

# ***COBB COUNTY WATER SYSTEM***



***Contract Documents and Specifications***

***FOR***

***TRAMORE INTERCEPTOR SEWER REHABILITATION***

***PROGRAM NO. S3037***

***March 25, 2021***

COBB COUNTY, a political subdivision in the State of Georgia  
Cobb County Water System  
Engineering & Records Division  
660 South Cobb Drive  
Marietta, GA 30060-3113  
(770) 419-6325

**COBB COUNTY WATER SYSTEM  
CONTRACT DOCUMENTS  
for  
TRAMORE INTERCEPTOR SEWER REHABILITATION  
S3037**

**TABLE OF CONTENTS**

**DIVISION 0 - BIDDING AND CONTRACT DOCUMENTS**

ADVERTISEMENT FOR BIDS .....	00200
INSTRUCTIONS TO BIDDERS.....	00100
PART 1 - BID.....	00300
PART 2 – BID SCHEDULE.....	00300
PART 3 – MEASUREMENT AND PAYMENT.....	00300
PART 4 – BID CERTIFICATION.....	00300
BID BOND .....	00410
AGREEMENT/CONTRACT.....	00500
NON-COLLUSION AFFIDAVIT .....	00550
GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT.....	00560
DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION .....	00570
PERFORMANCE BOND.....	00610
PAYMENT BOND.....	00620
GENERAL CONDITIONS .....	00700
INSURANCE REQUIREMENTS.....	00750
BUSINESS LICENSE.....	00751
SUBCONTRACTOR NOTIFICATION LIST .....	00752

**DIVISION 1 - GENERAL REQUIREMENTS**

SUMMARY OF WORK .....	01001
PROJECT PROCEDURES.....	01010
SPECIAL REQUIREMENTS.....	01012
PHOTOGRAPHIC DOCUMENTATION .....	01380
TRAFFIC REGULATION .....	01550

**DIVISION 2 - SITEWORK**

ACCESS ROAD CLEARING AND CONSTRUCTION.....	02113
TREE PROTECTION AND TRIMMING .....	02231
EROSION AND SEDIMENT CONTROL.....	02270
SEEDING.....	02485
SODDING.....	02486
TREES, SHRUBS AND GROUND COVERS .....	02490
BYPASS PUMPING.....	02750

**DIVISION 13 – SPECIAL CONSTRUCTION**

PRECONDITIONING AND CLEANING OF SEWER LINES.....	13327
INTERNAL SEWER LINE CONDITION ASSESSMENT.....	13328
SEWER REHABILITATION BY CURED-IN-PLACE METHOD.....	13342
SEWER REHABILITATION BY MACHINE SPIRAL WOUND LINER METHOD USING PVC PROFILES .....	13546

**APPENDIX A – INTERCEPTOR SEWER LOCATION MAP AND RECORD DRAWING**

**APPENDIX B – EROSION AND SEDIMENT CONTROL STANDARDS DETAILS**

**APPENDIX C – CCTV INSPECTION VIDEO**

**APPENDIX D – SEWER INSPECTION PIPE GRAPHIC REPORT**

**DIVISION 0**

**BIDDING AND CONTRACT DOCUMENTS**

**SECTION 00020  
ADVERTISEMENT FOR BIDS**

**TRAMORE INTERCEPTOR SEWER REHABILITATION  
PROGRAM NO. S3037  
for  
COBB COUNTY, GEORGIA**

Separate, sealed bids for furnishing all materials, labor, tools, equipment, and incidentals necessary for the construction of the aforementioned project will be received by **COBB COUNTY**, a political subdivision of the State of Georgia, herein referred to as "Owner", at the offices of the **Purchasing Department, 122 Waddell Street NE, Marietta, GA 30060**, until **12:00 Noon** (local time) on **March 25, 2021**. **No bids will be accepted after the 12:00 Noon deadline.**

The project name and program number must be shown on the outside of the sealed bid envelope. **Sealed bid labels** are attached and ***MUST*** be affixed to both the outside of the sealed bid envelope and the shipping container, if applicable, even if it is a no bid response.

Bids will be opened at 2:00 PM (local time) on **March 25, 2021**, at the offices of the **Purchasing Department, 122 Waddell Street NE, Marietta, GA 30060**.

The Project consists of the rehabilitation by cured-in-place pipe method or machine spiral wound PVC liner of approximately 500 linear feet of underground sewer main 30-inches in diameter.

Only contractors, who have been pre-qualified at the first date of public notice of this advertisement by the Cobb County Water System for Cured-In-Place Pipe (CIPP) Rehabilitation or those who have been pre-qualified at the first date of public notice of this advertisement by the Cobb County Water System for Water and Sewer Line construction and who meet the experience requirements set forth in the Bid Documents for installation of Machine Spiral Wound PVC Liner, are eligible to bid on this project. Bidders are required to have a State of Georgia Utility Contractor License.

The Cobb County Purchasing Department uses an e-procurement system for electronic bid solicitation thru BidNet's Georgia Purchasing Group. The Instruction to Bidders, form of Bid, form of Contract, Drawings, Specifications, forms of Bid Bond, Performance Bond, Payment Bond, and other Contract Documents are available on BidNet's Georgia Purchasing Group website via the Cobb County Purchasing Department's Web Portal for Sealed Bids at [www.bidnetdirect.com/georgia/cobbcounty](http://www.bidnetdirect.com/georgia/cobbcounty).

Bids will only be accepted from Bidders who are listed on the Plan Holders List, signifying that they have acquired the bid documents through the Bidder's registered account with BidNet's Georgia Purchasing Group.

Each bid must be accompanied by cashier's or certified check or a bid bond prepared on accepted form, duly executed by the bidder, in the amount of five per cent (5%) of the bid.

Owner reserves the right to waive any informality or to reject any or all bids, to evaluate bids, and to accept any bid which in its opinion may be for the best interest of Owner. Any bids submitted that do not include a duplicate of Section 00300 and a copy of the bid bond as specified in the

Instructions to Bidders may be rejected. Owner has the right to add to and delete from the contract once it has been awarded. Award, if award is made, will be to the lowest responsive, responsible bidder.

The successful bidder for this contract will be required to furnish a satisfactory performance bond and labor and material payment bond, each in the amount of one-hundred percent (100%) of the bid.

No bidder may withdraw its bid within 60 days after the actual date of the opening thereof.

**END OF SECTION**

# SEALED BID LABELS

## SEALED BID ENCLOSED

DELIVER TO:

Cobb County Purchasing Department  
122 Waddell Street, NE  
Marietta, GA 30060

---

**PROJECT NAME** TRAMORE INTERCEPTOR SEWER REHABILITATION

**PROGRAM NO.** S3037

**DATE:** \_\_\_\_\_

**BIDS MUST BE RECEIVED BEFORE 12:00 NOON ON THE DATE OF THE BID OPENING**

**BIDDER:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

\*\*\*\*\*

## SEALED BID ENCLOSED

DELIVER TO:

Cobb County Purchasing Department  
122 Waddell Street, NE  
Marietta, GA 30060

---

**PROJECT NAME** TRAMORE INTERCEPTOR SEWER REHABILITATION

**PROGRAM NO.** S3037

**DATE:** \_\_\_\_\_

**BIDS MUST BE RECEIVED BEFORE 12:00 NOON ON THE DATE OF THE BID OPENING**

**BIDDER:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**SECTION 00100  
INSTRUCTIONS TO BIDDERS**

**1. RECEIPT AND OPENING OF BIDS**

**COBB COUNTY**, a political subdivision of the State of Georgia, herein called the "Owner", invites bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids from Bidders included on the Cobb County Water System's Plan Holders List will be received by the Owner at the offices of the **Purchasing Department, 122 Waddell Street NE, Marietta, GA 30060**, on the date and at the time indicated on the Advertisement for Bids. After such time on the same day, bids will be publicly opened and read aloud. Bids received after the designated time will not be considered.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities 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. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof.

**2. PREPARATION OF BID**

Each bid must be submitted on the prescribed form, prepared and provided by the Owner. All blank spaces for bid prices must be filled, in with ink. All required enclosed certifications must be fully completed and executed when submitted.

Each bid must be submitted in a sealed envelope, addressed to the Owner. The following information must be clearly displayed on the exterior of the envelope utilizing one of the **sealed bid labels** found in Section 00020, *Advertisement for Bids*:

Project name and program number  
Date  
The name of the Bidder and its address.

If forwarded by mail or delivery service, the sealed envelope containing the bid must be enclosed in another shipping container (envelope or box) addressed as specified in the bid forms. The second **sealed bid label** provided must be affixed to the outside of the shipping container, as well.

Any and all bids not meeting the aforementioned criteria for bid submittal, will be declared non-responsive, will be returned to the Bidder unopened.

**Each bidder is required to submit a duplicate of Section 00300 and a copy of their bid bond (with each page clearly marked as duplicate) with the original bid documents. Failure to provide a duplicate may result in the bid being considered non-responsive.**

**3. METHOD OF BIDDING**

The unit or lump sum price of each of the items in the bid shall include the actual cost to perform the work item and the item's pro rata share of overhead and profit so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price represents the total bid. Any bid not conforming to this requirement, such as unit prices which in the opinion of the Owner

do not represent a reasonable cost for the work, will be considered unbalanced. Unbalanced bids may be rejected at the discretion of the Owner.

A bid in which a unit or lump sum price for an item is not entered, or for which a unit price of \$0.00 is entered, will be regarded as non-responsive and the bid will be rejected.

Bid prices shall include everything necessary for the completion of the work including, but not limited to, providing the materials, equipment, tools, plant and other facilities, and the management, superintendence, labor and services. Bid prices shall include allowance for Federal, state and local taxes.

In the event that the product of a unit price and an estimated quantity does not equal the extended amount quoted, the unit price shall govern, and the correct product of the unit price and the estimated quantity shall be deemed to be the amount bid. If the sum of two or more items in the bid schedule does not equal the total amounts quoted, the individual item amounts shall govern and the correct total shall be deemed to be the amount bid.

Bidders must satisfy themselves as to the accuracy of the estimated quantities in the bid schedule by examination of the site and a review of the drawings and specifications including any addenda. After bids have been submitted, the Bidder shall not assert that there has been any misunderstanding concerning the quantities of work or of the nature of the work to be done.

The quantities listed in the unit price bid form shall be considered as approximate and will be used only for comparison of bids. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the Contract.

#### **4. MODIFICATION OR WITHDRAWAL OF BIDS**

A submitted bid may be retrieved in person by a bidder or its authorized representative if, before the scheduled closing time for receipt of bids, the identity of the persons requesting retrieval is established and that person signs a receipt for the bid. If the bid is retrieved for modification, the sealed bid must be resubmitted prior to the scheduled closing time for receipt of bids. If the bid is not resubmitted, it will be considered as withdrawn.

#### **5. ADDENDA**

Each bid schedule shall include specific acknowledgment in the space provided of receipt of all addenda issued by the Owner during the bidding period. Failure to so acknowledge may result in the bid being rejected as non-responsive.

#### **6. LAND ACQUISITION**

The Work on this Project is to be performed on property owned and easements acquired by the Owner and within public road right-of-way.

Pursuant to the requirements of OCGA § 36-91-20(b)(4)(B), detailed information on project specific easements can be found in the Special Conditions of the Bid (Section 00300).

#### **7. INTERPRETATIONS**

No interpretation of the meaning of the drawings, specifications or other pre-bid documents will be made to any Bidder orally. Every request for such interpretation should be in writing, addressed to



the Owner, and in order to be given consideration must be received by the close of business on the Tuesday one week prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the bid. All addenda so issued shall become a part of the Contract Documents.

Any questions concerning this bid should be directed in writing via email to:

Mr. Roger Ball, CPPO  
Purchasing Director  
Cobb County Purchasing Department  
122 Waddell Street NE  
Marietta, GA 30060  
FAX: (770) 528-8428  
[purchasing@cobbcounty.org](mailto:purchasing@cobbcounty.org)

and Mr. Eric W. Olson, P.E.  
Manager, Engineering & Records Div.  
Cobb County Water System  
660 South Cobb Drive  
Marietta, GA 30060-3105  
FAX: (770) 419-6335  
[eric.olson@cobbcounty.org](mailto:eric.olson@cobbcounty.org)

## **8. SITE EXAMINATION**

The site of the proposed work is shown on the drawings. The Bidder, before making its bid, shall examine the drawings, specifications and the site and shall make such examinations on the ground as may be necessary to thoroughly familiarize itself with the nature and extent of the proposed construction and with all local conditions affecting the work. The Bidder shall also accept the premises in its present condition and carry out all work in accordance with the requirements of the specifications and as shown on the drawings. The Owner will not be responsible for Bidder's errors and misjudgment nor for failure to obtain any information on local conditions or general laws or regulations pertaining thereto.

At the time of the opening of bids, each Bidder will also be presumed to have read and to be thoroughly familiar with the drawings, Contract Documents (including all addenda) and the construction specifications. The failure or omission of any Bidder to examine any form, instrument or document shall in no way relieve any Bidder from any obligation in respect to its bid.

## **9. NOTICE OF SPECIAL CONDITIONS**

Attention is particularly called to those parts of the Contract Documents and specifications which deal with the following:

- A. Insurance requirements
- B. Surveys, permits and regulations

The Federal and state regulations herein referred to supersede all conflicting requirements of the Contract Documents.

## **10. LAWS AND REGULATIONS; LICENSING**

The Bidder's attention is directed to the fact that all applicable Federal and state laws, county and municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

The State of Georgia has requirements for the licensing of contractors engaged in specific types of construction, including electrical, plumbing, and underground utility work [re: OCGA § 43-14]. Any contractor (or subcontractor of any tier) performing regulated work on this project shall furnish proof of valid and current registration to the Owner. Similarly, the State requirements concerning local business licenses shall be met (see also Section 00751 of these documents).

## 11. STATUS OF PERMITS

The following status of permits related to this project is presented pursuant to the requirements of OCGA § 36-91-20(b)(4)(A).

- A. Refer to the Special Requirements (Section 01012) for the status of permits for which the Owner is responsible.
- B. The Contractor is responsible for obtaining any necessary building permits or individual trade permits from the Cobb County Community Development Department. Contact the Development and Inspections Division at (770) 528-2039 for further information.
- C. Other permits necessary for construction shall be the full responsibility of the Contractor. These may regularly include, but not limited to:
  - Cobb County Trenching and Excavation Permit
  - Cobb County Department of Transportation Lane Closure / Road Closure Permit
  - Cobb County and State of Georgia permits associated with the use of explosives (blasting)

## 12. GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT

The Georgia Security and Immigration Compliance Act (O.C.G.A. § 13-10-91) requires that contractors who enter into a contract for physical performance of services for a political subdivision of the state must register and participate in the federal work authorization program to verify employment eligibility of all newly hired employees. Further Contract provisions regarding this Act are included herein as Section 00560.

**The Contractor Affidavit and Agreement (See Section 00560), signed and notarized by the Bidder, must be submitted with the Bid. Bids received without an executed affidavit will be deemed non-responsive and will be disqualified from further consideration.**

## 13. EXECUTION OF BID DOCUMENTS

The Contractor, in signing its bid on the whole or any portion of the work, shall conform to the following requirements:

- A. Bids which are not signed by individuals providing said bid 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. 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 corporate seal shall also be affixed to the bid.

#### **14. METHOD OF AWARD**

The Contract will be awarded to the responsive, responsible Bidder submitting the lowest base bid complying with the conditions of the invitation to bid. Award will be made on the basis of the prices given in the base bid (not including alternates). Alternates may be awarded at the discretion of the Owner. The Bidder to whom the award is made will be notified at the earliest possible date following Board of Commissioners approval. The Owner reserves the right to reject any and all bids and to waive any informality in bids received whenever such rejection or waiver is in its best interest.

A responsive Bidder shall be one who submits its bid in the proper form without qualification as called for in the specifications and on the Contract Drawings and who properly completes all forms required to be completed and submitted at the time of the bid opening.

#### **15. CONTRACT PERFORMANCE BOND AND PAYMENT BOND**

The Contractor will be required to furnish a contract performance bond and a payment bond executed by a surety company listed in the latest issue of U.S. Treasury Circular 570, registered and duly authorized to do business in the State of Georgia, and signed (or countersigned) by a local agent, each in an amount that is at least equal to one-hundred percent (100%) of the Contract Price, as security for the faithful performance of this contract and as security for the payment of all persons performing labor and furnishing material in connection with the Contract.

The surety shall be acceptable to the Owner and the bond shall be executed on the form attached. In case of default on the part of the Contractor, all expenses incident to ascertaining and collecting losses under the bond, including both engineering and legal services, shall lie against the bond.

The Contractor will be required to provide the Owner a one-year guarantee covering workmanship and materials of the project. The contract performance bond shall remain in force for one year from date of acceptance by the Owner. The cost of this bond shall be paid by the Contractor.

#### **16. INSURANCE PROOF OF COVERAGE**

Prior to execution of Contract Documents, a certificate of insurance will be required as outlined in Section 00750 of these specifications, Insurance Requirements for Contractors.

#### **17. AWARD OF CONTRACT**

The Bidder to whom the Contract is being awarded will be required to execute the agreement, accompanying affidavits and forms, and obtain the performance bond, payment bond and insurance within seven (7) calendar days from the date when the notice of award is issued to the Bidder.

**END OF SECTION**

**Part 1 - BID**

MADE TO: COBB COUNTY, a political subdivision of the State of Georgia  
COBB COUNTY WATER SYSTEM  
660 SOUTH COBB DRIVE  
MARIETTA, GA 30060-3105

**PROGRAM NAME: Tramore Interceptor Sewer Rehabilitation**

The undersigned, as **Bidder**, hereby declares that the only person or persons, company or parties interested in this bid is or are named herein; and that this bid is made without connection with any other person, company or parties making bid; and that it is in all respects fair and in good faith, without collusion or fraud.

