

**CONTRACT DOCUMENTS
AND
TECHNICAL SPECIFICATIONS
FOR THE CONSTRUCTION OF THE**

**CITY OF CUMMING
HIGHWAY 20 FORCE MAIN
EXTENSION – POST RD TO
CHAMBLEE GAP RD**

BID READY November 7, 2018



Prepared By:

_____**CEC**_____

CIVIL ENGINEERING CONSULTANTS, INC.
Civil & Environmental Engineering

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**SECTION 00 11 13
ADVERTISEMENT FOR BIDS**

The City of Cumming hereby requests BIDS for furnishing all materials, labor, tools, equipment and appurtenances necessary for the construction of the CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD.

BIDS shall be received until 11:30 a.m. local time, on Wednesday, December 5, 2018 at City Hall, the City of Cumming, 100 Main Street, Cumming, GA 30040, and then publicly opened and read aloud.

The CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD includes the following: furnishing all materials, labor and equipment to install approximately 7,205 LF of 8-inch DIP Force Main and all appurtenances necessary for the completion of the work.

All BID DOCUMENTS may be downloaded at cec.engineering under the tab Bid Information. Upon payment of \$150.00 (non-refundable), Contractor shall be placed on the Plan Holders list and be eligible to bid the project. **Hard copies of the Contract Documents will not be available.** Any questions should be directed to Andrew Lovejoy, P.E. at 770-977-5767 or andy@cec.engineering. Checks should be mailed to Civil Engineering Consultants at 4994 Lower Roswell Road, Suite 17, Marietta, Georgia 30068.

A satisfactory Bid Bond (in the amount of 10% of the Bid), executed by the Bidder, and an acceptable surety company listed in the latest issue of U.S. Treasury Circular 570, will accompany each BID. In lieu of a Bid Bond, the City will accept a cashier's check, certified check, or cash deposit in an amount equal to at least 10% of the total contract amount. The Owner reserves the right to reject any or all Bids or to waive any informality in the bidding, to evaluate Bids, and to accept any Bid, which in his opinion, may be for his best interest.

The successful Bidder for this Contract will be required to furnish a satisfactory Performance Bond and a Labor and Material Payment Bond, with a corporate surety approved by the OWNER and listed in the latest issue of U.S. Treasury Circular 570, each in the amount of 100% of the Bid. An Irrevocable Letter of Credit from a local, Forsyth County bank is acceptable in lieu of Performance Bond and Labor and Material Payment Bond.

**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

BIDS will be received by the City of Cumming, herein called the "OWNER", until 11:30 a.m., local time, on Wednesday, December 5, 2018.

Each BID must be submitted in a sealed envelope, addressed to The City of Cumming, 100 Main Street, Cumming, GA 30040. Each sealed envelope containing a BID must be plainly marked on the outside as BID for the CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD and the envelope should bear on the outside, the name of the BIDDER, his address, his license number (if applicable) and the name of the project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at 100 Main Street, Cumming, GA 30040.

All BIDS must be made on the required BID Form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID Form must be fully completed and executed when submitted. Only one (1) copy of the BID Form is required.

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. No BIDS will be received or accepted after the above specified date and time for the opening of BIDS, unless otherwise extended by an Addendum. BIDS submitted after the designated hour will be deemed invalid and returned unopened to the BIDDER. No BIDDER may withdraw a BID within 120 days after the actual date of the opening thereof. Should there be reasons why the Contract cannot be Awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

The BIDDER must meet the minimum project experience requirements stated in the Advertisement for Bids. Those requirements are as follows:

1. Minimum of three (3) projects in the last ten (10) years involving pressurized ductile iron pipe installations with pipe diameter greater than or equal to 36-inches and a minimum of 1,000-LF in length.
2. Proposed Project Superintendent shall have been directly involved in at least one of the above-mentioned projects.
3. To demonstrate current qualifications to perform the Work, each Bidder must submit the following with their Bid:
 - a. Section 00 41 13 – Bid Form
 - b. Section 00 43 13 – Bid Bond
 - c. Section 00 45 13 – Statement of Bidder's Qualifications
 - d. Section 00 45 47 – Security and Immigration Compliance Act Certification

4. Bidder shall be a licensed Utility Contractor in the State of Georgia at the time Bids are submitted.

BIDDERS must satisfy themselves of the amount of required work and materials by a review of the plans and specifications and including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done. Any request for interpretation of Contract Documents or ADDENDA shall be made, to the Engineer, in writing.

Each BID must be accompanied by a BID Bond payable to the OWNER for ten percent of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return the Checks or BID Bonds of all except the three (3) lowest responsible BIDDERS. When the Agreement is executed, the Bonds of the two (2) remaining unsuccessful BIDDERS will be returned. If no Award has been made within 120 days after the opening of BIDS, the BIDDERS may request return of their Checks or BID Bonds, if they have not been notified of the acceptance of his/her or their BID. The BID Bond of the successful BIDDER will be retained until the Performance Bond has been executed and approved, after which, it will be returned. A certified check may be used in lieu of a BID Bond. The BID Bond shall be secured by a guaranty or a surety company, listed in the latest issue of U.S. Treasury Circular 570, licensed to do business in the State of Georgia.

The party to whom the Contract is Awarded will be required to execute the Agreement and obtain the Performance Bond and the Payment Bond within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary Agreement and bond forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may, at his option, consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

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

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

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The OWNER reserves the right to add to and/or delete from the Contract after it has been Awarded. BIDS may be held by the OWNER for a period not to exceed one hundred-twenty (120) days from the date of the opening of BIDS for the purpose of reviewing the BIDS, prior to Awarding the Contract.

A conditional or qualified BID will not be accepted.

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

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

The specifications contained herein are intended to provide performance and material requirements for the execution and completion of this Project.

The number and trade names given for any products are taken from various manufacturer catalogs as stated and shall be construed as being descriptive only of type, style, and quality of material required. Material of other reputable manufacturers of equal quality, type and style may be acceptable only if approved by the Engineer.

The CONTRACTOR, in signing his BID on the whole or any portion of the WORK, shall conform to the following requirements:

- (a) BIDS which are not signed by individuals making them shall have attached thereto a power of attorney evidencing authority to sign the BID in the name of the person for whom it is signed.
- (b) BIDS which are signed for a partnership shall be signed by all of the partners or by an attorney-in-fact. If a BID is signed by an attorney-in-fact, there should be attached to the BID a power of attorney executed by the partners evidencing authority to sign the BID.
- (c) BIDS which are signed for a corporation shall have the correct corporate name thereof and the signature of the President or other authorized officer of the corporation manually written below the corporate name following the wording "By _____". The Corporation seal shall also be affixed to the BID and the signature shall be attested by the Secretary.

The Award of the Contract will be made to the lowest responsive, responsible BIDDER, based on the BID Proposal Form with the lowest TOTAL BID PRICE. The BIDDER to whom the Award is made will be notified at the earliest possible date. The OWNER reserves the right to reject any and all BIDS and to waive any informality in BIDS whenever such rejection or waiver is in its interest.

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BIDDER must agree to commence work on or before a date to be specified in a written "NOTICE TO PROCEED" of the OWNER. The Contract Time for Substantial Completion shall be 270 consecutive calendar days. BIDDER must also agree to pay as Liquidated Damages the sum of \$500.00 dollars per day for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.

The Project Engineer is Andrew E. Lovejoy, P.E. of Civil Engineering Consultants, Inc., located at 4994 Lower Roswell Road, Suite 17, Marietta, Georgia 30068 770-977-5747, Direct Line 770-977-5767, Email: andy@cec.engineering.

**SECTION 00 41 13
BID FORM**

This BID is submitted to: **City of Cumming**
100 Main Street
Cumming, GA 30040

1. The undersigned BIDDER proposes and agrees, if this BID is accepted, to enter into an agreement with the OWNER in the form included in the Contract Documents to perform and furnish all WORK as specified or indicated in the contract Documents for the TOTAL PRICE BID and within the BID times indicated in this BID and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement For Bids and Information For Bidders, including without limitation those dealing with the disposition of the BID security. This BID will remain subject to acceptance for ninety (90) days after the day of BID opening, or for such longer period of time that BIDDER may agree to in writing upon request of the OWNER. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds, Certifications of Insurance, and other documents required by the Bidding Requirements within ten (10) days after the date of the OWNER’s Notice of Award.
3. In submitting this BID, BIDDER represents, as more fully set forth in the Agreement, that:
 - (a) BIDDER has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda receipt of all which is hereby acknowledged (list Addenda by Addendum Number and Date):

<u>Addendum No.</u>	<u>Date Received</u>	<u>Addendum No.</u>	<u>Date Received</u>
_____	_____	_____	_____
_____	_____	_____	_____

- (b) BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the WORK, and BIDDER has not relied upon any oral representations by employees or agents of OWNER or ENGINEER.
- (c) BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the WORK.

- (d) BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or continuous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions. BIDDER acknowledges that such reports and drawings are not Contract Documents and may not be complete for BIDDER's purposes. BIDDER acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site.
- (e) BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the WORK or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto.
- (f) BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this BID for performance and furnishing of the WORK in accordance with the times, price and other terms and conditions of the Contract Documents.
- (g) BIDDER is aware of the general nature of WORK to be performed by OWNER and OTHERS at the site that relates to WORK for which this BID is submitted as indicated in the Contract documents.
- (h) BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- (i) BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the WORK for which this BID is submitted.

(j) This BID is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, associates, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham BID; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

4. UNIT PRICES have been computed in accordance with paragraph 11.03 of the General Conditions. All specific cash allowances are included in the price(s) and have been computed in accordance with paragraph 11.02 of the General Conditions.

BIDDER acknowledges that quantities are not guaranteed and are solely for the purpose of comparison of BIDS, and final payment for all Unit Price BID items will be based on actual quantities provided, determined as provided in the Contract Documents.

5. BIDDER declares that he understands that the quantities shown on the proposal are subject to adjustment by either increase or decrease, and that should the quantities of any of the items or WORK be increased, the undersigned proposes to do the additional work at the Unit Prices stated herein; and should the quantities be decreased, BIDDER 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 actual quantities will be determined upon completion of WORK, at which time adjustment will be made to the Contract Amount by direct increase or decrease.

6. BIDDER will complete the WORK in accordance with the Contract Documents for the prices listed in the following Bid Schedule.

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BID SCHEDULE

All BID Items shall include all costs for furnishing all labor, materials, equipment, supplies, allowances and all other costs including permit fees, taxes, insurance, miscellaneous costs, overhead and profit incurred for the WORK, complete in place and ready for continuous service.

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Approx. Qty.</u>	<u>Unit Price</u>	<u>Total Price</u>
1	8-Inch DIP Pressure Class 350, Type 3 Laying	LF	5,676	\$ _____	\$ _____
2	8-Inch DIP Pressure Class 350, Type 3 Laying, Restrained	LF	1,529	\$ _____	\$ _____
3	12-Inch Steel Casing, Jack and Bore	LF	215	\$ _____	\$ _____
4	Air/Vacuum Valve Assembly	EA	4	\$ _____	\$ _____
5	AWWA C153, Class 350 DIP Fittings (includes Megalugs)	TON	3	\$ _____	\$ _____
6	8-inch Plug Valve	EA	1	\$ _____	\$ _____
7	Tie-in to ex. 10-inch Force Main	EA	1	\$ _____	\$ _____
8	Silt Fence Type "C"	LF	6,025	\$ _____	\$ _____
9	Construction Exit	EA	6	\$ _____	\$ _____
10	Permanent Grassing	LF	6,025	\$ _____	\$ _____
11	Erosion Control Monitoring	LS	1	\$ _____	\$ _____
12	Marker Balls	EA	100	\$ _____	\$ _____
13	Contingencies	LS	1	\$40,000.00	\$40,000.00
TOTAL AMOUNT BID (ITEMS 1 THROUGH 13, INCLUSIVE)				\$ _____	

Total Price Bid (In Words): _____

The amount of Total Price Bid shall be shown in both figures and words. In case of a discrepancy, the amount shown in words shall govern. In the event of a discrepancy between the Unit Price bid and the extension, the Unit Price will be deemed intended by the Bidder and the extension adjusted. In the event of a discrepancy between the sum of the extended amounts and the Bid total, the sum of the extended amounts shall govern.

1. BIDDER agrees that the WORK will be Substantially Completed within 180 consecutive calendar days, from the date when the Contract Time commences to run as provided in paragraph 2.03 of the General Conditions.

BIDDER accepts the provisions of the Agreement as to Liquidated Damages in the event of failure to complete the WORK within the time(s) specified in the Agreement.

2. The following documents are attached and made a condition of this BID:
 - a. Required Bid Security in the form of Bid Bond, Certified Check, or Cashier's Check.
(Strikeout inapplicable terms.)
 - b. BIDDERS who submit Bid Security in the form of a Certified Check or Cashier's Check are bound by the "Terms of Bid Bond" as if submitted on the attached "Bid Bond" form.

The address of BIDDER indicated below.

BIDDER'S NAME: _____

Primary Contact Person: _____

Secondary Contact Person: _____

Bidder's Street Address: _____

Bidder's Mailing Address (if different from above): _____

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Bidder's Telephone Number: _____

Bidder's Fax Number: _____

3. Terms used in this BID which are defined in the General Conditions will have the meanings indicated in the General Conditions.

THIS BID SUBMITTED on _____, 2017.

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____

(Signature)

Title: _____

Attest: _____

(CORPORATE SEAL)

(Signature)

Business Address: _____

Telephone Number: _____

Fax Number: _____

Date of Qualification to do business is: _____

SECTION 00 43 13
BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

_____ as PRINCIPAL, and

_____ as SURETY, are held and firmly bound unto

The City of Cumming, hereinafter called the "Local Public Agency", in the penal sum of

_____ Dollars,

(\$ _____) lawful money of the United States, for the payment of which sum well and

truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns,

jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that Whereas the Principal has submitted the

Accompanying Bid, dated _____, 2018 for the construction of the City of Cumming – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD.

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified therein after the opening of the same, or, if no period be specified, within thirty (30) days after the said opening and shall within the period specified therefore, or if no period be specified, within ten (10) days after the prescribed forms are presented to him for signature, enter into a written Contract with the Local Public Agency in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, if the Principal shall pay the Local Public Agency the difference between the amount specified in said Bid and the amount for which the Local Public Agency may procure the required work or supplies or both, if the latter be in excess of the former, than the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their

several seals this _____ day of _____, 2018, the name and corporate seal of each corporate party

being hereto affixed and these presents signed by its undersigned representative, pursuant to authority of its governing body.

**CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO
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In presence of:

_____ (SEAL)
(Individual Principal)

(Address, Zip Code)

_____ (SEAL)
(Partnership)

(Address, Zip Code)

By: _____

(Corporate Principal)

(Address, Zip Code)

By: _____
(Affix Corporate Seal)

(Corporate Surety)

By: _____
(Affix Corporate Seal)

Countersigned by:

_____ State of _____
Attorney-in-Fact, State of

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____, Secretary of the Corporation named as Principal in the within bond; that _____, who signed the said bond on behalf of the Principal was then _____ of said corporation; that I know his signature, and his signature thereto is genuine; and that said bond was duly signed, sealed, and attested to for and in behalf of said corporation by authority of this governing body.

_____ (Corp.)
_____ (Seal)
Title _____

**SECTION 00 45 13
STATEMENT OF BIDDER’S QUALIFICATIONS**

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information desired. Attach all additional sheets to this statement. (Sample “Project Information Form” contained at the end of this Section.)

1. Name of Bidder: _____
2. Permanent main office address and phone number: _____
3. When organized: _____
4. How many years have you been engaged in the contracting business under your present firm or trade name: _____
5. Contracts on hand (list major contracts, total number, and dollar value) _____

6. Have you ever failed to complete any work awarded to you? If so, where and why?

7. Have you ever defaulted on a contract? If so, where and why? _____

8. Attach a list of the most important projects recently completed by your company which are similar in scope to this Project. (Complete a “Project Information Form”, attached, for each Project listed.) See the Advertisement for Bid and the Instructions to Bidders for required minimum project experience.
9. List your major equipment available for this Contract. _____

- 10. Background and experience of the Principal members of your organization, including officers. Attach resume(s)

- 11. Background and experience of the Project Manager who will be assigned to this Project. Attach resume

- 12. Background and experience of the Superintendent who will be assigned to this Project. Attach resume

- 13. Any history of litigation, arbitration, or other related mediation actions for the proposed Project Manager, Project Superintendent, or referenced Projects? _____

- 14. The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Statement of Bidder's Qualifications.

I, _____, certify that I am _____ of the Bidder, and that the answers to the foregoing questions and statements contained therein are true and correct.

BIDDER: _____

By: _____
(name signed)

(name printed or typed)

Title: _____

Date: _____

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

NOTARY PUBLIC: _____
(name signed)

(name printed or typed)

Commission Expires: _____
(Date)

(SEAL)

Project Information Form
(Attach Copies for Three (3) Projects)

Project Title: _____

Project Description: _____

Project Owner:

1. Owner Name: _____

2. Address: _____

3. Contact Person: _____

4. Phone Number: _____

Contractor Project Manager:

1. Company Name: _____

2. Contractor Project Manager: _____

3. Phone Number: _____

Contract Amount:

1. Initial: _____

2. Final: _____

3. Reason if Different: _____

Contract Time

1. Initial: _____

2. Final: _____

3. Completion Date: _____

4. Reason if Different: _____

SECTION 00 45 47
SECURITY AND IMMIGRATION COMPLIANCE ACT CERTIFICATION

Pursuant to the Georgia Security and Immigration Compliance Act of 2006, Contractor understands and agrees that compliance with the requirements of OCGA 13-10-91 and Georgia Department of Labor Rule 300-10-1 et. seq. are conditions of Agreement. Contractor further agrees that such compliance shall be attested through execution of Contractor Affidavit and Agreement required by Georgia Department of Labor Rule 300-10-1-.07, or a substantially similar contractor affidavit. Contractor’s fully executed affidavit is attached and is incorporated into this Agreement by reference herein.

By initialing in the appropriate line below, Contractor certifies that the following employee number category as identified in OCGA 13-10-91 is applicable to Contractor:

- 1. _____ 500 or more employees;
2. _____ 100 or more employees;
3. _____ Fewer than 100 employees.

Contractor understands and agrees that, in the event Contractor employs or contracts with Subcontractor in connection with this Agreement, Contractor shall:

- 1. Secure from each Subcontractor an indication of the employee-number category as identified in OCGA 13-10-91; and
2. Secure from each Subcontractor an attestation of Subcontractor’s compliance with OCGA 13-10-91 and Georgia Department of Labor Rule 300-10-1-.02 by causing each Subcontractor to execute the attached Subcontractor Affidavit required by Georgia Department of Labor Rule 300-10-1-.08, or a substantially similar subcontractor affidavit. Contractor further understands and agrees that Contractor shall require the executed Subcontractor Affidavit to become a part of the agreement between Contractor and each Subcontractor. Contractor agrees to maintain records of each Subcontractor attestation required hereunder for inspection by Owner.

BY: Authorized Officer or Agent

Date

Title of Authorized Officer or Agent if Contractor

Printed Name of Authorized Officer or Agent

Subscribed and Sworn Before Me on this
_____ day of _____, 20_____

Notary Public
My Commission Expires: _____

**SECTION 00 51 00
NOTICE OF AWARD**

TO: _____

PROJECT DESCRIPTION:

Construction of CITY OF CUMMING – CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD

The OWNER has considered the BID submitted by you for the above described WORK.

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

You are required, by the General Information for Contractor, to execute the Agreement and certificates of insurance within ten (10) days from the date of this Notice to you.

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

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

Dated this xxnd day of _____, 2018

CITY OF CUMMING
Owner

By _____

Phil Higgins
City Administrator

ACCEPTANCE OF NOTICE:

Receipt of the above NOTICE OF AWARD is hereby acknowledged by:

Contractor

This the ____ day of _____, 2018

By _____

President

**SECTION 00 52 13
STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF STIPULATED PRICE**

THIS AGREEMENT is dated _____, 2018 by and between the CITY OF CUMMING, GEORGIA (hereinafter called **OWNER**) and _____ hereinafter called (**CONTRACTOR**).

OWNER and **CONTRACTOR**, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work, known as the CITY OF CUMMING - HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD includes the following: furnishing all materials, labor and equipment to install approximately 7,205 LF of 8-inch DIP Force Main and all appurtenances necessary for the completion of the work.

Article 2. ENGINEER.

The Project has been specified by CIVIL ENGINEERING CONSULTANTS, Inc., who is hereinafter called **ENGINEER** and who is to act as **OWNER**'s representative, assume all duties and responsibilities and have the rights and authority assigned to **ENGINEER** in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME.

3.1 The Work will be substantially completed within 180 consecutive calendar days from the date when the Contract Time commences to run as provided in paragraph 2.03 of the General Conditions. Work will be finally completed within 60 consecutive calendar days after substantial completion.

3.2 **Liquidated Damages.** **OWNER** and **CONTRACTOR** recognize that time is of the essence of this Agreement and that **OWNER** will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by **OWNER** if the Work is not completed on time. Accordingly, instead of requiring any such proof, **OWNER** and **CONTRACTOR** agree that as liquidated damages for delay (but not as a penalty) **CONTRACTOR** shall pay **OWNER** Five Hundred Dollars \$500.00 for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially completed.

The parties have discussed the potential financial losses to the Owner in the event this facility is

CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD

11/07/2018

not completed on time, and have determined that the stipulated sum is a reasonable pre-estimate of probable loss even though exact amounts are difficult or impossible of accurate estimation.

Article 4. CONTRACT PRICE.

4.1 **OWNER** shall pay **CONTRACTOR** for completion of the Work in accordance with the Contract Documents in current funds as follows:

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Approx. Qty.</u>	<u>Unit Price</u>	<u>Total Price</u>
1	8-Inch DIP Pressure Class 350, Type 3 Laying	LF	5,676	\$ _____	\$ _____
2	8-Inch DIP Pressure Class 350, Type 3 Laying, Restrained	LF	1,529	\$ _____	\$ _____
3	12-Inch Steel Casing, Jack and Bore	LF	215	\$ _____	\$ _____
4	Air/Vacuum Valve Assembly	EA	4	\$ _____	\$ _____
5	AWWA C153, Class 350 DIP Fittings (includes Megalugs)	TON	3	\$ _____	\$ _____
6	8-inch Plug Valve	EA	1	\$ _____	\$ _____
7	Tie-in to ex. 10-inch Force Main	EA	1	\$ _____	\$ _____
8	Silt Fence Type "C"	LF	6,025	\$ _____	\$ _____
9	Construction Exit	EA	6	\$ _____	\$ _____
10	Permanent Grassing	LF	6,025	\$ _____	\$ _____
11	Erosion Control Monitoring	LS	1	\$ _____	\$ _____
12	Marker Balls	EA	100	\$ _____	\$ _____
13	Contingencies	LS	1	\$40,000.00	\$40,000.00

TOTAL AMOUNT BID (ITEMS 1 THROUGH 13, INCLUSIVE) \$ _____

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by **ENGINEER** as provided in the General Conditions.

