

**BID DOCUMENTS, CONTRACT DOCUMENTS AND
CONSTRUCTION SPECIFICATIONS**

for

MODIFICATIONS TO WOODWARD CREEK INTAKE

for the

**FLOYD COUNTY, GEORGIA
BOARD OF COMMISSIONERS**

Elected Officials

Rhonda Wallace, *Chairman*

Wright Bagby

Scotty Hancock

Larry Maxey

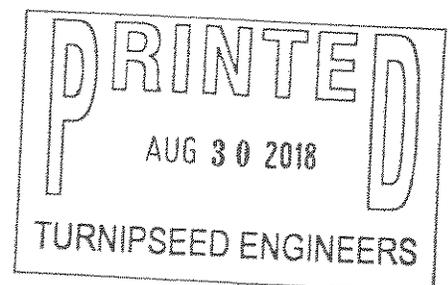
Allison Watters

Jamie McCord, *County Manager*

JUNE 2018

PROJECT NO. 173144

FUNDING: LOCAL



ATLANTA
AUGUSTA
ST. SIMONS ISLAND

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Prepared by:



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**FLOYD COUNTY BOARD OF COMMISSIONERS
PURCHASING DEPARTMENT
#12 East 4th Ave. Ste. 106
ROME, GA 30161**

(706) 291-5118

FAX (706) 290-6099

**Date Issued: September 6, 2018
Bid Number: 18-1009**

**INVITATION FOR BIDS
MODIFICATIONS TO WOODWARD CREEK INTAKE**

To Whom It May Concern:

Notice is hereby given that Floyd County, Georgia proposes to let a Contract to the lowest responsive, responsible bidder, upon sealed bids, for the furnishing of all labor, material, equipment and other things necessary for the construction of the:

**MODIFICATION OF THE WOODWARD CREEK INTAKE
BURLINGTON DRIVE NE
SHANNON, GEORGIA 30172**

Sealed bids will be received until **2:00PM** (local time), on **October 9, 2018** at the office of the Floyd County Purchasing Director, located in the Floyd County Administration Building, 12 East Fourth Avenue, Suite 106, Rome, Georgia. Sealed bids will then and there be publicly opened and read aloud in the office of the Purchasing Director. Late bids will not be accepted.

This project consists of performing modifications to the Woodward Creek Intake as described and shown on engineering drawings provided by Turnipseed Engineers. Addition of a single intake screen, air backwash, piping, concrete channel, complete with appurtenances to connect to the existing intake structure.

All bidders must have a State of Georgia Utility Contractors License and must employ a state "Utility Manger" certificate holder who will have oversight on all the work.

Time allotted for construction is 120 consecutive calendar days for substantial completion and 150 days for final completion.

Bids for the complete work in one general contract shall be made on the form provided and shall contain prices in words and figures.

NO PRE-BID CONFERENCE AND SITE VISIT will be held. Interested parties wishing to view the site may contact Troy Atkins at the Floyd County Water Department, 706-291-5244.

The work is to be let in one contract, and shall conform in all respects to the Specifications of TURNIPSEED ENGINEERS, located at 2255 Cumberland Parkway, Building 400, Atlanta, GA 30339.

The Contract Documents may be examined at the following location(s):

Office of the Engineer:

TURNIPSEED ENGINEERS
2255 CUMBERLAND PARKWAY, BLDG 400
ATLANTA, GA 30339
(770) 333-0700

TURNIPSEED ENGINEERS
4210 COLUMBIA ROAD, BUILDING 3
AUGUSTA, GA 30907

ATLANTA BUILDERS EXCHANGE
1940 THE EXCHANGE, SE
ATLANTA GA. 30339

Office of the Owner:

FLOYD COUNTY BOARD OF COMMISSIONERS
Floyd County Purchasing Department, Suite 106
#12 East Fourth Ave.
Rome, GA 30162
(706) 291-5109

Copies of the Contract Documents may be obtained at the Issuing Office, TURNIPSEED ENGINEERS located 2255 Cumberland Parkway, Building 400, Atlanta, GA 30339; Tel No. (770) 333-0700 upon payment of **\$100.00** for each set.

Digital Copies of the documents are not available.

Upon receipt of all documents in undamaged condition within 30 days after the date of opening of bids, half of the deposit will be refunded. No refund will be made after 30 days.

All forms, certifications and compliance documents required by Floyd County must accompany each bid. Including, but not necessarily limited to, compliance with the Georgia Security and Immigration Compliance Act OCGA 13-10-90 et.seq. Contractor must complete and submit with bid, the Contractor Affidavit under OCGA 13-10-91(b)(1) included with contract documents.

Bids must be accompanied by a Bid Bond in an amount of not less than five percent (5%) of the base bid. All bonds must be signed or countersigned by a Georgia Resident Agent.

A Performance Bond in the amount of one hundred percent (100%) of the amount of the bid, and a Labor Materials Payment Bond in the amount of not less than the amount of said Bid, one hundred percent (100%), shall be furnished by the successful bidders.

The right is reserved to the Board of Commissioners of Floyd County, Georgia to delay the award of the Contract for a period not to exceed one hundred twenty (120) days from the date of opening of bids, during which time bids shall remain open and not subject to withdrawal. The right is also reserved to the Board of Commissioners of Floyd County, Georgia to reject any and all bids and to waive any and all technicalities or informalities. Any contract executed pursuant to this notice shall be binding upon the Board of Commissioners of Floyd County, Georgia, as such, but will not create a liability expressed or implied, against any members of the Board of Commissioners of Floyd County, the Chairman of the Board, or employee of said County, in his or her individual capacity.

The Floyd County Board of Commissioners, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

By: Bill Gilliland, Purchasing Director, Floyd County Board of Commissioners. Legal ad run: September, 6,13,20,27

PROPOSAL

**TO BOARD OF COMMISSIONERS
FLOYD COUNTY, GEORGIA**

Submitted: _____, 2018

The undersigned, as Bidder, hereby declares that the only persons interested in the Proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the Contract to be entered into; that this Proposal is made without connection with any person, company or parties making a bid or Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the Drawings and Specifications for the work and contractual documents relative thereto, and has read all Special Provisions and General Conditions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees, if this Proposal is accepted, to contract with **FLOYD COUNTY, GEORGIA** in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary and to complete the construction of the work in full and complete accordance with the shown, noted, described, and reasonably intended requirements of the Drawings, Specifications and Contract Documents to the full and entire satisfaction of the **FLOYD COUNTY, GEORGIA** with a definite understanding that no money will be allowed for extra work except as set forth in the attached General Conditions and Contract Documents, for the following prices:

**FLOYD COUNTY, GEORGIA
MODIFICATIONS TO WOODWARD CREEK INTAKE**

For furnishing all materials and performing all labor necessary for construction modifications to the Woodward Creek Intake as shown on the Drawings and as specified for the following prices and approximate quantities:

Item 1. For the installation of an intake pipe, screen, air backwash system and channel as shown on the Drawings and/or specified, not including equipment prices listed in Item 2 below, the lump sum of:

\$ _____

Item 2. For furnishing and installing Major Mechanical Equipment.

	<i>Equipment and Manufacturer</i>	<i>Price</i>	<i>Base Price</i>
a.	Intake Screen - Section 6.12		\$ _____
	Mfr. _____	_____	
	Mfr. _____	_____	

Subtotal, Items 1 through 2 inclusive, the amount of: \$ _____

EXTRA WORK, IF ORDERED BY ENGINEER

(To cover authorized changes in scope of lump sum work under Item No. 1)

<i>Item No.</i>	<i>Qty.</i>	<i>Unit</i>	<i>Description</i>	<i>Unit Price</i>	<i>Total Price</i>
3.	10	CY	ADDITIONAL FOUNDATION STABILIZATION (to include undercutting and removal of unsuitable soils, backfilling with stone and geotextile fabric)	_____	_____
4.			CONCRETE WORK		
a.	5	CY	Class 'A' Concrete	_____	_____
b.	5	CY	Class 'B' Concrete	_____	_____
c.	5	CY	Class 'C' Concrete	_____	_____
d.	500	LBS	Reinforcing Steel	_____	_____
e.	100	SF	Contact Forms	_____	_____

Subtotal, Items 3 through 4 inclusive, the amount of: \$ _____

TOTAL AMOUNT BID, ITEMS 1 THROUGH 4, INCLUSIVE, THE AMOUNT OF:

_____ Dollars (\$ _____)

The Bidder may offer at his own option the bid price and name of other makes of equipment which he desires to substitute for specified equipment designated by him in the Proposal. The Bidder is referred to Section 6.03 of these Specifications for "Substitute Equipment" required.

<i>Section</i>	<i>Description</i>	<i>Price</i>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Note: The Owner reserves the right to select any item of equipment bid upon as a basis to award contract.

The Bidder further proposes and agrees hereby to commence work under this contract, with adequate force and equipment, on a date to be specified in a written order of the Engineer, and shall fully complete all work thereunder with the number of calendar days set forth in the Contract Agreement.

The Bidder further proposes and agrees to construct all work under lump sum items of the Proposal for the lump sum price bid, and understands that certain quantities as listed under Extra Work If Ordered By Engineer will be used in case of minor authorized increase or decrease in quantities to adjust by direct increase or decrease the lump sum bid for the complete work.

The Bidder declares that he understands that the unit price quantities shown in the Proposal are subject to adjustment by either increase or decrease, and that should quantities of any of the items of the work be increased, the undersigned proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, he also understands that payment will be made on actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in the quantities and that quantities will be determined upon completion of the work at which time adjustment will be made to the contract amount by direct increase or decrease.

The undersigned further agrees that, in case of failure on his part to execute the said Contract and the Bond within 10 consecutive calendar days after written notice being given of the award of the Contract, the check or bid bond accompanying this bid and the monies payable thereto, shall be paid into the funds of the Owner as liquidated damages for such failure otherwise, the check or bid bond accompanying this Proposal shall be returned to the undersigned.

BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDA

No. _____ Date _____ No. _____ Date _____

No. _____ Date _____ No. _____ Date _____

Attached hereto is a certified check on the _____ Bank of _____, or a Bid Bond by the _____ in the amount of _____ Dollars (\$ _____) made payable to **FLOYD COUNTY, GEORGIA** in accordance with the conditions of the advertisement and provisions herein.

Submitted By: _____

Georgia Utility Contractor License No. _____

By: _____ L.S.

Title: _____

Address: _____

Telephone No. _____ Fax No. _____

(Note: If the Bidder is a Corporation, the Proposal shall be signed by an officer of the Corporation; if a Partnership, it shall be signed by a Partner. If signed by others, authority for signature shall be attached.)

The full names and residences of persons and firms interested in the foregoing bid, as principal, are as follows:

EXPERIENCE AND REFERENCES

The bidder shall here state what work he has done of similar nature to that bid for, and give references that will afford the Owner opportunity to judge as to experience, skill, business standing and financial ability.

BID BOND

**STATE OF GEORGIA
FLOYD COUNTY**

KNOW ALL MEN BY THESE PRESENTS: THAT WE _____
(herein called the "Bidder") submitted a Bid to Floyd County, Georgia (herein called the
"Owner") dated the _____ day of _____, 2018 for procuring and installing
products for a project entitled "Modifications to Woodward Creek Intake, June 2018," (herein
called the "Project") and the testing and starting up of that project; that the Bidder and we,
_____ (herein called the "Surety") are
firmly bound to the Owner in the sum of:

Dollars (\$ _____)

in lawful United States currency; and that we, the Bidder and Surety jointly and severally, bind
our respective assigns, successors, heirs, executors and administrators to our obligations to pay
the Owner that sum.

THE CONDITION OF THIS OBLIGATION is that if the Bid is not selected by the Owner as
being the lowest, or lower, responsible Bid, then this obligation shall be void, otherwise this
obligation shall remain in full force and effect.

THE FURTHER CONDITION OF THIS OBLIGATION is that the Surety, for value received,
stipulates and agrees that extensions to the time limit in which the Owner may accept Bids shall
not invalidate the Surety's obligation under this bond, and that the Surety does hereby waive
notice of extensions to that time limit.

IN WITNESS WHEREOF the Bidder and the Surety have executed this BID BOND on this
_____ day of _____, 2018

(Bona Fide Bidder's Name) (Bidder's Seal if Corporation)

By: _____ L.S.
(Print Name and Title of Signer)

(Surety's Name)

By: _____ (Surety's Seal)
(Print Name and Title of Signer)

Countersigned

By: _____ L.S.
(Agent, Resident of the State of Georgia)

NON-COLLUSION AFFIDAVIT OF BIDDER

State of _____

County of _____

I, _____ (name of individual), being first duly sworn, deposes and says that:

(1) He is _____ (title) of _____ (Company) the Bidder that has submitted the Bid on the following;

Project Name: Floyd County, Modifications to Woodward Creek Intake, June 2018

Project Number: 173144

(2) He makes an oath that O.C.G.A. 36-91-21 (e) has not directly or indirectly been violated;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid of any other bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Floyd County, Georgia or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

Title _____

Subscribed and sworn to before me,

This _____ day of _____, 2018

Notary Public: _____

(Notary Seal)

My commission expires: _____



Floyd County
Board of Commissioners

Request for Bids

(RFB No. 18-1006)

To Provide

Construction Services

for

Woodward Creek Intake Project

Burlington Drive NE

Shannon, Georgia 30172

Issue Date: September 06, 2018



ATTACHMENT

FLOYD COUNTY BOARD OF COMMISSIONERS DRUG-FREE WORKPLACE CERTIFICATE

By signature on this certificate, the Vendor certifies that the provisions of O.C.G.A. Section 50-24-1 through 50-24-6 related to the "Drug-Free Workplace Act" have been complied with in full. The Vendor further certifies that:

1. A drug-free workplace will be provided for the Vendor's employees during the performance of the contract; and
2. Each Vendor who hires a sub-Vendor to work in a drug-free workplace shall secure from that sub-Vendor the following written certification: "As part of the subcontracting agreement with (Vendor's name), (sub-Vendor's name) certifies to the Vendor that a drug-free workplace will be provided for the sub-Vendor's employees during the performance of this contract pursuant to O.C.G.A. Section 50-24-3(b)(7)."

By signature on this certificate, the Vendor further certifies that it will not engage in the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana during the performance of this contract.

Vendor: _____

By: _____

Name Printed: _____

Title: _____

Date: _____



CERTIFICATE OF NON-DISCRIMINATION

In connection with the performance of work under this contract, the bidder agrees as follows:

The bidder agrees not to discriminate against any employee or applicant for employment because of race, creed, color, sex, national origin, ancestry or disability. The vendor shall take affirmative action to insure that employees are treated without regard to their race, creed, color, sex, national origin, ancestry or disability. Such action shall include, but not be limited to the following: employment, upgrading, demotion, transfer, recruiting, or recruitment, advertising, lay-off or termination, rates of pay or other compensation and selection for training, including apprenticeship.

In the event of the bidder's non-compliance with this non-discrimination clause, the contract may be canceled or terminated by Floyd County Board of Commissioners. The bidder may be declared, by Floyd County, ineligible for further contracts with Floyd County until satisfactory proof of intent to comply shall be made by the vendor.

The bidder agrees to include this non-discrimination clause in any sub-contracts connected with the performance of this agreement.

BIDDER _____

SIGNATURE _____

TITLE _____



BIDDERS DECLARATION

The bidder understands, agrees and warrants:

That the bidder has carefully read and fully understands the full scope of the specifications.

That the bidder has the capability to successfully undertake and complete the responsibilities and obligations in said specifications.

That this bid may be withdrawn by requesting such withdrawal in writing at any time prior to 2PM 9 October 2018 but may not be withdrawn after such date and time.

That Floyd County reserves the right to waive compliance by any applicant with any provision contained in this request whenever the County in its sole discretion believes such waiver is in the County's best interests

That by submission of this quote the bidder acknowledges that Floyd County has the right to make any inquiry or investigation it deems appropriate to substantiate or supplement information supplied by the bidder.

That the accompanying bid is not the result of or affected by, any act of collusion with another person or company engaged in the same line of business or commerce, or any other fraudulent act punishable under Georgia or United States law.

BIDDER:

Company Name: _____

Phone: _____

Name Print: _____

Signature: _____

Email: _____

Date: _____

Request for Taxpayer Identification Number and Certification

**Give Form to the
requester. Do not
send to the IRS.**

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	<p>1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.</p> <p>2 Business name/disregarded entity name, if different from above</p> <p>3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.</p> <p><input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate</p> <p><input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____</p> <p>Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.</p> <p><input type="checkbox"/> Other (see instructions) ▶ _____</p>	<p>4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):</p> <p>Exempt payee code (if any) _____</p> <p>Exemption from FATCA reporting code (if any) _____</p> <p><small>(Applies to accounts maintained outside the U.S.)</small></p>
	<p>5 Address (number, street, and apt. or suite no.) See instructions.</p> <p>6 City, state, and ZIP code</p> <p>7 List account number(s) here (optional)</p>	<p>Requester's name and address (optional)</p>

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number					
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	-		-		
or					
Employer identification number					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; border: 1px solid black; height: 20px;"></td> <td style="width: 5%; text-align: center;">-</td> <td style="width: 70%; border: 1px solid black; height: 20px;"></td> </tr> </table>		-			
	-				

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ▶ _____	Date ▶ _____
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.



STATE OF GEORGIA PROMPT PAY ACT AFFIDAVIT

THIS AFFIDAVIT IS TO ACCOMPANY THE BID

GEORGIA PROMPT PAY ACT: The Georgia Prompt Pay Act was enacted by the General Assembly in 1994 and took effect January 1, 1995. This act requires owners to pay contractors within 15 days of a pay request by the owner or the owner's representative. If payment is not made the owner shall pay the contractor 1% per month interest on the delayed payment. Additionally, the contractor must pay subcontractors within 15 days of receipt of payment from the owner.

This Act is Code Section 13.11.1 (Georgia Laws of 1994, p. 1398 par. 4)

Firm Name: _____

Signature: _____

Title: _____

Subscribed and Sworn to before me this _____ day of _____, 20_____

Notary Public

CONTRACT AGREEMENT

This Agreement made and entered into on the _____ date of _____, 2018, by and between **FLOYD COUNTY, GEORGIA**, party of the first part (hereinafter called the "Owner"), and _____, party of the second part (hereinafter called the "Contractor").

WITNESSETH:

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

That the Contractor will furnish all equipment, tools, materials, skill and labor of every description, necessary to carry out and complete in a good, firm, substantial, and workmanlike manner the construction of all the work specified under:

FLOYD COUNTY, GEORGIA MODIFICATIONS TO WOODWARD CREEK INTAKE JUNE 2018

In strict conformity with Drawings and the Construction Specifications hereinafter set forth, which Drawings and Specifications together with the foregoing Bid, Advertisement for Bid, Instructions to Bidder and Special Provisions, General Conditions, Supplemental General Conditions, Performance and Payment Bonds, this Agreement, and all addenda, hereto annexed, shall form essential parts of this Agreement, as if fully contained herein. The work covered by this construction Agreement includes all work as shown on the Drawings, specified, and listed in the attached Proposal.