The **Bidder** further declares that it has carefully examined the site of the work, has read and understands the plans, specifications and Contract Documents relative thereto, and has read all special provisions and addenda furnished prior to the opening of bids; and the Bidder further declares that it has informed itself fully in regard to all conditions and requirements pertaining to the work.

The **Bidder** proposes and agrees, if this bid is accepted, to furnish all materials, labor, tools, equipment and incidentals necessary to complete the work in full and in accordance with the shown, noted, described and reasonably intended requirements of the Contract Documents.

**Bidder** accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of bid security. The Bidder agrees that, at the time of execution of a Contract, it will furnish the performance bond and payment bond in the forms attached hereto, each in the amount of one-hundred percent (100%) of the Contract. Bidder will also furnish all of the required insurance certificates.

The undersigned agrees, unless hereinafter stated otherwise, to furnish all materials shown and specified in the plans, specifications and bid schedule.

*THE REMAINDER OF THIS PAGE IS LEFT BLANK INTENTIONALLY*

**Part 2 - Bid Schedule  
Tramore Interceptor Sewer Rehabilitation**

**Option 1 – Cured-In-Place Pipe (CIPP)**

<u>Item No</u>	<u>Description</u>	<u>Qty</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total Price</u>
<b>MH 261-0030 to MH 261-0029 (30-Inch RCP)</b>					
S-2090	Lining Pre-Installation CCTV Inspection	500	LF		
S-2230	30-Inch Cured-In-Place Pipe (CIPP)	500	LF		
A-2060	Allowance for Testing	1	EA	\$1,000.00	\$1,000.00

**Option 2 – Machine Spiral Wound PVC Liner**

<u>Item No</u>	<u>Description</u>	<u>Qty</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Total Price</u>
<b>MH 261-0030 to MH 261-0029 (30-Inch RCP)</b>					
S-2090	Lining Pre-Installation CCTV Inspection	500	LF		
S-2230	30-Inch Spiral Wound PVC Liner	500	LF		
A-2060	Allowance for Testing	1	EA	\$1,000.00	\$1,000.00

**Bidders may submit a bid on Option 1 or Option 2 or on both Option 1 and Option 2. Award will be made for either Option 1 or Option 2, and will be based on the lowest bid submitted.**

**TOTAL BID PRICE \$** \_\_\_\_\_

**TOTAL BID PRICE PARTS (IN WORDS)** \_\_\_\_\_

**Contractor's Name** \_\_\_\_\_

**BID BOND (IS) REQUIRED FOR THIS PROJECT.**

*THE REMAINDER OF THIS PAGE IS LEFT BLANK INTENTIONALLY*

## PART 3 - MEASUREMENT AND PAYMENT

### GENERAL

Only those pay items identified in the bid schedule, or added by Addendum or Supplemental Agreement, will be measured for payment by the units listed in the bid schedule and/or supplemental agreement and paid for at the Contract prices.

The cost of all Work not directly covered by the pay items shall be considered incidental to the construction and is to be included and distributed among the bid unit prices of the pay items listed in the Contract.

Contract unit prices represent the complete sewer cleaning, internal CIPP rehabilitation, condition assessment, cleanout installation, sewer replacement and lateral installation accepted cost, including, but not limited to:

- \* All required labor, tools, equipment, and materials, unless otherwise noted.
- \* All required normal traffic control.
- \* Disposal of all waste materials and debris.
- \* Protection of existing utilities, including but not limited to locating, diligent care in handling and working around, relocating, and repairing.
- \* Miscellaneous associated work necessary to complete the work in place.
- \* Coordination of additional project access as may be desired.
- \* Overhead and profit

The **Contractor** shall include in the Bid Total all the allowances listed in the Bid Schedule.

Payment will be made only for the actual quantities of work performed in compliance with the Drawings and Specifications. The **Contractor** will be paid an amount equal to the approved quantity times applicable unit price. Any unused balance of the unit price work or allowances shall revert to the **Owner** upon completion of the project.

The **Contractor** shall take no advantage of any apparent error or omission in Specifications, and the **Owner** shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents.

### 30-INCH CIPP

Measurement for payment of 30-INCH CIPP shall be based on the actual horizontal length of sewer main lined by field measurement along the centerline of the pipe in place from center of manhole to center of manhole in accordance with Section 13342 – Sewer Rehabilitation by Cured-in-Place Pipe Method. All costs for rehabilitation of sewer main by cured-in-place pipe liner shall be included in the unit prices for 30-inch CIPP including, but not limited to, access road improvements, cleaning and CCTV inspection prior to lining, wet-out, insertion, curing, sealing of connections at manholes, sealing of cut edges in pipe, and/or manholes, post installation CCTV video, and all other related procedures and materials necessary to complete the pipe lining. Payment will not be made for a pipe segment until the installed liner samples are shown to meet the required physical properties and the post-installation video inspection for that segment is submitted to and accepted by the **Owner**. No separate or additional payment will 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.

### **30-INCH SPIRAL WOUND PVC LINER**

Measurement for payment of 30-INCH SPIRAL WOUND PVC LINER shall be based on the actual horizontal length of sewer main lined by field measurement along the centerline of the pipe in place from center of manhole to center of manhole in accordance with Section 13546 – Sanitary Sewer Rehabilitation by Machine Spiral Wound Liner Method Using PVC Profiles. All costs for rehabilitation of sewer main by Machine Spiral Wound Liner Method Using PVC Profiles shall be included in the unit prices for 30-inch Spiral Wound PVC Liner including, but not limited to, access road improvements, cleaning and CCTV inspection prior to lining, insertion, curing, sealing of connections at manholes, sealing of cut edges in pipe, and/or manholes, post installation CCTV video, and all other related procedures and materials necessary to complete the pipe lining. Payment will not be made for a pipe segment until the installed liner samples are shown to meet the required physical properties and the post-installation video inspection for that segment is submitted to and accepted by the **Owner**. No separate or additional payment will 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.

### **TESTING ALLOWANCE**

Testing allowance shall only be utilized at the direction of the **Owner** for direct costs incurred by the **Contractor** for CIPP acceptance testing services of recognized testing laboratories. The scope and cost must be approved prior to performance of the work and be consistent with Sections 13342 of the Specifications. The testing laboratory shall be approved by the **Owner**. No additional payment will be made for **Contractor's** overhead and profit for any work performed by a testing laboratory.

END OF MEASUREMENT AND PAYMENT

**DISADVANTAGED BUSINESS ENTERPRISE (DBE)  
IDENTIFICATION FORM**

A Disadvantaged Business Enterprise (DBE) is generally defined as a Female, Black American, Hispanic American and any other minority owned business. See *Instructions to Bidders* (Section 00100) and *Disadvantaged Business Enterprise (DBE) Participation* (Section 00570) for additional information related to periodic reporting guidelines.

If your firm is classified as a Disadvantaged Business Enterprise (DBE), please complete this form and submit with bid response:

Cobb County Purchasing Department  
Attn: Purchasing Director  
122 Waddell Street NE  
Marietta, GA 30060  
FAX: (770) 528-8428  
Email: [purchasing@cobbcounty.org](mailto:purchasing@cobbcounty.org)

Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

DBE Certification Number: \_\_\_\_\_

Name of Certifying Organization: \_\_\_\_\_

**This information is acquired for documentation of participation only and  
will have no bearing on the award unless otherwise stated in the  
Advertisement for Bids.**



**Part 4 – BIDDER CERTIFICATION**

Bidder hereby agrees to commence work under this Contract promptly after receipt of Notice to Proceed and to complete the work within **Thirty (30)** calendar days. Should said work not be completed by that date, the sum of **Five Hundred Dollars (\$500.00)** per day will be paid by the **Contractor** to the **Owner** as liquidated damages for each consecutive calendar day of delay.

Receipt is acknowledged of the following addenda:

No. \_\_\_\_\_ Dated \_\_\_\_\_  
No. \_\_\_\_\_ Dated \_\_\_\_\_  
No. \_\_\_\_\_ Dated \_\_\_\_\_

Bidder agrees that the **Owner** has the right to accept or reject any or all bids and to waive all formalities.

Respectfully submitted,

\_\_\_\_\_  
Company

Date: \_\_\_\_\_

By: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Address

CORPORATE SEAL

\_\_\_\_\_  
City/State/Zip Code

( ) \_\_\_\_\_  
Telephone

( ) \_\_\_\_\_  
Fax Number

\_\_\_\_\_  
Georgia Utility Contractor License No.

**SECTION 00410  
BID BOND**

KNOW ALL MEN BY THESE PRESENTS, that we \_\_\_\_\_, as Principal, hereinafter called the Bidder, and \_\_\_\_\_, a corporation duly organized under the laws of the State of \_\_\_\_\_, listed in the latest issue of U.S. Treasury Circular 570, and registered in the State of Georgia, as Surety, are held and firmly bound unto **COBB COUNTY**, a political subdivision of the State of Georgia, as Obligee, hereinafter called Owner, in the sum of \_\_\_\_\_ Dollars (in words), (\$ \_\_\_\_\_) (in figures), for the payment of which sum well and truly to be made, the said Bidder and the said Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Bidder has submitted a bid for construction of this project located in Cobb County, Georgia, identified by the Cobb County Water System as **Program No. S3037** and known as **Tramore Interceptor Sewer Rehabilitation**, consisting of **rehabilitation by cured-in-place pipe method or machine spiral wound PVC liner of approximately 500 linear feet of underground sewer main 30-inches in diameter.**

NOW THEREFORE, if the Owner shall accept the bid of the Bidder and the Bidder shall enter into a contract with the Owner in accordance with the terms of such bid, and give such bond or bonds as may be specified in the Bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the execution thereof, or in the event of the failure of the Bidder to enter such Contract and give such bond or bonds, if the Bidder shall pay the Owner the penalty hereof, then this obligation shall be null and void, otherwise to remain in full force and effect, unless returned by Owner to Bidder; until Owner shall demand payment by Surety, all as allowed in Contract Documents.

*THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY*

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ A.D. \_\_\_\_\_.

Attest: \_\_\_\_\_ (SEAL)  
Principal (Bidder)

\_\_\_\_\_  
By: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed Name

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_ (SEAL)  
Surety

\_\_\_\_\_  
By: \_\_\_\_\_  
Signature, Attorney-in-Fact

\_\_\_\_\_  
Typed Name

(Attach Certified Copy of Power of Attorney)

**SECTION 00500  
AGREEMENT/CONTRACT**

THIS AGREEMENT, made and entered into this \_\_\_ day of \_\_\_\_\_ in the year 2021, by and between **COBB COUNTY**, a political subdivision of the State of Georgia, hereafter called the Owner, and, \_\_\_\_\_, hereinafter called the Contractor.

WITNESSETH

That the Owner and the Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

**1. WORK**

The Contractor shall perform all work as specified or indicated in the Contract Documents for the completion of the project generally described as **Tramore Interceptor Sewer Rehabilitation, Program No. S3037**.

The Owner shall not be liable to the Contractor for any neglect, default, delay or interference of or by any other contractor, nor shall any such neglect, default, delay or interference of any other contract or alteration which may be required in the work, release the Contractor from the obligation to finish the work within the time allowed.

**2. CONTRACT TIME**

The Contractor will commence the work required by the Contract Documents on the date specified in the Notice to Proceed and will complete the same within **Thirty (30)** calendar days, unless the period for completion is extended otherwise by the Contract Documents. Should said work not be completed by that date, the sum of **Five Hundred Dollars (\$500)** per day will be paid by the Contractor to the Owner as liquidated damages for each consecutive calendar day of delay.

**3. CONTRACT PRICE**

The Contractor agrees to perform all the work described in the Contract Documents and comply with the terms therein for the sum of \_\_\_\_\_ (in words), (\$\_\_\_\_\_) (in figures), and/or as shown in the Bid Schedule.

**4. PAYMENTS**

It is hereby mutually agreed that the Owner is to pay and the Contractor is to receive the prices bid in the proposal herein contained, or hereto annexed, as full compensation for furnishing all materials, supplies, machinery, equipment, tools, apparatus and other means of construction, maintenance and repairs, and all management, supervision, and labor, and perform all construction maintenance and repair necessary to complete the work under the conditions herein specified and for fully complying with the terms and conditions of this Contract; provided that any increased cost to the Contractor due to any subsequent levy of Federal or State tax against any item entering into the work of this Contract exclusive of profits, may be reimbursed to the Contractor by the Owner as provided hereunder.

## **5. PROGRESS AND FINAL PAYMENTS**

The Contractor shall submit an Application for payment in accordance with a schedule agreed upon in the preconstruction conference. The Contractor will provide, with the Payment Application, a line item breakdown of all previous costs to date plus the amount being applied for. The Owner will make payments to the Contractor within a reasonable period of time after receipt of the Payment Application; but may withhold payment if the Owner determines there is unsatisfactory job progress, defective work, disputed work, actual or potential third party claims, failure to make timely payments for labor or materials, damage to other entities connected with the project or reasonable evidence that the Contract cannot be completed for the balance of the Contract Price. Payments that are not unreasonably delayed will bear no interest penalties. The terms of this paragraph and the entire Contract Documents are intended to supersede all provisions of the Prompt Pay Act, O.C.G.A. 13-11-1 through 13-11-11.

The Contractor shall present to the Owner the final request for payment within forty-five (45) days of the final inspection of the work performed under this Contract. The Owner reserves the right to reject any and all payment claims made by the Contractor after the forty-five (45) day period. In connection herewith and by execution of this document, the Contractor hereby agrees to waive any and all rights to such payments, the claims for which have not been submitted to the Owner within the required forty-five (45) day period.

## **6. CONTRACT DOCUMENTS**

The Contract Documents which comprise the Contract between Owner and Contractor are attached hereto and made a part hereof and consist of the following:

- A. ADVERTISEMENT FOR BIDS (00020)
- B. INSTRUCTIONS TO BIDDERS (00100)
- C. PART 1 - BID (00300)
- D. PART 2 – BID SCHEDULE (00300)
- E. PART 3 – MEASUREMENT AND PAYMENT (00300)
- F. PART 4 – BID CERTIFICATION (00300)
- G. BID BOND (00410)
- H. AGREEMENT/CONTRACT (00500)
- I. NON-COLLUSION AFFIDAVIT (00550)
- J. GEORGIA SECURITY AND IMMIGRATION ACT COMPLIANCE (00560)
- K. DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION (00570)
- L. PERFORMANCE BOND (00610)
- M. PAYMENT BOND (00620)
- N. INSURANCE REQUIREMENTS FOR CONTRACTORS (00750)
- O. BUSINESS LICENSE (00751)
- P. SUBCONTRACTOR NOTIFICATION LIST (00752)
- Q. SPECIFICATIONS: Divisions 1, 2 and 13
- R. ADDENDA: No \_\_\_\_ Dated \_\_\_\_\_

## **7. MISCELLANEOUS**

- A. Terms used in this Agreement/Contract are defined in the General Conditions and shall have the meanings described therein.
- B. Neither Owner nor Contractor shall, without the prior written consent of the other, assign or sublet in whole or in part its interest under any of the Contract

Documents; and specifically, Contractor shall not assign any monies due or to become due without the prior written consent of the Owner.

- C. Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives, to the other party hereto in respect to all covenants, agreements and obligations contained in the Contract Documents.
- D. Contract Documents constitute the entire Agreement/Contract between Owner and Contractor and may be altered, amended or repealed only by a duly executed written instrument, in the form of a change order.
- E. This Agreement shall be administered and interpreted under the laws of the State of Georgia. Jurisdiction of litigation arising from this Agreement shall be in that state and venue shall lie in Cobb County, Georgia. If any part of this Agreement is found to conflict with applicable laws, such part shall be inoperative, null, and void insofar as it conflicts with said laws, but the remainder of this Agreement shall be in full force and effect.

*THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY.*

IN WITNESS WHEREOF, the parties hereto have executed this Agreement/Contract the day and year first above written. The Cobb County Board of Commissioners authorized the Chairman to execute this Agreement/Contract, the same being recorded in Minutes of Meeting of Board of Commissioners.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original.

\_\_\_\_\_  
Date of BOC approval:

Recommended:

\_\_\_\_\_  
Judy B. Jones, P.E.  
Director, Cobb County Water System

Approved as to form:

\_\_\_\_\_  
County Attorney

\_\_\_\_\_  
CONTRACTOR

By:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

Attest:

By: \_\_\_\_\_  
Secretary

AFFIX SEAL

\_\_\_\_\_  
**COBB COUNTY**  
OWNER

By:

\_\_\_\_\_  
Signature Date

\_\_\_\_\_  
Lisa N. Cupid  
Typed Name

\_\_\_\_\_  
Chairwoman, Cobb County  
Board of Commissioners

\_\_\_\_\_  
Date

Attest:

By: \_\_\_\_\_  
Clerk

**SECTION 00550  
NON-COLLUSION AFFIDAVIT**

STATE OF GEORGIA  
COUNTY OF COBB

PROJECT NAME: **TRAMORE INTERCEPTOR SEWER REHABILITATION**

PROGRAM NO.: **S3037**

\_\_\_\_\_ Affiant  
(Name)

the \_\_\_\_\_  
(Title or relationship to Bidding Entity)

Of \_\_\_\_\_  
(Bidder's Company Name)

Affiant states upon oath that he/she has not, by himself or herself or otherwise, prevented or attempted to prevent competition in the bidding on this project by any means whatever, either directly or indirectly.

Affiant further states that he/she has not, by himself or herself or for another, prevented or endeavored to prevent anyone from making a bid therefore by any means whatsoever, nor has caused or induced another to withdraw a bid for the work.

\_\_\_\_\_  
(Signature of Affiant)

Sworn to and subscribed  
before me, this \_\_\_\_\_  
day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
County

My commission expires: \_\_\_\_\_



**SECTION 00560**  
**GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT**  
*(Revised 07/01/13; supersedes all previous versions)*

**1. GENERAL**

- A. The Georgia Security and Immigration Compliance Act (O.C.G.A. § 13-10-91) requires every contractor of a public employer and every subcontractor of a public employer's contractor that enters into a contract for the physical performance of services must register and participate in a federal work authorization program to verify employment eligibility of all newly hired employees. The applicable federal work authorization program is currently "E-Verify", an internet-based system operated by the Department of Homeland Security in partnership with the Social Security Administration, pursuant to the Immigration Reform and Control Act of 1986 (IRCA).
- B. Compliance with the requirements of the Georgia Security and Immigration Compliance Act (O.C.G.A. § 13-10-91), Rule 300-10-1 of the Georgia Department of Labor, and the following Procedures and Requirements of Cobb County are conditions of this Contract for the physical performance of services.
- C. Definitions.