5.1 **Progress Payments.** **OWNER** shall make progress payments on account of the Contract Price on the basis of **CONTRACTOR**'s Applications for Payment as recommended by **ENGINEER**, on or about the last day of each month during construction as provided below. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in paragraph 2.07 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Conditions.

5.1.1 Prior to Substantial Completion, progress payments will be made in an amount equal 90% of the Work completed, but, in each case, less the aggregate of payments previously made and less such amounts as **ENGINEER** shall determine, or **OWNER** may withhold, in accordance with paragraph 14.02.B.5 of the General Conditions.

50% of Work Completed. If Work has been 50% completed as determined by **ENGINEER**, and if the character and progress of the Work have been satisfactory to **OWNER** and **ENGINEER**, **OWNER** on recommendation of **ENGINEER**, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no additional retainage on account of Work completed in which case the remaining progress payments prior to Substantial Completion will be in an amount equal to 100% of the Work completed and 90% of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to **OWNER** as provided in paragraph 14.02 of the General Conditions).

5.1.2 Upon Substantial Completion, in an amount sufficient to increase total payments to **CONTRACTOR** to 95% of the Contract Price, less such amounts as **ENGINEER** shall determine, or **OWNER** may withhold, in accordance with paragraph 14.02.B.5 of the General Conditions.

5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, **OWNER** shall pay the remainder of the Contract Price as recommended by **ENGINEER** as provided in said paragraph 14.07.

Article 6. INTEREST.

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of 0.25 percent per month.

Article 7. CONTRACTOR'S REPRESENTATIONS.

In order to induce **OWNER** to enter into this Agreement **CONTRACTOR** makes the following representations:

7.1 **CONTRACTOR** has familiarized itself with the nature and extent of the Contract Documents, Work, site, Locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing the Work.

7.2 **CONTRACTOR** has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by **CONTRACTOR** in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.04 of the General Conditions.

7.3 **CONTRACTOR** has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

7.4 **CONTRACTOR** has given **ENGINEER** written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by **ENGINEER** is acceptable to **CONTRACTOR**.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between **OWNER** and **CONTRACTOR** concerning the Work consist of the following:

- 8.1 This Agreement (pages 1 to 8, inclusive).
- 8.2 Contractor's Bid.
- 8.3 Bid Bond.
- 8.4 Security and Immigration Compliance Act Certification.
- 8.5 Payment Bond.
- 8.6 Performance Bond.

- 8.7 Notice of Award.
- 8.8 Certificate of Owner's Attorney.
- 8.9 Notice To Proceed.
- 8.10 Change Order Form.
- 8.11 General Conditions (pages 1 to 62, inclusive).
- 8.12 Supplementary Conditions (pages 1 to 5, inclusive).
- 8.13 Specifications dated December 5, 2018, bearing the title City of Cumming – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD and consisting of 8 Divisions as listed in table of contents thereof.
- 8.14 Drawings prepared by Civil Engineering Consultants, Inc., numbered 1 through 26 and dated December 5, 2018.
- 8.15 Addenda: No. dated _____ and No. dated _____, 2018
- 8.16 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraph 3.04 of the General Conditions.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraph 3.04 of the General Conditions. To the extent possible, the Contract Documents shall be construed together so as to be consistent with one another. To the extent such a construction is not possible the documents dated later in time shall supersede and govern over those dated earlier in time.

Article 9. MISCELLANEOUS.

9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 **OWNER** and **CONTRACTOR** each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

Article 10. OTHER PROVISIONS. NONE.

IN WITNESS WHEREOF, **OWNER** and **CONTRACTOR** have signed this Agreement in triplicate. One counterpart each has been delivered to **OWNER**, **CONTRACTOR** and **ENGINEER**. All portions of the Contract Documents have been signed or identified by **OWNER** and **CONTRACTOR** or by **ENGINEER** on their behalf.

CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD

11/07/2018

This Agreement will be effective on August 27, 2018.

OWNER: CITY OF CUMMING, GEORGIA CONTRACTOR: JOHN D. STEPHENS, Inc.

By: _____

Phil Higgins
City Administrator

[CORPORATE SEAL]

Attest: _____

Address for giving notices

City of Cumming
100 Main Street
Cumming GA 30040

By: _____

President

[CORPORATE SEAL]

Attest: _____

Address for giving notices

(If OWNER is a public body, attach License No. _____, evidence of authority to sign and resolution or other documents. Agent for service process: authorizing execution of Agreement.) _____

(If CONTRACTOR is a corporation, attach evidence of authority to sign.)

**SECTION 00 55 00
NOTICE TO PROCEED**

TO: _____

Date:

Project: CITY OF CUMMING - HIGHWAY 20
FORCE MAIN EXTENSION – POST RD TO
CHAMBLEE GAP RD

You are hereby notified to commence WORK on the Date written above, in accordance with the Agreement; you are to Substantially Complete the WORK within 180 consecutive calendar days. The date of completion of the WORK is therefore _____.

THE CITY OF CUMMING

By _____
Phil Higgins
City Administrator

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

This xxth day of _____ 2018

By _____

President

**SECTION 00 61 14
PERFORMANCE BOND**

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a Corporation hereafter called (Corporation, Partnership or Individual) PRINCIPAL and

(Name of Surety)

hereinafter called SURETY, are held and firmly bound unto The City of Cumming, 100 Main Street, Cumming, Georgia 30040 herein after called OWNER in the total aggregate penal sum of

(\$ _____) in 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 hereof for the construction of the CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD.

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 extensions thereof which may be granted by the OWNER, with or without notice to the SURETY and during the one 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 expense 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 there under or the SPECIFICATIONS accompanying same 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 or to the SPECIFICATIONS.

PROVIDED, FURTHER, that it is expressly agreed that the BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the CONTRACT as so amended. The term "Amendment", wherever used in this BOND, and whether referring to this BOND, the Contract or the Loan Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

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

CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD

11/07/2018

WITNESS WHEREOF, this instrument is executed in Three (3) counterparts, each of which shall be deemed an original.

Signed and Sealed this _____ day of _____, 2018.

ATTEST:

(Principal) Secretary

(SEAL)

By _____

President

Witness as to Principal

(Address)

Surety

ATTEST:

Witness as to Surety

By _____
Attorney-in-Fact

(Address)

(Address)

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 of Georgia.

SECTION 00 61 15
PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

A Corporation hereinafter called (Corporation, Partnership or Individual) PRINCIPAL and

(Name of Surety)

hereinafter called SURETY, are held and firmly bound unto The City of Cumming, 100 Main Street, Cumming, Georgia 30040 herein after called OWNER, and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the Contract and to their successors and assigns in the total aggregate penal sum of

(\$ _____) in 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 hereof for the construction of the CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD.

NOW, THEREFORE, if the PRINCIPAL shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing all 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 materialman lienholder 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, that beneficiaries or claimants hereunder shall be limited to the SUBCONTRACTORS, and persons, firms, and corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

PROVIDED, FURTHER, that no suit or action shall be commenced hereunder by any claimant: (a) Unless claimant, other than one having a direct contract with the PRINCIPAL, shall have given written notice to any two of the following: The PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the PRINCIPAL, OWNER, or SURETY, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer. (b) After the expiration of one (1) year following the date of which PRINCIPAL ceased work on said CONTRACT, is being understood, however, that if any limitation embodied in the BOND is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract no increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

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

CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD

11/07/2018

WITNESS WHEREOF, this instrument is executed in Three (3) counterparts, each of which shall be deemed an original.

Signed and Sealed this _____ day of _____, 2018.

ATTEST:

(Principal) Secretary

(SEAL)

By _____
President

Witness as to Principal

(Address)

Surety

ATTEST:

Witness as to Surety

By _____
Attorney-in-Fact

(Address)

(Address)

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 of Georgia.

**SECTION 00 62 15
CERTIFICATE OF OWNER'S ATTORNEY**

I, the undersigned, _____, the duly authorized and acting legal representative of the City of Cumming, Georgia, (the "City") do hereby certify as follows:

I have examined the attached Contract Documents and the manner of execution thereof by the City, and I am of the opinion that each of the aforesaid agreements are adequate and have been duly executed by the proper parties on behalf of the City; that said representative(s) has full power and authority to execute said agreements on behalf of the City; and that the foregoing agreements constitute valid and legally binding obligations upon the City in accordance with terms, conditions, and provisions thereof.

By: _____

Date: _____

SECTION 00 63 63
CHANGE ORDER FORM

OWNER: CITY OF CUMMING

CONTRACTOR:

NAME OF CONTRACT: CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD

ORIGINAL AGREEMENT DATE: _____

ORIGINAL CONTRACT AMOUNT: \$ _____

CHANGE ORDER DATE: _____

_____ is hereby directed to comply with the following additions and deductions to the above referenced Contract Plans and Specifications.

ADDITIONS:

- 1. Add \$ _____
 - 2. Add _____
- SUBTOTAL ADDITIONS \$ _____

DEDUCTIONS:

- 1. Delete \$(_____)
 - 2. Delete (_____)
- SUBTOTAL DEDUCTIONS \$(_____)
- TOTAL CHANGE ORDER DECREASE/INCREASE \$(_____)**

The Contract Amount shall be decreased/increased \$ _____, from \$ _____ to \$ _____.

The completion date of _____, _____ is unchanged/changed to _____.

**CITY OF CUMMING – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO
CHAMBLEE GAP RD**

11/07/2018

This Document will become a supplement to the Contract Documents and all provisions will apply hereto.

Requested By: OWNER
CITY OF CUMMING

Phil Higgins
City Administrator

Date: _____

Recommended By: ENGINEER
CIVIL ENGINEERING CONSULTANTS, INC.

Andrew E. Lovejoy, P.E.
President

Date: _____

Accepted By: CONTRACTOR

President

Date: _____

SECTION 00 65 19
FINAL LIEN WAIVER

TO: CITY OF CUMMING, GEORGIA

FROM:

RE: Agreement between the City of Cumming, Georgia and (contractor) dated , 2019 for construction of the HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD project.

I hereby certify that all suppliers of materials, equipment and services, subcontractors, mechanics and laborers employed by (contractor) or any of its subcontractors in Forsyth County, Georgia have been paid and satisfied in full as of , and that there are no outstanding obligations or claims of any kind for the payment of which the City of Cumming, Georgia on the above-named project might be liable, or subject to, in any lawful proceeding at law or in equity.

The undersigned is authorized by Contractor to execute this document on Contractor’s behalf and has personal knowledge of the facts herein stated.

BY: Authorized Officer or Agent

Date

Title of Authorized Officer or Agent if Contractor

Printed Name of Authorized Officer or Agent

Subscribed and Sworn Before Me on this day of ,

Notary Public
My Commission Expires:

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

- 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
- 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

- 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
- 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
- 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

- 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
- 2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other

professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price

or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by

Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery

against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all

court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor

shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

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

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
1. all persons on the Site or who may be affected by the Work;
 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*
 - a. Submit number of copies specified in the General Requirements.
 - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.
 2. *Samples:*
 - a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Submittal Procedures:*
1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop

Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 6. any inspection, test, or approval by others; or
 7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor,

Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
1. written notice thereof will be given to Contractor prior to starting any such other work; and
 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits

and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The

opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on

Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:

- a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
- b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 2. there is no corresponding adjustment with respect to any other item of Work; and
 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

- c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the

control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.

- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute

resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and

equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the

Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or

- b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or

- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

**SECTION 00 73 00
SUPPLEMENTARY CONDITIONS**

PART 1 GENERAL

1.1 SUPPLEMENTARY CONDITIONS

- A. The provisions of the Supplementary Conditions as described herein change, amend, or supplement the General Conditions and shall supersede any conflicting provisions of this CONTRACT. All provisions of the General Conditions which are not changed, amended, or supplemented, remain in full force.

1.2 INSURANCE

- A. The CONTRACTOR shall purchase and maintain such insurance as will protect it 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 the CONTRACTOR, any SUBCONTRACTOR, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:
1. Claims under workmen's compensation, disability benefit and other similar employee benefit acts;
 2. Claims for damages because of bodily injury, occupational sickness or disease, or death of employees;
 3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than employees;
 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; and
 5. Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.
- B. Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled unless at least thirty (30) days prior WRITTEN NOTICE has been given to the OWNER. Certificates of Insurance shall name The City of Cumming (OWNER) and Civil Engineering Consultants, Inc. (ENGINEER) as additional insured.

- C. The CONTRACTOR shall procure and maintain, at the CONTRACTOR's own expense, during the CONTRACT TIME, Liability insurance as herein after specified:
1. CONTRACTOR's General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting the CONTRACTOR from all claims for person 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 the CONTRACTOR or by any SUBCONTRACTOR employed by the CONTRACTOR or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR employed by the CONTRACTOR.
 2. Insurance shall be written with a combined single limit for all liability of bodily injury and property damage of not less than \$2,000,000 per occurrence.
 3. Insurance shall be written to include Excess Liability coverage of \$5,000,000 for each occurrence and \$5,000,000 for the aggregate amount.
- D. The CONTRACTOR shall procure and maintain, at the CONTRACTOR's 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 occupation disease provisions, for all of the CONTRACTOR's 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 statue, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of its employees not otherwise protected.
- E. 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, and the OWNER. This provision shall in no way release the CONTRACTOR or CONTRACTOR's surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

1.3 DISPUTE RESOLUTION

- A. Article 16 – Dispute Resolution, of the General Conditions, is hereby deleted in its entirety.

1.4 CONFLICTS

- A. The General Conditions of the Contract shall govern in the event of any conflict with any other provisions of the Contract Documents unless notice to the contrary shall have been issued by the Owner. In the event of conflict, the Supplementary General Conditions control over the General Conditions and the Contract controls over the Supplementary and General Conditions. The Engineer has no authority to amend the General Conditions, orally or in writing, either expressly or by implication.
- B. The following principles shall govern the settlement of disputes which may arise over conflicts in the Contract Documents: (a) as between figures given on drawings and the scaled measurements, the figures shall govern; (b) as between large-scale drawings and small-scale drawings, the larger scale shall govern; (c) as between drawings and specifications, the requirements of the specifications shall govern; and (d) as between the contract and the specifications, the requirements of the contract shall govern. Conflicts noted shall be reported to the Design Professional.

1.5 ACCEPTANCE AND FINAL PAYMENT

- A. When the work provided for under this CONTRACT shall have been completed by the Contractor, and all parts thereof have been approved by the ENGINEER according to the CONTRACT, the ENGINEER shall, within ten (10) days unless otherwise provided, make final inspection and advise the Contractor as to preparing a final estimate, showing the value of work as soon as the necessary measurements and computations can be made, all prior certificates or estimates upon which payments have been being made approximated only, and subject to correction in the final payment. The amount of the final estimates, less any sums that may have been deducted or retained under the provisions of this CONTRACT, will be paid to the Contractor within sixty (60) days after approval by the Engineer, provided that the Contractor has properly maintained and operated the PROJECT as specified under these Specifications, and provided, that it has furnished to the Owner a sworn affidavit in form satisfactory to Owner's attorney to the effect that all bills are paid and no suits are pending in connection with the work done or labor and material furnished under this CONTRACT.

1.6 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENT

- A. Delete the last sentence of General Conditions Section 14.02.C.1 and replace with as follows:

14.02.C Prompt Payment Clause

1. Owner and contractor agree that all partial payments and final payments shall be subject to the Georgia Prompt Pay Act, as originally enacted and amended, and as set forth in O.C.G.A. 13-11-1 through 13-11-11, except as provided below to the extent authorized by law.

a. Interest Rate: For purposes of computing interest on late payments, the rate of interest shall be one percent per month in accordance the Georgia Prompt Pay Act with or a pro-rata fraction thereof on the unpaid balance as may be due.

b. Payment Periods:

1. When the contractor has performed in accordance with the provisions of these Contract Documents, the Owner shall pay the Contractor within 45 days of receipt by the Owner or the Owner's representative of any properly completed Application for Payment, based upon work completed or service provided pursuant to the terms of these Contract Documents.

2. When a subcontractor has performed in accordance with the provisions of its subcontract and the subcontract conditions precedent to payment have been satisfied, the Contractor shall pay to that subcontractor and each subcontractor shall pay to its subcontractor, within ten days of receipt by the Contractor or subcontractor of each periodic or final payment, the full amount received for such subcontractors work and materials based on work completed or service provided under the subcontract, less retainage expressed as a percentage, but such retainage shall not exceed that retainage being held by the Owner, provided that the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete its work as the contractor in its reasonable discretion may require, including but not limited to a payment and performance bond.

c. Interest on Late Payment:

Except otherwise provided in these Contract Documents and/or in O.C.G.A. 13-11-5, if a periodic or final payment to the Contractor is delayed by more than the time allotted in Paragraph b. of this Prompt Payment Clause or if a periodic or final payment to a subcontractor is delayed more than ten days after receipt of periodic or final payment by the Contractor or subcontractor, the Owner, Contractor, or subcontractor, as the case may be, shall pay interest to its Contractor, or subcontractor beginning on the day following the due dates as provided in Paragraph b. of this Prompt Payment Clause at the rate of interest as provided herein. Interest shall be computed per month or a pro-rata fraction thereof on the unpaid balance. There shall be no compounded interest. No interest is due unless the person or entity being charged interest received "Notice" as provided in Paragraph d. of this Prompt Payment Clause. Acceptance or

progress payments or final payment shall release all claims for interest on said payments.

d. Notice of Late Payment and Request of Interest:

Any person or entity asserting entitlement to interest on any periodic or final payment pursuant to the provisions of this Prompt Payment Clause shall provide "notice" to the person or entity being charged interest of the charging party's claim to the interest on late payment. "Notice" shall be in writing, serviced by U.S. Certified Mail--Return Receipt Requested at the time the properly completed Application for Payment is received by the Owner or Owner's representative, and shall set forth the following:

1. A short and concise statement that interest is due pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause;
2. The principal amount of the periodic or final payment which is allegedly due to the charging party; and
3. The first day and date upon which the charging party alleges that said interest will begin to accrue, pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause.

These "Notice" provisions are of the essence; therefore, failure to comply with any requirement as set forth in the Prompt Payment Clause precludes the right to interest on any alleged late payment to which said "Notice" would otherwise apply.

2. Integration with the Georgia Prompt Pay Act:

Unless otherwise provided in these Contract Documents, the parties hereto agree that these provisions of this Prompt Payment Clause supersede and control all provisions of the Georgia Prompt Pay Act (O.C.G.A. 13-11-1 through 13-11-11 (1994)), as originally enacted and as amended, and that any dispute arising between the parties hereto as to whether or not the provisions of this contract or the Georgia Prompt Pay Act control will be resolved in favor of these Contract Documents and its terms.

1.7 SUBSURFACE AND PHYSICAL CONDITIONS

- A. All excavation is considered unclassified excavation.

END OF SECTION

**SECTION 01 11 00
SUMMARY OF WORK**

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work to be done under this Contract shall include the furnishing of all materials, equipment, labor and means of construction necessary for the construction of the City of Cumming – HIGHWAY 20 FORCE MAIN EXTENSION – POST RD TO CHAMBLEE GAP RD and all other work as shown on the Contract Drawings and/or as specified herein including.
- B. Work shall include clean-up and dress-up and all repair work necessary to restore pavement, lawns, and finished areas as closely as possible to their original condition following installation of the work.
- C. All work pertaining to any requirements contained herein shall be included in the overall bid submitted unless such cost is designated as a separate pay item in the Bid Schedule.
- D. Contractor shall be responsible for obtaining and paying for all necessary local and state licenses, permits and taxes.
- E. The Contractor will be required to deliver all equipment, pipe, valves, and other materials to the location of installation. Care shall be exercised in handling all materials and equipment, and the Contractor will be held responsible for all breakage or damage to same.

1.2 WORK AND MATERIALS BY THE OWNER

- A. The Owner will furnish all water for construction operations and for testing.
- B. The Contractor shall make his own arrangements to convey the water from the Owner's tap to points of construction.
- C. The Owner shall provide personnel to operate all necessary valves in existing system and will oversee all necessary taps and connections to existing lines made by the Contractor's personnel.

1.3 OR APPROVED EQUIVALENT CLAUSE

- A. Whenever a material or article required is specified or shown on the Contract Drawings by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article which will meet design criteria and is equal in function and durability, as determined by the Engineer, will be considered acceptable.

1.4 COMPLIANCE OF WORK WITH SPECIFICATIONS

- A. The Contractor will be supplied with three sets of the Drawings and Specifications. Of these sets, one complete set shall be available on the job site at all times.
- B. Should any portion of the Drawings and/or Specifications be obscure or in dispute, it shall be referred to the Engineer and he shall decide as to the true meaning and intent. He shall have the right to correct errors and omissions at any time when those corrections are necessary for the proper fulfillment of the Drawings and Specifications.
- C. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether or not the work performed and materials used are in accord with the requirements and intent of the Specifications and Drawings. The Contractor shall give the work the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer and with other contractors in every way possible.
- D. The Contractor shall employ only competent and skilled personnel on the work. At all times when the work is in progress, the Contractor shall have a competent Superintendent or Foreman present with authority to receive orders, execute the work and to promptly supply materials, tools, plant equipment and labor as may be required. Should the Engineer so demand, the Contractor shall immediately remove any Superintendent, Foreman or worker whom the Engineer considers incompetent, undesirable, or both.

- E. The Project Engineer shall be authorized to inspect all work done and all materials furnished, including the preparation, fabrication and manufacture of the materials to be used. The Project Engineer shall be authorized to alter or waive the requirements of the Specifications. He may reject materials and suspend the work.
- F. No work shall be done nor materials used without suitable supervision and/or inspection by the Engineer or his representative. Failure to reject defective work and/or materials shall not in any way preclude later rejection when that defect is discovered or obligate the Owner to final acceptance.
- G. Inspection of the work shall not relieve the Contractor of his obligation to fulfill his contract. Defective work shall be made good even if such work and/or materials have been previously inspected by the Engineer or his representative and accepted or included in an estimate for payment. All rejected work and/or materials shall immediately be removed and replaced with materials and work in accord with the Specifications and Drawings. If the Contractor fails to remove the defective work and/or materials within ten days after having been ordered to do so, the Owner shall have the right and authority to stop the Contractor and suspend the work at once and to supply personnel and material to remove and replace that defective work and/or materials at the expense of the Contractor.