That the Contractor shall commence the work to be performed under this Agreement on a date to be specified in a written order of the Owner's Engineer and shall within 120 consecutive calendar days from said date substantially complete all work hereunder, except as otherwise provided in these documents for extension of the time limit, and shall within 150 consecutive calendar days from said date achieve final completion with 100% of punch list items complete. Time is of the essence in this contract, and the Contractor shall pay to the Owner, not as a penalty, but as liquidated damages, the sum of \$600.00 for each calendar day that he shall be in default of substantial or final completion of the work within the time limits named herein.

Because of the difficulty of fixing damages suffered by the Owner on account of such default, damages are herein agreed upon as stated.

The Contractor shall perform and comply with all conditions, stipulations and requirements specified in the deeds, easements or other documents pertaining to all aspects of this Project.

The Owner hereby agrees to pay to the Contractor for the faithful performance of this Agreement, subject to additions and deductions as provided in the Specifications and Proposal, in lawful money of the United States, the sum of:

DOLLARS (\$ _____)

On or before the 30th day of each calendar month, the Owner shall make partial payments to the Contractor on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the Contractor, including materials delivered to the site, less retainage as per the General Conditions, which is to be retained by the Owner until all work has been performed strictly in accordance with this Agreement, and until such work has been accepted by the Owner. The terms and General Conditions in the Contract Documents shall supersede all provisions of the *Georgia Prompt Pay Act*.

Upon submission by the Contractor of evidence satisfactory to the Owner that all payrolls, material bills and other costs incurred by the Contractor in connection with the construction of the work have been paid in full, final payment on account of this Agreement shall be made within thirty (30) days after the completion by the Contractor of all work covered by this Agreement and the acceptance of such work by the Owner.

It is further mutually agreed between the parties hereto that if, at any time after the execution of this Agreement and the surety bonds hereto attached for its faithful performance, the Owner shall deem the surety or sureties upon such bond to be unsatisfactory, or if, for any reason, such bond ceases to be adequate to cover the performance of the work, the Contractor shall, at his expense, within five (5) days after the receipt of notice from the Owner to do so, furnish an additional bond or bonds in such form and amount, and with such surety or sureties as shall be satisfactory to the Owner. In such event no further payment to the Contractor shall be deemed to be due under this Agreement until such new or additional security for the faithful performance of the work shall be furnished in manner and form satisfactory to the Owner.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement under their respective seals on the day and date first above written in 6 counterparts, each of which shall without proof or accounting for the other counterparts, be deemed an original contract.

NAME OF CONTRACTOR

Georgia Utility Contractor
License No. _____

Signed, sealed and delivered
in the presence of:

Unofficial Witness

BY: _____ (L.S.)
TITLE: _____

Notary Public
My Commission Expires:

(NOTARY SEAL)

WITNESSED:
BY: _____ (L.S.)
TITLE: _____
(CORPORATE SEAL)

FLOYD COUNTY, GEORGIA

(L.S.)

Signed, sealed and delivered
in the presence of:

Unofficial Witness

CHAIRMAN

Notary Public
My Commission Expires:

(NOTARY SEAL)

WITNESSED:
BY: _____ (L.S.)
Clerk

(COUNTY SEAL)

APPROVED AS TO FORM BEFORE EXECUTION

BY: _____ (L.S.)

Attorney for Owner

*Note: If Contractor is a corporation, the Agreement shall be signed by the President, or Vice-President, attested by the Secretary and the corporate seal affixed. If the Contractor is a partnership, the Agreement shall be signed in the partnership name by one of the partners, with indication that he is a general partner.

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____ hereinafter called Principal, and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto **FLOYD COUNTY, GEORGIA**, hereinafter called OWNER, the total aggregate penal sum of:

_____ DOLLARS (\$ _____)

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the PRINCIPAL entered into a certain contract with the OWNER, dated the _____ day of _____, 2018 a copy of which is hereto attached and made a part for the construction of:

**FLOYD COUNTY, GEORGIA
MODIFICATIONS TO WOODWARD CREEK INTAKE
JUNE 2018**

NOW, THEREFORE, if the PRINCIPAL shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any authorized extensions or modifications thereof which may be granted by the OWNER, with or without notice to the SURETY and during the one (1) year guaranty period and if the PRINCIPAL shall satisfy all claims and demands incurred under such contract, and shall fully, indemnify and save harmless the OWNER from all costs and damages

which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expenses which the OWNER may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said SURETY, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of the other beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 2018.

NAME OF PRINCIPAL

Signed, sealed and delivered
in the presence of:

BY: _____
TITLE: _____

Unofficial Witness

WITNESSED:

BY: _____ (L.S.)
TITLE: _____
(CORPORATE SEAL)

Notary Public
My Commission Expires:

(NOTARY SEAL)

NAME OF SURETY

Signed, sealed and delivered
in the presence of:

BY: _____
TITLE: _____

Unofficial Witness

WITNESSED:

BY: _____ (L.S.)

(SURETY SEAL)

Notary Public
My Commission Expires:

(NOTARY SEAL)

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. In addition the bonds must be signed or countersigned by an agent residing in Georgia.

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____ hereinafter called Principal, and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto **FLOYD COUNTY, GEORGIA**, hereinafter called OWNER, the total aggregate penal sum of:

_____ DOLLARS (\$ _____)

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the PRINCIPAL entered into a certain contract with the OWNER, dated the _____ day of _____, 2018 a copy of which is hereto attached and made a part for the construction of:

**FLOYD COUNTY, GEORGIA
MODIFICATIONS TO WOODWARD CREEK INTAKE
JUNE 2018**

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extensions or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and for all labor cost incurred in such WORK including that by a SUBCONTRACTOR, and to any

mechanic or material man lien holder whether it acquires its lien by operation of State or Federal law; then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said SURETY, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of the other beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 2018.

NAME OF PRINCIPAL

Signed, sealed and delivered
in the presence of:

BY: _____
TITLE: _____

Unofficial Witness

WITNESSED:

BY: _____ (L.S.)
TITLE: _____

(CORPORATE SEAL)

Notary Public

My Commission Expires:

(NOTARY SEAL)

NAME OF SURETY

Signed, sealed and delivered
in the presence of:

BY: _____
TITLE: _____

Unofficial Witness

WITNESSED:

BY: _____ (L.S.)

(SURETY SEAL)

Notary Public

My Commission Expires:

(NOTARY SEAL)

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. In addition the bonds must be signed or countersigned by an agent residing in Georgia.

CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is contracting with Floyd County, Georgia has registered with, is authorized to use and is participating in a federal work authorization program* [any of the electronic verification work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91. The user identification number and the date of authorization for the affiant are set forth below. The undersigned contractor is using and will continue to use the federal work authorization program throughout the contract period.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with Floyd County, Georgia, that undersigned shall require as a condition of such employment or contract that contractor or subcontractor registers and participates in a federal work authorization program to verify information of all newly hired employees. In addition, contractor will secure from such contractor(s) or subcontractor(s) similar verification of compliance with O.C.G.A. 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a notice of identity of such contractor or subcontractor together with a copy of each such verification to Floyd County, Georgia within five (5) business days after the time the contractor(s) or subcontractor(s) is retained to perform such service.

E-Verify* User identification Number

Date of Authorization for Contractor

Company Name

By: Authorized Officer or Agent

Date

Title of Authorized Officer or Agent of Contractor

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME THIS
_____ DAY OF _____, 2018

Notary Public: _____

My Commission expires: _____

(NOTARY SEAL)

**As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is "E-Verify" operated by the U.S. Citizenship and Information Services Bureau of the U.S. department of Homeland Security, in conjunction with the Social Security Administration (SSA).*

SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services as a subcontractor for _____, the contractor which has a contract with Floyd County, Georgia, has registered with, is authorized to use and is participating in a federal work authorization program* [any of the electronic verification work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91. The user identification number and the date of authorization for this subcontractor to use the federal work authorization program are set forth below. The undersigned subcontractor is using and will continue to use the federal work authorization program throughout the contract period.

E-Verify* User identification Number

Date of Authorization for Contractor

Company Name

By: Authorized Officer or Agent

Date

Title of Authorized Officer or Agent of Contractor

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME THIS
_____ DAY OF _____, 2018

Notary Public: _____

My Commission expires: _____

(NOTARY SEAL)

**As of the effective date of O.C.G.A. 13-10-91, the applicable federal work authorization program is "E-Verify" operated by the U.S. Citizenship and Information Services Bureau of the U.S. department of Homeland Security, in conjunction with the Social Security Administration (SSA).*

FLOYD COUNTY, GEORGIA
AFFIDAVIT VERIFYING STATUS FOR PUBLIC BENEFIT

By executing this affidavit under oath, as an applicant for a Floyd County, Georgia public benefit as referenced in O.C.G.A. § 50-36-1, I am stating the following with respect to my application for a Floyd County, Georgia public benefit for _____.

(Name of natural person applying on behalf of individual,
business, corporation, partnership, or other private entity)

1) _____ I am a United States citizen

OR

2) _____ I am a legal permanent resident eighteen (18) years of age or older or I am an otherwise qualified alien or non-immigrant under the Federal Immigration and Nationality Act eighteen (18) years of age or older and lawfully present in the United States.*

In making the above representation under oath, I understand that any person who knowingly and willfully makes a false, fictitious, or fraudulent statement or representation in an affidavit shall be guilty of a violation of O.C.G.A. § 16-10-20.

Signature of Applicant

Printed Name of Applicant

Date

*Alien registration number for non-citizens

Sworn to and subscribed

Before me this _____ Day of _____, 2018

Notary Public

My Commission Expires:

(NOTARY SEAL)

*Note: O.C.G.A. § 50-36-1(e)(2) requires that aliens under the federal Immigration and Nationality Act, Title 8 U.S.C., as amended, provide their alien registration number. Because legal permanent residents are included in the federal definition of "alien," legal permanent residents must also provide their alien registration number. Qualified aliens that do not have an alien registration number may supply another identifying number below:

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned _____, the duly authorized and acting legal representative of **FLOYD COUNTY, GEORGIA**, do hereby certify as follows:

I have examined the attached Contract(s) and Performance and Payment Bond(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

Attorney for Owner

Date: _____

GENERAL CONDITIONS

- | | |
|--|---|
| 1. Definitions | 17. Subsurface Conditions |
| 2. Additional Instructions | 18. Suspension of Work, Termination and Delay |
| 3. Schedules, Reports and Records | 19. Payments to Contractor |
| 4. Drawings and Specifications | 20. Acceptance of Final Payment as Release |
| 5. Shop Drawings | 21. Insurance |
| 6. Materials, Services and Facilities | 22. Contract Security |
| 7. Inspection and Testing | 23. Assignments |
| 8. Substitutions | 24. Indemnification |
| 9. Patents | 25. Separate Contracts |
| 10. Surveys, Permits, Regulations | 26. Subcontracting |
| 11. Protection of Work, Property, Persons | 27. Engineer's Authority |
| 12. Supervision by Contractor | 28. Land and Rights of Way |
| 13. Changes in the Work | 29. Guarantee |
| 14. Changes in Contract Price | 30. Arbitration by Mutual Agreement |
| 15. Time for Completion and Liquidated Damages | 31. Taxes |
| 16. Correction of Work | |

1. DEFINITIONS

- 1.1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:
- 1.2 ADDENDA - Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATION, by additions, deletions, clarifications or corrections
- 1.3 BID - The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed
- 1.4 BIDDER - Any person, firm or corporation submitting a BID for the WORK
- 1.5 BONDS - Bid, Performance and Payment Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the CONTRACT DOCUMENTS
- 1.6 CHANGE ORDER - A written order to the CONTRACTOR authorizing an addition, deletion or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME
- 1.7 CONTRACT DOCUMENTS - The Contract, including Advertisement For Bidders, BID, Bid Bond, Agreement, Payment Bond, Performance Bond, NOTICE OF AWARD,

NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS and ADDENDA

- 1.8 CONTRACT PRICE - The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS
- 1.9 CONTRACT TIME - The total number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK
- 1.10 CONTRACTOR - The person, firm or corporation (holder of a State of Georgia Utility Contractors License) with whom the OWNER has executed the Agreement
- 1.11 DRAWINGS - The part of the CONTRACT DOCUMENTS, which show the characteristics, and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER
- 1.12 ENGINEER - The person, firm or corporation named as such in the CONTRACT DOCUMENTS
- 1.13 FIELD ORDER - A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction
- 1.14 NOTICE OF AWARD - The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.
- 1.15 NOTICE TO PROCEED - Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.
- 1.16 OWNER - A public or quasi-public body or authority, corporation, association, partnership or individual for whom the WORK is to be performed.
- 1.17 PROJECT - The undertaking to be performed as provided in the CONTRACT DOCUMENTS
- 1.18 RESIDENT PROJECT REPRESENTATIVE - The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof
- 1.19 SHOP DRAWINGS - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed
- 1.20 SPECIFICATIONS - A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship
- 1.21 SUBCONTRACTOR - An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site
- 1.22 SUBSTANTIAL COMPLETION - That date as certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in

accordance with the CONTRACT DOCUMENTS, so the PROJECT or specified part can be utilized for the purposes for which it is intended

- 1.23 SUPPLEMENTAL GENERAL CONDITIONS - modifications to General Conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable state laws
- 1.24 SUPPLIER - Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site
- 1.25 WORK - All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT
- 1.26 WRITTEN NOTICE - Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party or his authorized representative on the WORK

2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

- 2.1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS
- 2.2 The additional drawings and instruction thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

3. SCHEDULES, REPORTS AND RECORDS

- 3.1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.
- 3.2 Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which he proposes to carry on the WORK, including dates at which he will start the various parts of the WORK, estimated date of completion of each part and, as applicable:
 - 3.2.1 The dates at which special detail drawings will be required; and
 - 3.2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies and equipment
- 3.3 The CONTRACTOR shall also submit a schedule of payments that he anticipates he will earn during the course of the WORK.

4. DRAWINGS AND SPECIFICATIONS

- 4.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all

incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

- 4.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern general DRAWINGS.
- 4.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or and inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR'S risk.

5. SHOP DRAWINGS

- 5.1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWINGS, which substantially deviates from the requirement of the CONTRACT DOCUMENTS, shall be evidenced by a CHANGE ORDER.
- 5.2 When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.
- 5.3 Portions of the WORK requiring a SHOP DRAWING or submission shall not begin until the SHOP DRAWING has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

6. MATERIALS, SERVICES AND FACILITIES

- 6.1 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, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete and deliver the WORK within the specified time.
- 6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.
- 6.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.
- 6.4 Materials, supplies and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

6.5 Materials, supplies or equipment to be incorporated into the WORK shall not be purchased by the CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sales contract or other agreement by which an interest is retained by the seller.

7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

7.5 Inspections, tests or approvals by the ENGINEER or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and his representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating federal or state agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

7.7 If any WORK is covered contrary to the written instruction of the ENGINEER it must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR'S expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

8. SUBSTITUTIONS

- 8.1 Whenever a material, article or piece of equipment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

9. PATENTS

- 9.1 The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design or the product of a particular manufacturer or manufacturers is specified, however if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

10. SURVEYS, PERMITS, REGULATIONS

- 10.1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of bench marks adjacent to the WORK as shown in the CONTRACT DOCUMENTS. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR, shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets
- 10.2 The CONTRACTOR shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.
- 10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for the by CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. The CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the

conduct of the WORK as drawn and specified. If the CONTRACTOR observes that the CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in **Section 13 CHANGES IN THE WORK.**

11. PROTECTION OF WORK, PROPERTY, AND PERSONS

- 11.1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- 11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.
- 11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury or loss. He will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

12. SUPERVISION BY CONTRACTOR

- 12.1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR shall employ a state "UTILITY MANAGER" certificate holder to supervise his utility work. The "UTILITY MANAGER" will have oversight of and be in charge of all construction on the PROJECT. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the

CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

13. CHANGES IN THE WORK

- 13.1 The OWNER may at any time, as the need arises, order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.
- 13.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME, or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

14. CHANGES IN CONTRACT PRICE

- 14.1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:
- a) Unit prices previously approved
 - b) An agreed lump sum
 - c) The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition there shall be added an amount to be agreed upon but not to exceed 15% of the actual cost of the WORK to cover the cost of general overhead and profit.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

- 15.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.
- 15.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.
- 15.3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the

OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the CONTRACT DOCUMENTS.

- 15.4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the WORK is due to the following, and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.
 - 15.4.1 To any preference, priority or allocation order duly issued by the OWNER
 - 15.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and
 - 15.4.3 To any delay of SUBCONTRACTORS occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

16. CORRECTION OF WORK

- 16.1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.
- 16.2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

17. SUBSURFACE CONDITIONS

- 17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:
 - 17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS; or
 - 17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.
- 17.2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he

determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

18. SUSPENSION OF WORK, TERMINATION AND DELAY

- 18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.
- 18.2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or if he disregards the authority of the ENGINEER, or if he otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety a minimum of ten (10) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.
- 18.3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.
- 18.4 After ten (10) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the Contract. In such case, the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.
- 18.5 If, through no act of fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public

authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER, terminate the CONTRACT and recover from the OWNER payment for all WORK executed and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days written notice to the OWNER and the ENGINEER stop the WORK until he has been paid all amounts then due, in which event and upon resumption of the WORK, CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

- 18.6 If the performance of all or any portion of the WORK is suspended, delayed or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time; an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME or both shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

19. PAYMENTS TO CONTRACTOR

- 19.1 All payments to the CONTRACTOR will be made according to an approved partial payment estimate submitted as required, but not more than once per month. The CONTRACTOR will, on or before the 5th day of the month, submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. The period covered by the partial payment estimate will end on the 25th of the previous month. If payment is requested on the basis of materials and equipment not incorporated in the WORK but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER, as will establish the OWNER'S title to the material and equipment and protect his interest therein, including applicable insurance. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the OWNER, or return the partial payment estimate to the CONTRACTOR indicating in writing his reasons for refusing to approve payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within fifteen (15) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment based on the approved partial payment estimate. The OWNER shall retain 10% of the amount of each payment until final completion and acceptance of all work covered by the CONTRACT DOCUMENTS. The OWNER at any time, however, after 50% of the WORK has been completed, if he finds that satisfactory progress is being made, shall reduce retainage to 5% of the contract amount on the current and remaining estimates.

When the WORK is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below 5% to only that amount necessary to assure completion. On completion and acceptance of a part of the WORK on which the price is stated separately in the CONTRACT DOCUMENTS, payment may be made in full, including retained percentages, less authorized deductions.

- 19.2 The request for payment may also include an allowance for the cost of such major materials and equipment, which are suitably stored either at or near the site.
- 19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.
- 19.4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.
- 19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.
- 19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUBCONTRACTORS, laborers, workmen, mechanics, materialmen and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.
- 19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

20.1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the Performance BOND and Payment BONDS.

21. INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts of them may be liable:

21.1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom

21.2 Coverages under the policies will not be canceled unless at least thirty (30) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK.

21.4 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified:

21.4.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the CONTRACT DOCUMENTS, whether such operations be by himself or by any SUBCONTRACTOR under him, or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR under him. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident, and a limit

of liability of not less than \$2,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$1,000,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$2,000,000 aggregate for any such damage sustained by two or more persons in any one accident.

- 21.4.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.
- 21.5 The CONTRACTOR shall procure and maintain at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide adequate and suitable insurance for the protection of his employees not otherwise protected.
- 21.6 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, the ENGINEER, and the OWNER.
- 21.7 The CONTRACTOR shall acquire and maintain, if applicable, Flood and Hazard Insurance, any flood insurance made available under the National Flood Insurance Act of 1968, as amended, for WORK to be performed. The insurance shall be in an amount at least equal to the contract amount costs, excluding cost of uninsurable improvements, or to the maximum limit of coverage made available under the National Flood Insurance Act of 1968, as amended, whichever is less.

22. CONTRACT SECURITY

- 22.1 The CONTRACTOR shall within 10 days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance Bond and a Payment Bond in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the

CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such bond is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS, CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

23. ASSIGNMENTS

- 23.1 Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

24. INDEMNIFICATION

- 24.1. The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.
- 24.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.
- 24.3 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, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

25. SEPARATE CONTRACTS

- 25.1 The OWNER reserves the right to let other contracts in connection with this PROJECT. The CONTRACTOR shall afford other CONTRACTORS reasonable opportunity for the introduction and storage of their materials and the execution of their WORK, and shall properly connect and coordinate his WORK with theirs. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other

CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

- 25.2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.
- 25.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves him in additional expense or entitles him to an extension of the CONTRACT TIME, he may make a claim therefore as provided in Sections 14 and 15.

26. SUBCONTRACTING

- 26.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.
- 26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR (S) in excess of 50% of the CONTRACT PRICE, without prior written approval of the OWNER.
- 26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- 26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.
- 26.5 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

27. ENGINEER'S AUTHORITY

- 27.1 The ENGINEER shall act as the OWNER'S representative during the construction period. He shall decide questions, which may arise as to quality, and acceptability of materials furnished and WORK performed. He shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The ENGINEER will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.
- 27.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship and execution of the

WORK. Inspection may be made at the factory or fabrication plant of the source of material supply.

27.3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures or construction safety.

27.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

28. LANDS AND RIGHTS OF WAY

28.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights of way necessary for carrying out and for completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information, which delineates and describes the lands owned and rights of way acquired.

28.3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

29. GUARANTY

29.1 The CONTRACTOR shall guarantee all materials and equipment furnished and WORK performed for a period of one (1) year from the date of SUBSTANTIAL COMPLETION. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of SUBSTANTIAL COMPLETION of the system that the completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance BOND shall remain in full force and effect through the guarantee period.

30. ARBITRATION BY MUTUAL AGREEMENT

30.1 All claims, disputes, and other matters in question arising out of, or relating to, the CONTRACT DOCUMENTS or the breach thereof, except for claims which have been waived by making an acceptance of final payment as provided by Section 20, may be decided by arbitration if the parties mutually agree. Any agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

30.2 Notice of the request for arbitration shall be filed in writing with the other party to the CONTRACT DOCUMENTS and a copy shall be filed with the ENGINEER. Request for arbitration shall in no event be made on any claim, dispute or other matter in question that would be barred by the applicable statute of limitations.

30.3 The CONTRACTOR will carry on the WORK and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

31. TAXES

31.1 The CONTRACTOR will pay all sales, consumer, use and other similar taxes required by the law of the place where the WORK is performed.

SUPPLEMENTAL GENERAL CONDITIONS

1. These “Supplemental General Conditions” shall apply to work as whole and to each and all branches of the work. Subcontractors shall be supplied with a copy of the “Supplemental General Conditions”, and no arrangement of contracts with the subcontractors is to be such as to conflict with same. They shall also apply to any modifications or extra work.
2. SPECIFICATIONS AND DRAWINGS - In addition to Sections 4.2 and 4.3 of the “General Conditions of these Specifications,” if the Contractor fails to call any discrepancy to the attention of the Engineer, the subsequent decision of the Engineers regarding the Specifications and Drawings as to which is correct shall be binding and final.
3. SANITARY PROVISION - The Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the regulation of the State Board of Health and all local ordinances. No nuisance will be permitted.
4. TAXES –
 - A. Social Security / Payroll Taxes: The Contractor assumes and is liable specifically for all state and federal so-called payroll or Social Security taxes that may be in force at the time of the award of the Contract, and guarantees to hold the Owner harmless in every respect against same.
 - B. State and Federal Sales and Use Taxes: The Contractor assumes and is liable specifically for all state and federal sales and use taxes that may be in force at the time of the award of the Contract, and guarantees to hold the Owner harmless in every respect against same.
 - C. State of Georgia Sales Tax Rebate O.C.G.A. 48-8-3 Machinery and Equipment Used to Reduce or Eliminate Water Pollution: The Owner may be eligible for a refund from the State of Georgia for sales tax paid by the Contractor on certain equipment. If requested by the Owner, the Contractor shall provide necessary sales tax documentation to the Owner for the sales tax refund request.
5. USE OF PREMISES - The Contractor shall not load nor permit any part of any structure to be loaded with a weight, which will endanger its safety. The Contractor shall confine his apparatus; the storage of materials and the operations of his workmen to the limits defined by laws, ordinance, permits or directions of the Engineer and shall not unduly encumber the premises with his material.

The Contractor shall enforce the instructions of the Engineers regarding signs, advertisements, fire and smoking.
6. GUARDS, LIGHTS, ETC. - The Contractor shall provide all barricades, guards, lights or other such protection and walks around his work as are required by the regulation of state, county or federal laws and shall assume all responsibility of same, and keep them in repair. The necessary lighting, if required, to facilitate overtime work shall be provided. All barricades, etc. shall be promptly removed on completion of the work.

7. MOVING MATERIALS - If it becomes necessary at any time during the construction to move materials which are to enter into the construction, the materials having been temporarily placed, the Contractor or subcontractor shall, when so directed by the Engineer, move them or cause them to be moved without additional cost to the Owner.

8. CLEANING DURING CONSTRUCTION AND AT COMPLETION OF WORK- The General Contractor shall keep the premises clean at all times and shall remove all rubbish as often as directed by the Resident Inspector or Owner. If the Contractor does not at all times provide men to attend to the cleaning up, on request, in a manner satisfactory to the Resident Inspector, the Resident Inspector may employ such men to direct and charge the cost of same to the account of the Contractor. Every effort shall be made to minimize siltation and bank erosion during construction.

Upon completion of the work, the Contractor shall leave the grounds in a neat and clean condition. Construction areas shall be replanted with grass and shrubs where they have been removed and where necessary, at the request of the Engineer, the ground shall be sprigged or sodded. All areas disturbed by construction shall be restored to present or better condition. Any existing structure, which is damaged during construction, shall be repaired or replaced to original condition at the Contractor's expense.

9. REMOVAL OF MATERIALS - All materials of unsound or otherwise unfit character and not in accordance with the terms of the Contract will be condemned by the Engineer.

The Contractor shall promptly remove from the premises all condemned materials whether incorporated in the work or not. The Contractor shall promptly replace the materials to the satisfaction of the Engineer. If the Contractor does not remove such condemned materials within a reasonable time fixed by written notice, the Owner may remove them and store at the expense of the Contractor. If the Contractor does not pay to the Owner the expense of such removal within 10 days' time thereafter, the Owner may upon 10 days written notice sell such materials at auction or private sale, and shall account for the net proceeds thereof, after deduction of all cost and expenses that rightfully should have been borne by the Contractor.

10. MAINTENANCE - The Contractor will be required to maintain all work done by him in a first class condition for 30 days after the same has been completed as a whole and the Engineers have notified the Contractor in writing that the work has been finished to their satisfaction. The retained percentage will not be due or payable to the Contractor until the 30 day maintenance period has expired.

Any damage to the site or surroundings, including paving, shoulders, culverts, drainage structures, grass, etc., shall be repaired by the Contractor and all parts of the site shall be left in as good repair as before the work started.

11. QUANTITIES OF ESTIMATE - The estimated quantities of work to be done and materials to be furnished under this Contract shown in any of the documents, including the Proposal, are given for use in comparing bids and to indicate approximately the total amount of the Contract; the right is especially reserved, except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this contract.

12. PUBLIC CONVENIENCE AND SAFETY - No street, alley or other roadway shall be closed to the public by the Contractor, except by written permission of the Engineer, and except while so closed, the Contractor shall maintain traffic over, through or around work with the maximum practical convenience for the full 24 hours of each day whether or not work has ceased temporarily. The Contractor shall notify the Engineer in writing, at the earliest practicable date and in any case before starting any construction that might in any way inconvenience or endanger traffic, regarding each proposed closure and proposed schedule of operations thereon, so all necessary arrangements may be made.

The convenience of the general public and of residents along the working area shall be provided for in a reasonably adequate and satisfactory manner. Where existing roadways are not available for use as detours, traffic shall be permitted to pass through the work, except as otherwise specified or directed by the Engineer. The Contractor shall provide and maintain at his expense and in a manner approved and deemed practicable by the Engineer, such temporary roads as may be necessary to provide convenience access to driveways, houses, buildings, business establishments, and other property abutting the work as well as temporary approaches to and crossings of intersecting streets and other roadways. The Contractor shall provide at his expense temporary bridges for pedestrians, as required, at all street intersections over ditches, etc.

Materials and equipment stored along streets and other roadways shall be so placed and the work at all times shall be conducted as to insure minimum danger and obstruction to the traveling public.

Fire hydrants in operating condition shall be accessible at all times to the fire department. No material or other obstructions shall be placed closer to an operating fire hydrant than permitted by ordinances, rules or regulations. No operating fire hydrant shall be disconnected, removed or otherwise rendered inoperable without the written permission of the fire department.

The Contractor shall give the Chief of the fire department at least 24 hours' notice in writing before closure of each street and each street intersection.

13. PUBLIC UTILITIES - The Contractor will be held responsible for the protection of the property and services of public utilities within the limits of the work. Where such physical properties conflict with the performance of the work under the Contract, he shall anticipate such conflicts and give proper advance written notice thereof to the owners of the utilities involved. Until satisfactory arrangements are made for continuance of service, the Contractor shall not commence any operations which may interfere with or impair the efficiency of the existing physical properties.

Unless otherwise specified or approved, utility lines shall be maintained in continuous service and shall be properly supported and protected by the Contractor.

In no case shall interruption to water or sewer service be allowed to exist outside of working hours except as permitted by the Engineer on the pipe lines to be altered or replaced under this Contract. Operating fire hydrants shall be kept accessible to the fire department at all times, and shall be kept clear of excavated materials and other materials, as specified in these Supplemental General Conditions.

In the event of interruption to water or other utility services as a result of accidental breakage, the Contractor shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of service as promptly as practicable. In the event that such pipes or other facilities are broken or improperly supported, the Contractor will be held responsible for their complete and prompt restoration in substantial and workmanlike manner and for any claim for damage which may arise as a result of such interruption of service.

14. WATER SUPPLY, FUEL AND ELECTRIC CURRENT – The water for the Contractor’s use shall be supplied by the Contractor. The Contractor shall make his own arrangements for obtaining a water supply for his construction operations. The Contractor shall furnish fuel and electric current required for construction purposes, including any temporary incoming power connections, transformers, poles and metering equipment required therefore. The Contractor may use existing electrical systems while modifying existing facilities subject to approval by the Engineer. The Owner will furnish without charge all electric current required for operating tests of permanent equipment installed under the Contract and for permanent operation.

15. MAINTENANCE DURING CONSTRUCTION - The Contractor shall maintain at his expense the work during construction and until final acceptance of all work under the Contract. Continuous and effective work shall be prosecuted day by day, with adequate equipment and forces as required to keep the backfill, pavement, structures, pipe lines and other features in satisfactory and acceptable condition at all times.

In the event that the Contractor fails to remedy any unsatisfactory maintenance within 24 hours after receipt of written notice from Engineer describing the unsatisfactory conditions, the Owner may immediately proceed with adequate forces and equipment to maintain the project, and the entire cost of this maintenance will be deducted from the monies otherwise due the Contractor under the Contract. As an alternative to the above specified maintenance, all of the items which are not properly maintained may be deducted at the Contract prices from the current partial payment estimate even if such items have been paid for in previous estimates.

16. ERRORS AND OMISSIONS - The Contractor shall take no advantage of any apparent error or omission in the Drawings or Specifications; but if such error or omission does occur, the Engineer shall have the authority to make corrections and interpretations deemed necessary to fulfill the intent of the Drawings and Specifications; nor shall such corrections or interpretations, if any, be construed as a waiver of any Contract provision.

17. USE OF CHEMICALS - All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either A.P.A. or U.S.D.A. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

18. SCHEDULE OF WORK - The Contractor shall schedule his work to create minimal interruption of the treatment process of the existing facility and the work schedules and functions of the plant personnel. The schedule of work shall conform to that specified in Section 1 – General Requirements. The Contractor shall notify the Engineer and City personnel before starting any new phase of construction to verify that no unavoidable interruption of service will be encountered.

19. PROGRESS PAYMENT REQUESTS - The proposed format for use in monthly pay requests along with an estimated schedule of progress payment amounts for the full construction period must be submitted for approval before notice to proceed will be issued. Progress payment requests should include:
- a. Work in place
 - b. Material and/or equipment which have been delivered to the construction site and when conditional or final acceptance is made by the Owner. It shall be the Contractor's responsibility to provide adequate insurance and appropriate security measures for the protection of the subject materials and/or equipment.
20. CONTRACTOR PROPOSED WORK SCHEDULE - A work schedule showing the proposed work schedule with the time required to complete each phase shall be submitted for approval prior to the notice to proceed. This work schedule shall be updated and resubmitted with each monthly payment request. Engineer approval of the work schedule is required.
21. COORDINATION - The Contractor shall coordinate with the Engineer and Owner to insure the proper and successful completion of this contract.
22. RESIDENT INSPECTOR - The Resident Inspector, as the Engineer's representative on the project, shall assist and advise the Contractor as to interpretation of the Drawings and Specifications. He shall be authorized to inspect all work done and all materials furnished including preparation, fabrication and manufacture of the materials to be used. The Resident Inspector shall not be authorized to alter or waive any requirements of the Specifications without prior approval from the Engineer. He shall call the attention of the Contractor to any failure of the work or material to conform to the Specifications and Contract. He may reject material or suspend the work until any questions at issue can be referred to and decided by the Engineer.
- The presence of the Resident Inspector shall in no way lessen the responsibility of the Contractor. The Contractor in no way relieves himself of responsibility for adequacy of the work by following the directives of the Resident Inspector.
23. PRECONSTRUCTION CONFERENCE - A preconstruction conference shall be held prior to issuance of notice to proceed. The Contractor shall be represented by at least 1 principal of the firm, the job superintendent and, if applicable, the superintendent of the electrical subcontractor. The Contractor shall at that time present the construction schedule, progress payment format and estimates, any available subcontractor approval requirements, required insurance, and any other documents deemed necessary.
24. EXISTING PIPING AND STRUCTURES - The Contractor shall verify the location of existing piping and structures in an area prior to beginning new construction in that area.
25. INSURANCE - In addition to the requirements of Article 21 of the Standard General Conditions, the Owner and the Engineer shall be listed as Additional Insureds on the Contractor's and Subcontractor's General Liability Policy and Builders Risk in the same amounts as required for the Contractor and Subcontractor. The certified endorsements for the Additional Insureds shall be in the same amounts as required for the Contractor and Subcontractor, listed on the Certificate of Insurance and attached to the Certificate of Insurance. Certificates of Insurance and endorsements shall be provided with executed

contract. In addition to required policy endorsements, package shall include the following forms:

- *Policy Change Endorsement*
- *Additional Insured – Owners, Lessees or Contractors – Complete Operations*
- *Additional Insured – Owners, Lessees or Contractors – Scheduled Person or Organization*
- *Changes Cancellation and Nonrenewal*

26. EVIDENCE OF CONTRACTOR’S INSURANCE - When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
27. EVIDENCE OF SUBCONTRACTOR’S INSURANCE - Contractor shall provide to Engineer, copies of the Subcontractor’s policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Subcontractor. Subcontractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
28. MODIFICATIONS - The Contractor and his subcontractors must submit in writing any requests for modifications to the Drawings and Specifications. Shop drawings that are submitted to the Engineer for his review do not constitute “in writing” unless it is brought to the attention of the Engineer that specific changes are being suggested. In any event, changes to the Drawings and Specifications by means of shop drawings become the responsibility of the person initiating such changes.

**SECTION 1
GENERAL REQUIREMENTS**

- 1.01 Location: The work described in these Specifications is located in **FLOYD COUNTY, GEORGIA**.
- 1.02 Work to be Done: The work to be done consists of the furnishing of all materials, labor and equipment for the complete construction of **MODIFICATIONS TO WOODWARD CREEK INTAKE, JUNE 2018** for **FLOYD COUNTY, GEORGIA** consisting of:

The addition of a single intake screen, air backwash, piping and concrete channel complete with appurtenances to connect to the existing raw water intake structure.

- 1.03 Schedule of Work: The Contractor shall schedule the work so-as-to minimize interruptions or shutdowns of the existing utility system. The Contractor shall consider the current and projected water levels in Woodward Creek when determining the work schedule. Since the proposed piping and structures shall be installed under water, the Contractor shall use a temporary cofferdam system, earthen dam, water or sand filled dike or approved equal to construct the proposed improvements. The pump station may be out of service for a period of no more than 30 consecutive days during construction.

The Contractor shall notify the Engineer and the Owner before starting any work that may result in an interruption of service.

- 1.04 Drawings: The Drawings entitled “**MODIFICATIONS TO WOODWARD CREEK INTAKE** for **FLOYD COUNTY, GEORGIA, JUNE 2018**” form a part of the Construction Agreement.

- 1.05 Specifications: The Specifications form a part of the Construction Agreement, and include this Section and Sections 2 through 8 as identified below:

<u>Section Number</u>	<u>Title of Section</u>
2	Control of Materials
3	Soil Erosion and Sediment Control
4	Site Preparation, Excavation, Backfilling and Grading
5	Pipe and Fittings
6	Mechanical Equipment
7	Electrical - Basic Materials And Methods
8	Painting

- 1.06 Protecting Existing Utilities and Structures: Prior to any excavation, the Contractor shall call the Utilities Protection Inc. “Call Before You Dig” number (811). Any damage done to existing utility lines, drains, power and telephone cable, poles, and structures of every nature, not indicated to be replaced and/or abandoned shall be repaired or replaced by the Contractor at his own expense. The approximate position of certain known underground lines and structures are shown on the Drawings according to the best available

information. Existing small lines are not shown. The Contractor shall locate, excavate and expose all existing underground lines in advance of trenching and other construction operations. Where connections are to be made at underground structures and pipe lines, elevations and locations shall be verified prior to construction of the pertinent work. Where underground utilities or obstructions are encountered which conflict with the new work, the location and/or alignment of the new or existing lines may be changed to avoid interference upon written approval of the Engineer.