Affidavit – a written statement made or taken under oath before an officer of the court or a notary public or other person who duly has been authorized so to act.

Affiant – the person who makes and subscribes to a statement made under oath (affidavit).

Physical Performance of Services – any performance of labor or services for a public employer using a bidding process or by contract wherein the labor or services exceed \$2,499.99.

**2. PROCEDURES AND REQUIREMENTS**

- A. **The attached CONTRACTOR AFFIDAVIT & AGREEMENT (Exhibit A), signed and notarized by the Bidder, must be submitted with the Bid to attest the Bidder's compliance with the Act.**

**BIDS RECEIVED WITHOUT AN EXECUTED AFFIDAVIT WILL BE DEEMED NON-RESPONSIVE AND WILL BE DISQUALIFIED FROM FURTHER CONSIDERATION.**

- B. The Contractor (or any subcontractor, regardless of tier) shall notify the Owner within five (5) business days of entering into a contract or other agreement for hire with any subcontractor(s), regardless of tier.
- C. The Contractor shall obtain and provide to the Owner the attached Subcontractor Affidavit & Agreement (Exhibit A-1) and Immigration Compliance Certification (Exhibit A-2) from each subcontractor, regardless of tier, employed or retained for work under the Contract prior to the commencement of any work under the Contract or any subcontract.

- D. The Owner reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the required affidavit or certification and/or for failure to comply with the statutory requirements of O.C.G.A. § 13-10-91 and/or for providing false or misleading information upon the required affidavit(s) or certification(s).
- E. The Contractor and/or subcontractor retaining any other subcontractor to perform services under the Contract shall provide legal notice to any subcontractor of the requirements of the Owner for immigration compliance and further provide notice that the Owner reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the required affidavit or certification and/or for failure to comply with the statutory requirements of O.C.G.A. § 13-10-91 and/or for providing false or misleading information upon the required affidavit(s) or certification(s).
- F. Failure to comply with any of the Procedures and Requirements of the Owner (i.e., failure to timely supply required affidavits or compliance certification documents; failure to utilize federal work authorization procedures; failure to permit or facilitate audits or reviews of records by the Owner or State officials upon request; and/or failure to continue to meet any of the statutory or County obligations during the life of the contract) shall constitute a material breach of the Contract and shall entitle the Owner to dismiss the Contractor or to require the dismissal of any subcontractor or sub/subcontractor (irrespective of tier) for failing to fully comply with these requirements.
- G. Upon notice of a material breach of these provisions, the Contractor (or subcontractor, regardless of tier) is entitled to cure the breach within ten (10) days and provide evidence of such cure. Should the breach not be cured, the Owner shall be entitled to all available remedies, including termination of the contract, the requirement that a subcontractor be dismissed from performing work under the contract, and any and all damages permissible by law.
- H. Prior to commencing work under this Contract for the physical performance of services, the Contractor shall complete the attached Immigration Compliance Certification (Exhibit A-2) form and submit the same to the Owner.
- I. Prior to allowing any other subcontractor to perform work under the Contract, the Contractor shall obtain a completed Immigration Compliance Certification (Exhibit A-2) from each subcontractor (regardless of tier) and submit the same to the Owner.

*AFFIDAVITS AND FORMS ON FOLLOWING PAGES*

*THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY*

**CONTRACTOR AFFIDAVIT & AGREEMENT  
(EXHIBIT A)**

**This affidavit must be signed, notarized and submitted with any bid requiring the performance of physical services. If the affidavit is not submitted at the time of the bid, bid will be determined non-responsive and will be disqualified.**

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is contracting with Cobb County, Georgia, has registered with, is authorized to use, and is participating in a federal work authorization program (an electronic verification of work authorization program operated by the U.S. Department of Homeland Security or any equivalent federal work authorization program operated by the U.S. Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA)). The undersigned contractor further attests that it will continue to use the federal Employment Eligibility Verification (EEV) work authorization program throughout the contract period.

The undersigned further agrees that should it employ or contract with any subcontractor(s) or should its subcontractor(s) employ other subcontractor(s) for the physical performance of services pursuant to the contract with Cobb County, Georgia, the contractor or subcontractor will:

- (1) Notify the County within five business days of entering into a contract or agreement for hire with any subcontractor(s);
- (2) Secure from any subcontractor(s) and/or their subcontractor(s) verification of compliance with O.C.G.A. § 13-10-91 on the attached Subcontractor Affidavit & Agreement (EXHIBIT A-1) prior to the commencement of any work under the contract/agreement;
- (3) Secure from any subcontractor(s) and/or their subcontractor(s) a completed Immigration Compliance Certification (EXHIBIT A-2) prior to the commencement of any work under the contract/agreement;
- (4) Provide the subcontractor(s) with legal notice that Cobb County, Georgia, reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the affidavit and/or for failure to comply with the requirements referenced in the affidavit;
- (5) Maintain records of such compliance and provide a copy of each such verification to Cobb County, Georgia, at the time the subcontractor(s) is retained to perform such services or upon any request from Cobb County, Georgia; and
- (6) Maintain such records for a period of five (5) years.

\_\_\_\_\_  
EEV (E-Verify) Program User ID Number

\_\_\_\_\_  
EEV Program Date of Authorization

BY: \_\_\_\_\_  
Authorized Officer or Agent  
[Contractor Name]

\_\_\_\_\_  
Contractor Business Name

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Date

SWORN AND SUBSCRIBED BEFORE ME  
ON THIS THE \_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
Notary Public      Commission Expires: \_\_\_\_\_

**Effective 07/01/2013**

**SUBCONTRACTOR AFFIDAVIT & AGREEMENT  
(EXHIBIT A-1)**

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of Cobb County, Georgia, has registered with, is authorized to use, and is participating in a federal work authorization program (an electronic verification of work authorization program operated by the U.S. Department of Homeland Security or any equivalent federal work authorization program operated by the U.S. Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA)). The undersigned subcontractor further attests that it will continue to use the federal Employment Eligibility Verification (EEV) work authorization program throughout the contract period.

The undersigned further agrees that should it employ or contract with any subcontractor(s) or should its subcontractor(s) employ other subcontractor(s) for the physical performance of services pursuant to the contract with Cobb County, Georgia, the undersigned subcontractor will:

- (1) Notify the County within five business days of entering into a contract or agreement for hire with any subcontractor(s);
- (2) Secure from any subcontractor(s) and/or their subcontractor(s) verification of compliance with O.C.G.A. § 13-10-91 on this Subcontractor Affidavit & Agreement (EXHIBIT A-1) form prior to the commencement of any work under the contract/agreement;
- (3) Secure from any subcontractor(s) and/or their subcontractor(s) a completed Immigration Compliance Certification (EXHIBIT A-2) prior to the commencement of any work under the contract/agreement;
- (4) Provide the subcontractor(s) with legal notice that Cobb County, Georgia, reserves the right to dismiss, or require the dismissal of, any contractor or subcontractor for failing to provide the affidavit and/or for failure to comply with the requirements referenced in the affidavit; and
- (5) Maintain records of such compliance and provide a copy of each such verification to Cobb County, Georgia, at the time the subcontractor(s) is retained to perform such services or upon any request from Cobb County, Georgia; and
- (6) Maintain such records for a period of five (5) years.

\_\_\_\_\_  
EEV (E-Verify) Program User ID Number

\_\_\_\_\_  
EEV Program Date of Authorization

BY: \_\_\_\_\_  
Authorized Officer or Agent  
[Subcontractor Name]

\_\_\_\_\_  
Subcontractor Business Name

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Date

SWORN AND SUBSCRIBED BEFORE ME  
ON THIS THE \_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
Notary Public      Commission Expires: \_\_\_\_\_

**Effective 07/01/2013**

**IMMIGRATION COMPLIANCE CERTIFICATION**  
**(To be completed by Contractors and all Subcontractors)**  
**(EXHIBIT A-2)**

I certify to the Cobb County Board of Commissioners that the following employees will be assigned to:

Tramore Interceptor Sewer Rehabilitation

---

*(Project Name/Description)*


I further certify to Cobb County, Georgia the following:

- The E-Verify program was used to verify the employment eligibility of each of the above-listed employees hired after the effective date of our contract to use the program;
- We have not received a Final Nonconfirmation response from E-Verify for any of the employees listed.
- If we receive a Final Nonconfirmation response from E-Verify for any of the employees listed above, we will immediately terminate that employee's involvement with the project.
- I have confirmed that we have an I-9 on file for every employee listed above and that to the best of my knowledge all the I-9s are accurate.
- To the best of my knowledge and belief, all of the employees on the above list are legally authorized to work in the United States.
- If any other employee is assigned to this Cobb County project, a certification will be provided for said employee prior to the employee commencing work on the project.

To the best of my knowledge and belief, the above certification is true, accurate and complete.

**Sworn to by:**

**Employer Name & Address:**

\_\_\_\_\_  
Signature of Officer

\_\_\_\_\_

\_\_\_\_\_  
Printed Name/Title

\_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_

SWORN AND SUBSCRIBED BEFORE ME  
ON THIS THE \_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
Notary Public      Commission Expires: \_\_\_\_\_

**Effective 07/01/2013**

## SECTION 00570

### DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION

As indicated in the *Instructions to Bidders* (Section 00100), the Cobb County Government does not administer a Disadvantaged Business Enterprise (DBE) certification program; however, the County does desire to identify individuals/businesses certified and/or meeting the definition of a DBE who are providing products and/or services to Cobb County.

The Cobb County Government addresses DBE participation in the following ways:

1. All Contracts:
  - a. DBE firms are requested to identify such status at the time they register as a Vendor with the County. (Contact the Purchasing Department at 770-528-8400 or go to <https://www.cobbcounty.org/purchasing/vendor-registration> for Vendor application instructions and forms.)
  - b. DBE firms are requested to identify themselves at the time they propose to do business with the County. Contractors are to indicate their status on the DBE Identification Form included in Section 00300 of these Contract Documents and submit this form with their bid.
  - c. Contractors are requested to identify the DBE status and participation of any subcontractors that will be working on the project. This information is to be indicated on the Subcontractor Notification List (Section 00752) submitted following award at the time of execution of the Contract Documents.
  - d. Contractors are requested to submit a *Cobb County Government Disadvantaged Business Participation Monthly Report* with each request for payment. A copy of this form and instructions for its use follow this page.
2. Specifically Identified Contracts:
  - a. Cobb County has established a Disadvantaged Business Enterprise Plan in accordance with the regulations of the U.S. Department of Transportation (U. S. Department of Transportation (USDOT), 49 CFR Part 26.) The Cobb County Department of Transportation is the lead agency for implementing the USDOT DBE Program for the County.
  - b. This Disadvantaged Business Enterprise Plan applies only to projects which are clearly identified at the time of advertisement for bids.

*THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY*

## DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION REPORTING

All Cobb County Government contractors or vendors are requested to complete a report descriptive of any DBE subcontractor involvement in work for which the government is making payment. If otherwise specified in an RFP or contract, additional reporting forms may be required as well.

The objective of this request is to assist in the identification of Disadvantaged Business Enterprise (DBE) business participation with the Cobb County Government and to quantify that participation.

The Cobb County Government does not administer a DBE Certification Program. The principal certification agency for the State of Georgia is the Georgia Department of Transportation. As a Contractor/Vendor you are not responsible for verification of any DBE Certification information of your subcontractor(s).

### \*\*\* Instructions \*\*\*

1. Complete the following *DBE Participation Monthly Report* form and submit with each request for payment.
2. Upon receipt of a Contractor/Vendor payment request, County staff will record the information. In order to add or verify the prime contractor is registered as a DBE vendor in AMS, the County department/agency should send a copy of the DBE report to the Purchasing Department (Attn.: DBE Report).

### \*\*\* DBE Definition \*\*\*

A Disadvantaged Business Enterprise (DBE):

1. Is a firm that is under the control of someone in an ownership position (at least 51%) that:
  - a. Has membership in one or more of the following groups: Female, Black American, Hispanic American, Native American, Subcontinent Asian American and Asian-Pacific America. There may be other groups that may be eligible to be certified as DBE;
  - b. Is a U.S. citizen or lawfully admitted permanent resident of the U.S.; and,
  - c. Has a personal net worth which does not exceed \$1.32 million.
2. Meets the Small Business Administration's size standard for a small business and the average gross annual receipts for the three previous fiscal years does not exceed \$23.98 million; and,
3. Is organized as a for-profit business.

Note that the business may also be DBE eligible as a certified U.S. Small Business Administration 8(a) program participant.

**COBB COUNTY GOVERNMENT DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION**  
**MONTHLY REPORT**

Contractor/Vendor: Please keep this blank report to make copies as needed. Print or type in the report, then send the completed report to the County department/agency receiving the service or product.

County Departments: Keep a copy of this completed report and use the dollar figures to input into your quarterly DBE report to the DBE Liaison (Records Management Division). If you already have a similar reporting method of gathering the dollar figures continue to use it. Send a copy of this completed report to the Purchasing Division (Attn: DBE Report) to add or verify the prime contractor is registered as a DBE vendor in AMS.

Submitted by: \_\_\_\_\_ Month Invoiced: \_\_\_\_\_  
**Name of Prime Contractor/Vendor** **From/To:**

Cobb County Project Name: **Tramore Interceptor Sewer Rehabilitation**

Cobb County Department or Agency receiving service or product: \_\_\_\_\_

Description of Purchased Service/Product: \_\_\_\_\_

Full Contracted Amount: \$ \_\_\_\_\_ Payment amount requested at this time: \$ \_\_\_\_\_

1. Are YOU, the Prime Contractor, a DBE business? YES \_\_\_\_\_ NO \_\_\_\_\_  
 2. Are YOUR subcontractors DBE vendors? YES \_\_\_\_\_ NO \_\_\_\_\_

**Please provide information below for each participating subcontractor(s).**

DBE Subcontractor Business Name	Type Service or Product Supplied	DBE Subcontractor Business/Contact Tel. Number	Actual Dollar Value of DBE Subcontractor Participation this Reporting Month
			\$
			\$
			\$
			\$
			\$
			\$
			\$

Submitted by: \_\_\_\_\_  
 Printed Name

Title or position: \_\_\_\_\_

Date Completed: \_\_\_\_\_

Signature of Authorized Representative



**SECTION 00610  
PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_, as Principals, hereinafter called Contractor, and \_\_\_\_\_, a corporation duly organized under the laws of the State of \_\_\_\_\_, listed in the latest issue of U.S. Treasury Circular 570, and registered in the State of Georgia, as Surety, are held and firmly bound unto **COBB COUNTY**, hereinafter called Owner, in the sum of \_\_\_\_\_ (\$ \_\_\_\_\_), for payment of which sum, well and truly to be made, the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has entered into a written contract dated the \_\_\_ day of \_\_\_\_\_, 2021, with the Owner for **Tramore Interceptor Sewer Rehabilitation, Program No. S3037**, in accordance with drawings and specifications prepared by the Cobb County Water System.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void otherwise shall remain in full force and effect. The Surety hereby waives notice of any alteration or extension of time made by the Owner. Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- A. Complete the Contract in accordance with its terms and conditions; or,
- B. Obtain a bid or bids for completing the Contract in accordance with its terms, and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as Work progresses (even though there should be default or a succession of defaults) under the contract or contracts of completion arranged under this paragraph sufficient funds to pay the cost of completion less the balance of the contract prices; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.

Any suit under this Bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of the Owner.

The Contractor is required to provide the Owner a one-year guarantee covering workmanship and materials of the Project. This Performance Bond shall remain in force for one year from the date of Acceptance of the Project by the Owner.

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original, this \_\_\_\_\_ day of \_\_\_\_\_, 2021.

Attest: \_\_\_\_\_ (SEAL)  
Principal (Bidder)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed Name

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_ (SEAL)  
Surety

\_\_\_\_\_  
Signature Attorney-in-Fact

\_\_\_\_\_  
Typed Name

(Attach Certified and Dated Copy of Power of Attorney)  
DO NOT DATE PERFORMANCE BOND. BOND DOCUMENT WILL BE DATED BY BOC.  
(Bond must not be dated prior to date of Agreement)

**SECTION 00620  
PAYMENT BOND**

NOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_, as Principals, hereinafter called Contractor, and \_\_\_\_\_, a corporation duly organized under the laws of the State of \_\_\_\_\_, listed in the latest issue of U.S. Treasury Circular 570, and registered in the State of Georgia, as Surety, are held and firmly bound unto **COBB COUNTY**, hereinafter called Owner, in the sum of \_\_\_\_\_, (\$\_\_\_\_\_), for payment of which sum, well and truly to be made, the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has entered into a written Contract dated the \_\_\_\_ day of \_\_\_\_\_, 2021, with the Owner for **Tramore Interceptor Sewer Rehabilitation, S3037**, in accordance with drawings and specifications prepared by the Cobb County Water System.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

- A. A claimant is defined as one having a direct Contract with the Contractor or with a Subcontractor of the Contractor for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.
- B. The above named Contractor and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expense of any such suit.
- C. No suit or action shall be commenced hereunder by any claimant,
  1. Unless claimant, other than one having a direct Contract with the Contractor, shall have given written notice to any two of the following: the Contractor, the Owner, or the Surety above-named, within ninety (90) days after such claimant did or performed the last of the work of 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 Contractor, Owner or Surety, at any place where any 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.

2. After one (1) year from the completion of Contract and the acceptance by Owner of the work thereunder, it being understood, however, that if any limitation embodied in this 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.
3. Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, and not elsewhere.
4. The amount of this bond shall be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by surety of mechanics' liens which may be filed on record against said improvement, whether or not claim for the amount of such presented under and against this bond.