1.5 CONFLICTING REQUIREMENTS

- A. In case of conflict between the requirements in the Technical Specifications, that requirement which is in compliance with all the applicable codes and which is, in the opinion of the Engineer, more advantageous to the Owner, shall govern. This shall apply to all requirements indicated by the Technical Specifications of the Contract Documents.

1.6 EROSION CONTROL MONITORING

- A. The contractor shall comply with the requirements of the State of Georgia General NPDES Permit for Storm Water Discharges from Construction Activities, General Permit No. GAR 100000. The cost of the work from the Notice of Intent to the Notice of Termination and all other activities related to the Erosion and Sedimentation Control Program shall be included in the Lump Sum Bid Item for Erosion Control Monitoring in the Bid Schedule.

END OF SECTION

**SECTION 01 22 00
MEASUREMENT AND PAYMENT**

PART 1 GENERAL

1.1 SCOPE

- A. The Bid lists each item of the Project for which payment will be made. No payment will be made for any items other than those listed in the Bid.
- B. Required items of work and incidentals necessary for the satisfactory completion of the work which are not specifically listed in the Bid, and which are not specified in this Section to be measured or to be included in one of the items listed in the Bid, shall be considered as incidental to the work. All costs thereof, including Contractor's overhead costs and profit, shall be considered as included in the lump sum or unit prices bid for the various Bid items. The Contractor shall prepare the Bid accordingly.
- C. Work includes furnishing all labor, equipment, tools and materials, which are not furnished by the Owner and performing all operations required to complete the work satisfactorily, in place, as specified and as indicated on the Drawings.

1.2 DESCRIPTIONS

- A. Measurement of an item of work will be by the unit indicated in the Bid.
- B. Final payment quantities shall be determined from the record drawings. The record drawing lengths, dimensions, quantities, etc., shall be determined by a measurement by the Engineer for any Unit Price Bid items after the completion of all required work. The precision of final payment quantities shall match the precision shown for that item in the Bid.
- C. Payment will include all necessary and incidental related work not specified to be included in any other item of work listed in the Bid.
- D. Unless otherwise stated in individual Sections of the Specifications or in the Bid, no separate payment will be made for any item of work, materials, parts, equipment, supplies or related items required to perform and complete the work. The costs for all such items required shall be included in the price bid for item of which it is a part.

- E. Payment will be made by extending unit prices multiplied by quantities provided and then summing the extended prices to reflect actual work. Such price and payment shall constitute full compensation to the Contractor for furnishing all labor, equipment, tools and materials not furnished by the Owner and for performing all operations required to provide to the Owner the entire Project, complete in place, as specified and as indicated on the Contract Drawings.

1.3 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS:

- A. Payment will not be made for following:

1. Loading, hauling, and disposing of rejected material.
2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
4. Material not unloaded from transporting vehicle.
5. Material and equipment not properly stored.
6. Defective Work not accepted by Owner.
7. Material remaining on hand after completion of work.

1.4 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

- A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings or preliminary operation and maintenance manuals are acceptable to Engineer.
- B. Final Payment: Will be made only for products incorporated in work; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.5 CLEARING AND GRUBBING

- A. No separate payment shall be made for clearing and grubbing.
- B. The cost of moving and re-establishing landscape features, including labor and materials, shall be included in the Unit Price for this Bid Item affected by the moving or relocation.

1.6 EROSION AND SEDIMENTATION CONTROL

A. General:

1. No separate payment shall be made for temporary and/or permanent erosion and sedimentation controls. All other temporary and/or permanent erosion and sedimentation control costs shall be included in the price bid for the item to which it pertains. When ordered by the Engineer, additional work or increases in the quantities of certain classes of work over those called out on the Drawings may be required. Quantities for payment shall be based upon actual quantity constructed and authorized by the Engineer.
2. No payment will be made for any portion of the Project for which temporary erosion and sedimentation controls are not properly maintained.

B. Construction Exits: All costs for construction exits, including installation, maintenance, repair, and removal shall be included in the Unit Price for this Bid Item.

C. Type Sensitive Silt Fence: All costs for reinforced silt fence, including installation, maintenance, repair, replacement, and removal shall be included in the Unit Price for this Bid Item.

D. Permanent Sodding:

1. No separate payment will be made for temporary grassing.
2. Payment shall be made only for the final permanent perennial grassing. All costs for grassing, including seed bed preparation, topsoiling, seeding, fertilizing, mulching as well as temporary measures, shall be included in the Unit Price for this Bid Item.

E. Temporary Stream Crossings: All costs for temporary stream crossings, including all materials, installation, maintenance, repair, replacement, and removal shall be included in the Unit Price for this Bid Item. All pipe and stone required for each crossing shall be included in the Unit Price for this Bid Item.

1.7 DIP FORCE MAIN

- A. Payment for force main pipe shall be per linear foot of pipe installed. Depth of force main line shall be determined from the Construction Drawings unless the contractor notifies the Engineer prior to installation of the pipe that the actual topographic conditions are different from what is shown on the Construction Drawings so as to cause a change in depth. Upon such notification, the Engineer will make the necessary measurements to confirm or refute a discrepancy. However, no claim for additional payment will be allowed when a change in alignment or grade has been made without approval of the Engineer.
- B. The measurement of the length of each line or run of pipe will begin and end at:
 - 1. The end of the pipe where not connected to any other pipe fitting or structure under this Contract;
 - 2. The point of connection to any existing pipe or fitting;
 - 3. The point of connection with the item limit of any Lump Sum bid item which includes the pipe;
 - 4. The point of connection of runs and branches of tees, crosses and Y-branches not included in Lump Sum items, where branches or connection lines are constructed under this Contract.
- C. The measurement of each line or run of pipe of each size which is to be paid for on a Unit Price basis, will not include lengths occupied by valves or fittings installed between the ends of each such line.

1.8 DUCTILE IRON FITTINGS

- A. The Unit Price named in the Bid Schedule for ductile iron fittings shall include all labor and materials necessary to install the fitting, as per the Contract. Megalugs are required on all fittings in lieu of the standard mechanical joint gland. However, megalugs are not required on solid sleeves. Cost of megalugs shall be included in the price for ductile iron fittings. Weight of megalugs shall be included in the tonnage of ductile iron fittings. NO payment will be made for bolts, nuts, glands, etc.

1.9 CONCRETE BLOCKING

- A. Concrete for blocking of pipe and fittings will be measured for payment as the volume of concrete computed using the dimensions shown on the standard detail drawings for such blocking, unless otherwise authorized by the Engineer.

- B. All Concrete which is required in connection with manholes or structures, pavement or sidewalk replacement, and other pay items shall be included in the Lump Sum or Unit Price bid for the pay item associated with it and NOT concrete blocking.

1.10 GRAVITY SEWER

- A. Gravity sewer which is to be paid for on a unit price basis will be measured for payment after installation on the basis of the pipeline stationing as determined by the pipeline installation surveys, with all stations carefully measured.
- B. The measurement of each line or run of pipe of each size which is to be paid for on a Unit Price basis, will not include lengths occupied by manholes installed between the ends of each such line.
- C. Cut classification for gravity sewer shall be determined from the Construction Drawings unless the Contractor notifies the Engineer prior to installation of the pipe that the actual topographic conditions are different from what is shown on the Drawings so as to cause a change in cut classification. Upon such notification, the Engineer will make the necessary measurements to confirm or refute a discrepancy. However, no claim for additional payment will be allowed when a change in alignment or grade has been made without approval of the Engineer; and, in this case, or when no change in cut classification is confirmed, the Contractor shall pay to the Owner all additional costs incurred in making such a determination.

1.11 MANHOLES

- A. The price for manhole construction shall be divided into two prices. The price for manholes shall include the price for 4-foot base section, invert, casting and testing. The price for the riser shall be for the riser and transition section. Measurement for the riser shall be from the top of the 4-foot base section to the top of the manhole, including the transition section. The measurement computation will be by measuring the height from the top of the manhole to the invert (lowest point) and deducting 4.00 feet to account for the base.

1.12 OUTSIDE DROP PIPING

- A. Measurement for outside drop piping shall be defined as the invert of tee to the invert of the 90° bend. Included in this Bid item shall be pipe, tee, 90° bend and all appurtenances necessary to make the connection to a manhole.

1.13 MANHOLE VENT PIPING

- A. Measurement for Schedule 80 steel vent piping shall be defined by height “H” in the standard detail. All concrete, connections, fittings and other appurtenances shall be included in the Unit Price for manholes.

1.14 TRENCH EXCAVATION AND BACKFILL

- A. No separate or additional payment shall be made for any special or unique method, means, techniques or equipment necessary for the Contractor's compliance with these Specifications, regulatory requirements, permits, laws or regulations which govern this Project.
- B. Trench Excavation: No separate payment shall be made for trench excavation. All costs shall be included in the Unit Price for this Bid Item.
- C. Sheeting, Bracing and Shoring: No separate payment will be made for providing sheeting, bracing, shoring and timbering.
- D. Trench Rock Excavation: No separate payment will be made for trench rock excavation.
- E. Dewatering Excavations: All costs of equipment, labor and materials required for dewatering shall be included in the Unit Price for this Bid Item.

1.15 SITE UTILITIES

- A. Solid sleeves, fittings and piping necessary for connections to existing site utilities, if not shown on the Contract Drawings, shall be included in the Unit Price for that pipe associated with the connection. No payment will be made for fittings provided due to the Contractor's sequence of construction, layout problems, tie-ins or repairs.

1.16 CASING PIPE

- A. Where casing pipe is to be shown as bored and jacked, the actual length of usable casing shall be paid for at the Unit Price bid. Casings which are bored off line, or off grade, and late abandoned, will not be paid for.

1.17 PIPE IN CASING

- A. Where a gravity sewer pipe is to be installed in a casing, it shall be paid for at the price bid for the 0'-6' deep cut classification.
- B. Where a force main is to be installed in a casing, it shall be paid for at the price bid for the force main within the casing.

1.18 AIR/VACUUM VALVE ASSEMBLY

- A. Complete sewage air release valve assembly including manhole, frame and cover, gravel, 2” galvanized steel vent, force main tee, 2” gate valve and 2” air and vacuum valve shall be paid for in the Unit Price for this BID Item.

1.19 MARKER BALLS

- A. The Unit Price named in the Bid Schedule for Marker balls on the existing 8-inch force main shall include all appurtenances shown in the Standard Detail. Marker Balls shall be installed at all fittings and every 100-LF along straight sections of the existing 8-inch force main pipe.
- B. The Unit Price named in the Bid Schedule for Marker balls on the new 14-inch force main shall include all appurtenances shown in the Standard Detail. Marker Balls shall be installed at all fittings and every 100-LF along straight sections of the proposed 14-inch force main pipe.

1.20 PAVEMENT REPLACEMENT

- A. Payment for pavement replacement, if required, shall be included with the Unit Price for the pipe or structures affected by replacement and shall include removing existing pavement and installing new concrete pavement and bituminous surfacing. Maximum trench widths are as specified in the PIPELINE EXCAVATION & BACKFILL Section and extra concrete cap and paving width required due to sloping trench sides shall be provided at no additional cost to the Owner.

1.21 MAINTENANCE OF TRAFFIC

- A. No separate payment shall be made for maintenance of traffic required for construction. All costs shall be included in the Unit Price for the associated Bid Item.

1.22 STABILIZATION STONE

- A. Where called for by the Engineer, stone, in addition to that required as bedding or sand cushion, shall be used to stabilize poor soil. The extent of stabilization stone shall be determined by the Engineer at the time when the stone is placed. Measurement will be on a volume basis and a unit stone weight of 100 pounds per cubic foot shall be used.

1.23 STAKING

- A. Contractor shall contract with a surveyor competent in reading and interpreting sewer construction plans to provide all staking of piping, fittings and structures. Staking shall include offset and cut stakes at 50-foot even stations and at all fittings. Staking shall be done 7-days prior to the construction of the sewer line work to allow time for Owner and Engineer to verify locations of proposed utilities. Engineer will provide AutoCAD drawings with infrastructure located in State Plane Coordinates.

1.24 OWNER CONTINGENCY ALLOWANCE:

- A. This item shall be used for payment for additional Work performed at the discretion and direction of the Owner and the Engineer which is not included in the other Bid Items on the Bid Form. The Contingency or portion thereof shall not be paid to the Contractor except for additional work ordered in writing by the Engineer. A cost proposal for each item of additional work shall be prepared by the Contractor in accordance with the General Conditions for the Engineer's review as required by the General Conditions and other Sections of the Specifications. The total amount of Contingency funds paid to the Contractor shall be the total amount agreed to and ordered performed, which shall not necessarily be the total amount shown in the Bid Schedule.

1.25 VALVES

- A. Payment for valves shall include valve box, marker and megalug, if required, and shall be at the Unit Price shown in the Bid Schedule.

END OF SECTION

**SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.1 PRE-CONSTRUCTION CONFERENCE

- A. The Engineer shall schedule the pre-construction conference prior to the issuance of the Notice to Proceed.
- B. Representatives of the following parties are to be in attendance at the meeting:
 - 1. Owner.
 - 2. Engineer.
 - 3. Contractor and superintendent.
 - 4. Major subcontractors.
 - 5. Representatives of governmental or regulatory agencies when appropriate.
- C. The agenda for the pre-construction conference shall consist of the following as a minimum:
 - 1. Distribute and discuss a list of major subcontractors and a tentative construction schedule.
 - 2. Critical work sequencing.
 - 3. Designation of responsible personnel and emergency telephone numbers.
 - 4. Processing of field decisions and change orders.
 - 5. Adequacy of distribution of Contract Documents.
 - 6. Schedule and submittal of shop drawings, product data and samples.
 - 7. Pay request format, submittal cutoff date, pay date and retainage.

1.2 COORDINATION WITH PROJECT ENGINEER

- A. During the course of work under this Contract, the Contractor shall be responsible for keeping the Project Engineer informed of his work schedule and of his requirements concerning staking and inspection as herein specified.

- B. In the event that any work subject to inspection or testing by the Project Engineer is installed without notification in time for such testing or inspection to be done, that work shall be subject to removal and replacement by the Contractor at no additional cost to the Owner.
- C. The Contractor shall not put workers on the job or perform any work on any portion of the project without prior knowledge of the Project Engineer that such work is to be done, the place of work, and the scheduled starting time. A minimum 24-hour notification to the Project Engineer is required.

1.3 PROGRESS MEETINGS

- A. Contractor shall schedule and hold periodic progress meetings at least every month just prior to submittal of the monthly partial payment request and at other times as requested by Engineer or required by progress of the work. Contractor, Engineer, and all Subcontractors active on the site shall be represented at each meeting. Contractor may at his discretion request attendance by representatives of his suppliers, manufacturers, and other Subcontractors.
- B. Contractor shall preside at the meetings and provide for keeping and distribution of the minutes. The purpose of the meetings will be to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.
- C. The periodic progress meetings will generally have the following agenda:
 - 1. Review work progress since last meeting.
 - 2. Discussion of Construction Schedule for next period.
 - 3. Status of major equipment and material deliveries.
 - 4. Construction problems impacting progress.
 - 5. Field observations.
 - 6. Status of pending changes.
 - 7. Other business.

1.4 CONSTRUCTION SCHEDULE

- A. The Contractor shall submit to the Owner an Estimated Construction Progress Schedule immediately after execution and delivery of the Contract and before the first partial payment is made.

- B. The Schedule shall show the anticipated dates of commencement and completion of each of the various types of work required under the Contract Documents and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the Progress Schedule.
- C. The construction costs employed in making up these Schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis of additions to or deductions from the Contract price.

1.5 PROJECT LAYOUT

- A. The Engineer will furnish the Contractor with a list of coordinates for the various project structures, as well as bench mark locations and elevations. The Contractor shall be responsible for verifying these elevations and locations and for laying out the Work. The cost of this surveying shall be the responsibility of the Contractor.

1.6 SAFETY REQUIREMENTS

- A. All construction work on public rights-of-way shall be done in accordance with the rules and regulations of the agency having control. All safety equipment and markings shall be furnished by the Contractor.
- B. Work done on such rights-of-way shall be done only with the written consent of and in strict accordance with the Specifications of the right-of-way owner.
- C. It shall be the responsibility of the Contractor to notify the right-of-way owner's field engineer before doing any work within the right-of-way.
- D. All construction work shall be performed in accordance with established construction safety standards, and the Contractor shall be responsible for the safety of his employees and the public. All applicable local, state and Federal regulations, including the Department of Labor, Occupational Safety and Health Administration, (OSHA), 29 CFR Part 1926, Subpart P, latest edition shall be adhered to by the Contractor.

END OF SECTION

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART 1 GENERAL

1.1 SCOPE

- A. The work under this Section includes submittal to the Engineer of shop drawings, product data and samples required by the various Sections of these Specifications.
- B. Within 30 days after Notice to Proceed is issued, the Contractor shall review, approve and submit one (1) electronic copy in PDF format of all shop drawings and/or manufacturers' descriptions sheets for all materials and/or equipment for the approval of the Engineer.
- C. Definitions: Submittals are categorized as follows:
 - 1. Shop Drawings:
 - a. Shop drawings shall include technical data, drawings, diagrams, procedures and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.
 - b. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name or preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detailed shop drawings. Show dimensions and note dimensions that are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop drawings to be used in connection with the work without appropriate final "Action" markings by the Engineer.
 - c. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet and detail, Specification Section, schedule or room numbers shown on the Contract Drawings.
 - d. Minimum assembly drawings sheet size shall be 11 x 17-inches.
 - e. Minimum detail sheet size shall be 8-1/2 x 11-inches.
 - f. Minimum Scale:
 - 1. Civil / Site: 1-inch = 30 feet.
 - 2. All others: 1/4-inch = 1 foot.

2. Product Data:
 - a. Product data includes standard printed information on materials, products and systems, not specially prepared for this Project, other than the designation of selections from among available choices printed therein.
 - b. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to the Project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements that have been checked and special coordination requirements.
3. Samples:
 - a. Samples include both fabricated and un-fabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or, where indicated, for more detailed testing and analysis.
 - b. Provide units identical with final condition of proposed materials or products for the work. Include “range” samples, not less than three units, where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide a full set of optional samples where the Engineer's selection is required. Prepare samples to match the Engineer's sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations and compliance with standards. Samples shall be submitted to the Engineer for review to confirm the color, pattern, texture and “kind”. The Engineer will note “test” samples, except as otherwise indicated, for other requirements, which are the exclusive responsibility of the Contractor.
 - c. Miscellaneous submittals related directly to the work (non-administrative) include warranties, maintenance agreements, workmanship bonds, Project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the work but not processed as shop drawings, product data or samples.

1.2 SPECIFIC CATEGORY REQUIREMENTS

- A. General: Except as otherwise indicated in the individual work sections, comply with the general requirements specified herein for each indicated category of submittal. Submittals shall contain:
 1. The date of submittal and the dates of any previous submittals.

2. The Project title.
3. The submittal number as indicated as follows:
 - a. Submittal Identification and Packaging: Shop drawing submittals to the Engineer shall be numbered beginning with 1, with the applicable Specification Section in parenthesis after the submittal number. Should any submittal be returned for resubmittal, that resubmittal shall be numbered 1.1 and so on. The Contractor shall identify as an activity in the CPM schedule, all major equipment submittals as well as those involving complex reviews and long lead deliveries. Submittal schedule information shall be updated monthly with the Contractor's updated Project CPM schedule.
 - b. Contractor
 - c. Supplier
 - d. Manufacturer
4. Identification of the product, with the Specification Section number, permanent equipment tag numbers and applicable Drawing No.
5. Field dimensions, clearly identified as such.
6. Relation to adjacent or critical features of the work or materials.
7. Applicable standards, such as ASTM or Federal specification numbers.
8. Notification to the Engineer in writing of any deviations to the requirements of the Contract Documents. The notification of deviation shall be clearly marked by the Contractor in the body of the submittal and stated in text in the Contractor's remarks on the transmittal document of the submittal. Indicate the reasons for the deviations and the benefits to the Project.
9. Identification of revisions on re-submittals.
10. An 8 x 3-inch blank space for Contractor and Engineer stamps.
11. A stamp, initialed or signed, certifying the Contractor's review of the submittal and indicating the submittal's status relative to the requirements of the Contract Documents.

1.3 ROUTING OF SUBMITTALS

- A. Submittals and routine correspondence shall be routed as follows:
1. Supplier to Contractor (through representative if applicable)
 2. Contractor to Engineer
 3. Engineer to Contractor and Owner
 4. Contractor to Supplier

1.4 SUBMITTAL LOG

- A. The submittal log shall be created by the Engineer and issued to the Contractor as the complete listing of submittals required for the Project.

PART 2 PRODUCTS

2.1 SHOP DRAWINGS

- A. Unless otherwise specifically directed by the Engineer, make all shop drawings accurately to scale and large enough and in sufficient detail to show all pertinent features of the submitted item and its method of connection to the work.
- B. Submit all shop drawings larger than 11” x 17” in the form of one clean black and white copy.

2.2 MANUFACTURER’S LITERATURE

- A. Where the content of submitted literature from manufacturers includes data not pertinent to this submittal, clearly indicate which portion of the contents is being submitted for the Engineer's review.

2.3 SAMPLES

- A. Samples shall illustrate the material, workmanship and established standards by which completed work is judged.
- B. Unless otherwise specifically directed by the Engineer, all samples shall be made of and derived from the proposed product to be furnished.
- C. Submit the number of samples that are desired by the Contractor to be returned plus one sample, which will be retained by the Engineer on site. Samples shall be reviewed and comments, if any, returned to the Contractor electronically with the status of the submittal indicated.

2.4 COLORS

- A. Unless the precise color and pattern is specifically described in the Contract Documents, wherever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the Engineer for review and selection.
- B. Submit the number of color and pattern charts that are desired by the Contractor to be returned plus three charts to be retained by the Engineer.

- C. Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited to the installation, completely describe the relative costs and capabilities of each.