- 1.07 Subsurface Investigations: A subsurface investigation has not been made on the work. The prospective bidder must form his own opinion of the character of the sub-surface materials to be encountered in excavating for and the construction of the various facilities.
- 1.08 Easements: The Owner has obtained easements for all work on private property. The Contractor will be provided copies of all easement agreements to the Owner. The Contractor shall review any special conditions of any easement agreement and notify the Engineer of any condition which cannot be met under the Plans and Specifications without an increase in contract price.
- 1.09 Working Drawings: The Contractor's attention is directed to the requirements of the "Instructions to Bidders and Special Provisions" with reference to working drawings. The Contractor shall submit a digital copy of the drawings and details, covering Reinforcing Steel, Structural Steel, Miscellaneous Metals, Piping and such other items of work as may be necessary for successful completion of the work of the Project, to the Engineer for review. After review, the Engineer will return the digital copy to the Contractor. The Contractor will forward three hard copies, exactly as marked in the returned digital copy, to the Engineer.
- A. Check by Contractor: The Contractor shall check all working drawings for accuracy of dimensions and details and for conformation with the Drawings and Specifications before submitting working drawings to the Engineer for approval. The Contractor shall indicate that working drawings have been checked by him by affixing an appropriate stamp or notation on the face of each of the working drawings.
- B. Responsibility for Accuracy: Approval by the Engineer of the Contractor's working drawings shall not relieve the Contractor of the responsibility for accuracy of dimensions and details. The Contractor shall be responsible for agreement and conformity of working drawings with the Drawings and Specifications.
- 1.10 Shop Drawings: The Contractor shall submit shop drawings and details covering the required items of work and such other items which may be necessary for the successful completion of this Contract to the Engineer for checking and approval before any fabrication, erection or installation shall commence. An approved set of shop drawings with stamp of approval shall be kept on the job at all times.

The Contractor shall notify the Engineer in writing about any information in the shop drawings which deviates from the Contract Document.

Shop drawings, product data and engineering calculations covering all equipment, material, fabrications and similar items shall be submitted to the Engineer for review. Submittals shall verify compliance with the contract documents with any deviations noted by the Contractor. The Contractor shall submit a digital copy of drawings and details to adequately describe the function, performance characteristics, dimensions, arrangement, support, anchorage and other similar information to allow for installation, operation and maintenance. After review, the Engineer will return the digital copy to the Contractor. The Contractor will forward three hard copies, exactly as marked in the returned digital copy, to the Engineer.

1.11 As-Built Drawing: As the work progresses, the Contractor shall regularly record on one set of Drawings, all changes and deviations from the Contract Drawings and record the exact final locations of any deviation and original work. Upon completion, the Contractor shall have these drawings and records certified as to their completeness and correctness by the Resident Inspector and deliver them to the Engineer for incorporation in the tracings. Final as-built alignment, invert elevations and locations are to be supplied by the Contractor.

A. As-Built information for each item completed shall be provided monthly to the Engineer and submitted with the partial pay request. No pay requests will be processed while as-built records are incomplete.

B. As-Built Requirements: All submitted as-builts must meet the following requirements:

1. Contractor must present as-builts on a clean set of Drawings. All as-builts must be neat and legible.
2. All new line appurtenances installed will have a minimum of 2 distances from permanent points. (eg: manholes, fire hydrants, fittings, water and sewer taps, valves, plugs, etc.)
3. Detail of all piping is required.
4. Contractor must provide finish elevations and invert elevations of all structures and piping.
5. A distance is required for all new water and sewer lines every 100' from centerline of road or structure.

1.12 Operation and Maintenance Manuals: If applicable and before the work is 50% complete, the Contractor shall submit three (3) printed copies and one (1) digital pdf file of operation and maintenance manuals for equipment as specified. The digital file shall be provided on a single drive or disk. Each component shall be labeled per the specification section referenced, for example:

“8.22 Aluminum Gates.pdf” or “11.13 Mechanical Bar Screen.pdf”

1.13 Clean-up: Upon completion of the work, all excess material and rubbish shall be removed from the job site and disposed of as directed by the Engineer. The surrounding construction area shall be left in essentially as good a condition as existed prior to construction.

All unsuitable excavated material must be properly disposed of in a manner acceptable to the Engineer and in a manner that will not adversely impact the environment.

- 1.14 Payment: No separate payment will be made for the work of this Section. The cost of the work and all cost incidentals thereto shall be included in the price bid for the item to which the work pertains.

SECTION 2 CONTROL OF MATERIALS

- 2.01 Source of Supply and Quality of Materials: The source of supply for all materials and equipment shall be submitted to the Engineer for approval before orders are placed. Suppliers of reinforcing steel, fabricated metal work, and metal castings may be required to submit guarantees of conformity with Drawings and Specifications. Representative preliminary samples of the character and quantity prescribed shall be submitted by the Contractor or producer for examination and tested in accord with the methods referred to under the samples and testing materials section of these Specifications. Only materials conforming to the requirements of the Specifications and approved by the Engineer shall be used in the work. All materials proposed to be used may be inspected or tested at any time during their preparation and use. If, after trial, it is found that sources of supply which have been approved do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish materials from other approved sources. No material, which after approval has in any way become unfit for use, shall be used in the work.
- 2.02 Samples and Testing of Materials: Unless otherwise specified, standard tests of materials shall be made in accord with the Specifications and tests of the American Society for Testing Materials, by a commercial testing laboratory approved by the Engineer. Reports of the tests shall promptly be furnished to the Engineer. Tests shall be arranged by the Contractor. The cost of all tests will be paid for by the Contractor unless otherwise specified.
- 2.03 Schedule of Materials and Standard Tests: The following schedule of materials and the standard test to which each is to be subjected is given for the Contractor's guidance.
- A. Cement (any quantity): Certificate of mill test to be furnished by producers of laboratory tests made as per ASTM C-1
 - B. Fly Ash: Independent laboratory test as per ASTM C 618
 - C. Sand (any quantity for use in cement concrete): Tests to indicate conformity with ASTM C-33
 - D. Stone and Gravel (any quantity for use in cement): Coarse Aggregate, similar to sand
 - E. Concrete: Cylinder compression tests of concrete placed in the work from four (4) cylinders made for each day's placing of each class of concrete of each 50 cubic yards or fraction thereof. One (1) cylinder shall be broken at seven (7) days, two (2) cylinders shall be broken at 28 days, and one (1) cylinder shall be held in reserve.
 - F. Brick (1 to 5,000): Visual inspection for shape, color soundness, freedom from cracks, balls of clay, and particles of lime
 - G. Concrete Masonry Units: Visual inspection for shape, soundness and freedom from cracks and fractures. Laboratory tests are required on at least five (5) units as per ASTM C-140.

- H. Structural Tile: Visual inspection for shape, soundness, color, texture and crazing. Laboratory tests are required on at least five (5) units as per ASTM C-126.
- I. Building Stone:
1. 1 to 5 Tons: Visual inspection for shape and color
 2. For Each Additional Five (5) Tons or Part Thereof: Visual inspection for shape and color and test for compression as per ASTM C-97 and C-170
- J. Cast Iron Pipe and Ductile Cast Iron Pipe:
1. Field Inspection: Visual inspection for dimensions, coating, cement lining, holes, hammer test, weights
 2. Laboratory Tests: Certified test reports by foundry
- K. Steel Pipe: ASTM A-134 and A-139
- L. Polyvinyl Chloride Pipe:
1. Visual Inspection: To insure that pipe is homogenous throughout, free from cracks, nicks, gouges, severe scratches, voids, inclusions and other defects, reasonably uniform in color density and other physical properties. Quality Control Certification Seal and markings to include manufacturer's name or trademark, nominal pipe size and size base, PVC Cell Classification or Material Code, Dimension Ratio or Standard Dimension Ratio Number, product type, pressure class or pressure rating standard specification designation, production records code.
 2. Laboratory Tests: In amounts and character as per ASTM D-3034 for sewer pipe and AWWA C 900 for water pipe
- M. Structural Steel:
1. Any Quantity: Field inspection for rust, shape, and dimensions
 2. 25 to 200 Tons: Independent shop inspection and certified copies of mill tests
 3. For Structures and Buildings: See ASTM A-36
- N. Concrete Reinforcement Steel:
1. Up to 50,000 Pounds: Field inspection for rust, shape and dimensions
 2. 50,000 Pounds and Up: Independent laboratory inspection as follows:
 - a. Billet Steel - ASTM A-615
 - b. Roll Steel - ASTM A-616
 - c. Cold-Drawn Steel Wire - ASTM A-82
 - d. Wire Fabric - ASTM A-185

O. Cast Iron Castings:

1. Field Inspection: For dimensions, coatings, holes, hammer test
2. Laboratory Tests: Certified test reports by foundry

2.04 Payment: No separate payment will be made for work under this Section of the Specifications. The cost of such work and all cost incidentals thereto shall be included in the price bid for the item to which the work pertains.

SECTION 3 SOIL EROSION AND SEDIMENT CONTROL

- 3.01 Soil Erosion and Sediment Control Program: Siltation and soil erosion shall be prevented by the installation of erosion control measures and practices prior to or concurrent with land-disturbing activities. The Contractor shall utilize silt fence, hay bales, mulch, grass, slope drains and other erosion control devices or machines as necessary. All soil erosion and sedimentation control measures must be installed prior to initiation of construction activity. Siltation and erosion control shall be in compliance with the “Georgia Erosion and Sedimentation Act of 1975” as amended to date and these Specifications. Erosion, sedimentation and pollution control may include temporary construction work outside the right of way where necessary as a result of construction operations, such as haul roads and equipment storage sites. Any violations of the Act shall be subject to those penalties and fines as defined by the Act.
- 3.02 24-Hour Contact: Michael Skeen, Public Works Director, 706-236-2495
- 3.03 Erosion Control Program: Vegetation and mulch will be applied to applicable areas **immediately** after grading is completed. Best Management Practices (BMPs) will be employed to prevent erosion in areas of bare soils and concentrated water flows. Diversions and dikes will be installed to divert sediment-laden runoff into the sediment barriers and to protect cut and fill slopes from erosive water flows.
- 3.04 Standards and Specifications: All designs will conform to and all work will be performed in accordance with the standards and specifications of the publication entitled “Manual For Erosion and Sediment Control in Georgia” and in compliance with the “Georgia Erosion and Sedimentation Act of 1975” as amended to date. All materials shall be first-class quality to withstand a 25-year storm event.
- 3.05 Limit of Progress: The Engineer will limit the area of excavation commensurate with the Contractor’s capability and progress in keeping the finish grading, mulching, seeding and other such pollution control measures current in accordance with an accepted schedule. Should seasonal limitations make such coordination unrealistic, special erosion control measures shall be taken immediately to the extent feasible and justified. Excavation shall not exceed 100' in advance of pipe laying.
- 3.06 Construction in Rivers, Streams and Impoundments: Unless otherwise approved in writing by the Engineer, construction operations in rivers, streams and impoundments shall be restricted to those areas which must be entered for the construction of temporary or permanent structures. As soon as conditions permit, rivers, streams and impoundments shall be promptly cleared of all false work, piling and cofferdams which are to be removed, debris, and other obstructions placed therein or caused by the construction operations. Frequent fording of live streams with construction equipment will not be permitted; therefore, temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by the Engineer, mechanized equipment shall not be operated in live streams except as may be required to construct channel changes and temporary or permanent structures, and to remove temporary structures.

3.07 Temporary Erosion Control: Temporary erosion control shall consist of planting temporary grass of a quick growing species such as millet, rye grass or cereal grasses suitable to the area. The Contractor shall use all means necessary to control dust on and near the work site and all offsite barrow areas. The Contractor should thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors and concurrent performance of work on the site. Where the location of temporary erosion control structures are not indicated on the Drawings, the following guidelines shall be used: Install sedimentation structures at the toe of all disturbed earth slopes, around all drainage structure inlets, across constructed drainage ways at approximately 150' centers and at the tops of slopes and terraced slopes as indicated on the details. Siltation fences or hay bales only shall be used across constructed drainage ways. Hay bales only shall be used at drainage structure inlets. Perimeter barriers may be any of the types detailed. All areas left disturbed for a period greater than 14 days shall be stabilized with temporary seeding or straw mulch.

3.08 Silt Fence: Where shown on the Drawings and as directed by the Engineer, the Contractor shall furnish, install, maintain and remove water permeable self-supporting silt fencing to remove sediment laden runoff.

A. Fabric: Silt fencing shall be composed of strong rot-proof synthetic fibers formed into a fabric of either the woven or non-woven type. Either type of fabric shall be free of defects or flaws, coatings which may change its properties after installation, resist exposure to sunlight or heat and have finished edges to prevent fraying. Type fences shall be woven type.

In lieu of silt fence described above, the Contractor may use haybales. Haybales shall be placed as shown on the Drawings and secured with 2"× 4" wood post or No. 4 steel rebar.

1. Type "NS" Fence: Posts shall be a minimum of 4' long and either hardwood or steel may be used. If hardwood is used, the size may be 1.5" × 1.5" with a cross-section of 2.25-square inch. Steel posts shall be "U", "T" or "C" shaped with a minimum weight of 1.15-pounds per foot with props for fastening the fence. Maximum post spacing shall be 6'. Type "NS" sediment barriers shall have a P-factor no greater than 0.045.

2. Type "S" Fence: Posts shall be a minimum of 4' long and either hardwood or steel may be used. If hardwood is used, the size may be 1.5" × 1.5" with a cross-section of 2.25-square inch. Steel posts shall be "U", "T", or "C" shaped with a minimum weight of 1.15-pounds per foot with props for fastening the fence. Maximum post spacing shall be 4'. Type "S" sediment barriers shall have a P-factor no greater than 0.030.

B. Posts and Woven Wire Supports: Post installation shall start at the center of the low point (if applicable) with remaining posts spaced a maximum of 6' apart from Type "NS" fence and 4' apart for Type "S" fence. Post shall be driven in a minimum of 18". Fabric shall be secured to post with nails, staples, wire or string. Toe of fabric shall be buried 6" in the soil with 2" turned back upstream. If fence is erected in sections, a minimum of 18" overlap will be required.

- 3.09 Check Dam: Stone or Haybale check dams may be installed as shown. For stone check dams, the drainage area shall not exceed 2 acres. For hay bales, the drainage area shall not exceed 1 acre. The center of the check dam must be at least 9" lower than the ends and 2' tall maximum with 2:1 side slopes. A geotextile should be used as a separator between the stone and the soil base. Stone check dams should be graded sizes 2" to 10". Hay bales should be staked with 2 × 2 wood post or No. 4 steel rebar and embedded a minimum of 4".
- 3.10 Riprap: The Contractor shall furnish and place riprap as required and where shown. Riprap shall consist of stone or bagged sand-cement to a thickness of approximately 12". Stone shall be hard quarry or fieldstone of such quality that it will not disintegrate on exposure to water or weathering. Stone shall range in weight from a minimum of 25-pounds to a maximum of 150-pounds with at least 75% of the pieces weighing more than 50-pounds. Bagged sand-cement riprap shall consist of one part cement and five parts of sand in clean cloth bags approximately one cubic foot in size. Sand and cement shall be as specified for concrete work herein.
- 3.11 Grassing of Disturbed Areas: The Contractor shall furnish and install all materials and provide all labor for grassing and sedimentation control as indicated on the Drawings and/or Specifications.
- A. Preparation: The Contractor shall grass all areas that were disturbed by clearing or construction operations. Grassing shall be by conventional seeding or hydroseeding. Before seeding commences, the Contractor shall spread the stored stock piled top soil over the entire area, working the better top soil into the more rocky areas. The entire area shall be smoothed with a drag and all clods broken up. All deleterious material, large stones, roots, limbs and other debris shall be removed to leave a smooth area that would be suitable for mowing. Grassing (by seeding) shall be completed as soon as practical after finish grading is completed in order to minimize erosion from rainfall and runoff. Any erosion occurring in grassed areas shall be immediately repaired.
- B. Grass Seed: Grass seed selection shall be in accordance with the "Manual for Erosion and Sediment Control in Georgia" as amended to date. Otherwise, the type of grass seed applied shall be determined by site and soil compatibility and Owner discretion.
- C. Temporary and Permanent Seeding: Temporary seeding is required on any areas exposed longer than 14 days. Permanent seeding shall be done only if it can be completed between March 1st and April 15th or August 15th and November 15th. Use temporary seeding during remaining periods. The Contractor shall provide for later permanent seeding by obtaining a signed proposal to the Owner from an approved local landscaper for the work specified. The Owner shall deduct the amount of the proposal from the final payment. The work of spreading and compacting topsoil shall be performed by the Contractor, as specified, prior to planting rye grass. Replacing or repairing of eroded topsoil shall be done as necessary by the local landscaper at time of later grassing, and this work shall be included in his proposal.

- D. Hydro-seeding: Mix the seed (inoculated if needed), fertilizer and wood cellulose or wood pulp fiber mulch with water and apply in slurry uniformly over the area to be treated. Apply within one hour after the mixture is made.
 - E. Grassing Along Highway Right of Way: Grassing along highway right of way shall be in accordance with Department of Transportation, State of Georgia, Standard Specifications, Construction of Roads and Bridges, 1993 Edition, Section 700.
 - F. Grassing through Established Pastures and Lawns: Grassing through established pastures and lawns shall be by seeding with the same type of grass as was disturbed or, if acceptable to the Owner, seeding may be as recommended by the local Soil Conservation Agent.
 - G. Grassing of Other Areas: Grassing of other areas shall be by planting grass of a quick growing species that will also give a permanent cover. Permanent seeding shall be a mixture of Bermuda and centipede.
 - H. Planting: Preparation of soil along highway right of way shall be as set out in highway specifications. The Contractor shall use recognized equipment and materials in preparation of the soils. Before planting, a fertilizer of 6-12-12 composition or approved equal shall be evenly applied at the rate of 1,500-pounds per acre and disced or harrowed into the dampened soil.
 - I. Maintenance: Temporary grass may be intermixed with permanent grass. However, the Contractor shall cut and maintain the temporary grass such that the permanent grass will become established and not be choked out. The Contractor will be required to maintain the grass on the site until the job is accepted.
 - J. Payment: Grassing will be paid for on a lump sum basis and shall include all areas where the existing grass has been disturbed or destroyed by the Contractor's operation. Areas to be grassed shall be designated by the Engineer. Final acceptance and payment of grassing is defined as a full cover, over the seeded area of live and growing grass, when at least 98% of the total area has no bare spots exceeding 1-square foot, and the ground surface is fully stabilized against erosion. The cost of such work and all cost incidentals thereto shall be included in the unit prices bid for the item to which the work pertains.
- 3.12 Seed, Fertilizer, Mulch: Seed, fertilizer, mulch and periodic watering shall be applied in adequate quantities to assure a satisfactory ground cover over the entire disturbed area of construction operations. Water thoroughly as soon as completed and at least twice daily, or more often if necessary to provide continuous growth without setback until all growth from seed is thoroughly established.