PROVIDED FURTHER, that the 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 the work to be performed thereunder or the specifications accompanying the 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 no final settlement between Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claims may be unsatisfied.

*THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY.*

IN WITNESS WHEREOF, this instrument is executed in four (4) counterparts, each one of which shall be deemed an original, this \_\_\_\_\_ day of \_\_\_\_\_, 2021.

Attest: \_\_\_\_\_ (SEAL)  
Principal (Bidder)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Typed Name

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_ (SEAL)  
Surety

\_\_\_\_\_  
Signature Attorney-in-Fact

\_\_\_\_\_  
Typed Name

(Attach Certified and Dated Power of Attorney)  
DO NOT DATE PAYMENT BOND. BOND DOCUMENT WILL BE DATED BY BOC.  
(Bond must not be dated prior to date of Agreement)

**SECTION 00700  
GENERAL CONDITIONS**

TABLE OF CONTENTS

Section No.	Description	Page No.
<b>PART 1 GENERAL</b>		
1.01	DEFINITIONS OF WORDS AND TERMS	00700-3
1.02	JOINT VENTURE CONTRACTOR	00700-6
1.03	CONTRACT REQUIREMENTS	00700-7
1.04	LABOR STANDARDS	00700-7
1.05	LAWS, REGULATIONS AND PERMITS	00700-8
1.06	HEADINGS	00700-9
1.07	SUBCONTRACTS	00700-9
<b>PART 2 OWNER-CONTRACTOR AUTHORITY/RESPONSIBILITY</b>		
2.01	AUTHORITY OF OWNER	00700-9
2.02	RESPONSIBILITIES OF OWNER	00700-12
2.03	AUTHORITY OF CONTRACTOR	00700-12
2.04	RESPONSIBILITIES OF CONTRACTOR	00700-13
2.05	OWNER-CONTRACTOR COORDINATION	00700-21
<b>PART 3 SPECIFICATIONS AND DRAWINGS</b>		
3.01	INTERPRETATION OF SPECIFICATIONS AND DRAWINGS	00700-23
3.02	DIVISION OF SPECIFICATIONS AND DRAWINGS	00700-24
3.03	DISCREPANCIES IN SPECIFICATIONS AND DRAWINGS	00700-24
3.04	SUBMITTALS	00700-27
3.05	CONTRACTOR'S COPIES OF CONTRACT DOCUMENTS	00700-27
<b>PART 4 MATERIALS, EQUIPMENT AND WORKMANSHIP</b>		
4.01	GENERAL	00700-27
4.02	PRODUCT DATA	00700-28
4.03	QUALITY	00700-28
4.04	MATERIAL AND EQUIPMENT SPECIFIED BY NAME	00700-28
4.05	REQUESTS FOR SUBSTITUTION	00700-29
4.06	DEMONSTRATION OF COMPLIANCE WITH CONTRACT REQUIREMENTS	00700-30
4.07	STORAGE OF MATERIALS AND EQUIPMENT	00700-31
4.08	MANUFACTURER'S DIRECTIONS	00700-31
4.09	DEFECTIVE WORK	00700-32
4.10	GUARANTEE	00700-32

4.11	MATERIALS AND EQUIPMENT FURNISHED BY OWNER	00700-33
PART 5 LIABILITY AND INSURANCE		
5.01	LIABILITY OF CONTRACTOR	00700-33
5.02	BONDS	00700-34
5.03	INSURANCE	00700-34
PART 6 PROGRESS AND COMPLETION		
6.01	NOTICE TO PROCEED	00700-35
6.02	CONTRACT TIME	00700-35
6.03	SUSPENSION PROCEDURES	00700-40
6.04	TERMINATION PROCEDURES	00700-41
6.05	SUBSTANTIAL COMPLETION	00700-43
6.06	POSSESSION OF PORTIONS OF THE PROJECT	00700-44
6.07	ACCEPTANCE OF THE PROJECT	00700-45
PART 7 MEASUREMENT AND PAYMENT		
7.01	LIMITATIONS OF FUNDS	00700-45
7.02	PAYMENTS TO CONTRACTOR	00700-47
7.03	CHANGES IN THE WORK	00700-50
7.04	CHARGES TO CONTRACTOR	00700-59
7.05	COMPENSATION TO OWNER FOR TIME EXTENSION	00700-59

## PART 1 GENERAL

### 1.01 DEFINITIONS OF WORDS AND TERMS

Where used in the Contract Documents, the following words and terms shall have the meanings indicated. The meanings shall be applicable to the singular, plural, masculine and feminine of the words and terms.

- A. Acceptance. Formal action of the Owner in determining that the Contractor's work has been completed in accordance with the Contract and in notifying the Contractor in writing of the acceptability of the work.
- B. Act of God. A cataclysmic phenomenon of nature, such as an earthquake, flood or cyclone. Rain, wind, high water, or other natural phenomenon that might reasonably have been anticipated from historical records of the general locality of the Work shall not be construed as acts of God.
- C. Addenda. Supplemental written specifications or drawings issued prior to execution of the Contract that modify or interpret the Contract Documents by addition, deletion, clarification, or corrections.
- D. Bid. Offer of a bidder submitted on the prescribed form setting forth the price or prices of the Work to be performed.
- E. Bidder. Individual, partnership, corporation, or a combination thereof, including joint venturers, offering a bid to perform the Work.
- F. Construction Manager. The person designated, in writing, by the Owner to act as its representative at the construction site and to perform construction inspection services and administrative functions relating to this Contract. Contact by the Contractor with the Owner and Engineer shall be through the Construction Manager.
- G. Contract. The writings and drawings embodying the legally binding obligations between the Owner and the Contractor for completion of the Work.
- H. Contract Documents. The Contract comprises the documents listed below. Approved shop drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
  - 1. Advertisement for Bids
  - 2. Instructions to Bidders
  - 3. Bid
  - 4. Bid Bond
  - 5. Agreement
  - 6. Noncollusion Affidavit
  - 7. Georgia Security and Immigration Compliance Affidavit
  - 8. Performance Bond
  - 9. Payment Bond
  - 10. Subcontractor Notification List



11. General Conditions
12. Specifications
13. Contract Drawings
14. Addenda
15. Notice of Award
16. Notice to Proceed
17. Change Orders
18. Directives

- I. Contract Drawings. The drawings included in the Contract Documents plus those prepared by the Owner pursuant to the terms of the Contract. They include:
  1. Drawings.
  2. Modifying drawings issued by addenda.
  3. Drawings submitted by the Owner to the Contractor during the progress of the Work either as attachments to the change orders or as explanatory supplements to drawings and modifying drawings issued by addenda.
- J. Contract Price. Amount payable to the Contractor under the terms and conditions of the Contract. Based on the price given on the bidding schedule, with adjustments made in accordance with the Contract.
- K. Contract Time. Number of calendar days stated in the Contract for the completion of the Work; such completion as evidenced by the Owner's Acceptance.
- L. Contractor. The individual, partnership, corporation, or combination thereof, including joint venturers who enter into the Contract with the Owner for the performance of the Work.
- M. Contractor's Plant and Equipment. Equipment, material, supplies, and all other items, except labor, brought onto the site by the Contractor to carry out the Work, but not to be incorporated in the Work.
- N. County. Cobb County, Cobb County Board of Commissioners, Cobb County Water System or any combination thereof. Also referred to as the Owner.
- O. Day. Calendar day.
- P. Direct. Action of the Owner or Construction Manager by which the Contractor is ordered to perform or refrain from performing work under the Contract.
- Q. Directive. Written documentation of the actions of the Owner or Construction Manager in directing the Contractor.
- R. Engineer. The entity designated by the Owner to address issues deferred to it that affects the design and intent of the design of the Project.
- S. Equipment. Mechanical, electrical, instrumentation or other device with one or more moving parts, or devices requiring an electrical, pneumatic, electronic, or hydraulic connection.

- T. Furnish. To deliver to the job site or other specified location any item, equipment or material.
- U. Herein. Refers to information presented in the Contract Documents.
- V. Holidays. Legal holidays are New Year's Day, Martin Luther King Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday following Thanksgiving, and Christmas.
- W. Install. Placing, erecting, or constructing complete in place any item, equipment, or material.
- X. May. Refers to permissive actions.
- Y. Owner. Cobb County, a political subdivision of the State of Georgia and/or Cobb County Water System (may be used interchangeably).
- Z. Owner's Representative. The person designated in writing by the Owner to act as its agent on specified matters relating to this Contract.
- AA. Paragraph. For reference or citation purposes, paragraph shall refer to the paragraph, or paragraphs, called out by section number and alphanumeric designator. For example, this definition is found in paragraph 00700-1.02; permits and licenses are discussed in paragraph 00700-1.06 B.
- BB. Person. The term, person, includes firms, companies, corporations, partnerships, and joint ventures.
- CC. Project. The undertaking to be performed under the provisions of the Contract.
- DD. Provide. Furnish and install, complete in place.
- EE. Punch List. List of incomplete items of Work and of items of Work that are not in conformance with the Contract.
- FF. Resident Project Representative. See Construction Manager. The Construction Manager shall function as the Resident Project Representative (RPR).
- GG. Shall. Refers to actions by either the Contractor or the Owner and means the Contractor or Owner has entered into a covenant with the other party to do or perform the action.
- HH. Shown. Refers to information presented on the Drawings, with or without reference to the Drawings.
- II. Specifications. That part of the Contract Documents consisting of written descriptions of the technical features of materials, equipment, construction systems, standards, and workmanship.

- JJ. Specify. Refers to information described, shown, noted or presented in any manner in any part of the Contract.
- KK. Submittals. The information that is specified for submission to the Engineer through the Construction Manager in accordance with Division 1 of the Contract Documents.
- LL. Substantial Completion. Sufficient completion of the Project or the portion thereof to permit utilization of the Project, or portion thereof for its intended purpose. Substantial completion requires not only that the Work be sufficiently completed to permit utilization, but that the Owner can effectively utilize the substantially completed Work. Determination of substantial completion is solely at the discretion of the Owner. Substantial completion does not mean complete in accordance with the Contract nor shall substantial completion of all or any part of the Project entitle the Contractor to acceptance under the Contract.
- MM. Substantial Completion Date. Date when the Owner puts into service the Project, or that portion of the Project that has been determined to be substantially complete.
- NN. Utility. All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, casings, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground or aboveground to furnish products or services related to, but not limited to, electricity, gases, steam, liquid petroleum products, telephone or other communications including fiber optics, cable television, sanitary sewer, storm sewer, water, and traffic control systems.
- OO. Will. Refers to actions entered into by the Contractor or the Owner as a covenant with the other party to do or to perform the action.
- PP. Work. The labor, materials, equipment, supplies, services, and other items necessary for the execution, completion and fulfillment of the Contract.

## 1.02 JOINT VENTURE CONTRACTOR

In the event the Contractor is a joint venture of two or more contractors, the grants, covenants, provisos and claims, rights, power, privileges and liabilities of the Contract shall be construed and held to be several as well as joint. Any notice, order, direct request or any communication required to be or that may be given by the Owner or the Construction Manager to the Contractor under this Contract, shall be well and sufficiently given to all persons being the Contractor if given to any one or more of such persons. Any notice, request or other communication given by any one of such persons to the Owner or the Construction Manager under this Contract shall be deemed to have been given by and shall bind all persons being the Contractor.

## 1.03 CONTRACT REQUIREMENTS

### A. SUCCESSORS' OBLIGATIONS:

The grants, covenants, provisos and claims, rights, powers, privileges and liabilities obtained in the Contract Documents shall be read and held as made by and with, and granted to and imposed upon, the Contractor and the Owner and their respective heirs, executors, administrators, successors and assigns.

### B. ASSIGNMENT OF CONTRACT:

The Contract shall not be assigned in whole or in part without the written consent of the Owner. Involuntary assignment of the Contract as caused by the Contractor being adjudged bankrupt, assignment of the Contract for the benefit of Contractor's creditors or appointment of a receiver on account of Contractor's insolvency shall be considered as failure to comply with the provisions of the Contract and subject to the termination provisions contained herein.

### C. WAIVER OF RIGHTS:

Except as herein provided, no action or want of action on the part of the Contractor, Owner, Owner's Representative, Engineer or Construction Manager at any time with respect to the exercise of any right or remedies conferred upon them under this Contract shall be deemed to be a waiver on the part of the Contractor and Owner of any of their rights or remedies. No waiver shall be effective except in writing by the party to be charged. No waiver of one right or remedy shall act as a waiver of any other right or remedy or as a subsequent waiver of the same right or remedy.

### D. AMENDMENT OF GENERAL CONDITIONS:

These general conditions may be amended only by mutual consent of the Owner and the Contractor in writing.

## 1.04 LABOR STANDARDS

No work shall be performed between the hours of 6:00 p.m. and 7:00 a.m. or on Saturdays, Sundays or holidays except as such work as is necessary for the proper care and protection of the Work already performed, in the case of an emergency, or during approved, scheduled, and planned connections to existing facilities.

It is understood that the proposed construction schedule is based upon a normal 40-hour, five-day workweek, less recognized holidays. The Contractor may schedule his operations as desired within the designated core work hours and may work up to 50 hours per week. If the Contractor desires to work in excess of this limit, the Contractor shall submit a written request through the Construction Manager to the Owner, a minimum of five days prior to the desired work date.

## 1.05 LAWS, REGULATIONS AND PERMITS

### A. GENERAL:

The Contractor shall give the notices required by law and comply with all laws, ordinances, rules and regulations pertaining to the conduct of the Work. The Contractor shall be liable for violations of the law in connection with work provided by the Contractor. If the Contractor observes that the Drawings, Specifications or other portions of the Contract Documents are at variance with any laws, ordinances, rules or regulations, he shall promptly notify the Construction Manager in writing of such variance. The Owner shall promptly review the matter and, if necessary, shall issue a change order or take any other action necessary to bring about compliance with the law, ordinance, rule or regulation in question. Contractor agrees not to perform work known to be contrary to any laws, ordinances, rules or regulations.

### B. PERMITS AND LICENSES:

Unless otherwise specified herein, permits and licenses from governmental agencies that are necessary only for and during the prosecution of the Work and the subsequent guarantee period, including the Cobb County Building Permits, shall be secured and paid for by the Contractor. Permits and licenses of regulatory agencies that are necessary to be maintained after completion of the guarantee period shall be secured and paid for by the Owner. Water and sewer impact fees are not applicable to this Project.

The Cobb County Land Disturbance Permit for this Project will be obtained by the Owner and will be made available to the Contractor. The Contractor shall be responsible for complying with all of the terms and special conditions of permit approvals.

### C. PATENTS AND ROYALTIES:

The costs involved in fees, royalties or claims for any patented invention, article, process or method that may be used upon or in a manner connected with the Work under this Contract or with the use of completed Work by the Owner, shall be paid by the Contractor. The Contractor and his sureties shall protect and hold the Owner, the Engineer, and the Construction Manager, together with their officers, agents and employees, harmless from any and all loss, defense cost, and expenses and against any and all demands made for such fees or claims brought or made by the holder of any invention or patent. Before final payment is made on the account of this Contract, the Contractor shall, if requested by the Owner, furnish acceptable proof of a proper release from all such fees or claims.

Should the Contractor, his agent, employee or any of them be enjoined from furnishing or using any invention, article, material or plans supplied or required to be supplied or used under this Contract, the Contractor shall promptly pay such royalties and secure the requisite licenses; or, subject to acceptance by the Owner, substitute other articles, materials or appliances in lieu thereof which are of equal efficiency, quality, finish, suitability and market value to those planned or required under the Contract. Descriptive information of these substitutions shall be submitted to the Engineer

through the Construction Manager for determination of general conformance to the design concept and the construction Contract. Should the Owner elect to refuse the substitution, the Contractor agrees to pay such royalties and secure such valid licenses as may be requisite for the Owner, his officers, agents and employees or any of them, to use such invention, article, material or appliance without being disturbed or in any way interfered with by any proceeding in law or equity on account thereof.

#### 1.06 HEADINGS

Headings to parts, divisions, sections, paragraphs, subparagraphs and forms are inserted for convenience of reference only and shall not affect the interpretation of the Contract Documents.

#### 1.07 SUBCONTRACTS

The Contractor shall perform with his own organization not less than one-half of the Work and shall not sublet to one subcontractor more than one-third of the Work without the previous written consent of the Owner. The Contractor shall obtain the Owner's written consent of all subcontractors who will perform subcontract work.

### PART 2 OWNER-CONTRACTOR AUTHORITY/RESPONSIBILITY

#### 2.01 AUTHORITY OF OWNER

##### A. GENERAL:

The Owner, acting through the Owner's Representative, the Engineer and the Construction Manager, shall have the authority to act as the sole judge of the work and materials with respect to both quantity and quality as set forth in the Contract. It is expressly stipulated that the Drawings, Specifications and other Contract Documents set forth the requirements as to the nature of the completed work and do not purport to control the method of performing work except in those instances where the nature of the completed work is dependent on the method of performance.

##### B. AUTHORITY OF OWNER'S REPRESENTATIVE:

1. General: The Owner's Representative has the authority to act on behalf of the Owner on change orders, directives, progress payments, contract decisions, acceptability of the Contractor's work, and early possession.
2. Change Orders: The Owner's Representative has the authority to make recommendations to the Board of Commissioners to accept or reject change orders proposed by the Construction Manager, the Engineer, or the Contractor.
3. Directives: The Owner's Representative has the authority to issue Directives to the Contractor and to accept or reject Directives that have been proposed by the Construction Manager.