PART 3 EXECUTION

3.1 CONTRACTOR’S COORDINATION OF SUBMITTALS

- A. Prior to submittal for the Engineer's review, the Contractor shall use all means necessary to fully coordinate all material and products, including the following procedures:
 - 1. Determine and verify all field dimensions and conditions, catalog numbers and similar data.
 - 2. Coordinate as required with all trades and all public agencies involved.
 - 3. Submit a written statement of review and certification of compliance with the requirements of all applicable technical Specifications as well as the requirements of this Section.
 - 4. Clearly indicate in a letter or memorandum on the manufacturer's or fabricator's letterhead, all deviations from the Contract Documents. Clearly mark the deviation in the body of the submittal and state the deviation on the transmittal form of the submittal. Describe the benefits and reasons for the deviation.
- B. Each shop drawing sheet and the cover page of all data shall bear the Contractor's stamp showing that the submittal has been fully reviewed. Shop drawings submitted to the Engineer without the Contractor's stamp will not be reviewed by the Engineer. The submittal will be returned to the Contractor for conformance with this requirement.
- C. The Owner, at its discretion, may charge the Contractor for the Engineer’s review cost if more than two reviews of a submittal occur before a “No Exceptions Taken” status is achieved.
- D. Packaging of Submittals:
 - 1. Submittals shall be packaged. Submittals in packages shall be submitted simultaneously. Unless otherwise specifically permitted by the Engineer, make all submittals in packages containing all submittals indicated by the submittal log to be packaged together.

2. No review will be given to partial submittals or incomplete packages of submittals. It is the Contractor's responsibility to assemble the shop drawings for interconnecting and interdependent items, check them and then make one submittal to the Engineer along with Contractor's comments as to compliance, non-compliance or features requiring special attention.
 3. The Engineer will provide the Contractor the list of packages with the submittal log.
- E. List of Submittals: The Engineer will create the submittal log and identify how the submittals are to be packaged. The Contractor may propose changes and supplements to the log.

3.2 TIMING OF SUBMITTALS

- A. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and re-submittal, and for placing orders and securing delivery. Time lost due to unacceptable submittals shall be the Contractor's responsibility.
- B. In scheduling, allow sufficient time for the Engineer's review following the receipt of the submittal.

3.3 REVIEWED SUBMITTALS

- A. Engineer Review:
 1. Allow 30 days for the Engineer's processing of each submittal, including re-submittals, requiring review and response, except allow longer periods for submittals needing coordination with subsequent submittals. The Engineer shall inform the Contractor promptly when it is determined that a submittal being processed must be held for coordination. Allow a minimum of two weeks for reprocessing each submittal requiring coordination.
 2. Acceptable submittals with no review comment shall be marked "No Exceptions Taken".
 3. Acceptable submittals with a minor comment or comments offered merely to alert the Contractor to some issue or provide information will be marked "No Exceptions Taken with Comment".
 4. Submittals requiring minor corrections will be marked "Make Corrections Noted". The Contractor may order, fabricate and ship the products, provided the indicated corrections are made. A submittal with an "Make Corrections Noted" status must be re-submitted for review and marked "No Exceptions Taken" prior to installation or use of the submitted product.

5. Submittals marked “Rejected” are not acceptable. Upon return of a submittal so marked, the Contractor shall repeat the initial review procedure utilizing acceptable products.
- B. No product shall be installed that does not have a corresponding submittal bearing a status of “No Exceptions Taken” or “No Exceptions Taken With Comment”. The Contractor shall maintain at the job site a complete set of current submittals indicating the review status established by the Engineer.
- C. Substitutions: In the event the Contractor obtains the Engineer's approval for the use of products other than those which are listed first in the Contract Documents, the Contractor shall, at the Contractor's own expense and using methods approved by the Engineer, make any changes to structures, piping and electrical work that may be necessary to accommodate these products.

Use of the “No Exceptions Taken” notation on shop drawings or other submittals is general and shall not relieve the Contractor of the responsibility of furnishing products of the proper dimension, size, quality, quantity, materials and all performance characteristics, to efficiently perform the requirements and intent of the Contract Documents. The Engineer's review shall not relieve the Contractor of responsibility for errors of any kind on the submittals. Review is intended only to assure conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site. The Contractor is also responsible for information that pertains solely to the fabrication processes or to the technique of construction and for the coordination of the work of all trades.

3.4 RE-SUBMISSION REQUIREMENTS

- A. Clearly mark and alert the Engineer to the presence of changes within the re-submittal that are other than those required by the Engineer’s comments on the previous submittal.

END OF SECTION

**SECTION 01 40 00
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.1 REFERENCE STANDARDS

A. Abbreviations used in the Contract Documents are defined as follows:

- | | |
|-------------|---|
| 1. AASHTO | American Association State Highway and Transportation Officials |
| 2. ACI | American Concrete Institute |
| 3. AISC | American Iron and Steel Institute |
| 4. ANSI | American National Standard Institute |
| 5. ASTM | American Society for Testing and Materials |
| 6. AWWA | American Water Works Association |
| 7. CRSI | Concrete Reinforcing Steel Institute |
| 8. Fed Spec | Federal Specifications |
| 9. IBBM | Iron Body, Bronze-Mounted |
| 10. IPS | Iron Pipe Size |
| 11. MIL | Military Specification |
| 12. NPT | National Pipe Thread |
| 13. UL | Underwriter's Laboratories |

1.2 DEFECTIVE WORK

A. All materials furnished and work done by the Contractor at any time during the progress of the work shall be subject to the inspection of the Engineer, who shall have full power to accept or reject any part thereof. The Contractor shall remedy any defective or unsatisfactory work or material at no additional cost to the Owner. In the event the Contractor fails to initiate corrections within 48 hours after written notice, the Engineer shall have full right to have same done and to bill the Contractor for cost thereof. Any condemned material must be removed from the work within 24 hours at no additional cost to the Owner.

1.3 COMPETENT LABOR

A. The Contractor shall employ only competent and skilled personnel on the work. Either the on-site project manager or the field superintendent, as listed in the Contractor's statement of qualifications, must be on site full time for the duration of the project. The on-site project manager or the field superintendent shall have the authority to receive orders and execute the Work. Should there be a change from the listed on-site project manager and/or field superintendent, the Contractor is to submit resume of proposed personnel to Engineer for approval.

1.4 TESTING AND INSPECTION

- A. Testing will be performed according to the procedures detailed for each portion of the utility system improvements. Payment for testing not specifically stated to be paid for by the Owner, is to be included in the construction costs bid for the item to be tested.

END OF SECTION

**SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS**

PART 1 GENERAL

1.1 SCOPE

- A. This Section includes requirements for the installation, maintenance and removal of temporary utilities, controls, facilities and construction aids during construction.

1.2 SANITARY FACILITIES

- A. Contractor must provide portable toilet facilities during construction activities. The Contractor shall pay all costs for sanitary facilities.

1.3 PARKING AND WORK AREAS

- A. The Contractor must park equipment, construction and private vehicles, in a safe manner off all travel lanes.

1.4 EROSION CONTROL

- A. The Contractor shall comply with the requirements of the State of Georgia General NPDES Permit for Storm Water Discharges from Construction Activities, General Permit No. GAR100002. The cost of the work from the Notice of Intent to the Notice of Termination and all other activities related to the Erosion and Sedimentation Control Program shall be included in the overall cost of the project. No separate payment will be made for this work.
- B. All erosion and sedimentation control measures and Best Management Practices (BMPs) must be in conformance to the State of Georgia Erosion and Sedimentation Control Act of 1975, as currently amended. All erosion and sedimentation control measures must be installed in accordance with the Manual for Erosion and Sedimentation Control in Georgia, as currently amended.
- C. At a minimum the General Permit includes having BMP plan on site, initial inspection for BMP record keeping, rain measurement, repairs, etc.
- D. Contractor is responsible for all sampling in order to comply with the General Permit.
- E. All Erosion and Sedimentation control measures must be installed prior to initiation of construction activity.

1.5 TEMPORARY UTILITIES

- A. Potable Water: Potable water will be available from the Owner for drinking from a cooler, etc. Contractor shall pay for all costs to transfer water from source to point of use.
- B. Telephone: Telephone service is not available from the Owner. Contractor shall pay all costs to establish a separate telephone service.
- C. Internet: Contractor must maintain an e-mail account over the duration of the contract.

1.6 DUST CONTROL

- A. The Contractor shall provide dust control at all times, including holidays and weekends, as required to abate dust nuisance on and about the site which is a result of construction activities. Dust control shall be by means of sprinklered water or by other approved methods, except that chemicals, oil, or similar palliatives shall not be used.
- B. Quantities and equipment for dust control shall be sufficient to effectively prevent dust nuisance on and about the jobsite; and when weather conditions warrant, sprinklering equipment shall be on hand at all times for immediate availability.
- C. The Engineer shall have authority to order dust control work whenever conditions warrant, and there shall be no additional cost to the Owner therefore. Dust control shall be effectively maintained whether or not the Engineer orders such work.
- D. Complaints from the public shall be reported to the Engineer and shall be acted on immediately.
- E. Where earthwork operations are in progress, keep exposed earth surfaces dampened continuously. Also, keep dirt access ways and roads dampened continuously.
- F. If portions of the site are temporarily inactive or abandoned for whatever reason, provide dust control and abatement continuously during such periods of inactivity.
- G. Where dust resulting from construction activities has collected on public sidewalks and streets, hose down such sidewalks and streets to abate flying dust particles. Clean all sidewalks and streets from accumulated dirt and dust.

1.7 MUD CONTROL

- A. The Contractor shall take measures to prevent tracking of mud onto public streets, drives, and sidewalks.
- B. All egress from the site shall be maintained in a dry condition, and any mud tracked onto streets, sidewalks, or drives shall be immediately removed, and the affected area shall be cleaned. The Engineer may order such work at any time the conditions warrant.
- C. Where trucks will leave a muddy site and enter paved road surfaces, the Contractor shall maintain a suitable truck wheel-washing facility and crew. All trucks, or other vehicles leaving the site, shall be cleaned of mud and dirt, including mud and dirt clinging to exterior body surfaces of vehicles.
- D. All trucks coming to the jobsite or leaving the jobsite with materials or loose debris shall be loaded in a manner that will prevent dropping of materials or debris on streets. Spillage resulting from hauling operations along or across any public travel way shall be removed immediately.

1.8 EXISTING WASTEWATER MANAGEMENT

- A. Bypassing of raw wastewater onto the ground or into a receiving stream is prohibited.

END OF SECTION

**SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS**

PART 1 GENERAL

1.1 GUARANTEE OF WORK

- A. All work shall be guaranteed against defects in workmanship and material for a period of one year after the date of acceptance by the Owner.

1.2 PUNCH LIST

- A. The Engineer and Owner will perform a Punch List inspection after Substantial Completion.
- B. The punch list is the basis for establishing Final Completion for the Work. The schedule for completing and/or correcting punch list activities shall be no longer than 30 consecutive calendar days for intermediate milestones and 60 consecutive calendar days for final contract completion, but shall be scheduled to conclude on or before the contract completion date and it shall be initiated immediately upon Substantial Completion. The overall Contract duration is based upon a 60-day period following the contractual date for Substantial Completion to establish the contractual date for Final Completion. Later delivery of Substantial Completion shall not revise the Final Acceptance date. Assessment of liquidated damages for late Substantial Completion shall not relieve assessment of liquidated damages for Final Acceptance should Final Acceptance be established beyond the contractual completion date.

1.3 PROJECT RECORD DRAWINGS

- A. Project Record Drawings shall be submitted to the Engineer prior to Final Acceptance for Payment.
- B. Legibly make drawings to record actual construction including, but not limited to:
 - 1. Measured horizontal and vertical locations of underground utilities
 - 2. Field changes of dimensions and details
 - 3. Details not on original Contract Drawings
 - 4. Marker Ball Information

END OF SECTION

**SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES**

PART 1 GENERAL

1.1 RELATED SECTIONS

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

PART 2 PRODUCTS

2.1 CONCRETE FORMS

- A. Forms shall be of plywood or of tongue-and-groove lumber, and shall be of grade and type suitable to obtain the finish required. Forms constructed of tongue-and-groove lumber shall be lined when used for exposed surfaces. Form lining, where used, shall be of tempered fiberboard of not less than 1/8-inch thickness. Metal forms, and other types of manufactured forms, shall not be used unless their use has been authorized by the Engineer. Form ties shall be of the cone nut threaded rod, or standard snap-tie type, and designed so that when removed no metal will be left closer than 1-inch from the finished wall face. The cavities left in faces of concrete work by removal of form ties shall be pointed-up with non-staining, non-shrink mortar. Form ties shall have a working strength of not less than 3,000 lbs. when fully assembled, and shall be as approved by the Engineer.
- B. Concrete form release shall be a non-residual, non-staining chemical type form release such as EZ Strip or Debond Form Locating, as manufactured by L & M Construction Chemicals, Inc., or approved equal.
- C. Concrete curing agent shall be DRESS & SEAL, as manufactured by L & M Construction Chemicals, Inc., or approved equal.
- D. Concrete hardening agent shall be SEAL HARD, as manufactured by L & M Construction Chemicals, Inc., or approved equal.
- E. Water shall be fresh, clean, and free from injurious amounts of oil, acid and alkali.
- F. Water reducing agents, such as Boral SP, shall be used in all walls to reduce potential for honey comb areas. The water reducing agents shall be used in accordance with the manufacturer's recommendations.

2.2 FORM TIES

- A. Form ties shall be of the removable-end, permanently embedded body type and shall have sufficient strength and rigidity to support and maintain the form in proper position and alignment without the use of auxiliary spreaders.

PART 3 EXECUTION

3.1 FORM WORK

- A. Before concrete is placed, forms shall be thoroughly cleaned and coated with a non-staining form release agent, such as EZ Strip or Debond Form Coating, as manufactured by L & M Construction Chemicals, or other approved equal.
- B. Where concrete is placed against gravel or crushed rock which does not contain at least 25% material passing a No. 4 sieve, such surfaces shall be covered with polyethylene film to protect the concrete from loss of water. Joints in the film shall be lapped at least 4".
- C. Form work shall be constructed, braced, and removed in accord with the following:
 - 1. Form work shall be built to conform to the shape, lines, and dimensions of the concrete work. Forms shall be set to line and grade, and shall be braced, tied and secured in a manner which will withstand placing of the concrete, and which will maintain shape and position. Forms shall be tight, and be substantially assembled to prevent bulging and the leaking of concrete. Joints shall be arranged vertically or horizontally. Temporary openings shall be arranged, where required, at the bottoms of wall forms and elsewhere, to facilitate cleaning and inspecting. Lumber used once in forms shall have nails removed, and surfaces in contact with concrete work thoroughly cleaned, before re-use. Wall sleeves, inserts, and openings shall be properly set in form work.
 - 2. Shores shall be used where necessary. If adequate foundations for shores cannot be obtained, trussed supports shall be provided. Structural members, and other work, which will be subject to additional loads during construction, shall be adequately shored to protect that work from distortion and damage.

3. Forms shall not be removed until the member supported thereby has acquired sufficient strength to safely support its own weight, and the load imposed on it. Tie rod clamps shall be loosened 24 hours after concrete has been placed. Standard snap ties shall be removed when forms are stripped; care shall be taken to avoid spoiling concrete surface. Cutting ties back from the face of the wall will not be permitted. Under normal conditions, the time elapsing before the forms may be stripped shall be not less than that shown in the following schedule; the use of the schedule shall not relieve the Contractor from his responsibility for the safety of the structure. Wood forms shall be completely removed from all portions of the work so that no material will remain for termite infestation.
 - a. Slabs: 14 Days
 - b. Columns and Pedestals: 7 Days
 - c. Walls and Vertical Faces Not Supporting Other Work: 2 Days

3.2 EDGES AND CORNERS

- A. Chamfer strips shall be placed in forms to bevel all salient edges and corners except the top edges of walls and slabs which are to be tooled and edges which are to be buried. Unless otherwise noted, bevels shall be 3/4" wide.

3.3 FORM REMOVAL

- A. Forms shall not be removed or disturbed until the concrete has attained sufficient strength to safely support all dead and live loads. Care shall be taken in form removal to avoid surface gouging, corner or edge breakage, and other damage to the concrete.

END OF SECTION

**SECTION 03 20 00
CONCRETE REINFORCING**

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. Section 01 33 00 Submittals Procedures
- B. Section 03 10 00 Concrete Forming and Accessories
- C. Section 03 30 00 Cast-In-Place Concrete

1.2 SCOPE

- A. The work covered by this Section of Specifications consists of furnishing all materials and equipment and performing all labor necessary for furnishing and installing all reinforcing steel, as indicated on the Drawings, as specified, and as required for completion of all work under this Contract.

1.3 SUBMITTALS

- A. The Contractor shall furnish to the Engineer, for checking and approval, seven (7) copies of bending and placing details for steel bar reinforcing which shall show bar size, spacing, bending and tagging identification. No manufacture or fabrication shall commence until such drawings have been approved.

PART 2 PRODUCTS

2.1 REINFORCING STEEL

- A. Bar reinforcement shall be furnished by domestic steel mills.
- B. Steel bar reinforcement shall conform to the requirements of ASTM A615-75, (Grade 60), as amended to date, subject to the following restrictions:
 - 1. Billet Steel: Billet steel shall be made by the open hearth process.
 - 2. Cold Twisted Bars: The use of cold twisted bars will not be permitted.
 - 3. Test Specimens: Test specimens shall be a minimum of 48 inches.
 - 4. Deformed Bars: Steel bar reinforcement shall be of an approved deformed type, such that a mechanical bond will be provided between concrete and steel at frequent intervals.

- C. Steel bar reinforcement shall be cold bent to shapes indicated on the Drawings. Bending shall be done in the shop before shipment unless otherwise specified. Bending details for steel bar reinforcement shall conform to the requirements of the ACI Building Code (ACI-318-83) unless otherwise indicated on the Drawings or specified. Steel bar reinforcement shall be bent, bundled, and tagged in accordance with details furnished by the fabricator.
- D. Steel bar reinforcement shall be furnished full length unless otherwise indicated on the Drawings, or approved by the Engineer. Splices, where permitted, shall be well distributed or located at points of low tensile stress. Splices and dowels, except when used in cantilever wall or slab construction shall lap not less than 30 times the diameter of the bar. Splices and dowels used in cantilever wall or slab construction shall lap 40 diameters. Splices in horizontal reinforcement shall be staggered. The minimum clear distance between spliced bars, except when bar clamps are specified, shall be 1-1/2 bar diameters, but in no case less than 1-inch, nor less than 1-1/2 times the maximum size of coarse aggregate.
- E. Hooks of 180 degrees shall have a radius of bend on the axis of the bar of not less than three bar diameters plus an extension of four bar diameters at the free end. Hooks of 90 degrees shall have a radius of bend on the axis of the bar of not less than four bar diameters plus an extension of twelve bar diameters at the free end.
- F. Openings 12-inches and larger through concrete walls and slabs shall have a minimum of 8 extra diagonal bars in each face of the wall or slab of the same size as the largest bar in the wall or slab. The length of extra diagonal bars at openings shall be as shown on the Drawings, or as directed by the Engineer.
- G. Concrete walls, slabs, and other concrete work shown on the Drawings to have no reinforcing, shall have a minimum area of steel bar reinforcing equal to 0.003 times the cross-sectional area of the concrete work.

PART 3 EXECUTION

3.1 STEEL BAR REINFORCEMENT

- A. Steel bar reinforcement shall be placed in the locations shown on the Drawings and held securely in place during the placing of concrete. The pushing of short bars into new concrete work will not be permitted. Bar reinforcing in walls shall be spaced the proper distance from the face of the wall by the use of approved precast concrete mortar blocks. Bar reinforcing in slabs or beams shall be spaced the proper distance from the bottom of the slabs or beams by use of approved precast concrete mortar blocks or stainless steel chairs. Vertical stirrups shall always pass around main tension members, and be securely attached thereto. Bar spacing, covering, minimum clearance, bond and anchorage shall conform to the requirements of the ACI Building Code (ACI-318-83), as amended to date, except as otherwise indicated on the Drawings or specified.

- B. Steel bar reinforcing, when properly placed, shall be securely wired together at intersections with 18-gauge black annealed wire. Prior to the placing of concrete, all mortar and other foreign matter which may reduce or destroy bond shall be removed from the reinforcement. No concrete shall be deposited until the placement of the reinforcing has been approved by the Engineer.

- C. Steel reinforcement shall be stored above the surface of the ground upon platforms, skids, or other supports, and shall be protected as far as practicable from mechanical injury and surface deterioration. When placed in the work, it shall be free from rust, dirt, scale, paint, oil, or other foreign matter which may reduce or destroy bond.

END OF SECTION

**SECTION 03 30 00
CAST-IN-PLACE CONCRETE**

PART 1 GENERAL

1.1 RELATED SECTIONS

- A. Section 01 33 00 Submittal Procedures
- B. Section 03 10 00 Concrete Forming and Accessories
- C. Section 03 20 00 Concrete Reinforcing

1.2 SCOPE

- A. The work covered by this Section consists of furnishing all materials and equipment, and performing all labor necessary for the complete construction of all cast-in-place concrete work as shown on the Contract Drawings and as specified.
- B. The work shall include the installation of all sleeves, inserts, piping, hangers, anchors, frames and all other items to be built into the concrete work and all other work and appurtenances, for proper execution of the work.
- C. All items of work shall be inspected and approved by the Engineer before any concrete is placed.

1.3 GENERAL REQUIREMENTS

- A. Concrete shall be composed of cement, fine aggregate, coarse aggregate, and water proportioned and mixed to produce a plastic workable mix in accord with the requirements of this Section.
- B. Concrete shall be classified as Class "A" or "B"; shall have normal setting characteristics; shall have 28-day compressive strengths (two cylinder average strength) not less than those listed below. High early strength cement may be used under special conditions and its use must be approved by the Engineer. Concrete containing high early cement shall have a 7-day compressive strength not less than those listed below.
 - 1. Class "A" concrete shall have a compressive strength of not less than 4,000 psi and shall be used for all reinforced concrete work, unless otherwise indicated.
 - 2. Class "B" concrete shall have a compressive strength of not less than 3,000 psi and shall be used for concrete duct bank, pipe thrust block and all other work as indicated on the Drawings.
- C. Concrete shall comply with all provisions of ACI 350-01, or latest edition.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Admixture shall be added to Class "A" and Class "B". The admixture shall be Master Builders' "Pozzolith", or approved equal, and shall be added in accord with the admixture manufacturer's printed instructions. A standard dispenser shall be used to introduce the admixture into the mix, and the services of the admixture manufacturer's representative to install and establish the operation of the dispenser shall be furnished by the Contractor. Plasticizing agents or other moisture reducing agents should be used to increase concrete workability for low W/C ratio mixes. Air-entraining admixtures shall conform to "Specification for Air-Entraining Admixtures for Concrete", ASTM C260.
- B. Fine aggregate shall be natural and consisting of hard, strong, durable, and uncoated particles having fineness modulus of not less than 2.30 nor more than 3.00; variation in fineness modulus shall be limited to +0.20 from the average of all tests. Aggregate shall satisfy the requirements of Federal Specifications SS-A-281b, Class 1, Grade A, or ASTM C33, and have gradation as follows:

<u>Sieve Size</u>	<u>Percent Passing, By Weight</u>
No. 4 Sieve	94 to 100
No. 16 Sieve	50 to 85
No. 50 Sieve	10 to 30
No. 100 Sieve	2 to 10

- C. Coarse aggregate shall be washed gravel or crushed stone consisting of hard, strong, durable, and uncoated particles, and shall contain neither vegetable matter nor soft, friable, thin, and elongated particles in quantities considered deleterious by the Engineer. Coarse aggregate shall satisfy the requirements of Federal Specifications SS-A-281b, Class 2, Grade A, or ASTM C33; and have gradation as follows:

<u>Sieve Size</u>	<u>Percent Passing, By Weight</u>
1 to 1/2" Sieve	100
1" Sieve	95 to 100
2" Sieve	25 to 60
No. 4 Sieve	0 to 10
No. 8 Sieve	0 to 5

- D. Cement shall satisfy the requirements of ASTM C150; cement for normal Class "A" and "B" concrete shall be Type IA or IIA; cement for high early strength Class "A" concrete shall be Type IIIA. Type III cement shall be used only if its use is approved by the Engineer. In lieu of Type IA, IIA or IIA cement, Type I, II or III cement may be used with approved air entrainment add mixtures as specified below.