The mulching material will consist of dry straw or hay of good quality, free of seeds of competing plants, and at the rate of two or two and a half tons per acre, respectively. Straw or hay mulch will be applied uniformly over the disturbed areas to achieve 75% coverage. It must be spread within 24-hours after seeding is done. The spreading must be done by blower-type or other mulch-spreading equipment or by hand and anchored by pressing the mulch into the soil. Anchoring must be done immediately after the mulch is spread. A disk harrow with the disk set straight or a special "packer disk" may be used.

The disk may be smooth or aerated and should be 20" or more in diameter and 8" to 12" apart. The edges of the disk should be dull enough not to cut the mulch but sharp enough to press into the soil leaving much of it in an erect position.

- 3.13 Slope Stabilization: Sedimentation shall be controlled by the use of hay mulch on all slopes. On slopes greater than 3:1, the Contractor shall install blankets. Prior to placing the blanket, the grassing shall have been completed and the area left in a smooth, uniform condition, free from stones, lumps, roots, and other material which would prevent from making snug contact with the underlying soil.

A. Fiberglass Blanket: The fiberglass blanket shall be machine produced consisting of uniform layer of continuous, randomly-oriented glass fiber strands. The blanket shall be at least 48" wide and weighing a minimum of 0.2-pounds per square yard when used on slopes and 0.4 pounds per square yard when in waterways.

1. Securing and Stapling: All staples shall be driven flush with the ground. Staples for securing the blanket shall be made from cold drawn wire no less than 6" lengths of 14-gauge, to form a "U" of 1" in width. Longer staples may be required for loose soil.

Each strip of the blanket shall be held firmly in place by means of 3 rows of staples; 1 row along each edge and 1 row along the middle. The staples shall be spaced no more than 3' apart in each row with the staples in the middle row spaced alternately with those at the edges. The edge staples shall be placed in the 2" overlap. At the end of each blanket, staples shall be placed in a row with spacing of approximately 12".

An anchor slot or trench, 9" in depth, shall be dug across the upgrade end of the site. The first 12" of the blanket shall be placed in the trench and the backfill tamped solidly in place. Adjacent strip ends shall overlap 2" and adjoining ends shall overlap 6" with the upstream section on top.

B. Organic Fiber Blanket:

1. Straw Blanket: The straw blanket shall be a machine-produced blanket of clean, weed-free straw from agricultural crops with consistent thickness and the straw evenly distributed over the entire area of the blanket.

a. Slopes: The top of each blanket shall be covered with a photodegradable plastic mesh having a maximum mesh size of 5/16" × 5/16" which is sewn to the straw using biodegradable thread. The blanket shall be at least 48" wide with a minimum thickness of 3/8" and a minimum dry weight of 0.5-pounds per square yard.

b. Waterways: The blanket shall be the same as for slopes except having the photodegradable plastic mesh on the top and bottom.

2. Excelsior Blanket: A machine produced mat of curled wood excelsior of which 80% has 6" or longer fiber length with consistent thickness and the

fiber evenly distributed over the entire area of the blanket. The blanket shall be smolder resistant. The top of the blanket shall be clearly labeled.

- a. Slopes: The top of each blanket shall be covered with a photodegradable plastic mesh having a maximum mesh size of 1½"× 3". The blanket shall be at least 48" wide with a minimum thickness of ¼" and a minimum dry weight of 0.8-pounds per square yard.
 - b. Waterways: The blanket shall be the same as for slopes except having the photodegradable plastic mesh on the top and bottom.
3. Securing and Stapling: Staples shall be driven vertically into the ground to anchor the plastic mesh. Staples shall be spaced approximately 2-yards apart on each side of the blanket and one row in the center alternately spaced between each side staple. Where blankets are laid side to side, the staples shall be placed with half of the staple anchoring mesh from each blanket. At the beginning of a blanket, staples shall be placed in a row with spacing of approximately 12".

In waterways, there shall be no longitudinal seams unless overlapped at least 6" with the upgrade section on top. The first 12" of the first row of blankets shall be placed in a 6" deep anchor slot stapled in the bottom, and the slot shall be backfilled and solidly tamped.

- 3.14 Final Stabilization: When monitoring is required, stabilized means at least 70% of the soil surface is uniformly covered in permanent vegetation unlike the NPDES Storm Water Discharges Associated with Construction Activities, General Permit (GAR 100001, 100002, 100003), which includes installation of equivalent permanent stabilization measures (such as the use of riprap, gabions, permanent mulches or geotextiles). Permanent vegetation consists of planted trees, shrubs, perennial vines; a crop of perennial vegetation appropriate for the season and region; or a crop of annual vegetation and a seeding of target crop perennials appropriate for the region such that within the growing season a 70% coverage by the perennial crop is achieved. For linear construction projects on agricultural or silvicultural lands, stabilized means stabilizing it for its agricultural or silvicultural use.

Final acceptance of grassing for payment is defined as a full cover, over the seeded area of live and growing grass, when at least 98% of the total areas has no bare spots exceeding 1-square foot, and the ground surface is fully stabilized against erosion.

- 3.15 Maintenance Program: Best management practices will be inspected daily. Any damages will be repaired by the end of the day. Cleanout of sediment control structures will be accomplished in accordance with the publication entitled "*Manual for Erosion and Sediment Control in Georgia*," latest edition and sediment disposal accomplished by spreading on the site. Sediment basins and barriers will remain in place until disturbed areas are stabilized. The sediment control barriers will then be removed and the areas by these structures grassed.

No separate payment will be paid for the above work. The cost of the above work and all cost incidental thereto shall be included in the lump sum price bid for the item to which

the work pertains. In case of failure on the part of the Contractor to adequately control erosion, pollution, and / or siltation, the Owner reserves the right to employ outside assistance or to use his own forces to provide the necessary corrective measures. Such incurred direct costs plus Project Engineering costs will be charged to the Contractor and appropriate deductions made from the Contractor's monthly progress estimate.

SECTION 4 SITE PREPARATION

- 4.01 Scope: The work covered by this Section of the Specifications consists of furnishing all materials and equipment, and performing all labor necessary for dredging to permit construction of the structures, piping and appurtenances in strict conformity with the contract Drawings, the Specifications and the directions of the Engineer.
- 4.02 Site Conditions and Soil Investigations: The Contractor's attention is directed to the article in the Instructions to Bidders, Special Provisions and General Requirements section of these Specifications relating to Site Examination. Contours and existing topography shown on the Drawings are believed to be reasonably correct. It shall be the Bidder's responsibility to determine any major difference which would affect his bid and make allowance for such differences in his bid.
- 4.03 Clearing Site: The area shall be cleared of all existing structures, pavements, and other obstructions interfering with or in the way of construction of new work. The area shall be cleared of trees, stumps, roots, brush, rubbish and other such materials to limits at least 10' outside of limits of tops of cuts and toes of fill. Trees and shrubs designated to be left in place, and these outside of limits, shall not be damaged.
- A. Disposal of Waste Material: All waste materials resulting from clearing operations shall be disposed of in accordance with applicable regulations of the Georgia Environmental Protection Division.
- B. Damage to Existing Facilities: Any structure or other such work removed for construction purposes, or damaged by reason of construction operations; but not in the way of new work, shall be replaced or repaired.
- 4.04 Excavations: The Contractor shall perform all excavating of every description, and of whatever substances encountered, to the dimensions and levels shown on the Drawings and/or as specified. Excavation may be accomplished by any customary method.
- A. Earth Excavation: Earth excavation shall include all substances to be excavated other than rock.
- B. Rock Excavation: Rock excavation shall comprise of solid rock, in the original bed or in well defined ledges; the removal of which, in the opinion of the Engineer, requires drilling, blasting, or the use of jack hammers and bull points, and shall also include all boulders and detached pieces of rock 8 cubic feet or more in content.
- C. Blasting: All blasting operations shall be conducted in accordance with existing ordinances and regulations, and as directed by the Engineer. Exposed structures shall be protected from the effects of blasts and blasts shall be covered with suitable mats, and shall be restricted to the extent that no appreciable shock will be transmitted to existing structures, pipe lines, sewers or other public or private facilities. No blasting shall be started without the Engineer's approval of method and quantity of explosive to be used.

- D. Damage to Existing Facilities: Any damaged structures, pipe lines, sewers or other private or public facilities shall be immediately repaired or replaced at the expense of the Contractor. Any damaged to such facilities which will impair or restrict the operation of the water supply system shall be immediately repaired or replaced with no stoppage of work until such repairs or replacements are complete.
- 4.05 Excavation for Structures: The limits of excavation for structures shall be in accordance with the following:
- A. Earth Excavation: Earth excavation for structures shall be to limits not less than 2' outside wall lines, to allow for formwork and inspection; and further, as necessary, to permit the trades to install their work. Excavations for footings shall be to footing dimensions. Excavation for slabs shall be to near bottom slab level. Earth excavation for structures shall not be machine dug below a level of 6" above bottom elevations of slabs or footings.
- B. Rock Excavations: Rock excavations for structures shall be to limits not less than 2' outside of wall lines, with a vertical tolerance of 3" in or out, and further if necessary to allow for inspection and to permit trades to install their work. Excavation for footings shall be to a minimum depth and width not less than the footing dimensions. Excavation for slabs shall be not higher than bottom slab level.
- C. Blasting: All blasting operations shall be conducted in strict accordance with existing ordinances and regulations, and shall be done subject to the Engineer's approval of the method and quantity of explosive to be used. Exposed structures shall be protected from the effects of blasts and all blasts shall be covered with blasting mats, dirt, heavy timbers or other suitable material. They shall be restricted to the extent that no appreciable shock will be transmitted to existing structures, pipe lines, sewers or other public or private facilities. All blasting supplies shall be stored in a magazine which complies with all Local, State and Federal laws. In no case shall caps or other exploders be kept at the place where dynamite or other explosives are stored.
- 4.06 Riprap: Riprap consisting of rock no less than ½ cubic foot in volume shall be placed on the areas shown on the Drawings. The riprap may be placed by dumping from trucks and hand spreading to a uniform surface and to a minimum depth of 12".
- 4.07 Demolition: The work covered by this Section of the Specifications consists of furnishing all materials and equipment, and performing all labor necessary for demolition and removal of existing structures and utilities as designated on the Drawings to be removed.
- A. Site Conditions: The Contractor's attention is directed to the paragraphs of Instructions to Bidders, Special Provisions and General Requirements section of these Specifications relating to Site Examination.
- B. Procedures: The Contractor shall submit proposed procedures for demolition work to the Engineer for review and approval. All demolition procedures shall be accomplished in strict compliance with all state and local laws and regulations as

well as shall conform to NFPA Standard 241, Safe-Guarding Building Construction and Demolition Operations. Submittals shall include a detailed description of the methods and equipment to be used for each operation and the sequence of operation; evidence of having successfully performed similar work on other projects; permits and notices authorizing demolition where required by local and/or state regulations; and permits for transport and disposal of debris where required by local and/or state regulations.

- C. Site Work: The Contractor shall not use explosives without prior approval of the Owner and Engineer. The Contractor shall conduct operations to insure minimum interference with all roadways and adjacent businesses and facilities.

The Contractor shall not obstruct roadways without obtaining permits and/or permission from governing authorities.

The Contractor shall protect all existing underground and overhead utilities from damage or interruption of service from demolition activities.

- D. Preparation: The Contractor shall remove all items to be salvaged for the Owner and place in designated storage area. The Contractor shall construct barriers, fences, guard rails, enclosures, shoring, etc. to deny public access to the demolition site and to protect utilities and structures that are to remain.

- E. Structures: Structures shall be completely removed where denoted on the plans. Holes resulting from removal structures shall be backfilled and compacted in accordance with these Specifications.

- F. Cleanup: The Contractor shall remove debris and rubbish from the site as soon as practicable. Debris and rubbish will not be allowed to accumulate. Remove and transport debris in a manner as to prevent spillage on streets, public rights of way, or adjacent areas. The Contractor shall obtain all permits for transport and disposal of debris as required by all local, state and federal agencies.

All disturbed areas from demolition activities shall be grassed in accordance with these Specifications.

- 4.08 Method of Payment: Payment for all cofferdams, excavation and fill work shown on the Drawings and herein specified, that is required to complete the clearing, site excavation, sheeting, shoring, riprap and any other excavation and fills required to construct the project as shown on the Drawings shall be included in the lump sum price bid in the Bid Schedule and no measurement of the quantities will be made. The contours and elevations of the present ground are believed to be reasonably correct but are not guaranteed. The Contractor shall satisfy himself by actual examination of the site work as to the existing elevations and contours and the amount of work required under this Section.

- A. If the quantities of common excavation required are increased or decreased as a result of changes made in the Drawings or by direction of the Engineer in writing during construction, the Engineer will determine the quantities of such changes and the lump sum price will be adjusted upward or downward as applicable to compensate for such changes at the applicable adjustment unit price bid for common excavation in the Proposal.

- B. The cost of all soils inspections and testing shall be paid by the Owner. If compaction tests do not meet required values, the cost of additional testing as required by the Engineer shall be paid by the Contractor.
- C. Rock excavation is unclassified for this project. No separate payment will be made for rock excavation. The cost of such work and all costs incidentals thereto shall be included in the prices bid for the time to which the work pertains.

SECTION 5 METAL PIPE AND FITTINGS

- 5.01 Scope: The work described by this Section consists of furnishing all materials and equipment and performing all labor necessary to install all interior and exterior piping systems and valves, complete, as shown on the Drawings or specified, and as required for proper operation of all equipment installed under this Contract. All standard test designations refer to the revision of those standards in effect on the date of issue of the Contract Documents, except when a specific revision is specified.
- 5.02 Drawings: The Contractor shall furnish pipe fabrication details and dimensional layouts for all piping systems for checking and approval by the Engineer in accordance with the General Requirements section of these Specifications. Each joint of pipe and fittings shall be marked and dimensioned to insure installation shall commence until those drawings have been approved.
- 5.03 Iron Pipe and Fittings: Cast iron or ductile iron pipe shall be used in sizes 3" through 8" and ductile iron pipe shall be used in sizes 10" through 64" where shown or indicated on the Drawings. All cast iron and ductile iron pipe shall be designed for a minimum 150-psi working pressure, 100-psi surge allowance, a 2 to 1 factor of safety on the sum of working pressure plus surge pressure, single AASHO H-20 truck loading, laying condition 2, and cover required. Each pipe shall be subjected to a hydrostatic pressure test of at least 500-psi at the point of manufacture. Cast iron pipe shall be of the thickness according to ANSI A21.1. Cast iron pipe shall conform to ANSI A21.6 or ANSI A21.8. Ductile iron pipe shall conform to ANSI A21.51. The class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the manufacturer's mark, year in which the pipe was produced, and the letters "D.I./C.I." or "Ductile/Gray Iron" shall be cast or stamped on the pipe. Fittings shall be cast from gray or ductile iron. Ductile iron fittings shall conform to AWWA C 110 (ANSI A 21.10), or ANSI/AWWA C153/A21.53, gray iron fittings shall conform to ANSI/AWWA C110/A21.10, or latest revision. All fittings shall have standard mechanical joints. Exterior joints for cast iron and ductile iron shall be push-on type unless otherwise shown. Interior joints shall be flanged in accordance with ANSI A21.15 and ANSI A21.10.
- A. Coatings, Linings, and Gaskets:
1. Exterior Coatings:
 - a. Underground Pipe and Fittings: Asphaltic coating in accordance with AWWA C151
 - b. Exposed Pipe and Fittings: Factory applied primer compatible with painting systems specified in "Painting" section
 2. Interior Lining:
 - a. Pipe and fittings shall be lined with a bituminous asphalt coating in accordance with ANSI A21.4 and AWWA C104, NSF 61 for water applications, except as noted below.

- b. Gravity sewer pipe shall be cement lined in accordance with ANSI A21.4 and AWWA C104
 - c. Air pipe shall be unlined.
 - 3. Gaskets:
 - a. Sewers: Styrene Butadiene Rubber (SBR) conforming to ANSI A21.11
 - b. Water: Styrene Butadiene Rubber (SBR) or EPDM in accordance with ANSI A21.11
 - c. Air: Viton
 - B. Restrained Joint Pipe and Fittings: Where indicated on the Drawings, restrained joint pipe shall be ductile iron, pressure class as indicated, with push on joints and retainer glands. Glands shall be American Fastite, U.S. Pipe Tyton, or approved equal. U.S. Pipe TR Flex or American Flex Ring Joints may be used at the Contractor's option. Valves and fittings in restrained joint pipe shall be mechanical joint with EBAA Iron, Inc. megalug glands.
- 5.04 Pipe Couplings: Pipe couplings for cast iron pipe shall be of gasketed, sleeve type, with diameter to properly fit the pipe. Each coupling shall consist of one steel middle ring, 2 steel followers, 2 rubber-compounded wedge section gaskets, and sufficient track-head steel bolts to properly compress the gaskets.
- A. The middle ring and followers of the coupling shall be true circular sections free from irregularities, flat spots, or surface defects. They shall be formed from mill sections with the follower-ring section of such design as to provide confinement of the gasket.
 - B. Coupling bolts shall be of the elliptic-neck track-head design with rolled threads. All bolt holes in the followers shall be oval for greater strength.
 - C. Gaskets shall be composed of crude or synthetic rubber base compounded with other products to produce a material which will not deteriorate with age, from heat, or from exposure to air under normal storage conditions. It shall also possess the quality of resilience and ability to resist cold flow of the material, so the joint will remain sealed and tight indefinitely when subjected to shock, vibration pulsation, temperature, or other adjustments of the pipe line.
- 5.05 Flange Adapter: Contractor shall furnish and install cast iron flange adapters to joint plain-end pipe to flanged pipe where shown on the Drawings. Adapters shall be manufactured to meet ASTM A-126, Class B, cast-iron. Flange end of adapter shall mate with ASA 16.1 and B16.5 flanges of the same nominal size. Adapters shall be locking type with special high-strength steel pins. Adapters shall be EBAA Megaflange or equal.
- 5.06 General Provisions for Laying Exterior Metal Pipe Lines: The Contractor shall lay all pipe and fittings to accurately conform to the lines and grades established by the Engineer as follows:
- A. Handling: Proper and suitable tools and equipment, for the safe and convenient handling and laying of pipe, shall be used; great care shall be taken to prevent the

pipe and coatings from being damaged. All pipe shall be carefully examined for cracks and other defects. No pipe and other castings shall be laid which are known to be defective. If pipe and other castings are discovered to be cracked, broken and defective after being laid, it shall be removed and replaced with sound material, at no additional expense to the Owner. All pipe and fittings shall be thoroughly cleaned before being laid, and shall be kept clean until accepted in the complete work.