4. Progress Payments: The Owner's Representative has the authority to accept or reject requests for progress payments that have been submitted by the Contractor and recommended by the Construction Manager.
5. Contract Decisions: Should the Contractor disagree with the Construction Manager's decision with respect to the Contract, the Contractor may request that the Owner's Representative review the Construction Manager's decision and make a determination on behalf of the Owner in the manner provided under paragraph 00700-2.05 F.
6. Acceptability of Work: The Owner's Representative has the authority to make the final determination of the acceptability of the Work as provided under paragraph 00700-6.05 and 00700-6.07. The Owner's Representative also has the authority to accept or reject the Construction Manager's recommendations regarding retention of defective work as provided in paragraph 00700-4.09 B.
7. Early Possession: The Owner's Representative has the authority to take early possession in accordance with paragraph 00700-6.06.

C. **AUTHORITY OF CONSTRUCTION MANAGER:**

1. General: The Construction Manager is the construction site representative of the Owner employed to act as advisor and consultant to the Owner in construction matters related to the Contract. The Owner has delegated his authority to the Construction Manager to make initial decisions regarding questions which may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate of progress of the Work under the Contract. The Construction Manager interprets the intent and meaning of the Contract and makes initial decisions with respect to the Contractor's fulfillment of the Contract and the Contractor's entitlement to compensation. The Contractor shall look initially to the Construction Manager in matters relating to the Contract. The Construction Manager's decisions are subject to review by the Owner's Representative in accordance with paragraph 00700-2.05 F.
2. Inspection of Construction: The Construction Manager shall have access to the Work and to the site of the Work and to the places where work is being prepared or where materials, equipment, and machinery are being obtained for the Work. If requested by the Construction Manager, the Contractor shall provide the assistance necessary for obtaining such access, and shall provide information related to the inspection of construction.
3. Change Orders and Use of Allowances: The Construction Manager has the authority to initiate or recommend change orders or use of allowances. Such change orders and use of allowances are subject to review and approval by the Owner.
4. Limits of Construction Manager's Responsibility: The Construction Manager shall not be responsible for the acts or omissions of any contractor, or of any subcontractor, any supplier, or of any other person or organization performing

or furnishing any of the Work. The Construction Manager shall not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. Services provided by Construction Manager during construction shall not impose on Construction Manager responsibility to supervise, direct or control such work or for the means, methods, techniques, sequences or procedures of construction or safety precautions or programs incident thereto, or Contractor's compliance with laws, rules, regulations, ordinances, codes or orders applicable to Contractor's furnishing and performing the Work. Accordingly, Construction Manager neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform its work in accordance with the Contract Documents.

#### D. AUTHORITY OF THE ENGINEER

1. General: The Engineer will assist the Owner by providing technical and engineering support services and coordinating with the Construction Manager during project coordination. The engineering support services will consist of technical reviews of requests for information submitted by the Contractor, development of Designer Clarifications, providing technical evaluations of Contractor-initiated and Owner-initiated change orders, review of Contractor-initiated substitution requests for equipment and/or materials, review of submittals, attendance at weekly progress meetings, periodic site visits, review of manufacturers' operations and maintenance manuals, development of an Operations Manual and assisting in plant start-up and operator training.
2. Limits of Engineer's Responsibility: The Engineer shall not be responsible for the acts or omissions of any contractor, or of any subcontractor, any supplier, or of any other person or organization performing or furnishing any of the Work. The Engineer shall not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. Services provided by Engineer during construction shall not impose on Engineer responsibility to supervise, direct or control such work or for the means, methods, techniques, sequences or procedures of construction or safety precautions or programs incident thereto, or Contractor's compliance with laws, rules, regulations, ordinances, codes or orders applicable to Contractor's furnishing and performing the Work. Accordingly, Engineer neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform its work in accordance with the Contract Documents.

Engineer is not responsible for providing Resident Engineering services. Site visits/inspections are periodic. As such, the Engineer's professional opinions rendered pursuant to site visits/inspections shall be based solely upon the information provided, observations reported on, knowledge and belief, formulated in accordance with commonly accepted procedures consistent with applicable standards of practice, and as such does not constitute a guaranty or warranty, either expressed or implied.



## 2.02 RESPONSIBILITIES OF OWNER

### A. ATTENTION TO WORK:

The Owner shall notify the Contractor in writing of the name of the Owner's Representative and of the Construction Manager. The Construction Manager normally will be at the site of the Work. During his absences, the Contractor may contact a previously designated representative of the Construction Manager.

### B. OWNER'S EMPLOYEES:

The Owner shall be responsible for the adequacy, efficiency, and sufficiency of his employees and of any consultant, supplier or subcontractor employed by the Owner.

### C. REFERENCE POINTS:

The Owner or Engineer will provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable the Contractor to proceed with the Work.

## 2.03 AUTHORITY OF CONTRACTOR

### A. CONTRACTOR'S REPRESENTATIVE:

The Contractor shall notify the Owner in writing of the name of the person who will act as the Contractor's representative and shall have the authority to act in matters relating to this Contract. This person shall have authority to carry out the provisions of the Contract and to supply materials, equipment, tools and labor without delay for the performance of the Work.

### B. CONSTRUCTION PROCEDURES:

The Contractor will supervise and direct the Work. He has the authority to determine the means, methods, techniques, sequences and procedures of construction, except in those instances where the Owner, to define the quality of an item of work, specifies in the Contract, a means, method, technique, sequence or procedure for construction of that item of work.

### C. SUBCONTRACTORS:

Subcontractors will not be recognized as having a direct relationship with the Owner. The persons engaged in the Work, including employees of subcontractors and suppliers, will be considered employees of the Contractor and their work shall be subject to the provisions of the Contract. References in the Contract Documents to actions required of subcontractors, manufacturers, suppliers, or any person other than the Contractor, the Owner, the Engineer or the Construction Manager shall be interpreted as requiring that the Contractor shall require such subcontractor, manufacturer, supplier or person to perform the specified action.

## 2.04 RESPONSIBILITIES OF CONTRACTOR

### A. SUBCONTRACTORS, MANUFACTURERS AND SUPPLIERS:

The Contractor shall be responsible for the adequacy, efficiency and sufficiency of subcontractors, manufacturers, suppliers and their employees.

The 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.

The Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with the Construction Manager through the Contractor.

The divisions and sections of the Specifications and the identifications of any Drawings shall not control the Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

### B. CONTRACTOR'S EMPLOYEES:

The Contractor shall be responsible for the adequacy, efficiency and sufficiency of his employees. Workers shall have sufficient knowledge, skill and experience to perform properly the work assigned to them. Upon written notification from the Owner, Contractor shall immediately remove from the job, for its duration, any laborer, worker, mechanic, foreman, superintendent or other person employed who is found to be intemperate, troublesome, disorderly or otherwise objectionable. The Contractor shall enforce strict discipline and good order among its employees and subcontractors at all times during the performance of the Work.

### C. PAYMENT FOR LABOR AND MATERIALS:

The Contractor shall pay and require his subcontractors to pay any and all accounts for labor including Workers Compensation premiums, State Unemployment and Federal Social Security payments and other wage and salary deductions required by law. The Contractor also shall pay and cause his subcontractors to pay any and all accounts for services, equipment, and materials used by him and his subcontractors during the performance of Work under this Contract. Such accounts shall be paid as they become due and payable. If requested by the Owner, the Contractor shall furnish proof of payment of such accounts to the Owner.

The Contractor shall pay all sales, retail, occupational, service, excise, old age benefit and unemployment compensation taxes, consumer, use and other similar taxes, as well as any other taxes or duties on the materials, equipment, and labor for the work provided by the Contractor which are legally enacted by any municipal, county, state or federal authority, department or agency at the time bids are received, whether or not yet effective. The Contractor shall maintain records pertaining to such taxes and levies as well as payment thereof and shall

make the same available to the Owner at all reasonable times for inspection and copying.

The Contractor is obligated to comply with all local and State Sales and Use Tax laws. The Contractor shall provide the Owner with documentation to assist the Owner in obtaining sales and/or use tax refunds for eligible machinery and equipment used for the primary purpose of reducing or eliminating air or water pollution as provided for in Chapter 48-8-3 (36) and (37) of the Official Code of Georgia. All taxes shall be paid by the Contractor. All refunds will accrue to the Owner.

D. PROSECUTION OF THE WORK:

1. Attention to the Work: The Contractor, acting through his representative, shall give personal attention to and shall manage the Work so that it shall be prosecuted faithfully. When his representative is not personally present at the Project site, his designated alternate shall be available and shall have the authority to act on the Contract.
2. Protection of the Work: The Contractor shall take all necessary precautions and provide the necessary protection to prevent damage or loss to the Work, including work partially complete and stored materials and equipment to be incorporated into the Work, whether in storage on or off the site.
3. Extent of the Work: 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. 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.
4. Lines and Grades. All Work shall be done to the lines, grades, and elevations indicated on the Drawings. Basic horizontal and vertical control points will be identified by Construction Manager to be used as datums for the Work. All additional survey, layout, and measurement work shall be performed by Contractor as a part of the Work.

The Contractor shall provide an experienced instrument person, competent assistants, and such instruments, tools, stakes, and other materials required to complete the survey, layout, and measurement work. In addition, Contractor shall furnish, without charge, competent persons and such tools, stakes, and other materials as the Construction Manager may require in checking survey, layout, and measurement work performed by the Contractor.

The Contractor shall keep the Construction Manager informed, a reasonable time in advance, of the times and places at which it wishes to do Work, so that horizontal and vertical control points may be established, and any checking deemed necessary by the Construction Manager may be done with minimum inconvenience to the Construction Manager and minimum delay to the Contractor.

The Contractor shall remove and reconstruct work which is improperly located.

The Contractor shall protect all horizontal and vertical control points identified by the Construction Manager from damage. Contractor shall relocate all horizontal and vertical control points which will be impacted by the construction operations to a location on the Site which is acceptable to the Owner and the Construction Manager. Contractor shall replace all horizontal and vertical control points which are damaged.

5. Connections to Existing Facilities.

- a. Unless otherwise specified or indicated, Contractor shall make all necessary connections to existing facilities, including structures, drain lines, and utilities such as water, sewer, gas, telephone, and electric. In each case, Contractor shall receive permission from Owner or the owning utility prior to undertaking connections. Contractor shall protect facilities against deleterious substances and damage.
- b. Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials, and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time. Operation of valves or other appurtenances on existing utilities, when required, shall be by or under the direct supervision of the owning utility.
- c. At least 21 days prior to each connection to an existing facility, the Contractor shall submit to the Construction Manager for review and approval a detailed shutdown and connection plan in accordance with Section 01300 – Submittals. A separate submittal is required for each connection to an existing facility. The shutdown and connection plan shall provide the Contractor's schedule for the shutdown and connection, sequencing details and sketches indicating the sequence of the Work to be performed, as well as a listing of the materials required for the Work. The Contractor's schedule for shutdowns and connections shall be acceptable to the Owner and the Construction Manager.
- d. Approximately 14 days prior to the scheduled shutdown, a coordination meeting shall be conducted to review the Contractor's shutdown and connection plan. The Contractor, Construction Manager, Engineer, and Owner shall attend the meeting. The Construction Manager shall preside at the meeting. The purpose of the meeting will be to review the

schedule/sequence of activities for the shutdown and connection, establish coordination efforts, and develop contingency plans.

- e. A minimum of 7 days prior to the scheduled shutdown, based on discussions from the coordination meeting, the Contractor shall submit a revised shutdown and connection plan and a detailed responsibility matrix to the Construction Manager for review and approval. The Contractor shall also provide certification that all required materials for the connection to the existing facility are onsite and ready for use.
- f. Within three days of receipt of an acceptable shutdown and connection plan and certification from the Contractor that all required materials to make the connection are onsite and ready for use, Owner shall grant permission to Contractor to make the connection; notwithstanding granting of permission, the Owner reserves the right to unilaterally cancel any planned shutdown if prevailing circumstances warrant such action.
- g. Prior to the commencement of each connection, the existing facility or pipeline to which the connection is being made and any other facilities connected thereto, shall be isolated from service and prepared for connection (e.g., evacuated, dewatered, etc.) by the Contractor at no additional cost to the Owner.
- h. Unless otherwise acceptable to the Owner and Construction Manager, each connection to an existing facility shall be scheduled independently of one another and shall not occur concurrently. The Contractor shall provide adequate equipment and workforce to ensure that the connection is completed within the required timeframe.
- i. The Contractor shall provide any additional temporary plugs, sleeves, couplings, closure pieces, restraining devices, bulkheads, dewatering pumps and systems, and any other miscellaneous appurtenances required to perform the Work in the specified sequence at no additional cost to the Owner.

#### E. USE OF THE SITE

1. Operating/Staging Area: Contractor shall confine all operations, including storage of materials on the site, to Owner-approved areas as shown on the Drawings.
2. Temporary Buildings: Temporary buildings (including storage sheds, shops, and offices) may be erected by the Contractor on the site only with the consent of the Owner and without expense to the Owner. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the Work. When the Contractor uses any portion of the site as a shop, the Contractor shall be responsible for any repairs, patching, or cleaning arising from such

use and for obtaining any necessary permits to establish such shop or temporary storage facilities.

3. Use of Roadways: The Contractor shall use only established roadways or temporary roadways authorized by the Owner. When materials are transported during prosecution of the Work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by federal, state, or local law or regulation. Any damage to existing roadways caused by the Contractor's activities during prosecution of the Work shall be repaired by the Contractor.
4. Clean-up and Disposal/Removal of Materials: The Contractor shall clean up all refuse, rubbish, scrap materials, and debris caused by its operations to the end that the site of the Work shall present a neat, orderly and workmanlike appearance at all times. The Contractor shall be responsible for compliance with all laws governing the storage and ultimate disposal of all such materials and components. The Contractor shall provide the Owner with a copy of all manifests and receipts evidencing proper disposal when required by the Owner or applicable law.
5. Employee Parking: On-site parking for the vehicles of the Contractor's or subcontractors' employees shall be restricted to those areas specifically designated for that purpose on the Drawings. If no such areas are shown, or if additional parking areas are required, it shall be the sole responsibility of the Contractor to arrange and pay for off-site employee parking and to provide transportation from the parking area to the Work site. Violations of on-site parking requirements will result in the impoundment and towing of vehicles, with all costs thereof to be paid by the owner of the vehicle(s). Repeated violations will result in the revocation of any on-site employee parking privileges.
6. Sanitary Facilities: The Contractor shall furnish temporary sanitary facilities at the site for the needs of all construction workers and others performing work or furnishing services on the Project. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least one toilet will be furnished for each 20 persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the Site. The use of restroom facilities in any existing building on the site by employees of the Contractor or his subcontractors is prohibited.
7. Hazardous Materials, Fuel/Oil Storage: All hazardous materials shall be locked up in approved storage areas and containers, and in compliance with the latest EPA regulations. Fuel and oil storage areas on site shall be configured and maintained in strict conformance with federal, state, and local fire safety regulations and requirements.
8. Concrete Wastes. Waste concrete shall be deposited, and mix trucks washed out, in a properly designed and operated Concrete Waste

Management area installed by the Contractor in a location approved by the Construction Manager and the Owner. Collected waste materials shall be disposed of by the Contractor in conformance with applicable laws and regulations, and in a manner acceptable to the Owner.

9. Temporary Residence. Travel trailers, recreational vehicles, mobile homes or similar means to provide overnight accommodations will not be allowed at the site of the Work. Workmen will not be allowed to remain on the site before or after work hours. Overnight use of the site will only be allowed when construction scheduling may require 24-hour shifts or when otherwise approved by the Owner.
10. Owner's Security Program. The Contractor and his employees, subcontractors, vendors, and other persons employed by the Contractor for the execution of the Work, shall comply with the Owner's security program related to the site of the Work and the operation of the facility. Security measures will involve proper identification of persons and vehicles, controlled access to the facility during certain hours of the day and/or days of the week, maintenance of site fencing, and other related requirements. The Owner assumes no responsibility for the security of the Contractor's plant and equipment, nor for any materials or equipment stored by the Contractor on the site of the Work.
11. Dust Control. The Contractor shall be responsible for the control of fugitive dust emissions from the construction site, implementing measures such as appropriate planning, sequencing, and training, development of consistent materials handling procedures, application of dust suppressants, use of wind barriers, and other project-specific measures. The Contractor shall make adequate provision to fully protect the surrounding area from damage by dust, fumes, or spray caused by construction activities. Protect all of the Owner's existing facilities (indoors or out), including motors, bearings, electrical gear, instrumentation, HVAC equipment, and building surfaces by enclosure, masking, covering, exhausting, containment, dust palliatives, or other effective means. The disposable intake filters of existing HVAC units with the impact zone of construction activities shall be replaced by the Contractor on a monthly basis for the duration of the Project, or until adequate stabilization of surfaces is attained in the opinion of the Construction Manager.

F. PROTECTION OF WORK, PROPERTY, AND PERSONS:

1. The Contractor shall be responsible for conditions of the site, including safety of all persons and property, during performance of the Work. The Contractor shall maintain the site and perform the Work in a manner which meets all statutory and common law requirements or other specific contractual requirements for the provision of a safe place to work and which adequately protects the safety of all persons and property on or near the site. This obligation shall apply continuously and shall not be limited to normal working hours. The Owner's inspection of the Work or presence at the site does not and shall not be construed to include review of the

adequacy of the Contractor's safety measures in, on or near the site of the Work.

2. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs, including adequate safety training, in connection with the Work. The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority having jurisdiction bearing on the safety of persons or property or their protection from damage, injury, or loss.
3. Unless otherwise required in the Contract Documents, the Contractor shall protect and be responsible for any damage or loss to the Work or to the materials and equipment associated with the Work until the date of Substantial Completion. The Contractor remains responsible for any damage or loss caused directly or indirectly by the acts or omissions of the Contractor, subcontractors, suppliers, or third parties authorized or allowed on the site by the Contractor until Acceptance of the Project.
4. The Contractor shall also be solely and completely responsible for damages arising from the Work that affect property adjacent to the site.
5. The Contractor shall repair or replace without cost to the Owner any damage or loss that may occur, except damages or loss caused by the acts or omissions of the Owner.
6. The Contractor shall erect and maintain adequate signs, fencing, barricades, lights, or security measures and persons to protect the Work until the Owner's Representative authorizes in writing the removal of signs, fencing, barricades, lights, or security measures.