- E. Ground granulated blast-furnace slag shall not be used in Class "A" concrete.

2.2 LIMITING REQUIREMENTS FOR CLASS "A" AND CLASS "B"

- A. Total Water Content for Class "A": Total water content of concrete shall not exceed 5.40 gallons of water per hundred pounds of cement in the mix, i.e., W/C less than 0.45 by weight.
- B. Slump for Class "A" and Class "B": Concrete slump shall be kept as low as possible consistent with proper handling and thorough compaction. Unless otherwise authorized by the Engineer, slump shall not exceed 4", before the addition of admixtures.
- C. Air-Entrainment for Class "A": The minimum air-entrainment shall be 5 percent, plus or minus 1 percent.
- D. Total Water Content for Class "B": The total water content of concrete shall not exceed 6.90 gallons of water per hundred pounds of cement in the mix, i.e. water content less than 0.57 by weight.

2.3 DESIGN MIX

- A. Design mix for each classification of concrete to be used in the work shall be prepared and tested by the independent, commercial, testing laboratory selected by the Contractor and approved by the Engineer for the testing of materials. Design mix shall be on the basis of 95% of 28-day two-cylinder averages being greater than the required design strength. The design mix shall be prepared using samples of the cement, admixture (if required), and the aggregates to be used in the work. Not fewer than eight (8) cylinders shall be made from the design mix for each classification of concrete; two (2) shall be tested at 7 days, two (2) tested at 14 days, two (2) tested at 28 days and two (2) shall be tested at 56 days. Cylinders shall be made and tested in accord with ASTM C31 and C39.
- B. If the design mix, based on trial batches, does not have sufficient data to establish a standard deviation, it shall not be considered acceptable if the concrete resulting from the design mix does not produce an average 28-day compressive strength at least 1,200 psi higher than specified for Class A concrete.

2.4 PROPORTIONING

- A. Proportioning of material shall be accomplished in a manner which will produce a workable mixture having a slump within the required limits, and having minimum water content.

- B. The exact portion of materials to be used in concrete shall be as determined by the Laboratory Design Mix, and as directed by the Engineer. The equipment necessary to positively determine and control actual amounts of materials entering into the concrete shall be furnished by the Contractor. The proportions of materials used in the mix shall be changed whenever, in the opinion of the Engineer, a change is necessary to obtain the required strength and the desired density for uniformity and workability. In structures intended to be watertight, good workability will be considered to be of primary importance.
- C. All materials shall be measured by weight, except for water, which may be measured by volume. One (1) bag of Portland cement shall be considered to weigh 94 lbs., and one (1) gallon of water to weigh 8.33 lbs.
- D. Cement content for each class of concrete shall be as follows and each cubic yard of concrete shall contain not less than the following quantities:

Class "A" _____	564 lbs. (6 Bags)
Class "B" _____	520 lbs. (5.53 Bags)

- E. In calculating the total water content of mixes, the amount of water borne on the surfaces of the aggregate particles shall be included. The amount of water to be used in the mix shall, in all cases, be the least amount necessary to produce a plastic mix having the required strength and the desired density, uniformity, workability, and characteristics within the required slump limits.
- F. The total volume of aggregates to be used in each cubic yard of concrete, and the proportion of fine aggregate to coarse aggregate, shall be that necessary to produce a dense mixture having the required workability, as determined by the Laboratory Design Mix, and as directed by the Engineer.

PART 3 EXECUTION

3.1 MIXING

- A. Concrete may be proportioned and mixed by the Contractor on the job site, or may be proportioned and mixed at a central plant.
- B. When concrete is proportioned and mixed at the job site, the Contractor shall provide the equipment necessary to positively determine and control the actual amounts of materials entering into the mix. Mixing shall be done in a batch mixer of approved design, and shall ensure a uniform distribution of the material throughout the mass. The entire contents of the drum shall be discharged before recharging. The volume of the mixed material, per batch, shall not exceed the rated capacity of the machine.

- C. The Contractor shall, during the mixing and placing of concrete, have no fewer than two concrete mixers on the site so as to maintain continuity of the placing in the event of mechanical failure of one of the mixers. The mixing of each batch shall continue not less than 1-1/2 minutes after all materials are in the mixer, during which time the mixer shall rotate at a peripheral speed of not fewer than 200 feet per minute.
- D. When concrete is proportioned and mixed at a central plant, plant layout and equipment shall be subject to approval by the Engineer. Concrete shall be proportioned, mixed and transported under the following conditions:
 - 1. The Contractor shall furnish the services of a representative of an approved testing laboratory, who shall be present at the central mix plant when Class "A" concrete is proportioned and mixed for the work, and shall control proportioning and mixing operations, except when otherwise approved by the Engineer.
 - 2. Loading tickets shall be initialed by the laboratory representative, and the time of loading stamped thereon. Tickets shall be handed to the inspector upon arrival of the mixer trucks at the job site, and before placing the load.
 - 3. Concrete shall be transported to the job site in approved mixer trucks, which will mix the concrete en route.
 - 4. The mixing and handling of ready-mix concrete, except as otherwise specified above, shall satisfy the requirements of ASTM C94. In the event the above conditions are not satisfied, the concrete will be subject to rejection.

3.2 BATCHING AND MIXING

- A. Concrete shall be furnished by an acceptable ready-mixed concrete supplier and shall conform to ASTM C94.
- B. The consistency of concrete shall be suitable for the placement conditions. Aggregates shall float uniformly throughout the mass and the concrete shall flow sluggishly when vibrated or spaded. The slump shall be kept uniform.
- C. A delivery ticket shall be prepared for each load of ready-mixed concrete. A copy of each ticket shall be handed to the Engineer by the truck operator at the time of delivery. Tickets shall show the quantity delivered, the amount of each material in the outdoor temperature in the shade, the time at which the cement was added, and the numerical sequence of the delivery.

3.3 PLACING:

- A. Before concrete is placed, the depth and character of the foundations, the adequacy of forms and falsework, and the placing of steel and appurtenant work shall be inspected, and must be approved by the Engineer; that approval, however, shall not relieve the Contractor from the responsibility to produce the finished work.
- B. Accumulated water and debris shall be removed from excavations and from form work into which concrete is to be placed; flow of water into those places shall be diverted into side drains or sumps, and be removed without disturbing newly placed concrete. Forms, unless lined, shall be thoroughly wetted with water before concrete is placed so as to tighten joints and prevent leakage of the mix. Runways for buggies and wheelbarrows, if used, shall not be supported by form work. Concrete shall be conveyed in a manner which will not disturb forms.
- C. Concrete shall be placed in daylight; placing of concrete in a portion of the work shall not be started if that portion of the work cannot be completed during daylight, unless otherwise specifically approved by the Engineer. That approval will not be given unless an adequate lighting system is provided, and that system is approved by the Engineer.
- D. Concrete shall not be placed when the atmospheric temperature is cooler than 35°F. If, after placing concrete, the atmospheric temperature becomes cooler than 35°F, the Contractor shall enclose, heat, and protect the concrete in a manner which will keep the air surrounding the fresh concrete at a temperature not cooler than 45°F for a period of 5 days after concrete is placed. The Contractor shall assume all risk connected with the cool weather placing and protecting of concrete, and should that concrete be unsatisfactory, it shall be rejected.
- E. Concrete shall be transported from the mixer to the point of deposit with a crane-handled bottom-dump concrete bucket, with concrete buggies, or with wheelbarrows. In the event the quality of the concrete as it reaches the forms, and the method and placing thereof, in the opinion of the Engineer, is not satisfactory, the Contractor shall change his method of operation so as to place concrete in a manner approved by the Engineer.
- F. Concrete shall be placed in a manner which will prevent the segregating of aggregates, displacing reinforcing, and coating and splattering chutes, and canvas tremies shall be arranged and used in a manner which will ensure that the concrete is placed in the manner specified. The placing of concrete within form work shall be regulated in a manner which will ensure that the pressure within the form work shall not exceed the design pressure of the form work. Concrete shall be placed in continuous horizontal layers, the thickness of which, in general, shall not exceed 12 inches. When placing concrete, each batch and each layer shall be placed immediately following the preceding batch and layer so that there will be no "cold

joints" in the work. Care shall be used to fill each part of the forms; concrete shall be deposited to as near final position as possible. After concrete has taken its initial set, care shall be used to avoid jarring the form work, and placing strain and vibration on the ends of projecting concrete reinforcements. If concrete must be dropped more than five feet (5'), it shall be deposited through a tremie.

- G. Concrete when placed shall be compacted with mechanical, internal vibrating equipment supplemented with hand-spading with a steel slicing rod. Vibrating shall not be used to transport concrete within forms. Vibrating equipment shall maintain an impulse rate of not less than 5,000 impulses per minute, when submerged in concrete. Not less than one (1) spare vibrator shall be maintained on the job site as a relief. The duration of vibration shall be limited to that necessary to satisfactorily consolidate the concrete without causing objectionable segregation. The vibrator shall not be inserted into lower layers which have begun to set.
- H. Thin section work shall be thoroughly worked with a steel rod; faces shall be shaped and mortar flushed to the surface of the form. Small diameter holes shall be drilled in form work beneath large wall sleeves and inserts to prevent the entrapment of air beneath those sleeves and inserts when concrete is placed.
- I. Concrete shall be placed and compacted in a manner which will form a dense, compact, impervious structure having smooth faces on exposed surfaces. Concrete found to be porous, plastered, and otherwise defective, in the opinion of the Engineer, shall be removed and replaced in whole, or in part, as directed by the Engineer, at no additional expense to the Owner.

3.4 CONSTRUCTION JOINTS

- A. Surface of concrete construction joints shall be cleaned and laitance removed.
- B. Immediately before new concrete is placed, all construction joints shall be wetted and standing water removed.
- C. Construction joints shall be located where shown, and where directed by the Engineer. Concrete shall be placed continuously between construction joints so that the unit will be monolithic in construction. Not less than 72 hours shall elapse between casting of adjoining units, unless otherwise approved by the Engineer.
- D. Construction joints in footings and walls, required for proper execution of the work, but not shown on the Drawings shall be located where directed by the Engineer, and across regions of low shearing stress so as to least impair the strength and appearance of the work. Special provisions shall be made for joining successive units as shown and as directed by the Engineer.

- E. Construction joints in slabs, required for proper execution of the work but not shown on the Drawings, shall be located where directed by the Engineer. Special provisions, including concrete footings for construction joints in slabs on earth shall be made for joining successive units, as shown and as may be directed by the Engineer.
- F. Keys shall be constructed in construction joints where shown, and as directed by the Engineer. Keys and water stops shall be placed in those construction joints which will be subject to water pressure.

3.5 EXPANSION JOINTS

- A. Expansion joints shall be constructed as detailed on the drawing and in the locations shown.

3.6 BONDING

- A. The surfaces of recently poured concrete work shall be thoroughly roughened and made free from all foreign matter and laitance, the forms placed and tightened, and the surfaces of that concrete slushed with grout before placing new concrete work. New concrete shall be placed before grout has attained its initial set; bonding work shall be accomplished in a manner which will ensure complete bonding. Two to four inches (2"-4") of grout shall be applied to construction joints.

3.7 FINISHING

- A. Exterior concrete surfaces shall be finished to levels not shallower than 12 inches below finish grade levels; interior concrete surfaces and concrete surfaces exposed to view shall be finished.
- B. Interior of basins shall be finished to a level not less than 12 inches below water level. Concrete not exposed to view shall have edges tooled off, and shall be pointed and spot finished to fill irregularities. Concrete to be painted or waterproofed shall be finished.
- C. When concrete has set sufficiently to permit, forms and form ties shall be carefully removed. Depressions resulting from removal of form ties, and other holes and rough places, shall be thoroughly wetted with water and pointed with non-staining, non-shrink sand-cement mortar.
- D. After pointed surfaces have sufficiently set, surfaces specified to be finished shall be kept wet with water, and shall be rubbed with a carborundum stone of medium fineness, or other equally as good abrasive, to bring the surface to a smooth texture and to remove all form and other marks. The paste formed by the rubbing may be rubbed down by floating with a canvas, carpet-faced, or cork float, or may be rubbed down with dry burlap.

- E. Recesses from form ties shall be filled flush with mortar. Fins and other surface projections shall be removed from all formed surfaces except exterior surfaces that will be in contact with earth backfill.
- F. Slabs, pavement, curbs, and other unformed surfaces shall be screeded and given an initial float finish followed by additional floating or belting. Unformed surfaces shall be given an initial float finish as soon as the concrete has stiffened sufficiently for proper working. Any piece of coarse aggregate which is disturbed by the float or which causes a surface irregularity shall be removed and replaced with mortar. Initial floating shall produce a surface of uniform texture and appearance with no unnecessary working on the surface.
- G. Initial floating shall be followed by belting or a second floating at the time of initial set. The belting or second floating shall produce a finish of uniform texture and color. The completed finish for unformed surfaces shall be the finish produced by the belting or second floating.

3.8 CURING AND PROTECTING

- A. Concrete shall be protected from loss of moisture by water saturation or membrane curing for at least 7 days after placement.
- B. Water saturation of concrete surfaces shall begin as quickly as possible after initial set of the concrete. Unformed surfaces shall be covered with polyethylene film, tarpaulins, or sand to retain the water. Water shall be applied as often as necessary to keep the concrete saturated for the entire curing period.
- C. Two (2) coats of an acrylic copolymer solution may be used in lieu of water curing. The curing compound shall be Dress & Seal, as manufactured by L & M Construction Chemicals, Inc., or another approved equal. When the concrete surface is to have another surface applied to it, L & M cure shall be used. All curing membranes shall be applied in strict accordance with the manufacturer's recommendations.
- D. Concrete shall be protected against freezing for at least 7 days after placement.

3.9 WATERTIGHTNESS

- A. Concrete required to be watertight shall be proportioned, mixed, and placed in strict accordance with this Section.

- B. All concrete structures for holding and transporting water, and pits below ground level, shall be tested and shall be watertight; a drop in the water level of more than 1-1/4" in 24 hours will not be permitted when water holding structures are filled. All exposed surfaces of water holding structures and interiors of pits below groundwater level shall be free from visible damp spots and seepage before acceptance.

3.10 SILICONE JOINT SEALANT

- A. Provide silicone joint sealant that exceeds both Federal Specifications TT-S-001543A Class A (one-part silicone sealants) and TT-S-00230C Class A (one-component sealants) that were written for construction sealants requiring extremely high movement capability.
- B. Install silicone joint sealant in accordance with manufacturer's recommendations.
- C. Dow Corning 7 888 meets the above specifications and is represented locally by Fred R. Hiller Company (770) 451-4551.

3.11 BACKER ROD

- A. Provide cylindrical flexible sealant backings composed of closed cellular material, as defined in ASTM C1330 for use with cold applied sealants.
- B. Install in accordance with manufacturer's recommendations.
- C. HBR7, manufactured by Nomaco, Inc., meets the above specifications and is represented locally by Fred R. Hiller Company (770) 451-4551.

3.12 IMPERFECT AND DAMAGED WORK

- A. All imperfect and damaged work shall be satisfactorily removed; new work and materials, which are in accordance with the requirement of the Drawings and construction Specifications shall be furnished and installed at no additional expense to the Owner. Removal of concrete work and installation of subsequent work and materials shall be accomplished in a manner which will not impair the strength of the structure.

3.13 REPAIRING DEFECTIVE CONCRETE

- A. Defects in concrete surfaces, such as honeycombs or cracks, shall be repaired to the satisfaction of the Engineer.
- B. Concrete repair work shall conform to Chapter 9 of ACI 301 and shall be performed in a manner that will not interfere with thorough curing of surrounding concrete. Repair work shall be adequately cured.

3.14 CLEANING UP

- A. Upon completion of work, all forms, equipment, protective covering and rubbish resulting there from shall be removed from the premises. Finished concrete surfaces shall be left in a condition satisfactory to the Engineer.

3.15 CONCRETE FLOORS AND SLABS

- A. All piping which will be under floors and slabs shall be tested and retested until there are no leaks before constructing concrete slabs.
- B. The subgrade for slabs on earth shall provide a solid bearing, and shall be brought to a true and even plane. Where floor drains occur, floors shall be pitched thereto, as shown. The concrete shall have a comparatively dry consistency, and shall be screeded level, or to the proper grade. After compacting and vibrating the concrete, the surface shall be prepared to receive the specified finish. All floors, walks, platforms, stairs and other slab work shall have a wood float finish. Settling basin and tank floors shall have a smooth steel troweled finish. After screeding to the required grade while the concrete is still green, but has hardened sufficiently to bear the finisher's weight, the concrete surface shall be floated with wood float to a true and even plane, have no visible coarse aggregate, and be sufficiently rough to prevent slipping.

3.16 STORAGE

- A. Cement shall be stored in suitable moisture-proof enclosures. Cement which has been caked or lumpy shall not be used.
- B. Aggregates shall be stored so that segregation and the inclusion of foreign materials are prevented. The bottom 6" of aggregate piles in contact with the ground shall not be used.
- C. Reinforcing steel shall be carefully handled and shall be stored on supports which will keep the steel from contact with the ground.

3.17 SAMPLING AND TESTING

- A. Cement aggregates shall be tested by a recognized testing laboratory which has been selected by the Contractor and accepted by the Engineer. The testing laboratory shall prepare written reports of such tests which shall certify that the material covered by the report complies in all respects with these Specifications. The tests and reports shall be made on each shipment of cement and on each bin or stockpile of aggregates used in the work. When aggregate is being furnished from the same source, tests subsequent to the initial tests may be suspended when specifically authorized by the Engineer. These tests, however, may be resumed when requested by the Engineer. When specifically authorized by the Engineer, mill test certificates shall be submitted for cement shipments. Certified test reports and certificates shall be submitted to the Engineer in duplicate.
- B. The Contractor shall determine the source, kind and quality of cement and aggregates to be used in the work well in advance of the scheduled start of the work, in order to permit proper sampling and testing. He shall be fully responsible for delays in the progress of the work due to delays in sampling, testing and reporting on cement or aggregates. No cement or aggregates shall be incorporated in the work prior to receipt and acceptance of certified test reports or certificates by the Engineer. The cost of sampling and testing cement aggregates will be borne by the Contractor.
- C. Concrete cylinder for testing purposes shall be made in accord with the procedure described in ASTM C31. Compression tests shall be made at the age of 7 days, 14 days and two (2) at 28 days by the testing laboratory in accord with the procedure described in ASTM C39, and as required by the Engineer. After beginning work, the number of tests shall be as listed in the following table, but shall not be less than one for each type of concrete for each pour. Each test shall consist of at least 8 specimens. Two (2) cylinders shall be held in reserve and tested at 56 days, if required.

<u>Total Cu. Yds. Concrete Placed</u>	<u>Minimum Number of Tests</u>
0 to 100	Two each Pour
101 to 1,000	One per each 100 Cu. Yds.
1,001 to 2000	One per each 150 Cu. Yds.
2,001 and over	One per each 250 Cu. Yds.

- D. Slump test of concrete shall be made in the field by the Contractor for each pour with an accurately made sheet iron test cone, and in accord with the procedure described in ASTM C143. The slump of concrete shall be not less than 3 inches, or more than 4 inches, before the addition of admixtures.

END OF SECTION

**SECTION 31 10 00
SITE CLEARING**

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The extent of Site Clearing is shown on the Contract Drawings.
- B. Site Clearing operations include, but are not limited to the following:
 - 1. Protection of existing trees and other vegetation.
 - 2. Removal of trees and other vegetation.
 - 3. Topsoil stripping.
 - 4. Clearing and grubbing.
 - 5. Abandoning buildings and structures.
 - 6. Removing above-grade improvements.
 - 7. Removing underground improvements.
 - 8. Salvaging, storing and protecting designated items.

1.2 RELATED SECTIONS

- A. Section 01 50 00 Temporary Facilities and Controls
- B. Section 31 20 00 Concrete Reinforcing
- C. Section 31 2333 Excavation and Fill for Pipeline

1.3 PROTECTION OF EXISTING IMPROVEMENTS

- A. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing improvements indicated to remain in place.
- B. Protect improvements on adjoining properties as well as those on the project site.
- C. Restore any improvement damaged by this work to their original condition, as acceptable to the Owners or other parties or authorities having jurisdiction.

1.4 PROTECTION OF EXISTING TREES AND VEGETATION

- A. Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary fences, barricades or guards as required to protect trees and vegetation to be left standing.
- B. Water trees and other vegetation which are to remain within the limits of the Contract Work as required to maintain their health during the course of construction operations.
- C. Provide protection for roots over 1-1/2 inches diameter that are cut during construction operations. Coat the cut faces with an emulsified asphalt, or other acceptable coating, especially formulated for horticultural use on cut or damaged plant tissues. Temporarily cover all exposed roots with wet burlap to prevent roots from drying out; provide earth cover as soon as possible.
- D. Repair or replace trees and vegetation damaged by construction operations, in a manner acceptable to the Engineer. Perform tree damage repair by a qualified tree surgeon. Replace trees which cannot be repaired and restored to full-growth status, as determined by the tree surgeon.

1.5 PROTECTION OF ADJACENT PROPERTY

- A. Protect improvements, trees and vegetation on adjoining property as well as those on property designated for site clearing work.
- B. Execute work so as not to create a nuisance to persons utilizing adjacent property.
- C. Use work methods and provide temporary facilities as necessary to prevent washing, erosion, siltation or dust damage, or hazard to persons and property, within and off the project site.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 STRUCTURE ABANDONMENT

- A. Prior to removal of indicated buildings and structures, disconnect and seal or have utility owner disconnect and seal all active utility services. Perform disconnection and sealing work in accordance with utility owner's standard service removal policy. Assume all costs associated with disconnecting and sealing utility services.
- B. Remove all equipment, furnishings and exposed four inch and larger piping within a building or structure to be demolished before undertaking its removal. Protect, properly store and prevent damage to any item removed which is shown on the Drawings to be reused in the project.