- B. Alignment and Gradient: Pipeline alignment and gradient shall be straight or shall follow true curves as near as is practicable. Curvature in pipe lines, where required, shall be well within the allowable horizontal or vertical-laying radius.
- C. Schedule of Work: Excavation, cleaning, laying, jointing, and backfilling shall be kept up as closely as is possible to progress the work in a uniform workmanlike manner. In no case shall pipe be left in the trench overnight without completing the jointing.

The completed pipeline shall not be left exposed in the trench unnecessarily; the Contractor shall backfill and compact the trench as soon as is possible after laying and jointing is completed. Each day at the close of work, and at all times when laying is not in progress, the exposed end of the pipe in the trench shall be closed with an approved head or barrier of wood or metal. If at any time it becomes necessary to cover the end of an incomplete pipeline with backfill, the end of that pipe shall be closed with a mechanical joint plug.

- D. Cleaning: The Contractor shall clean each joint of pipe while it is suspended before it is lowered into place.
- E. Mechanical Jointing: Mechanical joints shall be made only by experienced mechanics. Sockets and spigots shall be washed with soapy water before slipping gland and gasket over spigot. The spigot shall be inserted in the socket full depth. The gasket shall be brushed with soapy water and shall be pushed into position, making sure the gasket is evenly seated in the socket. The gland shall be laid into position for compressing gasket. All bolts and nuts shall be tightened "fingertight," after which bolts shall be tightened to a uniform permanent tightness using a torque wrench for tightening. Bolts shall be tightened alternately 180° apart. Sockets, spigots, gaskets, glands and bolts shall be kept clean and wet with soapy water until each joint is completed.
- F. Flanged Connections: Flanges shall have 125# ANSI drillings. Gaskets of rainbow rubber, or equal, with cloth inserts shall be used. Flanges shall be firmly bolted with machine bolts of the proper size and threaded. The bolts and nuts shall be of the best quality refined bar iron, with good, true threads, and shall be tightened in a manner which will evenly distribute the stress in the bolts and bring the pipe into uniform alignment.
- G. Jointing Bell-Spigot Connections: All bell-spigot connections shall be jointed with a molded rubber gasket. The inside of the bell and the outside of the pipe shall be thoroughly cleaned. Only joint runners in good condition shall be used in the work.

1. Gasket: All joints shall be made with best quality molded rubber gasket, properly installed in accord with manufacturer's printed recommendations.
 2. Defective Joints: All defective joints shall be replaced to the satisfaction of the Engineer.
- H. Push-On Joints: Joints shall be made in accord with the manufacturer's printed instructions.
- I. Cutting: Whenever pipe and special castings are required to be cut, the cutting shall be done by skilled workmen; cutting torches shall not be used.
- 5.07 Operating Piping Systems: The Contractor shall furnish and install all small operating and control piping systems and other small piping systems indicated on the Drawings and as required for operation of all equipment. Piping for all operations and control piping systems shall be of crosslinked polyethylene (PEX), except as otherwise specified. Tubing, fittings, manifolds and adapters shall be as follows:
- A. Tubing: PEX high-density, crosslinked polyethylene tubing shall be manufactured to the requirements of ASTM F876 and meet the standard grade hydrostatic pressure ratings from Plastic Pipe Institute in accordance with TR-4/03.
 - B. Fittings: PEX press fittings shall be manufactured from UNS C83600, C87700 or C87710 Bronze and meet the requirements of ASTM F877 tested as a system with PEX tubing. The PEX press sleeve shall be manufactured out of a 304 grade or better stainless steel and have one to three view holes incorporated in it to ensure proper PEX tubing insertion. PEX crimp fittings for use with copper crimp rings shall be manufactured from UNS C36000, C37700, C69300 or C87850 brass meeting the requirements of ASTM F1807 and or polymer meeting the requirements of ASTM F2159. The PEX crimp connection shall be made by use of a full circle crimp tool designed to crimp F1807 copper crimp rings.
 - C. Manifolds:
 1. Copper Manifolds: Copper manifolds shall be copper material having a male or female solder, ProPress or PEX crimp inlets. All outlets shall be PEX Press, PEX Crimp or ProPress fittings and shall be provided by the crosslinked polyethylene system manufacturer.
 2. Polymer Manifolds: Polymer manifolds shall be plastic material having a male NPSM thread, PEX press or PEX crimp inlets. All outlets shall be PEX press, PEX crimp, or PEX compression connections provided by the PEX system manufacturer.
 - D. Adapter Fittings: PEX adapter fittings shall conform to one of the following ASTM standards: F877, F1807, F2159 or ASME B1.20.1, and fittings shall be listed to the CSA B137.5. The adapter fittings shall mate to NPT threads, copper tubing or copper fittings.
 - E. Installation and Arrangement: All pipe runs shall be parallel with, or at right angles to, walls, ceilings equipment etc. 45° fittings and angle runs shall be avoided as far as possible. Piping shall be arranged and installed neatly, so that it satisfies the service requirements and leaves the machine and equipment service

accessible. Insofar as possible, all valves shall be accessible for operation by a person standing on the floor.

1. Pipe Drainage: All piping, whose service requires drainage of moisture, shall be installed with the required slope in the proper direction for gravity drainage and in such a manner to least interfere with foot traffic.
2. Parallel Runs: All parallel runs of piping shall be installed with equidistant spaces between the piping and shall be neatly grouped. Grouping shall be such that crossovers, except as branches, are

F. Supports:

1. The maximum distance between supports shall be:

• ½" diameter	—	6' - 0"
• ¾" diameter	—	6' - 0"
• 1" to 2" diameter	—	8' - 0"
2. Piping 1" and smaller shall not be hung from rod hangers. Rod hangers, where used for pipe 1¼" and larger, shall be split pattern. No pipe shall be clamped directly to a masonry surface. Steel brackets shall be used so that there will be a space not less than ¾" between the pipe and the masonry. Piping 1" and smaller and, preferably, piping 1¼" and larger, shall be clamped to brackets and other steel members with clamps which will allow no axial movement. Clamps and clamping arrangements shall be of the "Unistrut" type, properly supported for the required arrangement.

5.08 Unloading, Hauling, Distributing and Storing Materials:

- A. Unloading: Equipment and facilities for unloading, hauling, distributing and storing materials shall be furnished by the Contractor and shall at all times be available for use in unloading materials. Delays in unloading railroad cars, unloading trucks, or hauling from freight terminal, which incur demurrage, truck waiting charges, or terminal charges shall be at the expense of the Contractor.
- B. Handling: Pipe, fittings and other materials shall be carefully handled to prevent breakage and to prevent damage to the cement lining of pipe and fittings. Pipe shall not be unloaded by rolling or dropping off of trucks or cars, but shall be handled by carefully lifting and lowering into position, using approved slings or clamps which shall be provided for the purpose.
- C. Distributing: Materials shall be distributed and placed to least interfere with traffic. No street or roadway may be closed without first obtaining permission of the proper authorities. The Contractor shall furnish and maintain proper warnings signs and obstruction lights for the protection of traffic along highways, streets and roadways upon which material is distributed. No distributed materials shall be placed inside drainage ditches.

- D. Storage: All pipe, fittings and other materials which cannot be distributed along the route of the work shall be stored for subsequent use when needed. The Contractor shall make his own arrangements for the use of storage areas.
- 5.09 Clearing: The Contractor shall perform all clearing work required for the installation of the complete work. Clearing shall consist of the removal and disposal of all trees, stumps, roots, brush or debris in the way of the work.
- Any private or public facilities, including fences, removed for construction purposes shall be promptly replaced. Trees or shrubbery along highways, roadways and streets shall not be disturbed unless absolutely necessary and approved by the Engineer. Any such trees or shrubbery removed shall be heeled in and replanted. Heeling in and replanting shall be done under the direction of an experienced nurseryman.
- 5.10 Existing Pipe Lines: Where new pipe line parallels or crosses existing pipe lines, the Contractor shall take precautions as necessary to ensure existing pipe lines are not disturbed. Any damage to existing pipe lines shall be promptly repaired at the Contractor's expense.
- 5.11 Connections to Existing Pipe Lines: Connections to existing pipe lines shall be made with the necessary fittings and valves as indicated on the Drawings.
- A. Location: The Contractor shall, before opening pipe line trenches, locate the various points of connections to be made into existing pipe lines and shall uncover as necessary for the Engineer to prescribe the type of connections and fittings to be installed.
- B. Interruption of Service: Connections to existing pipe lines shall be made only at such times and in such manner as will meet operating requirements. No cut shall be made in existing lines until the permission of the Owner has been obtained as to time and manner of making the cuts and connections. All existing valves shall be operated only by authorized representatives of the Owner.
- 5.12 Existing Underground Utilities and Obstructions: Certain existing water lines, culverts and cross drains are shown on the Drawings according to the best information available to the Engineer. The Drawings indicate the pipe lines to be laid over, under or around underground utilities or obstructions where such utilities or obstructions are known to exist. Where underground utilities or obstructions are encountered, minimum depth of cover, location and alignment may be changed upon written approval of the Engineer to avoid interference. The locations of the existing utilities are approximate only. The Contractor is responsible for determining the exact location of all utilities before beginning construction.
- The Contractor shall furnish and have available at all times an Electronic Pipe and Cable Finder in working order for the purpose of locating existing pipe lines or other obstructions along the route of the new work.
- 5.13 Piping for Equipment: The Contractor shall furnish completely dimensioned layouts for all piping, fittings, valves, specialties, and other equipment. Deviations from the dimensions shown on the Drawings caused by equipment dimensions shall be taken into consideration by the Contractor and changes in piping, electrical conduit, and other similar items shall be done at no additional expense to the Owner.

- A. All piping and appurtenances shall be properly supported by a system of hangers, pipe stands, saddles, base ells, and concrete piers as required. Concrete insets, bolts, anchors, etc., shall be placed in the forms before placing concrete.
 - B. Drip piping, 3/4" in size, shall be provided for all pumps; use crosses and plugs at all changes of direction. Piping shall be run to nearest drain in a manner which will not constitute a hazard to floor traffic. Furnish plug valve, or stop chock, bleeds for high points in piping for all pumping units.
 - C. Performance Requirements:
 - 1. The Contractor shall provide, maintain and operate all temporary facilities such as plugs, pumping equipment (both primary and backup units as required), conduits, all necessary power, and all other labor and equipment necessary to ensure continuous operation.
 - 2. The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
 - 3. The Contractor shall submit a plan for bypass piping connections to the Engineer for approval.
 - D. Field Quality Control And Maintenance:
 - 1. Test: The Contractor shall test the system for 4 hours before taking existing pump system offline.
 - 2. Inspection: Contractor shall inspect bypass pumping system every 2 hours to ensure that the system is working correctly.
 - 3. Maintenance Service: The Contractor shall ensure that the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating.
 - 4. Extra Materials: Spare parts for pumps and piping shall be kept on site as required.
 - E. Payment: The price bid for bypass pumping shall include all labor, equipment, piping, and materials to meet the requirements of these Specifications for the duration of the bypass pumping period.
- 5.14 Cleaning Up: Before the work shall be considered complete, all material not used and rubbish must be removed. All streets, sidewalks, curbs, fences and other private or public facilities and structures disturbed must be in as good condition as existed before the work was done. Any subsequent settlement of backfill or pavement over trenches shall be replaced by the Contractor, and the surfaces brought to grade.
- 5.15 Payment: No separate payment will be made for the above work. The cost of the above work and all cost incidentals thereto, shall be included in the lump sum price bid for the item to which the work pertains.

**SECTION 6
MECHANICAL EQUIPMENT**

6.01 Scope: The Contractor shall furnish all materials, labor and equipment necessary for complete installation of mechanical equipment as shown on the Drawings and specified in these Specifications and the furnishing of the services of a competent factory representative to supervise and/or inspect the installation and initial operation of the equipment. The duration of the service to be furnished during the periods of installation and initial operation is estimated as specified below:

Article Number	Equipment	Days of Service
6.12	Intake Screen	1

- A. The Contractor shall furnish, install, test, adjust and paint in accurate, satisfactory, workmanlike manner, all machinery, equipment, apparatus, accessories and fittings required for the completion of the work in accord with the Drawings, Specifications and equipment manufacturer.
- B. The Contractor shall furnish and install all materials including electric wiring, conduits and controls not furnished by the equipment manufacturers. The Contractor’s attention is directed to the General Requirements of these Specifications with reference to requirements for furnishing working drawings.
- C. The Contractor shall refer to electrical drawings for all voltage requirements for mechanical equipment.

6.02 Supervisory Services: The periods of installation and initial operation shall be assumed to occur on successive days, unless otherwise stated herein. If the Contractor fails to arrange his work so that all services may be performed on successive days, he will be required to furnish such services at a later date, at no additional expense to the Owner. Periods of service on more than one item furnished by the same manufacturer may run concurrently if approved and permitted by the Engineer. Manufacturers who are required to furnish supervisory and/or inspection services shall extend those services to include all equipment furnished by them for the Project, whether listed or not.

6.03 Equipment Bids:

- A. Manufacturer: Any reference to an item of equipment or material by a specific manufacturer’s trade name in these Specifications is intended merely as a standard. Even though named in the Specifications, equipment offered with smaller or lightweight mechanism or devices compared to that specified will not be approved for the project. Each bidder is required to state in his bid the name of at least one manufacturer or supplier named in these Specifications for each major item of equipment and his bid price for that item as required in the Proposal. This requirement is to prevent rejection of the bid should a piece of substitute equipment be rejected. Other equipment shall be considered as specified in the “General Condition,” if offered by the bidder under “Substitute Equipment” in the Proposal provided it is equal in functional design, mechanical and structural details, to the one specified.

- B. Substitute Equipment: Equipment offered under “Substitute Equipment” of the Proposal shall comply with requirements of these Specifications. It shall be the responsibility of the Bidder to determine that equipment offered in the Proposal is in accordance with the Specifications. Substitute equipment offered at a lower price by reason of smaller or lightweight members, inferior to or inefficient mechanism or devices will not be considered.
- C. Substitute Equipment Bid: The price for substitute equipment shall include the cost of all changes in the structure, mechanical, electrical work, and in other appurtenances for the accommodation of such equipment as determined by the Engineer, at the expense of the Contractor.
1. Information Required: It shall be the responsibility of the Bidder to ascertain that each manufacturer named in his Proposal has submitted to the Engineer at least 2 weeks in advance of the letting date complete information in regard to the equipment offered. For makes of equipment named in the Specifications this may be a statement that the equipment offered is in strict accordance with the Engineer’s specifications, listing any and all exceptions. To all substitute items of equipment, complete drawings, specifications, thickness and weights of principle parts shall be furnished to the Engineer 2 weeks prior to the letting date. A list of all substitute equipment which has been submitted in accordance with the above will be provided to all bidders one week prior to the receipt of bids.
 2. Experience and Manufacturer: It is desired that only equipment which has undergone thorough development as provided by successful service in similar installations for at least 2 years shall be accepted for installation unless specified elsewhere in these Specifications. Manufacturers and/or equipment which does not meet the 2 year experience period will be considered if the manufacturer or supplier provides a bond or cash deposit which will guarantee replacement of the equipment or process in the event of failure or unsatisfactory service. The amount of bond or cash deposit shall be sufficient to cover all labor and equipment costs for replacement in addition to any costs incurred by the Owner because of failure or unsatisfactory service. The period of time for which the bond or cash deposit is required shall be 2 years.
 3. Standardization: To avoid a division of responsibility among several manufacturers for items of equipment having functions related to each other or to the same portion of the treatment process, and to avoid unnecessary duplication of replacement parts and service calls by the Owner, unless otherwise permitted herein, the equipment supplied under any numbered paragraph shall be the product of, or furnished and guaranteed by, one manufacturer.
- 6.04 Equipment Obtained from Equipment Manufacturer: The Contractor shall obtain all equipment specified, and that required for the safe operation and use of that equipment from the manufacturer or the equipment, unless excluded by provisions in this paragraph or specifications for the item.

Unless otherwise stated in the Specifications, the following type of materials shall not be considered to be a part of the equipment: Connecting piping and valves, railing set in the tank or structure, motor starters and wiring, steps and manholes shall be installed separately from equipment, finish painting, etc.

6.05 Equipment Approval: Each manufacturer furnishing equipment shall submit the following information to the Engineer for approval.

- A. Certified drawings, guaranteed performance curves, wiring diagrams, specifications, and lists of electrical controls, including manufacturer's name and catalog number; furnish horsepower, normal full load maximum load ampere rating of each motor in accordance with the General Requirements of these Specifications.
- B. Estimated weight of each unit
- C. Certified test curves for each pump with capacity of greater than 100-gpm prior to shipment in accordance with the General Requirements of these Specifications
- D. List spare parts and tools furnished with equipment. Unless otherwise specified herein, tools shall be only such special tools required by the particular equipment.
- E. Within 6 weeks after above approval, complete installation and operation instructions and parts list in accordance with the General Requirements of these Specifications

6.06 Mechanical Testing: After each unit has been installed and is ready for operation, it shall be operated continuously for a period of 24 hours. During that period, the equipment will be inspected for defects and weakness. Parts of the unit which show a defect or weakness shall at once be removed and be replaced with new parts or be made good in a satisfactory manner, at no additional expense to the Owner.

- A. Continuous 24-hour test shall be made after all defects have been remedied, at no additional expense to the Owner.
- B. After installation and final testing, each equipment manufacturer furnishing supervision and/or inspection services shall make written certification to the Engineer and the Owner that the equipment and controls have been properly installed in accord with the Drawings, Specifications and manufacturer's requirements, and that the required operating and maintenance instructions have been furnished to the Engineer.

6.07 Piping for Equipment: The Contractor shall furnish completely dimensioned layouts for all piping, fittings, valves, specialties, and other equipment. Deviations from the dimensions shown on the Drawings caused by equipment dimensions shall be taken into consideration by the Contractor and changes in piping, electrical conduit, and other similar items shall be done at no additional expense to the Owner.

- A. All piping and appurtenances shall be properly supported by a system of hangers, pipe stands, saddles, base ells, and concrete piers as required. Concrete insets, bolts, anchors, etc., shall be placed in the forms before placing concrete.