G. PROTECTION OF PERSONS:

1. The Contractor shall take all reasonable precautions for the safety of all employees working on this Contract and all other persons who may be affected by such work. The Contractor shall designate a responsible member of its organization at the site whose duty shall be to manage and coordinate the safety programs and to prevent accidents of the Contractor and subcontractors.
2. Except as otherwise stated in the Contract, if the Contractor encounters, on the site, material reasonably believed to be Hazardous Material including but not limited to asbestos, lead, or polychlorinated biphenyl (PCB), the Contractor shall immediately stop work in the area affected and give Notice of the condition to the Owner. Work in the affected area shall not be resumed without written direction by the Owner.
3. The Contractor shall maintain in a reasonable number of conspicuous and accessible places at the site all materials necessary for giving first aid to the injured. The Contractor shall establish, publish and make known to all employees procedures for ensuring immediate removal to a hospital or a



doctor's care, of persons who may have been injured on the site. The Contractor shall ensure that at least one of its employees on site has adequate training in first aid. Employees shall not be permitted to work on the site before the Contractor has:

- a. Provided all materials necessary for giving first aid at the site; and,
  - b. Established and made known procedures for removal of injured persons to a hospital or doctor's care.
4. In order to protect the lives and health of persons performing work under this Contract, the Contractor shall comply with the Federal Occupational Safety and Health Act of 1970 (OSHA), including all revisions, amendments, and regulations issued thereunder, and the provisions of state and local safety and health regulations. There is no acceptable deviation from these safety requirements, regardless of practice in the construction industry. Any violation of OSHA or other safety requirements applicable to the Work may be considered a breach of this Contract.
5. The Contractor's attention is drawn to the fact that additional hazards are present at facilities that convey, pump, and treat wastewater. These hazards arise from the presence of pathogens in the wastewater and from the slime and scum layer that coat walking, working, and other surfaces. In dealing with these hazards, the Contractor shall take special precautions appropriate for the prevailing conditions to ensure worker safety.
6. Work in Confined Spaces:
- a. The provisions of OSHA Regulation Standards – 29 CFR Section 1910.146, "Permit-Required Confined Spaces", have been adopted by Owner and shall apply to Work under this Contract. The Owner has established a confined-space entry program for its own use, and will be responsible for enforcement of the program for Owner's personnel only.
  - b. The Contractor is hereby notified that the existing manholes and other structures on the site, included under the confined-space definition of 29 CFR 1910.146, shall be considered as hazardous locations with hazardous atmospheric conditions. The structures may contain methane, hydrogen sulfide, carbon dioxide, and other gases which are dangerous to life or health. Contractor shall allow its personnel or subcontractors to enter these confined spaces only through compliance with an entry permit program as specified herein.
  - c. The Contractor shall establish and maintain a confined-space entry program appropriate to the structures and conditions encountered. The program shall meet the requirements of 29 CFR 1910.146 and shall specifically address the provisions of Paragraph (d) therein. The Contractor shall enforce the requirements of Paragraphs (e) and (f), shall establish and conduct a training program in accordance with

Paragraph (g), and shall comply with all other applicable requirements of the referenced regulation.

d. Upon request, the Owner's confined-space entry program will be made available to the Contractor for review, but Owner's program shall not be considered as necessarily addressing all steps and measures to be taken into account. Contractor shall cooperate with Owner for coordination of activities whenever Contractor's personnel and Owner's personnel will both be working in or near the confined spaces at the same time.

7. Lockout/Tagout. The Contractor is advised that the Owner has established a "Lock-out / Tag-out" program for the facility. The Contractor shall establish and adhere to a "Lock-out / Tag-out" program for new facilities and shall be responsible for adhering to the provisions of the Owner's program for existing facilities.

8. Hazardous Areas. The Contractor is advised that certain hazardous chemicals may be stored, handled, and used at wastewater treatment facilities. The Owner will make copies of MSDS sheets and other information about the chemicals, their uses and hazards available to Contractor's personnel, upon request of the Contractor. The Contractor shall be fully responsible for the safety of his employees and any subcontractors and shall develop and adhere to a site-specific safety program which accounts for the hazards of the facility.

#### H. COOPERATION WITH CONSTRUCTION MANAGER:

The Contractor, when requested, shall assist the Construction Manager in obtaining access to work that is to be inspected. The Contractor shall provide the Construction Manager with information requested in connection with the inspection of the Work.

### 2.05 OWNER-CONTRACTOR COORDINATION

#### A. SERVICE OF NOTICE:

Notice, order, direction, request or other communication given by the Construction Manager or Owner to the Contractor shall be deemed to be well and sufficiently given to the Contractor if left at any office used by the Contractor or delivered to any of his officers, clerks or employees or posted at the site of the Work or mailed to any post office addressed to the Contractor at the address given in the Contract or mailed to the Contractor's last known place of business. If mailed by first-class mail, any form of communication shall be deemed to have been given to and received by the Contractor a day after the day of mailing.

#### B. SUGGESTIONS TO CONTRACTOR:

Plan or method of work suggested by the Owner or the Construction Manager to the Contractor but not specified or required, if adopted or followed by the

Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor. The Owner and the Construction Manager assume no responsibility therefor and in no way will be held liable for any defects in the Work which may result from or be caused by use of such plan or method of work.

C. COOPERATION:

The Contractor agrees to permit entry to the site of the Work by the Owner or other contractors performing work on behalf of the Owner. The Contractor shall afford to the Owner, other subcontractors and their employees, reasonable facilities and cooperation and shall arrange his work and dispose of his materials in such a manner as to not interfere with the activities of the Owner or of others upon the site of the Work. The Contractor shall promptly make good any injury or damage that may be sustained by other contractors or employees of the Owner at his hands. The Contractor shall join his work to that of others and perform his work in proper sequence in relation to that of others.

If requested by the Contractor, the Owner shall arrange meetings with other contractors performing work on behalf of the Owner to plan coordination of construction activities. The Owner shall keep the Contractor informed of the planned activities of other contractors.

Differences or conflicts arising between the Contractor and other contractors employed by the Owner or between the Contractor and the workers of the Owner with regard to their work shall be submitted to the Construction Manager for his decision in the matter. If the work of the Contractor is affected or delayed because of any act or omission of other contractors or of the Owner, the Contractor may submit for the Owner's consideration, a documented request for a change order.

D. DEVIATION FROM CONTRACT:

The Contractor shall not make an alteration or variation in, addition to, or deviation or omission from the terms of this Contract without the written consent of the Owner.

E. APPEAL TO THE CONSTRUCTION MANAGER FOR RECONSIDERATION OR FOR COMPENSATION:

1. In the event the Contractor disagrees with a decision of the Construction Manager or considers that the decision requires extra Work which causes additional costs or cause additional time on the critical path, he shall, within 5 calendar days, notify the Construction Manager in writing of the disagreement or of the claimed extra Work involved and the associated estimated additional cost and additional time of said Work.
2. The Contractor shall prepare and submit complete documentation of the nature and cost of extra Work within 10 calendar days of submittal of written notification of disagreement.

3. The Construction Manager shall make a determination in writing to the Contractor within 10 calendar days from the receipt of the Contractor's complete submittal of the nature and cost of the alleged extra Work.

F. APPEALS TO THE OWNER'S REPRESENTATIVE:

1. In the event the Contractor disagrees with any determination or decision of the Construction Manager, the Contractor may appeal the determination or decision to the Owner's Representative.
2. A Notice of Appeal must be submitted in writing by the Contractor to the Owner's Representative within 15 calendar days of the date of such determination or decision by the Construction Manager. Failure of the Contractor to appeal the decision or determination of the Construction Manager within said 15-day period shall constitute a waiver of the Contractor's right to thereafter assert an appeal resulting from such determination or decision.
3. Within 30 calendar days following the submittal of a Notice of Appeal the Contractor must submit in writing full documentation related to the Appeal, including:
  - a. A detailed factual statement of the Appeal providing all necessary details, dates, locations, and items of Contract Work affected;
  - b. Copies of documents and a written description of the substance of any oral communications that concern or relate to the Appeal;
  - c. The specific provisions of the Contract Documents on which the Appeal is based;
  - d. If an adjustment in the Contract Price is sought, the exact amount sought, accompanied with all records meeting the requirements herein for Contractor Change Proposals; and,
  - e. If an adjustment in the Contract Time is sought, the specific days and dates for which it is sought, accompanied by a schedule analysis meeting the requirements herein for Changes in Contract Time.
4. The Owner's Representative shall review the appeal and transmit his decision in writing to the Contractor within 45 calendar days from the date of receipt of the appeal. At the discretion of the Owner's Representative, additional information may be requested from the Contractor or the review period may be extended, following written notice to the Contractor.
5. Pending final decision of an Appeal hereunder, the Contractor shall proceed diligently with the performance of the Work, including that work associated with the Appeal, and maintain its progress with the Work.

6. The Contractor shall have the burden of proof to demonstrate entitlement to the relief sought through the Appeal process.

G. USE OF CONTRACTOR'S PLANT AND EQUIPMENT:

Contractor agrees to make available to the Owner his plant and equipment for the performance of work at the Project site. The Owner agrees that the use of such plant and equipment shall be considered as extra work and paid for accordingly.

PART 3 SPECIFICATIONS AND DRAWINGS

3.01 INTERPRETATION OF SPECIFICATIONS AND DRAWINGS

A. GENERAL:

The Specifications and Drawings are intended to be complementary of each other. Work specified on the Drawings and not in the Specifications, or vice versa, shall be executed as if specified in both.

B. BEFORE STARTING CONSTRUCTION:

Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. Contractor shall promptly report in writing to Engineer through Construction Manager any conflict, error, ambiguity or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from the Construction Manager before proceeding with any work affected thereby; however, Contractor shall not be liable to Owner, Construction Manager or Engineer for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless Contractor knew or reasonably should have known thereof.

C. REQUEST FOR CLARIFICATION:

In the event the Work to be done or matters relative thereto are not sufficiently detailed or explained in the Contract Documents, the Contractor shall apply to the Engineer through the Construction Manager for further explanations as may be necessary and shall conform thereto so far as may be consistent with the terms of the Contract. In the event of doubt or question arising respecting the true meaning of the Specifications or Drawings, reference shall be made to the Construction Manager for his decision. Should the Contractor disagree with the Construction Manager's decision, he may appeal to the Owner's Representative in accordance with paragraph 00700-2.05 E.

3.02 DIVISION OF SPECIFICATIONS AND DRAWINGS

Specifications and Drawings are divided into groups for the convenience of the Owner, Construction Manager and Engineer. These divisions are not for the purpose of apportioning work or responsibility for work among subcontractors, suppliers and manufacturers.

### 3.03 DISCREPANCIES IN SPECIFICATIONS AND DRAWINGS; DIFFERING CONDITIONS

#### A. ERRORS AND OMISSIONS:

If the Contractor, in the course of the Work, becomes aware of any claimed errors or omissions in the Contract Documents or in the Owner's fieldwork, he shall immediately inform the Construction Manager in writing. The Construction Manager shall promptly review the matter and if he finds an error or omission has been made, he shall determine the corrective actions and advise the Contractor accordingly. If the corrective work associated with an error or omission increases or decreases the amount of work called for in the Contract, an adjustment to the Contract will be developed through the procedures outlined herein for Changes in the Work. After discovery of an error or omission by the Contractor, related work performed by the Contractor shall be done at his risk unless authorized by the Construction Manager. In the event the Contractor disagrees with the determination of the Construction Manager under this provision, he may appeal to the Owner's Representative in accordance with paragraph 00700-2.05 F.

#### B. CONFLICTING PROVISIONS:

In cases of conflict between the Specifications and Drawings, the Specifications shall govern. Figure dimensions on drawings shall govern over scale dimensions and detail drawings shall govern over general drawings. In the event an item of work is described differently in two or more locations on the Drawings and in the Specifications, the Contractor shall request a clarification from the Engineer through the Construction Manager.

#### C. UNDERGROUND FACILITIES:

The Owner has endeavored to determine the existence of underground facilities at the site of the Work from the records of the owners of known utilities in the vicinity of the Work and from records of previous construction activities at the site. The positions of these underground facilities as derived from such records are shown on the Drawings. No excavations were made to verify the locations shown for underground facilities. The service connections to utilities are not shown on the Drawings. It shall be the responsibility of the Contractor to determine the exact location of underground facilities, utilities, and service connections thereto. The Contractor shall make his own investigations, including exploratory excavations, to determine the locations and type of existing underground facilities, prior to commencing work which could result in damage to such facilities. The Contractor shall immediately notify the Construction Manager as to any underground facility discovered by him in a different position than shown on the Drawings or which is not shown on the Drawings.

Work on underground facilities shall be performed and paid for as follows:

1. Shown or Indicated: 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.
2. Not Shown or Indicated: 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), identify the owner of such underground facility and give written notice to that owner and to Owner and Construction Manager. Construction Manager 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.

If the Construction Manager concludes that a change in the Contract Documents is required, a Directive will be processed to reflect and document such consequences. An equitable adjustment may be made in the Contract Price or Contract Times, or both, to the extent that such adjustment is 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. The adjustment to Contract Time shall be in conformance with the requirements specified elsewhere herein regarding impact to controlling activities on the critical path of the schedule.

E. DIFFERING SITE CONDITIONS:

1. The Contractor shall promptly, in any event no later than five days, and before such conditions are disturbed, notify the Owner in writing of:
  - a. Subsurface or latent physical conditions at the site differing materially from those indicated in this Contract.
  - b. Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract.

2. Unless otherwise agreed upon in writing by the Construction Manager, within fourteen days of the Contractor's initial written notification of the Differing Site Condition to the Owner, the Contractor shall provide a change proposal in accordance with the requirements of paragraph 00700-7.03 of this Section and:
  - a. A detailed description of the Differing Site Condition; and,
  - b. Substantive, contractual, and technical basis supporting the existence of the Differing Site Condition and its impacts.
3. The Owner shall promptly investigate the alleged Differing Site Conditions and respond to the Contractor's Notice of Differing Site Conditions and issue a Directive if appropriate.
4. Waiver:
  - a. If the Contractor's actions disturb the site such that the Owner or Construction Manager cannot adequately and fully investigate the alleged Differing Site Condition, the Contractor waives its right to receive any additional time or money as a result of the Differing Site Condition.
  - b. Failure by the Contractor to provide either (i) immediate notice or (ii) a change proposal shall constitute a waiver of the Contractor's right to receive any additional time or money as a result of the Differing Site Condition.
  - c. The Contractor shall be responsible for any and all costs or damages incurred by the Owner resulting from the Contractor's failure to provide appropriate notice and/or the detailed description and change proposal.
5. The Contractor shall not disturb the condition until receipt of written authorization from the Construction Manager that work can resume at the location of the alleged Differing Site Condition. The Contractor shall continue with the performance of all other Work.

### 3.04 SUBMITTALS

Where required by the Specifications, the Contractor shall submit specified information which will enable the Engineer to determine and advise the Owner whether the Contractor's proposed materials, equipment or methods of work are in general conformance with the design concept and in compliance with the Drawings and Specifications.

### 3.05 CONTRACTOR'S COPIES OF CONTRACT DOCUMENTS

The Owner will furnish the Contractor four sets of Contract Documents, including full-size drawings, within 14 days after the issuance of the Notice-To-Proceed. The Contractor is advised that revisions incorporating changes by addenda may not be incorporated into the reduced or full-size drawings furnished under the provisions of this



paragraph. Additional copies of the Contract Documents, if required by the Contractor, will be furnished by the Owner at cost. The Contractor shall keep at the construction site at least one set of the Contract Documents, including full-size drawings.

#### PART 4 MATERIALS, EQUIPMENT AND WORKMANSHIP

##### 4.01 GENERAL

Unless otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for materials, labor, tools, equipment, water, light, power, transportation, supervision, and temporary construction of any nature, and other services and facilities of any nature, whatsoever necessary, to execute, complete and deliver the Work within the specified time. Material and equipment shall be new and of a quality equal to that specified. Equipment offered shall be current modifications which have been in successful regular operation under comparable conditions. This requirement does not apply to minor details, nor to thoroughly demonstrated improvements in design or in materials of construction. Construction work shall be executed in conformity with the standard practice of the trade.

##### 4.02 PRODUCT DATA

Data required by the Owner for inspecting, testing, operating or maintaining parts of the Work shall be provided by the Contractor when specified. Unless otherwise specified, such information shall consist of three copies and shall be provided at the time the referenced material or equipment is delivered to the job site. The data shall be as specified and include such items as shop drawings, erection drawings, reinforcing steel schedules, testing and adjusting instructions, operations manuals, maintenance procedures, parts lists and record drawings. When applicable, information and data to be provided shall be identified by the specified equipment number. Extraneous material on the pages or drawings provided shall be crossed out, and the equipment or material to be supplied shall be clearly marked. Such information is to be provided as part of the Work under this Contract and its acceptability determined under normal inspection procedures.

##### 4.03 QUALITY

Where the Contract requires that materials or equipment be provided or that construction work be performed, and detailed specifications of such materials, equipment or construction work are not set forth, the Contractor shall perform the Work using materials and equipment of the best grade in quality and workmanship obtainable in the market, from firms of established good reputations, and shall follow standard practices in the performance of construction work. The work performed shall be in conformity and harmony with the intent to secure the standard of construction and equipment of work as a whole and in part.

##### 4.04 MATERIAL AND EQUIPMENT SPECIFIED BY NAME

###### A. GENERAL:

When material or equipment is specified by reference to two or more patents, brand names, or catalog numbers, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements, and that other materials or equipment, of equal capacities, quality and function shall be considered by the Owner upon the Contractor's request for substitution. Requests for substitution shall be made in accordance with paragraph 00700-4.05.

**B. SINGLE SOURCE PRODUCTS:**

If material or equipment is specified by only one patent or proprietary name, or by the name of only one manufacturer, it is for the purpose of standardization, or because the Owner knows of no equal. If standardization is the reason for using one name to specify any material or equipment, the specifications will so state that substitutions will not be considered. In other cases, the Contractor may offer substitutions of products considered to be equal to that specified. Such substitutions shall be requested in accordance with paragraph 00700-4.05.