3.2 CLEARING

- A. Remove vegetation, trees, brush, stumps, logs, grass, weeds, roots, poles, stubs, rubbish, refuse dumps, sawdust piles, loose boulders of one cubic yard or less, debris, and other objectionable matter resting on or protruding through the ground surface, or appearing within the work limits before final project acceptance.
- B. Remove above-grade improvements, surfacing and pavements (including bases for pavements), concrete slabs, curbs, gutters, walks, concrete or wood headers, abandoned utilities and utility structures, abandoned buildings and structures, and other work as specifically indicated which is resting on or protruding through the ground surface, or appearing within the work limits before final project acceptance.

3.3 GRUBBING

- A. Completely remove stumps and other organic matter protruding through the ground surface. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing (if any).
- B. Remove abandoned underground facilities, such as utilities and structures, walls, footings, basements, wells, septic tanks, cisterns, underground pipe and other indicated work, to a depth of three feet below finished grade or to such greater depth as may be necessary for construction. Break up or penetrate on-grade floor slabs at abandoned underground structures to permit movement of ground water. At a minimum provide openings of at least four square inches per ten square feet of floor slabs. The abandonment or removal of certain underground pipe or conduits may be shown on mechanical and electrical drawings, and is included under work of these headings. Removal of abandoned underground piping or conduit which interferes with construction is included under this Section.

- C. Stumps within the clearing limits prescribed on the Contract Drawings that are more than 5 feet from the pipe line trench excavation may be left in place IF GROUND DOWN TO 4 INCHES BELOW the natural or final grade whichever is lower.

3.4 HOLES AND DEPRESSIONS

- A. Fill holes, depressions and voids created or exposed by clearing or grubbing operations, including abandoned underground structures, with satisfactory soil material, unless further excavation or earthwork is indicated.
- B. Place fill material in horizontal layers not exceeding six inches loose depth, and thoroughly compact to a density equal to adjacent original ground.

3.5 TOPSOIL REMOVAL

- A. Topsoil is defined as friable clay loam surface soil found in a depth of not less than four inches or more than eight inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over two inches in diameter, and without weeds, roots, and other objectionable material.
- B. Strip topsoil in such manner so as to prevent intermingling with the underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping.
- C. Where trees are indicated to be left standing, stop topsoil stripping a sufficient distance from such trees to prevent damage to the main root system.
- D. Stockpile topsoil in storage piles in areas shown, or where otherwise authorized. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent windblown dust.

3.6 DISPOSAL GENERAL REQUIREMENTS

- A. Waste matter generated from clearing and grubbing operations becomes the property of the Contractor unless otherwise provided by the Contract Documents. Dispose of all such matter legally and without nuisance to others.
- B. Accomplish disposal of cleared and grubbed matter daily so as to maintain site in a safe and neat condition at all times.
- C. Owners of the property may remove merchantable timber, equipment, furnishings, buildings or other items of value from the project site before the Contractor begins his operations, and no assurance exists that any such material, except for items specifically designated for reuse in the project, will be on the construction site when the Contractor begins his work.

3.7 BURNING

- A. Construction waste may NOT BE BURNED.

3.8 CHIPPING

- A. Where practical, chip brush and roots to maximum dimension of one inch and use for soil erosion control and/or a substitute for mulch in finished grassing or landscaping.
- B. Where chips are used for mulch, it may be substituted pound for pound for any mulch required for the project.

3.9 REMOVAL OF WASTE MATTER

- A. When matter generated from clearing and grubbing operations can be disposed of on-site other than chipping, disposal areas and methods permitted will be indicated on the Drawings. In the absence of such indication, remove from the project site and legally dispose of all waste and objectionable matter.

END OF SECTION

**SECTION 31 23 00
EXCAVATION & FILL FOR PIPELINE**

PART 1 GENERAL

1.1 SCOPE

- A. Work under this Section shall include all clearing and grubbing, trench excavation, preparation of trench for pipe laying, pipe bedding, tamping of fill around piping, complete trench backfill, dressing of completed backfill.
- B. The Contractor shall determine, as far as possible in advance, the location of all existing water, sewer, and gas pipes, storm drains, and all existing buried cables. Coordination with the local utilities, in particular the gas and telephone utilities shall be maintained to allow those utilities sufficient time to locate and protect their properties in accordance with local and/or state laws. In case of damage to any existing structures, repair and restoration shall be made at once and backfill shall not be replaced until this is done.

1.2 RELATED SECTIONS

- A. Section 01 50 00 Temporary Facilities and Controls
- B. Section 33 11 00 Water Main Construction
- C. Section 33 12 19 Water Utility Distribution Fire Hydrants
- D. Section 33 31 00 Sanitary Utility Sewerage Piping

1.3 LABORATORY TESTS

- A. All laboratory tests to determine compliance of embedment and backfill materials with specified requirements and to determine compliance with specified compaction requirements will be paid for by the Owner, except for retesting of failed samples, which will be at the Contractor's expense.

1.4 CLOSING OF STREETS AND DRIVES

- A. The Contractor shall not close more than one city block at a time to traffic and shall maintain at least one lane open for local traffic except for locations where this is not possible in the opinion of the Engineer.
- B. Driveways which are cut for installation of piping must be backfilled and cleared for traffic within four hours of being cut. Property owners must be given 24 hours advance notice that work will be done.

The Engineer shall be notified of any scheduled street closing, and his approval must be obtained for such closing. Notification must include a scheduled time for closing the street and a scheduled time for completion of work.

PART 2 PRODUCTS

2.1 BACKFILL AND FILL MATERIALS

- A. Provide acceptable soil materials for backfill and fill, free of stumps, trees, roots, sod, muck, trash and other deleterious matter.
- B. Handle, conserve, store and place excavated material to provide least desirable acceptable material at the bottom of fills and backfills, and grade up to the best material at the top. Do not permit rock having any dimension in excess of two inches to be used in the top two feet of fill and backfill.

PART 3 EXECUTION

3.1 PREPARATION OF SITE

- A. Prior to starting construction operations, the Contractor shall remove all vegetation, debris and other objectionable matter standing or lying on the surface within the limits of the areas to be excavated or filled. Removal and disposal of such materials shall be done in a manner acceptable to the Engineer.
- B. Areas occupied by trees, brush or other vegetation shall be cleared of such growth and suitably grubbed. All large roots or stumps shall be removed to a depth at least 2' below original ground surface. Any pits or cavities thereby created which extend beyond the excavation limits shall be filled with the materials and in the manner specified herein.
- C. Ornamental trees, cultivated shrubs, and similar growth which occupies streets, alleys, or other public rights-of-way or easements but which lies outside the exact limits of excavation shall remain undisturbed and shall be carefully preserved and protected by the Contractor throughout all stages of the construction work.
- D. The Owner will secure rights-of-way or easements through private lands where required; but the Contractor shall give due notice to tenants therein and shall be responsible for damage to property therein. Each building, wall, fence, pole, tree, lawn, or other property or improvement encountered, whether public or private, shall be carefully protected from all injury, and, in case of damage or removal, shall be completely repaired or restored to its original condition. All costs related to damage to such improvements shall be borne by the Contractor. Special care shall be taken in trenching under or near buildings to avoid or minimize all damage or injury thereto.

- Exploratory excavation shall be made when necessary to locate underground obstructions. Every pipe, conduit, foundation or other "underground structure" encountered in trenching shall be carefully protected from injury or displacement. All costs related to damage to such structures and pipelines or damage to property or persons resulting from damage to such structures and pipelines shall be borne by the Contractor. Damage shall be completely repaired within a reasonable time. No claim shall be made for damage or delay of the work on account of the proximity of or the leakage from such structures and pipelines.
- E. Preparation of the site as specified above shall be considered as an integral part of the excavation, and no separate payment therefore will be allowed.
 - F. Where high-pressure gas lines are to be crossed, they shall be uncovered by hand excavation methods before other excavation near them is started. No blasting operations will be allowed within 5' of gas pipes. Removal of rock in this area shall be done by jackhammer and/or hand excavation. The Contractor shall be responsible for the requirements of Georgia law with regard to blasting or excavating near gas pipes.

3.2 TRENCH EXCAVATION

- A. Trench excavation or excavation for pipelines shall consist of excavation necessary for the construction of water lines and all appurtenant facilities therefore, including sand or crushed stone cushion, and pipe protection as called for on the plans or as specified herein. It shall include site preparation, backfilling and tamping of pipe trenches and the disposal of waste materials, all of which shall conform to the applicable provisions of these Specifications.

Trench excavation shall be made in open cut and true to the lines and grades shown on the plans or established by the Engineer, unless tunneling or boring is shown or specified. When practical, the banks of the trenches shall be cut in vertical, parallel planes equidistant from the pipe centerline. The horizontal distance between such planes - that is, the overall width of trench - shall vary with the size of pipe to be installed. The overall width of trench shall be 24" for pipe 6" in diameter and smaller and the pipe outside diameter plus 16" for pipe 8" in diameter and larger. When sheeting is used, the distance between vertical planes shall be measured from the inside faces of the sheeting. When vertical banks for trench excavation are not practical to construct or create conditions dangerous to workers, the banks may be sloped provided that such excavation does not damage adjacent structures. When trench banks are sloped, such banks shall be cut to vertical planes as specified above for that part of the ditch below the level of 12" above the top of the pipeline. The bottom of the trench shall be level in cross section and shall be cut true to the required grade of the pipe except where concrete cradles or cushion materials are shown on the

plans, specified or authorized by the Engineer, in which case the excavation shall extend to the bottom of the cradle or cushion.

Bell holes for bell-and-spigot pipe shall be excavated at proper intervals so that the barrel of the pipe will rest for its entire length upon the bottom of the trench. Bell holes shall be large enough to permit proper installation of joints in the pipe. Bell holes shall not be excavated more than 10 joints ahead of pipe laying.

- B. Excavation for other pipeline structures shall be as specified for structural excavation.
- C. When muck, quicksand, soft clay, or other materials unsuitable for foundations or subgrade are encountered extending beyond the limits of the excavation, such material shall be removed and replaced with sand cushion as specified in these Specifications.
- D. Pipe trenches shall not be excavated more than 500 feet in advance of pipe laying, and all work shall be performed so as to cause the least possible inconvenience to the public. Temporary bridges or crosswalks shall be constructed where necessary to maintain vehicular or pedestrian traffic. Crosswalks and bridges shall have handrails or other features necessary for safe use by the public.
- E. Pipe trenches shall not be excavated in advance of the pipe laying a distance greater than that which can be completed within a day's operation. Trenches will not be allowed to remain open overnight. In areas where the excavation must remain open, adequate barricades and safety equipment shall be placed around the excavation to provide warning and protection to vehicular and pedestrian traffic.
- F. In all cases where materials are deposited along open trenches, they shall be placed so that, in the event of rain, no damage will result to the work or adjacent property.
- G. Excavation shall be considered as an integral part of laying pipe and no specific payment will be allowed therefore.

3.3 SHEETING, SHORING AND BRACING

- A. The sides of all excavations shall be sufficiently sheeted, shored and braced whenever necessary to prevent slides, cave-ins, settlements or movement of the banks and to maintain the excavation clear of obstructions that will, in any way, hinder or delay the progress of the work or endanger workers. Wood or steel sheet piling of ample design and type shall be used when necessary. All sheeting, shoring and bracing shall have sufficient strength and rigidity to withstand the pressures exerted and to maintain the walls of the excavation properly in place and protect all persons and property from injury or damage.

- B. Where excavations are made adjacent to existing buildings or other structures or in paved streets or alleys, the Contractor shall take particular care to sheet, shore and brace the sides of the excavation adequately so as to prevent any undermining of or settlement beneath such structures or pavement. The Contractor will be liable for any damage to any structure or injury to any person that results from his operations.
- C. Sheeting and shoring materials shall be withdrawn as trenches are being backfilled, after backfill has been placed over pipe at least 18". If their removal before backfill is complete endangers any adjacent structure, they shall be left in place until backfill is complete and pulled then, if possible. Voids caused by sheeting withdrawal shall be backfilled and tamped with thin rammers designed for the purpose. If not withdrawn, sheeting shall be cut off at least 18" below surface.
- D. Sheeting, shoring and bracing shall be considered as an integral part of the excavation work and no specific payment will be allowed therefore.

3.4 UNDERWATER EXCAVATION

- A. Where the excavation area shown on the plans falls under the groundwater surface or near the banks of a flowing stream or other body of water, the Contractor may adopt and carry out any method he may deem feasible for the performance of the excavation work and for the protection of the work thereafter, provided the method and equipment to be used result in completed work which complies with the Specifications and is acceptable to the Engineer. In such cases, the excavation area shall be effectively protected from damage during the excavation period and until all contemplated construction work therein has been completed.
- B. The cost of all temporary construction work necessary or incidental to work under water or in wet conditions, including the cost of installing and removing sand bags, coffer dams, sheet piling, excavation and backfill, pumping and dewatering, shall be considered as an integral part of the cost of excavation and no separate payment therefore shall be allowed or made.

3.5 BORROW EXCAVATION

- A. Wherever the backfill requires a volume of material that is in excess of the volume of suitable materials available from excavation or trenching, Contractor shall be responsible for obtaining additional backfill material from borrow pits which are acceptable to the Engineer.
- B. Borrow pits shall be properly cleared and grubbed and all objectionable matter shall be removed from the borrow pit material prior to its placement in the backfills.
- C. Borrow excavation shall be considered an integral part of the excavation work and no separate payment therefore will be allowed.

3.6 ROCK IN PIPE TRENCHES

- A. Rock encountered in trench excavation shall be removed for the overall width of trench which shall be a minimum of 12" plus the diameter of the pipe. It shall be removed to a depth of 6" below the bottom of the pipe if rock extends to such depth.

The space below the ultimate pipe grade shall be filled with fine earth, sand, crushed stone, or other approved materials as required, compacted to proper grade and made ready for pipe laying. Unless otherwise specified or authorized by the Engineer, fine earth removed from the pipe trench shall be used as cushion material. Fine earth so used shall be thoroughly compacted with approved power tools. No allowance shall be made under this item for bell hole excavation. Bedding shall be included in the unit price bid per foot of pipe.

3.7 DRILLING AND BLASTING

- A. Drilling and blasting methods used in rock excavation shall be optional with the Contractor but shall be conducted with due regard for the safety of persons or property in the vicinity of the work and in strict conformity with all laws, ordinances and of the work and in strict conformity with all laws, ordinances and regulations governing blasting and the use of explosives. Rock excavation near existing structures of all types shall be conducted with the utmost care and every precaution shall be taken to prevent damage to such structures. Any damage or injury of whatever nature to persons or property caused directly or indirectly by blasting operations shall be promptly repaired, replaced or compensated for by the Contractor at his own expense and to the entire satisfaction of the persons injured or the owners of the property damaged.

3.8 BACKFILLING TRENCHES

- A. The backfilling of pipeline trenches shall be started immediately after the pipe work has been inspected and approved by the Engineer. Backfill material shall consist of fine loose earth free of large clods, stones, vegetable matter, debris, and/or other objectionable material. Backfill shall be deposited and compacted in accordance with the manufacturer's recommendations. If the trench extends along or across streets, roadways, proposed roadways, useable alleys or sidewalks, the remainder of the trench shall be backfilled and tamped to it full depth in the manner specified above with a minimum density of 100% Standard Proctor for the full depth. Where tamping of material is not required for the full depth of the trench, this material (from a height of one foot above the pipe upward) shall be as herein before specified, except that a broken stone content of not more than 50% by volume will be allowed of stones not exceeding 6" maximum dimensions, provided that these stones are thoroughly mixed with earth.

- B. Before being placed under pavement, earth material for backfill which is, in the opinion of the Engineer, too dry to allow thorough compaction, shall receive an admix of sufficient water prior to compaction to insure such compaction. Earth material considered by the Engineer to have excessive water content shall not be placed.
- C. Backfill material having less than a 10% clay content may be compacted by puddling with water in lieu of tamping when authorized by the Engineer. Such puddling shall consist of applying water under pressure to the entire content of the trench beginning near the trench bottom and working through pipes or well points.
- D. Backfill materials used shall contain a sufficient amount of moisture for proper compaction. In areas to be paved and areas not to be paved but inside road rights-of-way, the backfill shall be brought up in accordance with this Paragraph, and compacted to not less than 95% of Standard Proctor.
- E. Compaction tests may be required at varying depths and intervals determined by the Engineer. Tests shall be made by a qualified independent testing laboratory selected by the Engineer. The Owner shall pay for all compaction testing. However, in the event that such tests fail to meet the requirements of the Specifications, the expense of such tests shall be borne by the Contractor.
- F. Where the test results indicate that compaction is less than the allowable minimum specified in this Paragraph, the material will be removed to the depths and limits determined by the Engineer and new material placed and compacted to minimum standards at no additional cost to the Owner.
- G. Where excavation has been made within the limits of finished areas across private property such as golf course, the top one foot of backfill material shall consist of fine loose earth free of large clods, vegetable matter, debris, stone and/or other objectionable materials.
- H. Where tamping of backfill material is not required for the full depth, the backfill material shall be neatly rounded over the trench to a sufficient height to allow for settlement to grade after consolidation. Any deficiency in the quantity of materials for backfilling the trenches or for filling the depressions caused by settlement shall be supplied by the Contractor.
- I. Where pipe trenches are cut across pavement, the Contractor shall construct a temporary surface over the cut by filling and tamping the upper 6" of the cut with selected gravel or crushed stone which will not disintegrate under the traffic and which shall be maintained in good condition under traffic until the permanent pavement has been constructed. No specific payment will be allowed for temporary surfacing.

- J. All backfilling shall be done in a manner which will not disturb or injure the pipe or structure over or against which it is being placed. Any pipe or structure injured, damaged or moved from its proper alignment during backfilling operations shall be opened up and then rebackfilled as herein specified.
- K. The Contractor shall replaced all surface materials and shall restore drives, curbing, sidewalks, gutters, shrubbery, fences, sod and other disturbed surfaces to a condition equal to that before the work began, furnishing all labor and materials incidental thereto. No payment for such items shall be made unless specifically stated in these Specifications and/or in the Bid Schedule.

3.9 SAND CUSHION

- A. Sand cushion shall consist of either coarse sand, gravel, or crushed stone. All cushion material shall pass a 1-1/2" screen and 90% shall be retained on 20 mesh screen. The material shall be handled on the job so that it will be kept clean and free of dirt, clay and other foreign matter and will retain its ability to pass water freely.
- B. Sand cushion shall be used, 1) at locations shown on the plans or when specified to provide bedding for pipe where rock has been removed from the trench; 2) in local areas where rock has been removed from the pipe trench and the excavated materials are not suitable for bedding the pipe; and 3) in local areas where unsuitable materials such as muck, quicksand, soft clay, swampy material or excessive groundwater make it necessary to provide a satisfactory pipe foundation.
- C. Sand cushion used to provide bedding for pipe where rock has been removed from the trench shall be placed to the overall width of trench, which shall be as specified in this Section. It shall be placed to the depth of 6" below the bottom of the pipe. Sand cushion used to provide additional bedding for pipe installed in deep cuts shall be placed to the width and depth shown on the plans or as directed by the Engineer.
- D. Sand cushion under structures shall be placed in the areas and to the depth shown on the plans or as authorized by the Engineer.
- E. Cushion material shall be compacted by tamping with suitable tools and shaped to receive the pipe and to support the full length of the barrel of the pipe at exact line and grade.
- F. All costs pertaining to sand cushion requirements contained herein shall be included in the unit price bid per foot of pipe submitted in the Bid Schedule.

3.10 MAINTENANCE

- A. All excavated areas, backfills, embankments, trenches and access roads, grading and ditches shall be maintained by the Contractor in good condition at all times until final acceptance by the Owner. Where trench backfill has settled, trenches shall be rebackfilled.
- B. At the end of each work week, Contractor shall inspect road surfaces where excavations have been made and make all necessary repairs to the surfaces disturbed by the construction work.

3.11 PAVEMENT REPLACEMENT

Where pipe trenches are cut across paved driveways a temporary surface, as specified in this Section, shall be provided before permanent pavement patch is made.

- A. Where pipe is installed running longitudinally with paving, installation of backfill shall be as specified in this Section.
- B. Payment for pavement replacement shall be per linear foot of pipeline covered and shall include excavation Class A concrete trench cap, and surfacing material. Trench widths are considered to be widths as specified in this Section and extra paving width due to sloping trench sides shall be done at no additional cost to Owner.
- C. Contractor shall be responsible for any pavement replacement that is made necessary by construction equipment while working on off-road excavation.
- D. Where pipe trenches cut across or along dirt or gravel based roads or driveways, installation of backfill shall be according to this Section.

3.12 BLASTING

- A. The Contractor shall comply with all laws, ordinances, applicable safety code requirements, and regulations relative to the handling, storage, and use of explosives and the protection of life and property. The Contractor shall be responsible for all damage caused by his blasting operations. Suitable methods shall be employed to confine all materials lifted by blasting within the limits of the excavation or trench.
- B. All rock which cannot be handled and compacted as earth shall be kept separate from other excavated materials and shall not be mixed with backfill or embankment materials except as specified or directed.

3.13 UNAUTHORIZED EXCAVATION

- A. Except where otherwise authorized, shown, or specified, all materials excavated below the bottom of concrete walls, footings, slabs on grade, and foundations shall be replaced, at no additional expense to the Owner, with concrete placed at the same time and monolithic with the concrete above.

3.14 DEWATERING

- A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface water and groundwater entering excavations, trenches, or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter, until the structure to be built or the pipe to be installed therein is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.

All excavations for concrete structures or trenches which extend down to or below groundwater shall be dewatered by lowering and keeping the groundwater level beneath such excavations 12" or more below the bottom of the excavation.

- B. Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practicable without causing damage to adjacent property.
- C. The Contractor will be held responsible for the condition of any pipe or conduit which he may use for drainage purposes and all such pipes or conduits shall be left clean and free of sediment.

3.15 DISPOSAL OF EXCESS EXCAVATION

- A. Transport excess excavated material, including unsatisfactory soil material, to any designated spoil areas, and spread as specified; otherwise remove from the Owner's property and construction site, and legally dispose of such material.

3.16 DISPOSAL OF WASTE MATERIAL

- A. Remove waste materials from Owner's property and legally dispose of such material.