- B. Drip piping, $\frac{3}{4}$ " in size, shall be provided for all pumps; use crosses and plugs at all changes of direction. Piping shall be run to nearest drain in a manner which will not constitute a hazard to floor traffic. Furnish plug valve, or stop chock, bleeds for high points in piping for all pumping units.
- 6.08 Shop Painting: All shop painting of equipment shall be as specified in "Painting" Section, unless otherwise specified.
- 6.09 Operation and Maintenance Manuals: Before the equipment is placed in service, operation and maintenance manuals for the equipment, clean and unused, shall be delivered to the Engineer by the Contractor in accordance with the General Requirements of these Specifications.
- 6.10 Guarantees: The Contractor shall guarantee the equipment to be free from defects in workmanship, design, and material for a period of one year after initial operation begins; the Contractor shall replace at no additional expense to the Owner, every defective part, and every part showing undue wear during that guarantee period. The date of initial operation shall be only after approval by the Engineer and shall be furnished in writing to the Contractor.
- 6.11 Motors: Motors for operating mechanical equipment shall satisfy the latest requirements of the Institute of Electrical and Electronic Engineers, American National Standards Institute, and the National Electrical Manufacturer's Association. Motors shall be manufactured by General Electric Co., Westinghouse, or approved equivalent. All single and 3-phase motors (except fan motors which may be of an approved manufacturer standard) shall be ball bearing, and have either sealed-in lubricant or be designed for external oil or grease lubrication. The equipment manufacturer shall supply motors having sufficient torque to start equipment under load and to accelerate the equipment smoothly and quickly to full speed without exceeding the motor nameplate ratings, including service factor. Motors shall have 1.15 service factor, except totally enclosed motors unless otherwise specified.
- Motors 25 horsepower and larger shall be equipped with embedded stator thermostats (normally closed) connected internally in series and brought out through motor junction box for connection to starter pilot relay 115V control circuit. Large motor protection will be covered under the paragraph applying to the individual motor.
- A. Motors $\frac{1}{2}$ horsepower and larger shall be 3 phase, 60 hertz, induction type, and be designed for full voltage starting. Motors shall have either 40°C rise Class B insulation or 60°C rise Class B insulation, be open drip-proof for indoor installation, be vertical splash-proof and drip-proof for outdoor installation, or have 70°C Class B rating rise for totally enclosed, nonventilated, outdoor, horizontal installation.
- B. Motors smaller than $\frac{1}{2}$ horsepower shall be single phase, induction, capacitor-run type, unless otherwise specified. Very small motors and those for special purposes may be shaded pole type subject to approval by the Engineer.
- 6.12 Intake Screen: The Contractor shall furnish and install as shown and specified one intake screen with an air backwash system for the raw water intake. The intake screen assembly shall be a passive type as supplied by Johnson Division or equal.

- A. Capacity: The intake assembly capacity shall be 555 GPM at a maximum through-slot velocity, as a result of water withdrawal, of 0.5' per second. The corresponding average through-slot velocity shall be 80% to 90% of the maximum velocity. Pressure drop through the entire intake assembly shall be approximately 0.135 psi at the rated flow. The hydraulic design of this system is based on this maximum headloss; screens that exceed this headloss are not acceptable. The manufacturer's clean screen assembly headloss must be stated in the bid documents. The total intake assembly capacity of 555 GPM shall be handled by one Johnson Screens Model T-12HC intake tee screen assembly. Evidence of the intake assembly capacity and flow distribution shall be proven by a Computational Fluid Dynamic (CFD) analysis, supplied by the manufacturer. The CFD Analysis Method must be verified by actual physical testing.
- B. Strength: The intake assembly shall be designed to a maximum 4.33 psi (0.3 bar) negative pump pressure or differential headloss. Design stress used for determining strength of the assembly shall be no more than 90% of the published yield strength of the material used. Strength calculations verifying compliance with these criteria shall be provided upon request.
- C. Construction: The intake screen surface wire shall be Johnson Screens number 69. The surface wire, support beam and stiffener structure shall be an all-welded matrix designed to provide the specific strength with minimal interference with the through screen flow pattern. End plates and tee body shall be a minimum of 0.105 inches thick. All structural butt welds shall be full penetration fillet welds and shall be the thickness of the thinner component.
- D. Slot Opening Size: The screen slot size shall be 0.125". The open area for this slot opening shall be 63.78%. Slot size shall be controlled and continuously monitored during manufacture. For slot openings of 0.040" through 0.100" the mean slot size shall be within +/- 0.002" with a standard deviation no greater than 0.002" throughout the assembly. For slot openings greater than 0.100" the mean slot size shall be within +/- 0.003" with a standard deviation no greater than 0.003" throughout the entire assembly.
- E. Materials: The main outlet flange shall mate with a 6" flange with a flange pattern equal to AWWA C-207, Table 2, Class D. The air connection shall be 1" NPT. The intake screen material shall be manufactured of 304 Stainless Steel material.
- F. Air Backwash System: The intake screen supplier shall provide, as part of the overall intake screen system, an air backwash system designed to remove debris from the screen surface by delivering a suitable volume of compressed air to the inside of the screen body. The exiting air shall scour the screen surface to maintain adequate design flow and through slot velocity characteristics. The air backwash system shall consist of an integrated system of compressor, receiver tank and valves. The compressor shall be a reciprocating type and shall be sized to recover from each backwash in 15 minutes. The skid mounted receiver shall be a 30 gallon receiver, ASME coded for 200 psig, sized for the system piping and to displace THREE SCREEN VOLUMES OF AIR AT THE SCREEN IN 3-5

SECONDS during a backwash to provide suitable debris removal and cleaning. The receiver shall be equipped with a 4" isolated pressure gauge, safety valve and automatic drain valve. The system shall include one butterfly valve rated at 200 psi with standard ANSI class 125/150 flanges. There shall be one valve per screen and shall be sized to match the tank flange and the backwash piping.

G. Installation: Interconnecting piping between the intake screen assembly and the air backwash system and all power wiring and connections shall be provided by the Contractor.

H. Field Services: The manufacturer shall include the services of a factory-trained representative for the purposes of installation inspection, equipment start-up and training of plant personnel regarding proper operation and maintenance of the equipment for a period of one 8-hour day.

6.13 Payment: No separate payment will be made for the work of this Section. The cost of the work, and all costs incidental thereto, shall be included in the amount bid in the proposal for the item to which the work pertains.

SECTION 7
ELECTRICAL – BASIC MATERIALS AND METHODS

7.01 Scope of Work: Work covered by this Specification consists of furnishing all labor, equipment, supplies and materials, and performing all operations including cutting, trenching and backfilling, etc., necessary for the installation of complete wiring systems as shown on Drawings and as hereinafter specified.

Work shall include power distribution and controls, lighting systems, instrumentation and metering, wiring and telephone service (where required).

7.02 Quality Assurance: Installation shall comply with all laws applicable to electrical installations which are enforced by local authorities, with the regulations of National Electrical Code where such regulations do not conflict with local laws, and with regulations of the utility company that serves the facility. Contractor shall obtain all permits required by local authorities and, after completion of work, shall furnish Engineer and Owner a certificate of final inspection and approval from inspection bureau having jurisdiction. Contractor shall notify Engineer and Owner that certificate has been furnished to utility company and that application for service can be filed.

All materials shall be new and shall bear a U.L. label or be listed by Underwriter's Laboratories as conforming to its standards where such a standard has been established for the particular type of material in question.

7.03 Reference: All work shall conform to applicable standards of ANSI, IEEE, ISA, NEMA, UL and NEC.

7.04 Submittals:

A. Contractor's submittal shall include a list of manufacturers of principal items of equipment and material including wire, raceways, devices, boxes, panelboards, connectors, etc. Full information shall be furnished on products of manufacturers not named in the Contract Documents.

B. Shop drawings shall be submitted giving performance data, physical size, wiring diagrams, materials, etc., for control centers, lighting fixtures, motor controllers, panelboards, conduit and duct, and cable and wire.

C. The requirements of each electrical system shall be identified by the Contractor before submission of shop drawings, and all necessary accessory parts required between items of electrical equipment shall be identified in sufficient detail to prove that the total equipment furnished and installed will operate as specified and shown on the Drawings.

D. Shop drawings and samples shall be thoroughly checked and coordinated by the Contractor for details and fulfillment of Contract requirements prior to submittal. Approval of any item does not relieve Contractor of responsibility for coordinating dimensions and work required by other trades.

7.05 Delivery, Storage and Handling: All materials shall be unloaded and stored in a manner to avoid physical damage or detrimental effects of exposure to weather.

7.06 Products:

- A. Acceptable Manufacturers: Catalog numbers of devices, fixtures, equipment, etc., are used for ease in describing standard of quality desired. Devices, fixtures, equipment, etc., by other manufacturers, performing the same functions and considered equal in quality by the Engineer will be acceptable.
- B. Conduits: All wiring shall be in a raceway or conduit, and the following shall govern type used throughout the project except as otherwise specified:
 - 1. Rigid Galvanized Steel Conduit: Use for all exposed raceways, except as otherwise noted
 - 2. Electrical Metallic Tubing (EMT): Use for all concealed raceways in ceilings and walls
 - 3. Liquid-Tight Flexible Steel Conduit: Use for final connections to all motors, vibrating equipment and in wet or damp installations. Outer covering shall be polyvinyl chloride, and inner core shall be galvanized steel.
 - 4. Rigid Non-Metallic PVC Plastic Conduit: Use for outside underground for feeders and branch circuits except as otherwise noted and where specifically indicated on Drawings. A grounding conductor shall be installed in each non-metallic conduit to maintain grounding continuity. Follow manufacturer's recommendations for heat bends and cement application. Install plastic to rigid adapter before emerging from ground or running under building. Install expansion fittings for each 100' of unbroken PVC run.
 - 5. Where non-metallic PVC plastic conduit is installed underground in groups of three (3) or more, it shall be installed in duct banks as indicated on the Drawings.
 - 6. All conduits entering boxes, cabinets, panels of similar equipment shall have double locknuts and insulating bushing.
 - 7. In all liquid-tight flexible steel conduit, provide a green grounding conductor sized per NEC. Bond at fixture, motor, etc., and also bond at box where flexible conduit originates or the next box in line.
 - 8. A code sized grounding conductor shall be installed in all raceways.

7.07 Raceways:

- A. All raceways shall conform to Underwriter's Laboratories and NEMA standards and be fully UL labeled.
- B. Rigid steel and EMT galvanized raceways shall have a sheradized, bonderized, galvanized or similar approved coating.
- C. Rigid non-metallic PVC plastic raceways shall conform to Federal Spec. W-C-1094 and be thickwall, Schedule 40.

D. Conductors:

1. All conductors shall be type THW, XHHW, THHN, THHW or RHW #12 AWG minimum, insulated, color coded, and be of 98% conductivity copper with #10 AWG and smaller solid except control wiring which shall be stranded, and #8 AWG and above stranded.
2. Conductor splices and connections shall be made with approved solderless lugs and mechanical connections to insure positive electrically and mechanically strong joints. Use of connectors without internal spiral spring (wirenuts) is not acceptable.
3. Where bolted connectors are used for makeup of cables or for termination, they must be exact size to suit cable being used. Trimming, shimming or cutting of conductor strands are not permitted. Where branch circuit conduits are jointed or spliced using crimp-on or twist-on connectors, wires must first be twisted together full length and then connector installed.
4. Control cable shall be minimum #14 AWG single or multiple conductor, 600v insulation.

E. Outlets:

1. Boxes for exposed work shall be of cast alloy or cast steel type with threaded hubs.
2. Pull or junction boxes shall be constructed of code gauge galvanized steel sized per NEC or as noted, continuously welded along seams, and fitted with screw on cover plate secured with stainless steel covers.
3. All outlet or junction boxes of pressed or sheet steel type shall be galvanized, sheradized, bonderized or treated with a similar approved corrosion inhibitor.
4. Outside, underground pull and junction boxes shall be cast iron with bolted recessed covers similar to sidewalk type boxes with threaded hubs.

F. Grounding:

1. All equipment, building steel and main service must be effectively and permanently grounded with a cross section as required by the NEC and of capacity sufficient to insure effectiveness of the ground connections for fault current. Ground conductors must be as short and straight as possible, protected from mechanical injury, if practical, without splice or joint.
2. Raceways, boxes, outlets, cabinets, etc., shall be bonded together to form a continuous metallic grounding circuit in accordance with NEC.
3. Main service conduits, entering switchgear, panels, control center, switches, etc., shall be provided with insulating bushings with ground lug and connected to building ground system.

4. All flexible conduits making final connections to motors, lights, vibrating equipment, etc., shall contain a green copper bonding conductor which shall extend from outlet box where flexible conduit originates or from nearest box in line to the equipment served.
- G. Lighting and Distribution Panelboards: Panelboards shall be factory assembled, dead front, copper or tin plated aluminum bus, circuit breaker type for solid neutral services with lugs or main breaker type and in a flush or surface mounting cabinet having a minimum width of 20" and depth of 5-3/4" and having hinged locking door. Panelboards with plug-in-circuit breakers will not be acceptable. Circuit breakers shall be bolt-in, quick make, quick break, trip free, with combination thermal and magnetic trip with common trip pole breakers, meeting Federal Spec. W-C-357a. Multipole breakers shall have one operating handle. Tie handles will not be acceptable. Circuit breaker arrangements, phase, voltage, wires and special features shall be as shown on Drawings. Thin, twin or tandem breakers are not acceptable. Breakers to have 10,000 A.I.C. rating unless otherwise indicated
- H. Dry Type Transformer:
1. Transformers shall be designed and tested in accordance with USAI and NEMA Standards. Transformers shall have a maximum of 115° rise over 40° C ambient. The sound level in decibels shall be less than 42 and shall not exceed the ASNI Standards.
 2. Transformers shall be insulated and have 4 universal voltage type two 2½% below normal, and two 2½% above normal.
 3. Enclosure shall be suitable for indoor or outdoor operations.
 4. Coils shall be encapsulated.
- I. Switches:
1. Switches shall be specification grade, totally enclosed, brown composition, back and side wired, 20 ampere, 227 V., quiet type Hubbell Series 1220G.
 2. Equal devices by Arrow-Hart, Hubbell or Bryant are acceptable.
- J. Receptacles:
1. All receptacles shall conform to current NEMA configurations and be UL listed.
 2. Duplex wall receptacles shall be of grounding pole type, 125 V., 15 amperes, brown composition, back and side wired, NEMA 5-15R.
 3. Weatherproof covers for duplex receptacles shall be cast aluminum with hinged lid.
 4. Devices shall be manufactured by Arrow-Hart, Bryant, Thomas & Betts or equal.

- K. Coverplates: Cadmium plated steel, rustproof coverplate shall be provided for each outlet.

7.08 Execution:

- A. Inspection: Inspect preceding work to insure satisfactory completion prior to electrical work.
- B. Preparation: Coordinate work with power company and Owner to minimize delays in operation of new facilities.
- C. Wiring layouts or schematics are not intended to show exact location of raceways, outlets, etc. Contractor shall refer to building plans and details for dimensions and shall fit his work to conform to details of building construction. The right is reserved to shift any switch, receptacle, ceiling or other outlet a maximum of 10' from its location as shown on Drawings, before it is permanently installed, without incurring additional expense.

7.09 Installation: Contractor shall furnish all labor and furnish, install, connect, test and adjust all equipment and materials to form a complete operating installation, including wiring hangers, supports for equipment, cables, conduits, cable tray, cable trench, pull boxes anchors and inserts, identification plates, signs, and tags for equipment, conduits, wiring and wiring labels.

The electrical work shall be installed in such a manner and at such times as will require a minimum of cutting and patching of the building structure.

7.10 Raceways and Conductors:

- A. Raceways shall be supported from building construction at intervals not exceeding 8' with straps and expansion bolts for masonry or concrete construction.
- B. All raceways shall be rigidly supported from building structure by rods or hangers attached to building structure. Raceways shall not be attached to any rods or hangers required by other trades.
- C. All raceways entering cabinets, panels, switchboxes, switchgear, junction boxes, etc. shall be fitted with double locknuts and bushings. One locknut inside and one outside box shall be used.
- D. All raceway stubs shall be sufficiently plugged or capped during construction to prevent entry of water, debris, mortar, etc.
- E. Feeder cable conductors shall be pulled into raceways using an approved soapstone product lubricant. Pull conductors with a pulling eye attached to conductor so not to stretch or injure insulation.
- F. Conductors within switchboards, panelboards, terminal cabinets, starters, control centers, etc., shall be neatly formed and trained to run parallel to or at right angles to the device. Conductors shall be bundled together and laced using nylon tie straps.

- G. Boxes and outlets shall be cast alloy type and securely attached to building structure using expansion bolts for masonry or concrete construction.
- H. Switches shall be installed 4' above floor to top of boxes except as otherwise noted.
- I. Receptacles shall, in general, be installed vertically 1'-4" above the floor except as noted otherwise.
- J. Contractor shall be responsible for coordinating proper connection at each item of equipment requiring service and connect accordingly. The term "stub-up and connect" or "connect" used on Drawings implies a full connection as required for each piece of equipment to place it in satisfactory operation. If equipment comes equipped with cord and plug, install proper matching receptacle.
- K. Control raceway and wiring shall be installed and fully connected to make system operational.
- L. Lighting protection shall be installed at each site as indicated on the Drawings. The lightning arresters shall be grounded to a separately driven ground rod plus connection to the metallic water supply and grounding system

7.11 Adjusting and Cleaning:

- A. Clean and lamp all lighting fixtures after installation and wiring. Install all fuses. All lighting fixtures shall be clean at time of final acceptance.
- B. Provide all wiring for testing and trials, for all required corrections, changes, additions, completions and adjustments until final acceptance of the work.
- C. Coordinate numbers and label all field wiring between equipment of the various electrical equipment suppliers.
- D. Any damage to work already in place as a result of electrical work shall be repaired and made good at no expense to the Owner.

7.12 Testing and Acceptance: Prior to acceptance by the Owner, all control systems shall function as required; all motors shall be connected to protective devices and control devices associated with a machine or a group of machines to produce the correct operating, timing and sequencing necessary for the proper functioning of the mechanical equipment.

7.13 As-Built Drawings: Submit one blueline print of the Contract Drawings marked to show as-built locations and description of all electrical work.

7.14 Motor Control Centers: Motor control centers shall be dead front, free standing assemblies consisting of enclosure, bussing, combination starters, circuit breakers, switches and other such items as may be shown or specified herein.

A. Quality Assurance:

- 1. The motor control center design shall be in accordance with the latest applicable standards of NEMA and Underwriters Laboratories.

2. The motor control center design shall have been tested in a recognized high power laboratory to prove adequate mechanical and electrical capabilities.

B. Submittals:

1. Shop drawings shall show separate views of the elevation, profile and conduit openings. The elevation shall show the section, identification and the unit identification. The drawings shall give dimensions of size and location of the following:
 - a. Vertical section height, width and depth
 - b. Mounting channels
 - c. Conduit openings top and bottom
 - d. Wireway openings in sides
 - e. Horizontal bus
 - f. Ground Bus
2. The drawings shall contain a summary of the design specifications containing but not limited to the following:
 - a. NEMA type enclosure and class of wiring
 - b. Rated bus voltage
 - c. Current ratings for horizontal bus, vertical busses and ground bus
 - d. Bus material and plating
 - e. Bus bracing and short circuit rating
3. The drawings shall contain a listing of each unit containing but not limited to the following:
 - a. Unit Location
 - b. Nameplate
 - c. Major contents of unit (fuse starter, C.B. switch, M.C.P., etc.) complete with NEMA size and heater rating or current rating
 - d. Size of load served (H.P. KVA, KW, etc.)
4. Shop drawings shall be complete and shall clearly list all accessories. The control Contractor shall review and approve all accessories required for control wiring prior to submittal.