**4.05 REQUESTS FOR SUBSTITUTION**

The Contractor may offer material or equipment of equal or better quality and performance in substitution for those specified. The Owner will consider offers for substitution only from the Contractor and will not acknowledge or consider such offers from suppliers, distributors, manufacturers, or subcontractors. The Contractor's offers of substitution shall be made in writing to the Engineer through the Construction Manager and shall include sufficient data to enable the Engineer to assess the acceptability of the material or equipment for the particular application and requirements. All requests for substitution must be made within 120 days of the receipt of notice to proceed. Requests for substitutions submitted after this 120-day period will not be considered unless evidence is submitted to the Engineer through the Construction Manager that all of the following circumstances exist:

1. The specified product is unavailable for reasons beyond the control of the Contractor. Such reasons shall consist of strikes, bankruptcy, discontinuance of manufacturer, or acts of God.
2. The Contractor placed, or attempted to place, orders for the specified products within 30 days after Notice to Proceed.
3. Request for substitution is made in writing to the Engineer through the Construction Manager within 10 days of the date on which the Contractor ascertains that he cannot obtain the item specified.
4. Complete data as set forth herein to permit complete analysis of the proposed substitution is submitted with the request.

The Engineer's decision regarding evaluation of substitutions shall be considered final and binding. Requests for time extensions and additional costs based on submission of, acceptance of, or rejection of substitutions will not be allowed.

If the offered substitution necessitates changes to or coordination with other portions of the Work, the data submitted shall include drawings and details showing such changes. Contractor agrees to perform these changes as part of the substitution of material or equipment at no additional cost to the Owner. Within 30 calendar days after receipt of the offer of substitution, the Engineer will review the material submitted by the Contractor and advise the Contractor of objections, if any, to the proposed substitution or if further information is required. Upon notification by the Engineer, the Contractor shall either provide material or equipment that complies with Project Specifications or furnish requested additional information. While the Engineer might not take any objections to the proposed substitution, such action shall not relieve the Contractor from responsibility for the efficiency, sufficiency, quality and performance of the substitute material or equipment, in the same manner and degree as the material and equipment specified by name. Any cost differential associated with a substitution shall be reflected in the offer and the Contract Documents shall be modified by Changes in the Work procedures.

#### 4.06 DEMONSTRATION OF COMPLIANCE WITH CONTRACT REQUIREMENTS

##### A. INSPECTION:

To demonstrate his compliance with the Contract requirements, the Contractor shall assist the Construction Manager in his performance of inspection work. The Contractor shall grant the Construction Manager access to the Work and to the site of the Work, and to the places where work is being prepared, or whence materials, equipment or machinery are being obtained for the Work. The Contractor shall provide information requested by the Construction Manager in connection with inspection work.

If the Contract Documents, laws, ordinances, or any public regulatory authority having jurisdiction requires parts of the Work to be specially inspected, tested or approved, the Contractor shall give the Construction Manager adequate prior written notice of the availability of the subject work for examination.

If parts of the Work are covered in contravention of the Construction Manager's directive, the cost of exposing the work for inspection and closing shall be borne by the Contractor regardless of whether or not the work is found to be in compliance with the Contract.

If any work is covered in the absence of the Construction Manager's directive to the contrary, the Contractor shall, if directed by the Construction Manager, uncover, expose or otherwise make available for inspection, portions of covered work. If it is found that such work is defective, the Contractor shall bear the expense of uncovering and reconstructing. If the work is found to be in compliance with the Contract, the Contractor will be allowed equitable compensation or an extension in the Contract Time, or both, except that extensions in Contract Time must meet the Contract requirements for impact on controlling activities. Recovery for such expense and/or time shall follow the procedures set forth herein for Changes in the Work.

##### B. SAMPLES OF MATERIALS:

In cases where compliance with Contract requirements for materials to be incorporated in the Work requires laboratory examination or special testing, the Contractor shall provide samples or specimens as requested by the Construction Manager. Such samples or specimens shall be provided in ample time to permit making proper test analysis and examinations before the time at which it is desired to incorporate the material into the Work. Tests of material will be conducted in accordance with the technical Specifications. In the absence of a specific test requirement, the Construction Manager will determine the appropriate standard test to be used. Unless stated otherwise in the Contract Documents, the costs of such examination or testing shall be borne by the Contractor.

C. CERTIFICATION:

In cases where compliance of materials or equipment to Contract requirements is not readily determinable through inspection and tests, the Construction Manager shall request that the Contractor provide properly authenticated documents, certificates or other satisfactory proof of compliance. These documents, certifications and proofs shall include performance characteristics, materials of construction and the physical or chemical characteristics of materials.

D. INSPECTION AT POINT OF MANUFACTURING:

If inspection and testing of materials or equipment in the vicinity of the Work by the Owner is not practicable, the Specifications may require that such inspection and testing or witnessing of tests take place at the point of manufacture. In this case and in the event the remote inspection and testing is not specified and is requested by the Owner, the required travel, subsistence, and labor expenses shall be paid by the Owner. If the Contractor requests the Owner to inspect and test material or equipment at the point of manufacture, then the additional cost to the Owner for travel, subsistence, and labor expenses shall be paid by the Contractor.

4.07 STORAGE OF MATERIALS AND EQUIPMENT

Materials and equipment shall be stored so as to ensure the preservation of their quality and fitness for the Work and so as to be protected from weather, damage, theft, and vandalism. Control panels, switchgear, drives, and other sensitive electrical and electronic equipment shall be stored indoors in a climate controlled environment. The Contractor shall be responsible for damages due to any cause that occur in connection with the care and protection of materials and equipment until Acceptance of the Work.

The Contractor is responsible for complying with the requirements of any manufacturer pertaining to the storage of their equipment, including but not limited to, motor rotation and lubrication, provision of temporary power for moisture control, provision of climate-controlled storage facilities, compliance with warranty restrictions on the use of the equipment for temporary construction-related purposes, and other special provisions as dictated by the manufacturer.

Stored equipment and materials shall be located so as to facilitate inspection. If space is available, materials and equipment may be stored on site in areas approved by the

Owner; however, they shall be stored so as not to interfere with the Owner's operations or with other work, block passageways, or obstruct access/exits to buildings or facilities. Materials and equipment may be stored off site with the Owner's consent, if the Owner's interest in those materials and equipment is protected through insurance and the Contractor provides documentation of such insurance.

#### 4.08 MANUFACTURER'S DIRECTIONS

Manufactured articles, material and equipment shall be applied, installed, connected, erected, adjusted, tested, operated and maintained as recommended by the manufacturer, unless otherwise specified. Manufacturer's installation instructions and procedures shall be provided prior to installation of the manufactured articles, material and equipment.

#### 4.09 DEFECTIVE WORK

##### A. CORRECTION OF DEFECTIVE WORK:

When, and as often as the Construction Manager determines through his inspection procedures, material, equipment or workmanship incorporated in the Project do not meet the requirements of the Contract, the Construction Manager shall give written notice of the noncompliance to the Contractor. Within five days from the receipt of such notice, the Contractor shall undertake the work necessary to correct the deficiencies, and to comply with the Contract. If the Contractor disagrees with the Construction Manager's determination and believes that the corrective work should be covered at the Owner's expense, he shall immediately notify the Owner's Representative, in writing, setting forth his position in accordance with the Appeals procedure in paragraph 00700-2.05 F. If the Owner's Representative determines that the corrective work is required to comply with the Contract, the Contractor shall proceed with such work.

##### B. RETENTION OF DEFECTIVE WORK:

Prior to acceptance of the Project, the Owner may, at his option, retain work which is not in compliance with the Contract if the Owner determines that such defective work is not of sufficient magnitude or importance to make the work dangerous or undesirable. The Owner also may retain defective work, if, in the opinion of the Construction Manager, and with concurrence of the Owner's Representative, removal of such work is impractical or will create conditions that are dangerous or undesirable. Just and reasonable value for such defective work shall be judged by the Owner and appropriate deductions shall be made in the payments due, or to become due to the Contractor. Acceptance of the Project shall not act as a waiver of the Owner's right to recover from the Contractor an amount representing the deduction for retention of defective work.

#### 4.10 GUARANTEE

The guarantee period shall be for 365 days. Except for Work accepted as substantially complete, the guarantee period shall commence on the date of Acceptance of the Project. For Work described as substantially complete, the guarantee period shall

commence on the date of substantial completion. During the guarantee period, the Contractor shall, upon the receipt of notice in writing from the Owner, promptly make all repairs arising out of defective materials, workmanship or equipment. The Owner is hereby authorized to make such repairs, if ten days after giving of such notice to the Contractor, the Contractor has failed to make or undertake the repairs with due diligence. In case of an emergency, where, in the opinion of the Owner, delay could cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the expenses in connection therewith shall be charged to the Contractor.

For the purpose of this paragraph, "acceptance of the Work" shall mean the acceptance of the Project or a portion of the Project by the Owner, in accordance with paragraph 00700-6.07. "Acceptance of the Work" shall not extinguish any covenant or agreement on the part of the Contractor to be performed or fulfilled under this Contract which has not, in fact, been performed or fulfilled at the time of such acceptance. All covenants and agreements shall continue to be binding on the Contractor until they have been fulfilled.

#### 4.11 MATERIALS AND EQUIPMENT FURNISHED BY OWNER

Materials and equipment specified to be furnished by the Owner shall be installed by the Contractor. Furnishing of material and equipment by the Owner will be considered conclusive evidence of their acceptability for the purpose intended. If the Contractor discovers defects in material or equipment furnished by the Owner, he shall notify the Construction Manager. After such discovery, the Contractor shall not proceed with work involving Owner-furnished materials and equipment unless authorized by the Construction Manager. Unless otherwise noted or specifically stated, materials and equipment furnished by the Owner, which are not of local occurrence, are considered to be FOB railroad station or truck terminal nearest to the site of the Work. After receipt by the Contractor at the point of destination, all risk of loss and damage to such materials and equipment shall be borne by the Contractor, as if it had been supplied and stored by the Contractor himself. The Contractor shall unload, transport, store and protect such material and equipment from damage.

### PART 5 LIABILITY AND INSURANCE

#### 5.01 LIABILITY OF CONTRACTOR

The Contractor shall be liable for any and all losses or damages from whatever cause which, prior to Acceptance of the Project, may occur on or to any part of the Work. The Contractor shall not be liable for losses or damages caused solely by the act of the Owner.

The Contractor shall be liable for damages and injury which shall be caused to persons owning property, on or in the vicinity of the Work, or which shall occur to a person, or persons, or property whatsoever, arising out of the Contractor's performance of this Contract. The Contractor's liability shall not be dependent upon whether or not such damage or injury is caused by the negligence of the Contractor, and whether or not such damage or injury be caused by the inherent nature of the Work as specified.

The Contractor shall indemnify and hold the Owner, the Construction Manager, the Engineer, and their officers, principals, agents, subcontractors, and employees, harmless from any and all loss, defense cost, expense, claims, demand or liability whatsoever, arising from allegations of injuries to persons or damage to property related to the performance of this Contract, regardless of concurrent negligence on the part of such indemnities. The indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers compensation acts, disability benefit acts, or other employee benefit act, nor shall it be limited to the limits of the liability insurance required by this Contract.

In case suit or legal proceeding shall be brought against the Owner, the Construction Manager, the Engineer, or their officers, principals, agents, subcontractors, or employees, on account of loss or damage sustained by person, or persons, or property, as a result of the performance of the Work covered by this Contract, the Contractor agrees to assume the defense thereof, and to pay the expenses connected therewith, and the judgments that may be obtained against the Owner, the Construction Manager, the Engineer, or their officers, principals, agents, subcontractors, or employees, in such suits. In the event that a lien is placed against the property of the Owner, the Construction Manager, the Engineer, or their officers, principals, agents, subcontractors, or employees, as a result of such suits, the Contractor agrees to at once cause the same to be dissolved and discharged by giving bond or otherwise. The Contractor's agreement to defend and to pay the related expenses shall exist whether or not such injuries or damage be due to the negligence of the Contractor, and whether or not such injuries or damage be caused by the inherent nature of the Work, as specified.

The mention of specific duties or liabilities imposed on the Contractor shall not be construed as a limitation or restriction of general duties or liabilities imposed upon the Contractor by the Contract. Reference to specific duties or liabilities is made herein, merely for the purpose of explanation.

## 5.02 BONDS

The Contractor shall provide two bonds, each in the amount of 100 percent of the Contract Price. One shall serve as security for the faithful performance of the Work and the other as security for the faithful payment and satisfaction of the persons furnishing materials and performing labor on the Work. The bonds shall be issued by a corporation duly and legally licensed to transact surety business in the State of Georgia. Such bonds shall remain in force throughout the period required to complete the Work, and thereafter for a period of 365 calendar days after Acceptance of the Project. The bonds must be executed by a duly licensed surety company, which is listed in the latest Circular 570 of the United States Treasury Department, as being acceptable as surety on federal bonds. The Surety Company shall be licensed to do business in the State of Georgia. No surety's liability on the bonds shall exceed the underwriting limitations for the respective surety specified in Circular 570. The scope of the bonds or the forms thereof prescribed in these Contract Documents shall in no way affect or alter the liabilities of the Contractor to the Owner as set forth herein.

Companies providing Bonds under this Contract must have a current Best's rating not less than A and current Best's Financial Size Category less than Class IX. These requirements conform to the ratings published by A. M. Best & Company in the current Best's Key Rating Guide – Property-Casualty.

### 5.03 INSURANCE

The Contractor shall maintain throughout the Contract Period, all insurance coverage specified in Section 00750. Evidences of insurance shall be provided to the Owner prior to execution of the Contract.

All policies shall contain provisions to the effect that in the event of payment of any loss or any damage, the insurers will have no right of recovery against the insured or additionally named insured thereunder.

## PART 6 PROGRESS AND COMPLETION

### 6.01 NOTICE TO PROCEED

After execution of the Contract by the Owner, written Notice to Proceed will be given by the Owner to Contractor. Notwithstanding other provisions of the Contract, the Contractor shall not be obligated to perform work, and the Owner shall not be obligated to accept or pay for work performed by the Contractor, prior to date of the Notice to proceed. The Owner's knowledge of work being performed prior to date of the Notice to Proceed shall not obligate the Owner to accept or pay for such work.

### 6.02 CONTRACT TIME

#### A. GENERAL:

Time shall be of the essence of the Contract. The Contractor shall promptly start the Work after the date of the Notice to Proceed and shall prosecute the Work so that the Project as a whole and portions of the Project shall be complete within the times specified in Section 00500. During periods when weather or other conditions are unfavorable for construction, the Contractor shall pursue only such portions of the Work as shall not be damaged thereby. No portions of the Work where acceptable quality or efficiency will be affected by unfavorable conditions shall be constructed while those conditions exist. It is expressly understood and agreed by and between the Contractor and the Owner that the Contract Time for completion of the Work described herein is a reasonable time taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work. The Contract Time may be changed only with a Change Order and in compliance with this Section and Section 00700, Article 7.03 of these Specifications.

#### B. CONSTRUCTION SCHEDULE:

The Contractor shall provide a construction schedule and reports as specified in Section 01310 for scheduling and coordinating the Work within the Contract Time. Contract time extensions shall be incorporated into updated schedules, reflecting



their effect at the time of occurrence. Failure of the Contractor to comply with these requirements for submittal of the construction schedule and reports may cause for delay in review of progress payments by the Construction Manager.

C. CONSTRUCTION PROGRESS:

The Contractor shall furnish such manpower, materials, facilities and equipment as may be necessary to insure the prosecution and completion of the Work in accordance with the accepted schedule. If work falls 14 days or more behind the accepted construction schedule, the Contractor agrees that he will take some or all of the following actions to return the Project to the accepted schedule. These actions may include the following:

1. Increase manpower in quantities and crafts.
2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of equipment, or any combination of the foregoing.
3. Reschedule activities.

If requested by the Construction Manager, the Contractor shall prepare a proposed schedule revision demonstrating a plan to make up the lag in progress and ensure completion of the Work within the Contract Time. The proposed revision shall be submitted to the Construction Manager in accordance with Section 01310. Upon receipt of an acceptable proposed schedule revision, the revision to the construction schedule shall be made in accordance with Section 01310. All actions to return the Project to the accepted schedule are at the Contractor's expense.

The Contractor shall pay all costs incurred by the Owner that result from the Contractor's action to return the Project to its accepted schedule. Contractor agrees that Owner shall deduct such charges from payments due the Contractor. It is further understood and agreed that none of the services performed by the Construction Manager in monitoring, reviewing and reporting Project status and progress shall relieve the Contractor of responsibility for planning and managing construction work in conformance with the construction schedule.