3.17 SETTLEMENT

- A. The Contractor shall be responsible for all settlement of backfill, fills, and embankments which may occur within one year after final completion of the Contract under which the work was performed.

- B. The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after notice from the Engineer or Owner.

3.18 PROTECTION OF GRADED AREAS

- A. Protect newly graded areas from traffic and erosion, and keep free of trash and debris.
- B. Repair and re-establish grades in settled, eroded, and rutted areas to specified compaction and tolerances.

3.19 RECONDITIONING COMPACTED AREAS

- A. Where completed compacted areas are disturbed by subsequent construction, adverse weather or other cause, scarify surface, re-shape, and compact to required density prior to further construction.

END OF SECTION

**SECTION 32 12 16
ASPHALT PAVING**

PART 1 GENERAL

1.1 PROJECT SCOPE

- A. The work covered by this Section of the Specifications consists of furnishing all materials, equipment and labor necessary for clearing and grubbing, excavating, backfilling, grading, preparation of base and subbase, curb and gutter, paving, drainage structures and all other work as indicated on the Contract Drawings and/or as specified herein.

1.2 RELATED SECTIONS

- A. Section 31 10 00 Site Clearing
- B. Section 31 23 33 Excavation & Fill for Pipeline
- C. Section 31 23 34 Excavation & Fill for Structures

1.3 GENERAL

- A. The work includes the full restoration of pavement due to water main construction and as shown on Construction Drawings and required by these Specifications. The Contractor is responsible for the scheduling of all related work. No more than 500 linear feet of pipeline construction shall be unpaved at any time.

1.4 STANDARD SPECIFICATIONS

- A. The Standard Specification Construction of Roads and Bridges latest revision of the Department of Transportation, State of Georgia (DOT) shall govern in all matters. Such Specifications are hereby incorporated by reference into these Contract Specifications.

PART 2 PRODUCTS

2.1 GRADED AGGREGATE BASE

- A. In accordance with Section 815, GDOT Standard Specifications, latest revision.

2.2 BITUMINOUS PRIME

- A. In accordance with Section 821, GDOT Standard Specifications, latest revision; Viscosity grade MC-70.

2.3 ASPHALTIC CONCRETE BASE COURSE

A. In accordance with Section 828, GDOT Standard Specifications latest revision; 25 mm.

2.2 ASPHALTIC CONCRETE BINDER COURSE

A. In accordance with Section 828, GDOT Standard Specifications latest revision; 19.5 mm.

2.3 BITUMINOUS TACK COAT

A. In accordance with Section 822, GDOT Standard Specifications latest revision; Grade SS-1 or SS-1h.

2.4 ASPHALTIC CONCRETE SURFACE COURSE

A. In accordance with Section 828, GDOT Standard Specifications latest revision; 12.5 mm.

2.5 PAINT TRAFFIC STRIPING

A. In accordance with Section 652, GDOT Standard Specifications latest revision.

2.6 THERMOPLASTIC TRAFFIC STRIPE

A. In accordance with Section 853, GDOT Standard Specifications latest revision.

2.7 COLD MIX FOR PATCHING

A. In accordance with Section 401, GDOT Standard Specifications latest revision.

2.8 PLASTIC PAVEMENT MARKINGS

A. In accordance with Section 659, GDOT Standard Specifications latest revision.

PART 3 EXECUTION

3.1 HOT MIX ASPHALTIC CONCRETE CONSTRUCTION

A. Work includes installation asphaltic concrete pavement construction and associated work as shown on the Contract Drawings and detailed in these Specifications.

- B. All work shall be performed in accordance with the appropriate sections of the GDOT standard specifications, latest revision.

3.2 TRAFFIC MARKINGS

- A. Work includes the installation of temporary traffic markings during the construction to safely direct the public during construction.
- B. Work includes the installation of permanent traffic markings to match existing traffic markings, restoration the traffic markings to original conditions prior to construction.

3.3 ACCEPTANCE

- A. Final payment is subject to City of Cumming acceptance for smoothness and trafficability.

END OF SECTION

**SECTION 32 92 00
TURF AND GRASSES**

PART 1 GENERAL

1.1 SCOPE

- A. Work under this Section shall include seeding or sodding all disturbed areas. Such areas shall be restored as nearly as possible to original condition.
- B. Sod replacement due to erosion on steep slopes will be done at no additional cost to the Owner.

1.2 RELATED SECTIONS

- A. Section 31 10 00 Site Clearing
- B. Section 31 23 33 Excavation & Fill for Pipe Line
- C. Section 31 23 34 Excavation & Fill for Structures

1.3 DELIVERY, STORAGE AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer and indication of conformance with state and federal laws, as applicable.

1.4 PROJECT CONDITIONS

- A. Weather Limitations: proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 PRODUCTS

2.1 FERTILIZER:

- A. Before planting, a fertilizer of 10:10:10, or other approved composition, shall be hand-raked into the topsoil at a rate of 10 pounds per 1,000 square feet and then watered. Apply lime as per soil test made by Contractor.

2.2 SEED

- A. The area shall be seeded with either common hulled Bermuda, at a rate of 15 lbs. per acre, or Kentucky 31 tall fescue, at a rate of 50 lbs. per acre.

2.3 MULCHES

- A. The area shall be mulched with hay at a rate of 2-1/2 tons per acre.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
 - 1. Verify that no foreign or deleterious material or liquid such as concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, or chemicals has been deposited in soil within a planting area.
 - 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 - 3. Suspend soil spreading, grading and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements and other facilities, trees, shrubs and plantings from damage caused by planting operations.
- B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus ½ inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.3 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions in right angles to each other.
- B. Do not use wet seed or seed that is moldy or otherwise damaged.
- C. Sow seed at a total rate of 3 to 4 lb/1,000 sq. ft.
- D. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly and water with fine spray.

3.4 CLEAN UP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks or other paved areas.
- B. All seeding shall be watered thoroughly as soon as completed and shall be watered at least twice daily, or more often is necessary, to provide continuous growth without setback until all growth from seed is thoroughly established.
- C. An acceptable stand of grass shall be obtained by the Contractor, as determined by the Engineer and defined as covering 98% of the area to be grassed with no bare area greater than one square foot and the entire area fully stabilized against erosion.
- D. If the schedule of construction is such that grassing cannot be accomplished before final inspection of all other items of the Work, the Contractor shall obtain a signed proposal to the Owner for 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, as specified above, by the local landscaper at time of grassing and this work shall be included in his proposal.

END OF SECTION

**SECTION 33 31 00
SANITARY UTILITY SEWERAGE PIPING**

PART 1 GENERAL

1.1 SCOPE

- A. The work to be done under this Section of the Specifications consists of furnishing all materials and equipment and performing all labor necessary for the complete construction of the gravity sewer system including all sewer pipe, house service lines and other appurtenances as indicated on the Contract Drawings and/or specified.

1.2 RELATED SECTIONS

- A. Section 01 33 00 Submittal Procedures
- B. Section 31 23 33 Excavation & Fill for Pipeline
- C. Section 33 39 00 Sanitary Utility Sewerage Structures

1.3 GENERAL

- A. All materials used in the construction shall be new and unused when delivered to the site and shall be subject to inspection by the Engineer before installation.

PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE AND FITTINGS

- A. Ductile iron pipe shall be push-on or mechanical joint conforming to AWWA C106 or C108. Pipe thickness shall be in accordance with AWWA C150, Class 50, or pressure Class 350. The pipe shall be cement-lined in accordance with AWWA C104. Rubber-gasket joints shall conform to AWWA C111.
- B. Fittings for gray iron or ductile iron pipe shall be mechanical joint gray iron or ductile iron fittings conforming to AWWA C153 and shall be cement-lined.
- C. Use flanged ductile iron pipe with standard cement lining and standard asphaltic coating conforming to AWWA C151. For exposed piping to be painted, use universal phenolic primer. Flanges to be in accordance with AWWA C110 and AWWA C115. Flanges to be Class 150, unless otherwise specified. Bolts for flanges shall be 304 stainless steel.
- D. Where called for on the Contract Drawings Protecto 401 ceramic epoxy lining material shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment and a permeability rating of 0.00 when tested

according to Method A of ASTM E-96. The interior of the pipe shall receive 40 mils nominal dry film thickness and the gasket area and spigot end up to 6 inches back from the end of the spigot must be coated with 6 mils nominal, 10 mils maximum using Protecto 401 Joint Compound.

2.2 CASING PIPE

- A. Jacked casing pipe shall be a smooth steel pipe with a minimum yield point of 35,000 psi, meeting ASTM A53 or ASTM A139. The minimum wall thickness shall be as indicated below:

<u>Nominal Diameter (Inches)</u>	<u>Nominal Thickness (Inches)</u>
Under 14	0.188
14	0.219
16	0.219
18	0.250
20	0.281
24	0.344
30	0.406
36	0.469

PART 3 EXECUTION

3.1 STAKING AND GRADING

- A. The Contractor shall be responsible for providing laser beam equipment and using this equipment to grade and align all sewer lines between manholes. The Engineer will provide a list of bench mark elevations from which the Contractor may work.

3.2 INSPECTION OF PIPE AND JOINTS

- A. All pipe shall be subject to inspection by the Engineer for uniform diameter, straightness, and defects before being lowered into trench. Rejected pipe shall be marked in such a way as will not impair its value and separated from accepted pipe and removed from the project.
- B. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to make an inspection of the joints, alignment and grade in the section laid.

- C. Inspection of piping and joints shall not relieve the Contractor of further liability in case of defective piping and/or joints which prove defective.

3.3 TRENCH WIDTHS

- A. Maximum permissible trench widths from bottom of trench to a point 12" above top of pipe shall be equal to the outside diameter of pipe barrel plus 16", except as noted otherwise.
- B. If the trench walls collapse, or if the excavated trench width up to a point 12" above the top of sewer pipe is greater than the maximum permissible trench width as set forth in Paragraph A above, then the Contractor shall, at no additional cost to the Owner, lay and backfill the line as specified in ASTM D2321.

3.4 JOINT CONSTRUCTION

- A. Each joint shall be laid so that it will form a close concentric joint with adjoining pipe and so as to avoid sudden offsets or inequalities in the flow line. The inside of all bells and the outside of all spigots shall be wiped to remove all dirt, water, or other foreign matter so that their surfaces are clean and dry when the pipes are jointed.
- B. Rubber ring gasket joints for PVC pipe shall be installed according to the pipe manufacturer's Specifications and recommendations. Extreme care shall be used in joining large diameter pipe to avoid damaging the rubber ring or displacing it from the proper operating position.
- C. Push-on or mechanical joints on cast iron sewer shall be installed according to the pipe manufacturer's Specifications and recommendations.
- D. After the joints have been completed, they shall be inspected by the Engineer before they are covered up. Any leaks or defects discovered at any time after completion of the work shall be repaired immediately. All pipe in place shall be carefully protected from damage until the backfilling operations have been completed. Any pipe which has been disturbed shall be taken up, the joint cleaned and remade and the pipe re-laid at no addition cost to the Owner.
- E. Water shall not be allowed to run or stand in the trench while pipe laying is in progress or before the joints are completed or before the trench has been backfilled. The Contractor shall not open up, at any time, more trench than his available pumping facilities are able to dewater.

3.5 PIPE LAYING - GENERAL

- A. Before sewer pipe is placed in position in the trench, the bottom and sides of trench shall be carefully prepared, bedding shall be placed and compacted, and necessary bracing and sheeting shall be installed.
- B. Each piece of pipe and special fitting shall be carefully inspected before it is placed and no defective pipe shall be laid in the trench. Pipe laying shall proceed upgrade starting at the lower end of the grade and with the bells upgrade.
- C. All sewer lines shall be laid to constant grades between invert elevations shown on the plans. Grades shown on the Drawings are invert of pipe and not trench subgrade. The pipe lengths shall be fitted together and matched so that when they are laid in the trench they will form a sewer with a smooth and uniform invert visible as a full circle from manhole to manhole.
- D. No filling of trench with earth to bring pipe to grade will be permitted. If trenches are dug too deep, they must be brought to grade and supported by No. 57 crushed stone for pipe bedding, at no additional cost to Owner. No pipe shall be laid in the trench until subgrade is tested and found correct.
- E. Pipe shall not be laid on solid rock. A pad of crushed stone for pipe bedding as hereinbefore specified at least 6" deep, shall provide support for at least the bottom quadrant of the pipe.
- F. No walking upon the completed pipelines will be permitted until trench has been backfilled to a depth of at least 6" over the top of pipe. Exception may be made at the discretion of the Engineer where it is necessary in order to tamp the backfill around the pipe.
- G. The interior of the pipe shall, as the work progresses, be cleaned of all dirt, jointing materials, and superfluous materials of every description. When laying of pipe is stopped for any reason, the exposed end of such pipe shall be closed with a plywood plug fitted into the pipe bell so as to exclude earth and other material, precautions being taken to prevent floatation of pipe by runoff into trench.
- H. Laying of pipe may be delayed by the Engineer until trenching has progressed far enough ahead to remove the possibility of having to change grade or alignment on account of other structures, pipelines or conduits.

- I. Unless permitted or directed for the following reasons, not less than 100' of pipe shall be laid at one operation:
 - 1. Street crossings;
 - 2. Wet caving trenches; and
 - 3. Business, houses, or institutions which would be damaged by prolonged disconnection from street.

- J. In wet, yielding, and mucky locations where pipe is in danger of sinking below grade or floating out of grade or line, or where backfill materials are of such a fluid nature that such movements of pipe might take place during the placing of the backfill, the pipe must be weighted or secured permanently in place by such means as will prove effective.

- K. When ordered by the Engineer, mucky and quicksand trench subgrades shall be removed below ordinary trench depth. Pay for such excavation shall be included in the unit prices bid for stone stabilization.

- L. Pipes shall be laid free from all structures other than manholes. Any pipes entering structures underground unsupported by original earth shall be supported by Class "C" concrete or brick and mortar masonry.

- M. Avoid permitting dirt, rubbish, surplus construction material, and other foreign matter to enter structures or pipe during construction. Use whatever means may be necessary to obtain a clean and internally smooth drainage system prior to final acceptance.

- N. Pipe stubbed out of manholes for future connection shall be plugged and tightly sealed with a plug jointed in the bell with joint compound approved by the Engineer. Plugs shall be made of the same material as the pipe used for the stubs.

- O. Sewer pipe laid shall be paid for as specified in the MEASUREMENT AND PAYMENT Section of these Specifications.

- P. No joints that show leakage will be accepted. If, after backfilling and inspection, any joints are found that are allowing groundwater to enter the sewer, such joints must be dug up and corrected at no additional cost to Owner.

3.6 WATER LINE SEPARATION

- A. Horizontal Separation: Sewers shall be laid at least 10 feet horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten foot separation, the Contractor shall notify the Engineer who may allow deviation on a case-by-case basis. Such deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer.
- B. Crossings: Sewers crossing water mains and service lines shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, 10 linear feet of concrete encasement shall be provided for the sewer to prevent damage to the water main.
- C. Special Conditions: When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the sewer shall be constructed using ductile iron pipe of strength equal to water pipe, and shall be pressure tested to assure water tightness prior to backfilling.

3.7 SERVICE CONNECTIONS TO SEWER MAIN

- A. Branch service pipes shall be laid to serve the abutting property at points to be designated by the Engineer. Such pipes shall be connected to the sewer through tees or wyes with the same run size as the main sewer and 6" side branch and 6" 45 degree bends. Side branches shall be supported from bottom of trench with crushed stone (No. 8 to 3/4") where cover is less than 6'.
- B. Six-inch service pipe shall be laid from the main sewer to the property line of the abutting property. Where practical, due to the slope of the existing ground, the service lines shall end at the property line with a wye which shall provide service connections to two adjacent properties. These locations shall be determined by the Engineer. Payment for service connections to sewer main shall be made at the unit prices stated in the Bid Schedule.
- C. Under normal conditions, where elevations are not critical, branch service sewers to customers shall be laid on not less than 0.025 feet per foot of length grade. Where elevations are critical, minimum grade shall be 0.0125 feet per foot laid with batter boards and grade line string.

- D. In the case of deep sewers, as directed by the Engineer, branch pipes may be brought up to a depth of approximately 4' below ground level with suitable bends and service pipe. These pipes shall be laid on a slant outside sewer trench so they will be supported on original earth and not dragged down and cracked by backfill settlement. Where depth of cover over wye or tee branches is greater than 6', these wyes or tees shall be encased in concrete. Cost of such concrete shall be included in the price bid for service pipe.
- E. In the case of branches to deep sewers in rock or narrow places, the service pipe shall be brought up to a depth of approximately 4' below ground level with suitable bends and riser pipe and encased in Class "C" concrete or brick and mortar masonry to subgrade of branch trench. The cost of such concrete and forms or masonry above the wye or tee branch shall be included in the price bid for service connections.
- F. The Contractor shall make an accurate dimensional record of the service connections as the installations are made. The following information shall be recorded:
 - 1. Distance from nearest manhole to wye or tee connection at main sewer;
 - 2. Distance from main sewer to end of service line;
 - 3. Angle between main sewer and service line; and
 - 4. Depth at end of service line.
- G. These records shall be kept by the Contractor until all connections are made and then submitted to the Engineer prior to the final work claim.
- H. Exact location of the service connections and stub tee or wyes shall be determined by the Engineer in the field.

3.8 GRAY AND DUCTILE IRON PIPE LAYING

- A. Gray and ductile iron sewers, where indicated on the Drawings, shall be laid to line and grade and according to provisions regarding bedding, laying, and jointing of AWWA C400, except that joints shall be made with mechanical or push-on joints, according to the manufacturer's specifications and using manufacturer-recommended tools. A copy of the manufacturer's instructions shall be made available at the site of work at all times when pipe is being laid.
- B. Cutting of pipe may be done with wheeled pipe cutters or with hammer and chisel, as the Contractor may elect; but, the Contractor will be held responsible for breakage or damage caused by careless cutting or handling.
- C. No pipe shall be laid on rock, blocking, or other unyielding objects, except where laid above ground on piers or in permanent tunnels.

- D. Materials for use as foundation, embedment and backfill shall be classified in accordance with ASTM D2487.
- E. Class IA Soils: Class IA soils include open-graded, clean manufactured aggregates and should be considered suitable for embedment and backfill.
- F. Class IB Soils: Class IB soils include dense-graded, clean manufactured, processed aggregates and should be considered suitable for embedment and backfill.
- G. Class II Soils: Class II soils include groups GW, GP, SW, SP, GW-GC and SP-SM as defined by the Unified Soil Classification System (USCS) and should be considered suitable for embedment and backfill.
- H. Class III Soils: Class II soils include groups GM, GC, SM and SC as defined by the USCS and should be considered suitable for embedment and backfill.
- I. Class IVA Soils: Class IVA soils include groups ML and CL as defined by the USCS and should be considered suitable for embedment and backfill.
- J. Class IVB and V Soils are not recommended for embedment and should be excluded from final backfill. Class IVB and V soils include groups MH, CH, OL, OH and PT as defined by the USCS.

3.9 COMPACTION REQUIREMENT AND TESTING

- A. Compactions shall be as specified in the PIPELINE EXCAVATION & BACKFILL Section.

3.10 INFILTRATION TESTS

- A. Weir tests shall be made of flow of water from all sewers before they are put into service.
- B. No more than 3,000 feet of sewer in one section shall be weir tested at one time.
- C. Suitable metal or wooden weirs shall be installed at the lower end of the section of sewer being tested, and measurements of flow shall be made.
- D. Any leaks into the sewer of significant magnitude that can be located shall be repaired or corrected as authorized by the Engineer, regardless of infiltration tests results.

3.11 INFILTRATION ALLOWANCE

- A. Infiltration of groundwater or other leakage into the sewer (including manholes) shall not exceed 25 gallons per mile of sewer per inch of inside diameter of the sewer per 24 hours in any section of the completed work.
- B. Inspection during pipe laying shall in no way relieve the Contractor of the responsibility for passing tests or correcting poor workmanship. Before acceptance, infiltration shall be reduced by repair of leaks to the allowable rate.
- C. Hydraulic Testing of Sewers: Measurement shall be performed by the City on any lines with a visible flow of water. In no case will an infiltration rate greater than 25 gallons per inch of pipe diameter per mile of sewer per day is allowed. All visible or audible leaks must be dug up and repaired unless the leak is found to be in a joint and can be repaired by chemical grouting. The testing procedure shall be in accordance with ASTM C1091 (Infiltration Testing), or ASTM C969.

3.12 AIR TESTS

- A. Air Pressure Testing of Sewers: A low pressure test of each sewer should be conducted according to Unibell UNI-B-6 or ASTM F1417.
- B. The Contractor shall air test the completed sewer line between each two consecutive manholes. If the test fails between manholes, the testing shall continue at closer intervals until the faulty construction is located and repaired.
- C. Test manholes and equipment used shall be approved by the Engineer prior to beginning the testing operation.
- D. Test sections shall be cleaned and flushed and shall have all pipe openings plugged and adequately braced to withstand the test pressure.
- E. The test section shall be pressurized until the internal pressure reaches 4.5 psig. Allow sufficient time for the air temperature in the test section to stabilize.
- F. Reduce the internal pressure to exactly 3.5 psig and accurately determine the time required for the pressure to drop to 3.0 psig.
- G. The minimum time required for the pressure drop shall be 5 minutes for 8-inch pipe and 10 minutes for 16-inch pipe.
- H. Any section of the sewer line which fails to meet the requirements state above, shall be repaired as necessary to eliminate all detectable leaks and shall be retested until satisfactory test results can be obtained. The Engineer shall approve final test results.

- I. The prescribed test pressure shall be in excess of the hydrostatic pressure of the groundwater above the top of the pipe. The pressure drop shall remain as indicated above.
- J. All PVC and Ductile Iron pipe shall be air tested after installation in accordance with this specification.

3.13 VIDEO INSPECTION OF SEWER LINES

- A. All sewer lines shall be video inspected.
- B. Video should show pipe free of dirt and debris. Prior to test, pipe should be jetted, flushed and vacuumed.
- C. Televising cable attached to a video monitor shall be directed through pipe to view for the following deficiencies:
 - 1. Cracks in pipe and liner material.
 - 2. Rolled gaskets.
 - 3. Leaking joints.
 - 4. Deviations from line and grade.
 - 5. Other deficiencies.
- D. Contractor shall repair all deficiencies noted by the Owner. Method of repair must be approved by the Owner's Engineer.
- E. Test shall be considered acceptable when the televised pipe does not reveal deficiencies as described above in paragraph C.
- F. The Owner's inspector must witness televising.