C. Enclosures:

1. Each section shall be a minimum of 90" high and not less than 20" wide and 20" deep.
2. Each section shall contain 12 to 13 space factors and shall accept a maximum of 6 front mounted unit starters per side.

3. Each section shall be physically independent free standing completely separated from adjacent section except for wireways and busses. End section shall have removable plates and wireways and busses for future additions.
4. A vertical wireway with a minimum of 19 square inches of cross sectional area shall be adjacent to each vertical wireway and shall contain steel rod cable supports with plastic cable ties. All wireway hardware to be captive.
5. Each section shall have a minimum of 6" vertical conduit and wiring space at the bottom.
6. Each section shall contain a horizontal wireway at the top isolated from the horizontal bus and shall be readily accessible through a hinged cover.
7. Enclosure shall be furnished in baked enamel on cleaned phosphatized steel in ASA #410. Enclosure shall be NEMA 1 gasketed; unless shown NEMA 2, drip-proof, NEMA 3R, walk-in, or NEMA 12 on plans.

D. Bus:

1. Each section shall contain a horizontal bus located at center or near the top of the control center which has been tested for the capacity as shown. Bus shall be sized as shown on Drawings but in no case shall main bus have a rating less than 600 amperes based on UL requirements.
2. The horizontal bus shall be of the same size for the entire length of the control center, without reduction and shall have provisions for adding future sections as shown.
3. Vertical bus in each section shall be rated as required by equipment feed, but in no case shall it be less than 300 amperes, front mount only or 600 amperes back to back mounting, based on UL standards.
4. The vertical bus shall be completely isolated and insulated by barriers to effectively isolate the vertical busses from unit spaces except for stab openings that accept unit bus stabs. Where space only is specified, bus stab openings shall have snap in plastic covers installed. Bus barriers shall be removable at joints, splices, etc., to allow bus maintenance.
5. A horizontal ground bus rated 25% of main bus shall be run continuous through each section for the entire length of each motor control center.
6. A neutral bus and/or neutral lugs shall be provided for all 4 wire motor control centers.
7. All buses shall be tin plated aluminum or copper. All connections between horizontal and vertical aluminum bus shall be made with bolts with spring washers.
8. All buses shall be braced as shown except no bus shall be braced as shown for less than 22,000 amperes RMS symmetrical. Where current limiters are employed in units, bus rating shall be a minimum of 42,000 amperes RMS symmetrical.

E. Units:

1. All units protected 225 amp and less shall be drawout type. Bus stabs shall be silver or tin plated and of such design that high currents tighten their grip on the bus. Stabs shall be free-floating and self-aligning.
2. Unit shall be of modular dimensions and supported on steel pans. It shall be possible to remove and relocate pans without the use of tools. Units shall have covers mounted to the fixed enclosure. Doors shall be removable, but the door must open wide enough to allow unit equipment to be removed or replaced without removing door. Doors shall be held shut by captive hardware. Pilot devices and starter overload reset buttons shall be door mounted. Interior of units shall be painted white.
3. Units shall be furnished with NEMA Class 1, type B wiring. Terminals shall be pull-apart type for all control wiring. Terminals shall be mounted in the unit not the vertical wireway.
4. Circuit breakers, MCP or fusible switches shall be externally operated and shall be interlocked to prevent closing the circuit breaker, MCP or switch with the door open and to prevent opening the door with the breaker or switch on. It shall be possible to defeat the interlocks for maintenance or inspection. Door mounted handles that must engage the circuit breaker or switch handle while the door is being closed are not acceptable. Each unit shall have an engraved black and white bakelite nameplate riveted or glued in place.
5. Padlock facilities shall be provided to positively lock the disconnect in the off position with from 1 to 3 padlocks, with the door open or closed.

F. Starters:

1. Combination starter units shall utilize the motor circuit protector (MCP) or fusible switches as shown on the Drawings Schedule. The MCP shall provide adjustable magnetic protection and be provided with pin insert to stop the magnetic adjustment at 13,000% of motor full load nameplate. The MCP and starter shall have a combined fault current rating of 22,000 amps RMS symmetrical.
2. Starters shall be electrically operated, electrically held, three pole assemblies with extinguishing characteristics and shall have silver renewable contacts and be NEMA size 1 minimum. They shall have provisions for adding a minimum of six normally open or normally closed electrical interlocks.
3. The overload relay assembly shall be of the melting alloy type. Single speed starters shall have three overloads, and two speed starters shall have six overloads.
4. Each starter shall be for 120 volt control power obtained from an integral 1 fuse control transformer. A control circuit disconnect shall be installed in the protective device of each starter unit to disconnect control power

from starter when the protective device is opened. An individual control circuit fuse shall be provided for each starter.

5. Each starter shall be equipped with the following control devices: Reset button, 2 N.O. auxiliary contacts. Reversing and 2-speed starters shall have 2 N.O. and 2 N.C. contacts. Additional control devices shall be furnished as shown on Drawings.

7.15 Payment: No separate payment will be made for the work of this Section. The cost of the work, and all costs incidental thereto, shall be included in the price bid for the item to which the work pertains.

SECTION 8 PAINTING

- 8.01 Scope: Contractor shall furnish all materials and equipment and perform all labor necessary for painting all surfaces constructed under this Contract, and specified to require painting, gas proofing or coating as indicated on the Drawings, and in accordance with the following Specifications.
- 8.02 Material: Materials for use in this work shall be delivered in unbroken original containers, bearing the manufacturer's name and shall be mixed and applied in conformance with the manufacturer's specifications and directions.
- 8.03 General: Painting shall be done in a first-class, workmanlike manner, and no paint shall be applied upon damp or frosty surfaces or in wet, foggy or freezing weather. All surfaces shall be brushed free of dust, and all foreign matter removed before any paint is applied. All surfaces shall be completely dry before any paint is applied. All iron and steel and other steel work which is shop primed shall have all abrasions in the priming coat cleaned by wire brushing, sandpaper or an approved method to bright metal, so as to remove all scale, ridges, rust or faults in the prime coat. All welding splatter shall be removed and this area reprimed. All voids, open or hollow places shall be repaired with a material suitable to the surface to be repaired. Paint shall be evenly spread and well brushed out, so there shall be no drops, runs or sagging of the coating. Where runs and drops do occur, they shall be removed and the surface recoated to the satisfaction of the Engineer. Sufficient time, as directed by the manufacturer shall be allowed for the paint to dry before the application of succeeding coats. Drop cloths shall be used to protect other surfaces of the structure or equipment in place, and upon completion of work all paint spots shall be removed from surfaces as directed by the Engineer, and any defaced surfaces shall be refinished as directed by the Engineer. Any painting work found to be defective or applied under adverse conditions shall be removed and replaced at the direction of the Engineer.
- 8.04 Testing Equipment Required: Contractor will furnish the Engineer with one (1) DeFesco PosiTector 6000 dry film thickness gauge.
- 8.05 Surfaces Requiring Painting: Surfaces requiring painting shall consist of equipment, piping and miscellaneous iron and steel.
- 8.06 Preparation of Painting Surfaces: All surfaces to be painted shall be prepared in accordance with the best practices with particular attention to the following:
- A. Non-submerged ferrous metal surfaces of small miscellaneous items such as handrails, metal doors, cast iron piping, pumps and motors, etc. shall be prepared in accordance with *Surface Preparation Specification SSPC-SP2 Hand Tool Cleaning*.
 - B. Submerged ferrous metal surfaces shall be prepared in accordance with *Surface Preparation Specification SSPC-SP10 Near-White Metal Blast Cleaning*.
- 8.07 Manufacturer: Paint manufacturers specified are Tnemec and Carboline. Contractor shall submit for approval proposed paint manufacturer, coatings and color charts.

8.08 Painting Miscellaneous Iron and Steel Work (non-immersion): Miscellaneous iron and steel work and structural steel work before leaving the shop of the fabricator and before being exposed to weather shall be thoroughly cleaned of all foreign matter, loose black scale and rust to a *Surface Preparation Specification SSPC-SP2 Hand Tool Cleaning* or *SSPC-SP3 Power Tool Cleaning* standard. Apply one (1) coat of Tnemec Series 1 or equal at 2.0-3.0 mils dry. Whenever the priming coat has been damaged in transit or during construction or has become deteriorated due to long exposure to the elements, the metal shall be cleaned, touched up, or re-primed to the satisfaction of the Engineer. Valves, gates and appurtenances, if not tar dipped, shall be primed and painted as specified for miscellaneous iron and steel. PLEASE NOTE ANY IMMERSION GRADE STEEL WILL RECEIVE A *SSPC-SP10 NEAR WHITE METAL BLAST* AS ITS SURFACE PREPARATION METHOD.

A. Existing: Repair/repaint all structural steel surfaces following surface preparation and corrosion protection as follows:

1. Immersion Grade Steel:

a. Surface Preparation: Pressure wash all substrates to be abrasive blasted. Abrasive blast the steel to a *SSPC-SP10 Near White Metal Blast* standard. Prior to paint the substrate must be clean, dry and free of all contaminants. Acceptable paint manufacturers are Tnemec, Induron, Carboline or equal.

b. Paint Coats as Follows:

- 1) 1st Coat – Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry
- 2) 2nd Coat – Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry
- 3) 3rd Coat – Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry

c. Minimum dry film thickness is 14 mils.

2. Exposed Exterior Steel:

a. Surface Preparation: Pressure wash all substrates to be abrasive blasted. Abrasive blast the steel to a *SSPC-SP6 Commercial Blast* standard. Prior to paint the substrate must be clean, dry and free of all contaminants.

b. Paint Coats as Follows:

- 1) 1st Coat – Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry
- 2) 2nd Coat – Tnemec Series N69 or equal, applied at 2.0 to 3.0 mils dry. Color must be lighter shade than the topcoat field applied color.

- 3) 3rd Coat – Tnemec Series 740 or equal, applied at 2.0 to 3.0 mils dry
 - c. Minimum dry film thickness is 6 mils.
3. Miscellaneous Steel:
- a. Surface Preparation: Pressure wash all substrates to be abrasive blasted. Abrasive blast the steel to a SSPC-SP6 *Commercial Blast* standard. Prior to paint the substrate must be clean, dry and free of all contaminants.
 - b. Paint Coats as Follows:
 - 1) 1st Coat – Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry
 - 2) 2nd Coat – Tnemec Series 104 or equal, applied at 2.0 to 3.0 mils dry
 - 3) 3rd Coat – Tnemec Series 104 or equal, applied at 2.0 to 3.0 mils dry
 - c. Minimum dry film thickness is 8 mils.
- B. General Interior Work: After erection, all miscellaneous iron and steel work installed inside of buildings shall be painted with two coats of Tnemec Series 2H or equal. Allow 12 to 24 hours drying time at 75° F between each coat, 1.5 minimum dry mil thickness per coat.
- C. General Exterior Work: After erection, all miscellaneous iron and steel work to be installed outside of buildings shall be clean, dry and free of all contaminants, shall be shop painted with Tnemec Series 1 or equal. The first field coat shall be painted with Tnemec Series 135 or equal, applied at 2.0 to 3.0 mils dry followed by a second coat of Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry.
- D. Pits, Vaults and Galleries: After erection, all miscellaneous iron and steel works, to be installed in pits, vaults, galleries and other locations where steel work is to be exposed to extreme humidity and condensation, shall be painted with two coats of Tnemec Series N69 or equal. Tnemec Series N140 or equal shall be used for potable water. Each coat will be applied at 4 mils minimum. Total minimum dry film thickness shall be 8 mils. Allow 9 hours drying time at 75° F between each coat.
- E. Interior Structural Steel Work: After erection, all structural steel work shall be painted with two coats of Tnemec Series N69 or equal. Tnemec Series N140 or equal shall be used for potable water. Each coat will be applied at 4 mils minimum. Total minimum dry film thickness shall be 8 mils. Allow 9 hours drying time at 75° F between each coat.
- F. Underwater Work: After erection, all miscellaneous iron and steel works to be installed in locations which will be normally covered with water shall be painted with two coats of Tnemec Series N69 or equal. Tnemec Series N140 or equal

shall be used for potable water. Each coat will be applied at 4 mils minimum. Total minimum dry film thickness shall be 8 mils. Allow 9 hours drying time at 75° F between each coat.

8.09 Painting Galvanized Iron Work:

- A. Interior Painting Galvanized Iron Work: Surface shall be prepared by solvent cleaning the entire substrate to be painted using xylol or xylene. The substrate should be clean, dry and free of all contaminants prior to painting. The first field coat should be painted with Tnemec Series 66 or equal, applied at 2.0 to 3.0 mils dry. The second field coat should be painted with Tnemec Series N69 or equal, applied at 2.0 to 3.0 mils dry.
- B. Exterior Painting Galvanized Iron Work: Surface shall be prepared by abrading the surface to a *SSPC-SP3 Power Tool Cleaning* standard. The substrate should be clean, dry and free of all contaminants prior to painting. The first field coat should be painted with Tnemec Series 66 or equal, applied at 2.0 to 3.0 mils dry. The second field coat shall be painted with Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry.

8.10 Painting Cast Iron or Ductile Piping:

- A. Submerged Cast Iron and Ductile Piping: The substrate should be blasted to a *SSPC-SP10 Near White Blast Standard*. The substrate should be clean, dry and free of all contaminants prior to painting. The shop coat or first field coat shall be painted with Tnemec Series N140-1211 or equal, applied at 3.0 to 4.0 mils dry. The second and third field coat shall be painted with Tnemec Series N69 (non-potable) or equal, applied at 4.0 to 6.0 mils dry. If piping is potable water, apply two coats of Tnemec Series N140 or equal, applied at 4.0 to 6.0 mils dry.
- B. Exterior Exposed Cast Iron and Ductile Piping: Surface shall be prepared by applying *SSPC-SP6 "Commercial Blast Cleaning."* The substrate should be clean, dry and free of all contaminants prior to painting. The shop coat or first field coat shall be painted with Tnemec Series N140-1211 or equal, applied at 3.0 to 4.0 mils dry. The second field coat shall be painted with Tnemec Series 135 or equal, applied at 3.0 to 4.0 mils dry. The third coat shall be Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry

8.11 Painting Interior Electrical Conduit: Surface shall be prepared by solvent cleaning the entire substrate to be painted using xylol or xylene. The substrate should be clean, dry and free of all contaminants prior to painting. The first field coat shall be painted with Tnemec Series 66 or equal, applied at 2.0 to 3.0 mils dry. The second field coat shall be painted with Tnemec Series N69 or equal, applied at 2.0 to 3.0 mils dry.

8.12 Painting Structural Surfaces:

- A. Surface Preparation: Structural surfaces to be painted, including concrete and masonry surfaces, shall be thoroughly dry and clean. Concrete work shall be rubbed and finished in accordance with provisions of "Concrete" Section. Concrete and masonry surfaces shall be further cleaned using stiff scrubbing brushes. Using scrubbing brush, scrub and neutralize with 10% muriatic acid solution thoroughly and wash down completely with fresh, clear water.

Flushing shall be performed before the acid solution dries and forms acid salts. All traces of dust, form oil, curing compound or other foreign matter shall be carefully removed. Allow two to four days for complete and thorough drying, or longer if necessary, depending upon humidity and temperature. Space heaters shall be used if due to condensation or temperature conditions painting may not otherwise be accomplished. No painting shall be started unless surfaces are thoroughly dry and they shall be kept dry during all painting operations.

B. Painting: Painting structural surfaces shall be accomplished by applying two coats of Tnemec Series 180 (self-priming) or equal at the rate of 150 square feet per gallon and allowing 4 hours drying time at 75° F between coats.

8.13 Painting Equipment: Special care shall be used to leave all nameplates and non-ferrous metal trim unpainted unless otherwise directed by the Engineer. The substrate should be clean, dry and free of all contaminants from shop applied coat of Tnemec Series 1 or equal. The first field coat shall be painted with Tnemec Series 135 or equal, applied at 3.0 to 4.0 mils dry. The second field coat shall be painted with Tnemec Series 73/1074 or equal, applied at 2.0 to 3.0 mils dry.

8.14 Colors: Where more than one coat of paint is required, paint for each undercoat shall be job tinted off-shade, sufficient to show complete coverage for each coat. The colors of paints for the various parts of the work shall be selected by the Engineer. The lower 4' of walls and partitions shall have dado stripe and color darker than the upper walls and ceilings, unless otherwise specified or directed by the Engineer.

8.15 Piping Color Codes: The Contractor shall paint all exposed metallic pipe lines with the colors specified. Small diameter non-metallic lines should not be painted but should be color-coded with the colors specified using labels according to the “Signs and Labels” section. Colors specified are Tnemec.

<u>Line</u>	<u>Tnemec Color</u>	<u>Tnemec No.</u>
Raw Water Lines:	Safety Blue	11SF
Chemical Lines:	Safety Yellow	02SF

8.16 Signs and Labels: After other painting of pipe work has been completed as provided for herein, the Contractor shall label the pipe work by stenciled legends, all as ordered by the Engineer.

8.17 Legends: In addition to the color coding of piping, two legends descriptive of the function of the pipe, such as “Raw Water” shall be stenciled. One legend shall be stenciled on each side of the pipe on the pipe lines and on the side of the bands away from the valve or fittings. The legend shall be located on the pipe so that it will be in direct line of vision. Legend may be omitted from one side if view is obstructed from that side. Where the flow in a pipe shall be at all times in one direction only, then a flow arrow shall be placed in front of each legend on the pipe. The lettering and arrows shall be cut neatly into stencils, the arrows being the same height as the letters. The size of lettering shall be:

	<i>Outside Diameter of Pipe or Covering</i>	<i>Size of Letters</i>
1.	¾" to 1¼"	½"
2.	1½" to 3"	¾"
3.	3¼" to 4¼"	1"
4.	4½" to 6¾"	1½"
5.	7" to 7¾"	2"
6.	8" to 9¾"	2½"
7.	10" to 11¾"	3"
8.	12" and over	3½"

- A. For pipes smaller than ¾" in outside diameter, use laminated plastic or aluminum tag with the lettering etched or stamped and filled in with black or contrasting enamel.
- B. The legends and flow arrows shall be stenciled with approved black or contrasting stencil paint. The above outline of intent designates the general extent of the identification work and is not exclusive of other similar work such as identification and other equipment as may be directed by the Engineer. Following the completion of the work under this item, the Contractor shall deliver to the Owner 2 sets of all stencils used.
- C. In addition to the above labeling of pipe work, the Contractor shall paint stencil lengths in the same manner as a pipe of appropriate size on the individual units of equipment such as blowers, pumps, collector drives, compressors, silencers, etc. All push buttons, starters, switches, etc. when remote from the equipment controlled and/or power packs shall have labels of the engraved plastic type fixed to or adjacent to the remote switch, push button, starter, etc.

8.18 Payment: No separate payment will be made for the work of this Section. The cost of the work, and all cost incidentals thereto, shall be included in the price bid for the item to which the work pertains.