3.14 HIGHWAY CROSSINGS

- A. Installation of the gravity sewers and appurtenances along or crossing State, Federal and County Highway rights-of-way shall be done only with written consent and in strict accordance with the specifications of the right-of-way owner.
- B. Sewers crossing State and Federal Highways shall be inserted in a steel casing pipe. Casing pipe shall be of a size as shown on the Drawings. Carrier pipe shall be PVC pipe inserted in the casing as described on the Drawings. Casing pipe shall be installed with a minimum cover of 48".
- C. Casing pipe may be bored or jacked and payment shall be per foot of casing actually installed. Jetting or wet boring will not be permitted.

- D. Sewer mains crossing City or County Highways shall be open cut, unless otherwise shown on the Drawings. Compaction and pavement replacement shall be as specified in the PIPELINE EXCAVATION AND BACKFILL Section.
- E. Following construction on highway right-of-way, Contractor shall be responsible for dressing, shaping, and re-seeding as required to return the highway ditches, shoulders and ditch back slopes to a condition as close as possible to original condition before the beginning of construction operations.
- F. It shall be the responsibility of the Contractor to notify the right-of-way owner's field engineer before doing any work within the right-of-way.

3.15 AS-BUILT DRAWINGS

- A. At the completion of the job, and prior to the request of Final Payment, the Contractor shall furnish the Engineer As-Built drawings for the entire project. The drawings shall show the locations and elevations of all manhole tops and inverts, locations of all service laterals and their depths, and the locations, type and size of all pipes and casings. As-Built drawings shall be to scale and neatly drawn.
- B. At the completion of the work, the Contractor shall provide the Owner a survey made by a registered surveyor, showing that the force main was installed within the permanent easement indicated on the construction drawings.
- C. The Contractor agrees to indemnify the Owner, the Engineer, its agents, representatives, etc., and hold them harmless from any work performed by the Contractor or its subcontractors, outside of the easements shown on the drawings.

3.16 PAYMENT

- A. No separate payment will be made for the work of this Section, except as may be specifically set forth in the Bid Schedule. The cost of the work of this Section, and all costs incidental thereto, except the work which may be specifically set forth in the Bid Schedule, shall be included in the price bid for the item to which the work pertains.

END OF SECTION

SECTION 33 34 00
SANITARY UTILITY SEWERAGE FORCE MAIN

PART 1 GENERAL

1.1 SCOPE

- A. The work to be done under this Section of the Specifications consists of furnishing all materials and performing all labor necessary for the complete construction of the force mains, including all piping and fittings, as indicated on the Drawings and/or specified.

1.2 RELATED SECTIONS

- A. Section 01 33 00 Submittals
- B. Section 31 23 33 Excavation & Fill for Pipeline
- C. Section 33 35 00 Sanitary Utility Sewerage Valves

1.3 GENERAL

- A. All materials used in the construction shall be new and unused when delivered to the site and shall be subject to inspection by the Engineer before installation.

PART 2 PRODUCTS

2.1 DIP PIPE AND FITTINGS

- A. Ductile iron pipe shall meet the requirements AWWA C151 with push-on and mechanical joints meeting AWWA C111 and a standard cement lining. Pipe shall be pressure Class 350.
- B. Fittings for the sewage force mains shall be mechanical joint, gray iron, or ductile iron, conforming to AWWA C153, with a working pressure of 200 psi.

2.2 CASING PIPE

- A. Jacked casing pipe shall be a smooth steel pipe with a minimum yield point of 35,000 psi, meeting ASTM A53 or ASTM A139. The minimum wall thickness shall be as indicated below:

<u>Nominal Diameter (Inches)</u>	<u>Nominal Thickness (Inches)</u>
Under 14	0.188
14	0.219
16	0.219
18	0.250
20	0.281
22	0.312
24	0.344
26	0.375
28	0.406
30	0.406
32	0.438
34	0.469
36	0.469
42	0.500

2.3 MARKER BALLS

- A. Marker balls shall be 3M Dynatel Series EMS ID Ball Markers Model Number 1424-XR/ID for sewer. These marker balls shall be programmable

PART 3 EXECUTION

3.1 DIP FORCE MAIN PIPE LAYING

- A. DIP shall be laid in conformance with AWWA C600.
- B. Pipe, appurtenances, and fittings shall be laid to the line and grade established on the Drawings, or as directed by the Engineer. A minimum cover of 48" shall be maintained over all pipe, unless otherwise indicated. The bed for the pipe shall be shaped either by trimming the bottom of the trench or by placing excavated earth thereon and tamping so that each piece of pipe has uniform bearing. The trench shall be further excavated around each bell or hub, so that it will be entirely clear of the ground and leave ample room for making joints.
- C. The inside of the bells and the outside of the spigots shall be thoroughly cleaned before they are placed. The inside of all pipes shall be thoroughly swabbed to insure that the pipe is clean and free of obstructions and foreign matter until the work is completed.

- D. Where pipe laying ceases at the end of the day, or for any cause, the end of the pipe shall be securely closed in order to prevent the entrance of water, mud, critters, or any other objectionable matter.
- E. The Contractor shall furnish and install pipe identification tape with the words "Buried Sewer Line." The tape shall be secured to the pipe and shall be continuous along the entire length of sewage force main. Payment for furnishing and installing tape shall be included in the Unit Price bid for the pipe.
- F. In the event the sewage force main crosses a water main, a minimum vertical distance of 18" between the outside of the water main and the outside of the force main shall be maintained. This shall be the case where the water main is either above or below the force main. The crossing shall be arranged so that the force main joints will be equidistant and as far as possible from water main joints. Where a water main crosses under the force main, adequate structural support shall be provided for the force main to prevent damage to the water main. A separation of 10 feet should be maintained between the force main and water main where they are laid parallel.

3.2 TRENCH WIDTHS

- A. Maximum permissible trench widths from bottom of trench to a point 12" above top of pipe shall be equal to the outside diameter of pipe barrel plus 16", except as noted otherwise.
- B. If the trench walls collapse, or if the excavated trench width up to a point 12" above the top of sewer pipe is greater than the maximum permissible trench width as set forth in Paragraph A above, then the Contractor shall, at no additional cost to the Owner, lay and backfill the line as specified in ASTM D2321.

3.3 JOINT CONSTRUCTION

- A. Each joint shall be laid so that it will form a close concentric joint with adjoining pipe and so as to avoid sudden offsets or inequalities in the flow line. The inside of all bells and the outside of all spigots shall be wiped to remove all dirt, water, or other foreign matter so that their surfaces are clean and dry when the pipes are jointed.
- B. Push-on or mechanical joints on cast iron sewer shall be installed according to the pipe manufacturer's Specifications and recommendations.

- C. After the joints have been completed, they shall be inspected by the Engineer before they are covered up. Any leaks or defects discovered at any time after completion of the work shall be repaired immediately. All pipe in place shall be carefully protected from damage until the backfilling operations have been completed. Any pipe which has been disturbed shall be taken up, the joint cleaned and remade and the pipe re-laid at no addition cost to the Owner.

3.4 INSPECTION OF PIPE AND JOINTS

- A. All pipe shall be subject to inspection by the Engineer for uniform diameter, straightness, and defects before being lowered into trench. Rejected pipe shall be marked in such a way as will not impair its value and separated from accepted pipe and removed from the project.
- B. No backfilling (except for securing pipe in place) over pipe will be allowed until the Engineer has had an opportunity to make an inspection of the joints, alignment and grade in the section laid.
- C. Inspection of piping and joints shall not relieve the Contractor of further liability in case of defective piping and/or joints which prove defective.

3.5 TESTING

- A. When a section of pipe of a length deemed adequate by the Engineer is ready for testing, the line shall be thoroughly blown free from air and a leakage test made; and the Contractor shall furnish all labor, materials and equipment for carrying out these tests. Wherever conditions will permit, in the opinion of the Engineer, pipelines shall be tested before the trench is backfilled. All joints then shall be examined during open trench test and all leaks entirely stopped. The Contractor shall furnish a test pump and means for accurate measurement of water introduced into the line during testing and shall furnish and install corporation stops at all high points on the line as required for blowing lines free from air and at the test pump location.
- B. The Contractor shall furnish, install and remove all temporary bulkheads, flanges or plugs necessary to permit the required pressure tests and shall furnish all equipment and labor to properly carry out such tests and to replace defective material.
- C. Any cracked or broken material such as pipe, fittings, valves or hydrants shall be removed and replaced with sound pieces, at the expense of the Contractor. Joints which leak shall be carefully remade. Remade joints and replaced material shall be retested under the same conditions of operation. If joints or materials are then found to be defective, they shall be remade and replaced until the line passes the required test.

- D. A leakage test shall be conducted after the pressure test has been satisfactorily completed. The duration of each leakage test shall be 2 hours. During the test, the system shall be subjected to a pressure of 150 psi gauge.
- E. No separate payment will be made for leakage and pressure tests.
- F. Test pressure shall be 150 psi at the low point on the line to be tested. Minimum test period shall be two hours. However, if in the opinion of the Engineer additional testing is required, such additional testing shall be performed by the Contractor at no additional expense to the Owner. Leakage shall exceed the following gallons per hour per 1,000 feet of pipe:

<u>Pipe Size (inches)</u>	<u>Allowable Leakage (gallons)</u>
4	0.33
6	0.50
8	0.66
10	0.83
12	0.99
14	1.16
16	1.32
20	1.66
24	1.99

- G. No separate payment will be made for the above work. The cost of the above work and all costs incidental thereto shall be included in the price bid for the items to which work pertains.
- H. Documentation: Each hydrostatic test shall be documented using the following format:

HYDROSTATIC FORCE MAIN PIPELINE TEST REPORT

Date _____ Tester _____

Project Name _____

Location _____

Pipe Diameter _____ Pipe Length _____ Pipe Material _____

Meter Number & Size _____ Meter Reading _____

Allowable Leakage (for two-hour test period) _____

Test Start Time _____ Test Ending Time _____

Test Pressure Used _____ Leakage Recorded _____

Test Analysis (U-unsatisfactory S-satisfactory) _____

Sketch of pipe layout being tested (include fittings, caps, and plugs, etc. in the sketch) to be noted below or to be attached.

END OF SECTION

**SECTION 33 35 00
SANITARY UTILITY SEWERAGE VALVES**

PART 1 GENERAL

1.1 SCOPE

- A. The work to be done under this Section of the Specifications consists of furnishing all materials and performing all labor necessary for the complete construction of the valves, as indicated on the Contract Drawings and/or specified.

1.2 GENERAL

- A. All materials used in the construction shall be new and unused when delivered to the site and shall be subject to inspection by the Engineer before installation.

1.3 RELATED SECTIONS

- A. Section 01 33 00 Submittal Procedures
- B. Section 01 78 23 Operation and Maintenance Data
- C. Section 33 34 00 Sanitary Utility Sewerage Force Mains

1.4 SUBMITTALS

- A. The following information shall be submitted for review in accordance with Section 01 33 00:
 - 1. Submit valve manufacturer's catalog data, descriptive literature and assembly drawings. Show dimensions, materials of construction by specification reference and grade, linings and coatings.
 - 2. Submit manufacturer's affidavit of compliance with referenced standards.

1.5 OPERATION & MAINTENANCE MANUALS

- A. Submit Operation and Maintenance (O&M) instructions in accordance with Section 01 78 23. O&M manuals shall reflect the approved materials and equipment.

PART 2 PRODUCTS

2.1 PLUG VALVES

- A. Plug valves shall be of the eccentric non-lubricated, manually operated type, and be designed for the use and working pressure intended.
- B. Valves shall have flanged ends or mechanical joint end, as shown on the Drawings. Valve body shall be of semi-steel.
- C. Seats shall have a welded-in overlay of not less than 90% pure nickel on all surfaces which will contact the plug face.
- D. The plug shall be totally encapsulated with Buna-N rubber.
- E. Plug stem bushing shall be of stainless steel, and permanently lubricated type.
- F. Valves shall have a 2" square operating nut, with worm gear actuator and open LEFT.
- G. Valves placed in a valve box shall have a handwheel operator.
- H. Plug valves shall be as manufactured by DeZurik, Homestead, or approved equal.

2.2 SEWAGE AIR RELEASE VALVE

- A. The sewage air release & vacuum break valve shall consist of all stainless steel fabricated body.
- B. Connection to the valve inlet shall be facilitated by flanged ends conforming to ANSI B16.1 Class 125 or Class 250 Standards.
- C. Valves shall respond to the presence of air/gas by discharging it through the small orifice at any pressures within a specified design range, i.e. 7 psi to 150 psi and shall remain leak tight in the absence of air.
- D. Valves shall react immediately to pipe line drainage or liquid column separation to allow unobstructed air intake at the lowest possible negative internal pipe line pressure.
- A. The sewage air release valves shall be Vent-O-Mat Model No. 050RGX1021 or International Valve Model SZG with 2-inch inlet size.

2.3 GATE VALVES

- A. Pump station gate valves shall be resilient-seated wedge type.
- B. Valve body, bonnet and wedge shall be constructed of ductile iron. The exterior of the ductile iron wedge shall be encapsulated with nitrile rubber.
- C. The wedge shall be symmetrical and seal equally well with flow in either direction. There shall be no exposed metal seams, edges or screws within the waterway.
- D. The stem shall be bronze in full compliance with Section 4.7 of AWWA C509.
- E. Wrench nut shall be constructed of ductile iron. Wrench nut shall have 4 flats at stem connection to assure even distribution of operating input torque to the stem.
- F. All Body-to-bonnet and bonnet-to-cover seals shall be O-rings. Flat gaskets shall not be allowed.
- G. Stem shall be sealed by 3 O-rings. The top 2 O-rings shall be replaceable with valve fully open and while subject to full rated working pressure. O-rings set in a cartridge shall not be allowed.
- H. Valve shall have thrust washers located above and below thrust collar to assure easy operation of the valve.
- I. All internal and external ferrous surfaces of the valve body and bonnet shall have a fusion bonded epoxy coating, complying with ANSI/AWWA C550, applied electrostatically prior to assembly. 250# raised face flanges shall be provided when required.
- J. Valves shall be American Flow Control's Series 2500 Ductile Iron Resilient Wedge Gate Valve or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install valves as shown on the Contract Drawings and in accordance with manufacturer's requirements.

END OF SECTION

SECTION 33 39 00
SANITARY UTILITY SEWERAGE STRUCTURES

PART 1 GENERAL

1.1 SCOPE

- A. The work to be done under this Section of the Specifications consists of furnishing all materials and equipment and performing all labor necessary for the complete construction of manholes and wet well including all appurtenances as indicated on the Contract Drawings and/or specified.

1.2 GENERAL

- A. All materials used in the construction shall be new and unused when delivered to the site and shall be subject to inspection by the Engineer before installation.

1.3 RELATED SECTIONS

- A. Section 01 33 00 Submittals
- B. Section 31 23 33 Excavation & Fill for Pipeline

PART 2 PRODUCTS

2.1 PRECAST CONCRETE MANHOLES

- A. Manholes shall have flexible pipe connectors manufactured in accordance with ASTM C923. Manholes shall have eccentric type of manhole cone.
- B. Precast manholes shall consist of precast reinforced concrete riser section, eccentric top section and a base section conforming to detail shown on the Contract Drawings. Precast manhole sections shall be manufactured in accordance with ASTM C478, as amended to date, and these Specifications. Concrete shall have a minimum compressive strength of 4,000 psi when tested in accordance with ASTM C39, as amended to date. Steel reinforcements shall be as specified in ASTM C478, as amended to date. Wall and bottom section shall have a minimum thickness of five inches (5").

- C. Base sections for precast manholes shall have a bottom poured monolithically with the walls. Base section shall be furnished with inside diameter of 4 feet as required. Base sections shall be furnished with a minimum height of 24 inches for pipes having a diameter of 8, 10 or 12 inches and a minimum height of 36 inches for pipes having a diameter of 15 or 18 inches. Minimum height for 5 or 6-foot diameter base sections shall be 48 inches regardless of pipe size. Base sections with 5 or 6 foot inside diameters shall be reduced to 4 foot inside diameter by means of an adapter ring or transition top. The openings in the base section for the accommodation of the pipe shall be cast to closely conform to job conditions and shall provide a minimum clearance of three inches (3") between the inside bottom of the base and outside bottom of the pipe barrel.
- D. The riser sections shall be furnished in a minimum of six inch (6") increments and shall be four feet (4') in diameter with, (a) tongue and groove joint to be sealed with approved butyl rubber or bitumastic material, similar to "E-Z Stik" as manufactured by Concrete Supply Company. The gasket joint shall be thoroughly cleaned of all loose materials and brushed with an approved epoxy to give a smooth surface free of any honeycomb.
- E. In the event that the manhole has to be altered after delivery to the job site, the Contractor may, with permission of the Engineer, connect the pipe to the manhole with a collar of mortar and brick. The opening between the pipe and manhole shall have a minimum clearance of one inch (1") and shall be filled from the inside of the manhole with a non-shrink grout.
- F. Repaired and patched sections will not be acceptable unless each individual section so repaired or patched shall have first been inspected and approved by the Engineer, for repair and patching at the manhole plant. Repairs to and patching of O-ring grooves and shoulders WILL NOT BE permitted.
- G. Absorption shall not exceed 6 percent when determined in accordance with ASTM C497, as amended to date.
- H. An inspection, by an independent testing laboratory approved by the Engineer, of the manufacturer's plant and product will be required to assure conformity of the precast manholes to these Specifications, and the minimum requirements of ASTM C478, as amended to date. Each section of precast concrete manhole shall be stamped with the laboratory's stamp. Each stamped section shall indicate the laboratory's configuration that it was accepted in accordance with applicable ASTM Specifications. A copy of such reports will be furnished to the Engineer with submittal of shop drawings for approval. Job site inspection shall be visual for shape, uniformity and density.

2.2 MANHOLES AND CASTINGS - GENERAL

- A. Manholes shall be precast concrete manholes and shall be located as shown on the Drawings. All manholes shall be 48" inside diameter, unless noted otherwise, and shall be installed level, true and plumbed.
- B. Where the difference in the invert elevation of two or more sewers intersecting in one manhole is 2' or more, a drop manhole shall be constructed. Drop manholes shall be similar in construction to the standard manhole except that a drop connection of pipe and fittings of the proper size and material shall be constructed outside the manhole as detailed on the Drawings.
- C. Where the difference in invert elevation of two or more sewers intersecting in one manhole is less than 2-feet, the invert shall be filleted to prevent deposition of solids.
- D. Pipe to manhole connection shall be made with a mechanically compressed flexible joint system. The joint system shall consist of an internal expanding band which clamps and seals a neoprene boot to opening in wall of manhole and an external band which contracts around the boot to clamp and seal to the pipe. Flexible Joint Connections shall be "Kor-n-seal", as manufactured by National Pollution Control System, Inc., Nashua, New Hampshire, or approved equal.

2.3 MANHOLE CASTINGS

- A. All castings shall be made accurately to the required dimensions and shall be sound, smooth, clean and free of blisters and other defects. Defective castings which have been plugged or otherwise treated shall be rejected. The contact surfaces between the cover and its corresponding supporting ring in the frame shall be machined so that the cover will rest on the ring for the full perimeter of the contact surfaces. Castings shall be thoroughly cleaned and, before rusting begins, shall be painted with a bituminous coating so as to present a smooth finish, tough and tenacious when cold, but not tacky nor with any tendency to scale. There shall be no holes or perforations in the covers.
- B. Manhole castings shall consist of cast iron frames and 23-1/4" diameter covers. Castings shall be Class II, weighing at least 350 and 460 pounds, as detailed on the Contract Drawings. Manhole covers must be set neatly in the frames with contact edges machined for even bearing and tops flush with the tops of the frames. They shall have sufficient corrugations to prevent slipperiness and be marked in large letters "GRAVITY SEWER". Covers shall have two (2) pick holes about 1-1/2" wide and 1" deep with 5/8" undercut all around.

- C. Manhole frames and covers shall be bolt down type with four stainless steel bolts 1/2" in diameter.
- D. Manhole steps shall be cast iron, 10" x 10" minimum size, having corrugated treads, or approved equal. Payment for manhole steps shall be included in the unit price bid for manhole.

2.4 INVERTS

- A. Manhole inverts shall be constructed of cement mortar and shall have the same cross-section as the invert of the sewers which they connect. The manhole invert shall be carefully formed to the required size and grade with gradual and uniform changes in sections and shall be made to a true curve with as large a radius as the size of the manhole will permit.

2.5 MANHOLE COATINGS

- A. Manholes requiring coating shall be coated with one (1) prime coat of Tnemec Series 218 and two (2) finish coats of Tnemec Series 104, 8 to 10 mils dft, or approved equal.

PART 3 EXECUTION

3.1 STAKING AND GRADING

- A. The Engineer shall be responsible for providing bench marks from which the Contractor shall work. The Contractor shall set offset stakes for line and grade.
- B. The Contractor shall be responsible for providing laser beam equipment and using this equipment to grade and align all sewer lines between manholes. The Engineer will provide a list of bench mark elevations from which the Contractor may work.

3.2 MANHOLE INFILTRATION TEST

- A. Each manhole shall be tested for watertightness.
- B. All connecting piping shall be plugged and manhole filled with water, allowed to stand for one (1) hour, and then refilled. If measurable water level drop occurs after a second one-hour period, the Contractor shall repair the leakage and retest at no additional cost to the Owner.

3.3 VACUUM TESTING OF MANHOLES

- A. Test Method: Each manhole shall be vacuum tested in accordance with ASTM C1244-94.
- B. Plug Lift Holes: All lift holes shall be plugged with approved non-shrink grout.
- C. NO grout will be placed in the horizontal joints before testing.
- D. Pipes Entering Manhole: All pipes entering the manhole shall be plugged, taking care to securely brace the plugs from being drawn into the manhole.
- E. The test head shall be placed at the inside of the top of the cone section and the seal inflated in accordance with the manufacturer’s recommendation.
- F. Vacuum Requirements: A measured vacuum of 10-inches of mercury shall be established in the manhole. The time for the vacuum to drop to 9 inches of mercury shall be recorded.
- G. Leakage: Acceptance standards for leakage shall be established from the elapsed time for a negative pressure change from 10 inches to 9 inches of mercury. The maximum allowable leakage rate for a 4-foot diameter manhole shall be accordance with the following:

<u>Manhole Depth</u>	<u>Minimum Elapsed Time for a Pressure Change of 1 Inch Hg</u>
10 feet or less	60 seconds
>10 feet but <15 feet	75 seconds
>15 feet but <25 feet	90 seconds

- H. Test Failure: If the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the vacuum is still being drawn. Re-testing shall proceed until a satisfactory test is obtained.
- I. Test Equipment: Vacuum test equipment shall be equal to that of P.A. Galzier, Inc., Worcester, MA.

END OF SECTION