D. DELAYS:

1. Notice of Delays: When the Contractor foresees a delay in the prosecution of the Work and immediately upon the occurrence of a delay which the Contractor regards as unavoidable, he shall notify the Construction Manager in writing of the probability of the occurrence of such delay, the extent of the delay, and its possible cause. In any event, the Notice of Delay shall be submitted to the Construction Manager within seven days of the occurrence or of when the Contractor was aware of the likelihood of a possible delay. The Contractor shall take immediate steps to prevent, if possible, the occurrence or continuance of the delay. If this cannot be done, the Construction Manager shall determine how long the delay shall continue and to what extent the prosecution and completion of the Work are being delayed thereby. He shall

also determine whether the delay is to be considered avoidable or unavoidable and shall notify the Contractor of his determination. The Contractor agrees that no claim shall be made for delays that are not called to the attention of the Construction Manager at the time of their occurrence. Within seven days of the submittal of the written Notice of Delay, the Contractor shall submit the following information:

- a. Nature of the delay;
  - b. Date (or anticipated date) of commencement of delay;
  - c. Activities on the construction schedule affected by the delay, and/or new activities created by the delay and their relationship with existing activities;
  - d. Identification of person(s) or organization(s) or event(s) responsible for the delay;
  - e. Anticipated extent of the delay; and
  - f. Recommended action to avoid or minimize the delay.
2. Avoidable Delays: Avoidable delays in the prosecution of the Work shall include:
- a. Delays that could have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or his subcontractors.
  - b. Delays which occur as a result of equipment maintenance, breakdown, or equipment that otherwise fails to operate properly.
  - c. Delays due to normal weather conditions.
  - d. Delays due to abnormal weather conditions for which the Contractor is specifically required to make provision.
  - e. Delays that may in themselves be unavoidable but which affect only a portion of the Work and do not necessarily prevent or delay the prosecution of other parts of the Work or the completion of the whole Work within the Contract Time.
  - f. Delays associated with the reasonable interference of other contractors employed by the Owner that do not necessarily prevent the completion of the whole Work within the Contract Time.
3. Unavoidable Delays: Unavoidable delays in the prosecution or completion of the Work shall include delays which result from causes beyond the control of the Contractor and which could not have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor or his subcontractors. Delays in completion of the work of other contractors employed by the Owner will be considered unavoidable delays insofar as they

interfere with the Contractor's completion of the whole Work within the Contract Time. Delays caused by acts of God, fire, abnormal weather, floods, tidal waves, earthquakes, strikes, labor disputes, freight embargoes and shortages of materials shall be considered as unavoidable delays insofar as they prevent the Contractor from proceeding with at least seventy-five percent (75%) of the normal labor and equipment force for at least five hours per day toward completion of the current controlling item on the accepted critical path schedule.

E. DAMAGES FOR DELAY:

For the period of time that any portion of the Work remains unfinished after the time fixed for completion in the Contract Documents, as modified by extensions of Contract Time granted by the Owner, it is understood and agreed by the Contractor and the Owner that the Contractor shall pay the Owner the amount of the liquidated damages specified in the Contract to cover the costs that the Owner suffers by failure of the Contractor to complete the Work within the stipulated time frame.

F. EARLY COMPLETION

The Contractor may complete the Project or any part of the Project earlier than is stipulated in the Contract. The Contractor may schedule its work to complete earlier than required by the Contract or stipulated in the approved schedule; however, under no circumstances shall the Contractor be entitled to added compensation for delays that occur during the originally stipulated Contract period. The Owner has purchased the entire scheduled time period by virtue of this Contract and further stipulates that only those delays that meet the tests set forth within paragraph 00700 - 7.03.G.4 will be considered for adjustment and only to the extent that they delay the Work past the originally contractually stipulated milestones or completion date.

G. WEATHER DELAY

Contract Time will be extended as a result of weather delays based only on the following criteria.

General Requirements: Delays caused by abnormal weather shall be considered as unavoidable delays insofar as they prevent the Contractor from proceeding with at least seventy-five percent (75%) of the normal labor and equipment force for at least five hours per day toward completion of the current controlling item on the accepted critical path schedule. Even though a cause of delay meets any, or all, of the weather delay rules stated herein, it shall in all cases be presumed that no extension, or further extension, of time is due unless the Contractor shall demonstrate that the delay is justified and had an impact to the critical path of the updated CPM schedule for the delay period. To this end, the Contractor shall maintain adequate records supporting any claim for an extension of time and shall submit such records, including a revised CPM schedule showing the impact of the delay, with the claim.

A Notice of Alleged Weather Delay shall be submitted in writing to the Construction Manager within seven days after the month for which the delay is claimed. Full supporting documentation, including a statement of the portions of the Work affected, an explanation as to the reasons work was prevented or hindered by the weather, the dates on which such portions of Work were affected, the total number of days believed that the job in its entirety was delayed, and the schedule update shall be submitted to the Construction Manager within seven days following submittal of the Notice. Failure by the Contractor to provide either (a) Notice of alleged weather delay or (b) full supporting documentation shall constitute a waiver of the Contractor's right to receive any additional time as a result of the alleged abnormal weather, unless the time for submitting the required information is extended in writing by the Construction Manager.

The Construction Manager will determine the Contractor's entitlement to an extension of the Contract Time, but in no event shall an extension be granted for days outside the Contract period. The daily records maintained by National Oceanic and Atmospheric Association's (NOAA) station located at the Atlanta Fulton County Airport (Charlie Brown Field), shall be the official source for weather data related to precipitation for this Project. A time extension of no more than one day will be granted for one day of lost work, regardless of the number of allowable reasons for lost time. The period of any extension of time shall be only for the portion of the Contract actually delayed due to the abnormal weather conditions. Any extension of Contract Time allowed under any of the following rules shall be considered non-compensable and have no impact on Contract Price.

1. Rule Number One: The total amount of precipitation that occurs during one calendar month.

If the actual amount of precipitation in a given month is less than the normal precipitation for that month, as stated in Figure 1, no claim will be allowed under this rule.

If the actual amount of precipitation for the month exceeds the normal amount, and the number of days having precipitation greater than one tenth (0.10") inch that is greater than the average number of precipitation days per month in Figure 2, then an application for extension is justified. One day time extension would be allowed for each day in excess of the average number of precipitation days. For each day, or period of consecutive days of "excess precipitation," a time extension of one day may be allowed for the following day as a "mud day." (See Rule Number Four.)

2. Rule Number Two: The frequency of the occurrences of precipitation during one calendar month.

Precipitation of greater than one-tenth (0.10") inch per day for three or more days of a consecutive five-day period is considered to be unusual frequency and, as such, is considered to be justification for application for a one-day extension. This rule can be used even when Rule Number One is not applicable, but may not apply concurrently with other rules. For each "frequency of precipitation" day, a one day time extension may be allowed for the following day as a "mud day." (See Rule Number Four.)

3. Rule Number Three: Unusually heavy precipitation.

Precipitation of greater than one inch during a single day is considered to be justification for application for a one-day time extension. For each “heavy precipitation” day or period of consecutive days, a one-day time extension may be allowed for the following day as a “mud day.” (See Rule Number Four.) Rule Number Three is applicable only after the precipitation for the month exceeds the normal precipitation for that month as stated in Figure 1.

4. Rule Number Four: The effect of precipitation on the Project’s site conditions.

Unfavorable site conditions that hamper work can result from unusual weather during that period when the work is unenclosed. This rule considers both mud and snow cover according to the season. A one day time extension for “mud” may be allowed for each day, or period of consecutive days, approved under Rule Number One, Two and Three; however, only one application of this rule, mud or snow, per day is allowed. Three inches or more of snow cover is considered to be justification for application for an extension of time. Whether or not the Contractor took reasonable precautions to provide protection for the Work will be considered in the evaluation of impacts related to abnormal weather.

5. Rule Number Five: Temperature

A daily high temperature of twenty degrees Fahrenheit or less is considered to be justification for application for a one-day time extension. This rule cannot be applied concurrently with any other rule. Temperatures above the statistical mean are not considered to be justification for an extension of Contract Time.

Figure 1											
Normal Precipitation (all measurements are in inches)											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
5.03	4.68	5.38	3.62	3.95	3.63	5.12	3.67	4.09	3.11	4.1	3.82

Figure 2											
Average Number of calendar days with Precipitation of 0.1 inches or more											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
12	10	11	9	9	10	12	9	8	7	8	10

[Information contained in Figures 1 and 2 are as provided by the U.S. National Oceanic and Atmosphere Administration (NOAA) Meteorological Data for Atlanta.]

6.03 SUSPENSION PROCEDURES

- A. The Owner may, at his convenience and at any time and without cause, suspend, delay, or interrupt all or any part of the Work for a period of not more than 90 days by notice in writing to the Contractor. The Owner shall fix the date on which the Work shall be resumed. The Contractor shall resume the Work within 10 days

after receiving written notice from the Owner to do so. The Contractor will be allowed an increase in the Contract Price or an extension of Contract Time, or both, directly attributable to any suspension if he makes a claim therefore as provided in the paragraphs related to change of Contract Price and change of Contract Time. Compensation for costs due to Suspension of the Work shall be limited to the direct costs of the Project as specified under Time and Expense Changes, except that no allowance will be made for overhead and profit. Additionally, the Contractor shall not be paid for extended home office overhead, lost use of capital, impairment of bonding capacity, loss of potential profit or any other direct costs.

- B. If the Contractor fails or refuses to perform its obligations in accordance with the Contract, the Owner may order the Contractor, in writing, to stop the Work, or any portion thereof, until satisfactory corrective action has been taken. The Contractor shall not be entitled to any adjustment in the Contract Time and/or Contract Price for any increased cost or time of performance attributable to the Contractor's failure or refusal to perform its obligations under the Contract.

#### 6.04 TERMINATION PROCEDURES

##### A. TERMINATION BY OWNER FOR DEFAULT:

The Owner may terminate the Contract upon seven days written notice to Contractor and his surety whenever the Contractor is deemed to be in default or fails to fulfill, in a timely and proper manner, the Contract obligations, or is in violation of any provisions or covenants of the Contract.

For purposes of this paragraph, the Contractor shall be deemed to be in default upon the occurrence of any one or more of the following events:

1. If Contractor is unable to demonstrate financial ability to finish the Project.
2. If Contractor makes a general assignment for the benefit of creditors.
3. If a trustee or receiver is appointed for Contractor, or for any of Contractor's property.
4. If Contractor files a petition to take advantage of any debtor's act, or to reorganize under any bankruptcy chapter or law.
5. If Contractor repeatedly fails to make prompt payments to subcontractors or others for labor, materials, or equipment.
6. If Contractor disregards laws, ordinances, rules, regulations, or orders of any public body having jurisdiction.
7. If Contractor disregards the authority of Construction Manager.

8. If Contractor fails to prosecute the Work or any portion thereof with sufficient diligence to ensure Substantial Completion of the Work within the Contract Time.
9. If Contractor fails to comply with Contract safety requirements.
10. If Contractor repeatedly fails to supply skilled workers or proper materials or equipment.
11. If Contractor violates in any substantial way the provisions of the Contract Documents by failing, neglecting, or refusing to proceed according to and in full compliance with the provisions and covenants of the Contract Documents.

If the Owner reasonably believes that one of the aforementioned events has occurred, the Owner will provide the Contractor with written Notice of its intent to terminate the Contractor for default, specifying within such notice the ground(s) for such termination. The Owner, at its option, shall require the Contractor to either promptly correct the deficiencies noted in the Owner's intent to terminate Notice or provide the Owner with a corrective action plan as to how such deficiencies will be remedied or cured in a timely fashion. If, after receipt of the proposed remedy, the Owner has a reasonable basis for concluding that the Contractor has (a) failed or is unwilling to repair, replace, or correct the deficiencies, or (b) failed or is unwilling to provide a reasonable and satisfactory corrective action plan, the Owner shall thereafter have the right to terminate this Contract for default.

After termination of Contractor for default, the Owner may exclude the Contractor from the site and take possession of the Work and all of the Contractor's tools, appliances, construction equipment, and machinery at the site and use the same to the full extent they could be used by the Contractor. The Owner may incorporate in the Work all materials and equipment stored at the site or for which the Owner has paid the Contractor, but which are stored elsewhere.

If the Owner proceeds as with the Work, the 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 the Owner arising out of or relating to completing the Work, such excess will be paid to the Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, the Contractor shall pay the difference to the Owner. Such claims, costs, losses, and damages incurred by the Owner will be reviewed by the Construction Manager as to their reasonableness and, when so approved by the Construction Manager, incorporated in a Change Order. When exercising any rights or remedies under this paragraph the Owner shall not be required to obtain the lowest price for the Work performed.

Where the Contractor's services have been so terminated by the Owner, the termination shall not affect any rights of the Owner against the Contractor then existing or which may thereafter accrue. Any retention or payment of monies due the Contractor by the Owner will not release the Contractor from liability.

If the Owner terminates this agreement for default, and it is thereafter determined that the Contractor had not so failed to perform its obligations or defaulted in any way, the termination shall then be deemed to have been effected for the convenience of the Owner. In that event, any adjustment of compensation to Contractor shall be in accordance with paragraph 00700-6.04 B.

**B. TERMINATION BY OWNER FOR OTHER THAN DEFAULT:**

The Owner may, without prejudice to any other remedy it may have under the provisions of the Contract, terminate this Contract, in whole or in part, at any time by giving written notice to Contractor or its representative by certified mail, return receipt requested. Termination shall be effective upon receipt of such notice by Contractor. Contractor shall immediately discontinue work and take all reasonable steps with its suppliers and subcontractors to minimize cancellation charges and other costs.

In the event of termination for reasons other than default of Contractor, Contractor shall be entitled to recover all reasonable costs incurred in connection with performance of the Work, plus any cost and expense reasonably and necessarily incurred in connection with such termination, plus a percentage of the profit based on the percentage of completion of the Work. The 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.

**C. TERMINATION BY CONTRACTOR:**

If the Work is stopped by order of a court, a public authority or the Owner for a period of 90 calendar days or more through no act or fault of the Contractor or anyone employed by him or his subcontractors, then the Contractor may terminate the Contract 10 calendar days after written notice to the Owner. Upon receipt of the written notice, the Owner shall implement procedures as set forth in paragraph 00700-6.04 B.

**6.05 SUBSTANTIAL COMPLETION**

The Contractor, on considering the Work to be substantially complete and ready for its intended use, shall so notify the Construction Manager in writing. The notification shall include an itemized list of remaining incomplete work.

To be deemed substantially complete, the entire Project must be fully capable of providing its intended use, to the satisfaction of the Construction Manager, unless the Contract Documents expressly indicate that portions of the Project are required to be substantially complete prior to the completion of the entire Project. All portions of the Project shall be installed and operational, including accessories, controls, and safety devices. All functional testing, startup, checkout, and field performance testing (including specified equipment run-in times) shall be completed, and all manual and automatic controls shall be in place and operational as intended, including any remote reporting and control systems. All final coatings, paving, grading, and other finish items shall have been completed. Manufacturer's field test reports, O&M



manuals, and warranties shall have been submitted and approved, and all required training shall have been successfully completed.

If the Construction Manager determines that the Work is not substantially complete, he will so notify the Contractor in writing identifying the reasons for such a determination. If the Construction Manager finds the Work substantially complete, he will meet with the Contractor to:

- A. Prepare a punch list;
- B. Define the division of responsibility between Owner and Contractor with respect to security, operation, maintenance, heat, utilities, insurance, and warranties; and
- C. Describe any other issues related to acceptance of the substantially completed Work.

Upon reaching agreement with the Contractor, the Construction Manager will write to the Owner, certifying that the Work is substantially complete, identifying punch list items, stating the date for completion of incomplete Work, defining the division of responsibilities, and setting forth any other terms related to acceptance.

The Owner, who has sole discretion for determination of substantial completion, will review the Construction Manager's certification that the Work is substantially complete and concurring with that certification, will notify the Contractor, in writing, that the Work is accepted as substantially complete. Except for any portion(s) of work specified for early completion or required by the Owner for early possession (paragraph 00700-6.06), substantial completion will not occur for any work until the entire Project is ready for possession and use. The acceptance notice will include a punch list of incomplete work items, set the date for their completion, describe the division of responsibility between the Owner and Contractor, and describe any other terms of acceptance. The Contractor will acknowledge receipt of the acceptance notice in writing, indicating acceptance of all of its terms and provisions.

Upon receipt of the Contractor's acknowledgment letter, the Owner shall take possession of the Work or portion of the Work and put it into its intended service. The date that the Work or portion of the Work is put into service will become the date of substantial completion. Unless otherwise specified, the Contractor's guarantee period and start date for associated warranties shall be the date that the portion of Work is put into service.

Subsequent to the substantial completion date, the Owner may exclude the Contractor from the Work during such periods when construction activities might interfere with the operation of the Project. The Owner, however, shall allow the Contractor reasonable access for completion or correction of incomplete punch list items.

Release of retainage will not be applied to substantial completion of components to be utilized by Owner prior to completion of the Project; retainage release will only be applied upon substantial completion of the entire Project. Upon attainment of Substantial Completion of the Project, the Contractor shall become eligible for payment

of retainage, subject to a withholding of 200 percent of the value of the outstanding Work, including punch list items, as determined by the Construction Manager.

#### 6.06 POSSESSION OF PORTIONS OF THE PROJECT

Should the Contractor fail to meet any date specified for substantial completion of the Work or any portion of the Work requiring early possession and use by the Owner, the Owner may, after written notice to the Contractor, take over such portion or all of the Work that is behind schedule. In such case, the Construction Manager will prepare a punch list. The Owner may allow the Contractor reasonable access to the Work at such times that the operation of the Project will not be affected or he may complete the Work himself after giving the Contractor notice of his intention to do so. The cost of Owner's work will be charged to and deducted from amounts due to the Contractor.

#### 6.07 ACCEPTANCE OF THE PROJECT

Upon completion of the Work, including portions of the Work previously accepted as substantially complete, the Contractor shall so notify the Construction Manager in writing. Upon receipt of the notification, the Construction Manager will determine if the Work conforms to the terms of the Contract. If he finds materials, equipment, or workmanship that do not meet the terms of the Contract, he shall prepare a punch list of such items and submit it to the Contractor. Following completion of the corrective work by the Contractor, the Construction Manager shall notify the Owner that the Work has been completed in accordance with the Contract. Final determination of the acceptability shall be made by the Owner. Upon acceptance of the Project, the Owner shall immediately notify the Contractor and Construction Manager in writing. For portions of the Project not previously accepted as substantially complete, the conditions of guarantee shall commence on the date that the Owner issues a Notice of Completion.

The final application for payment shall be accompanied by all required documentation called for in the Contract including complete and legally effective releases or waivers of liens in a form acceptable to Owner. Subject to prior approval of Owner, Contractor may submit in lieu of the lien releases and waivers:

- A. Receipts of releases in full;
- B. An affidavit that the releases and receipts cover all labor, services, materials, and equipment for which a lien could be filed and that all payrolls, materials, and equipment bills and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied; and
- C. Consent of the surety, if any, to final payment.

If any subcontractor or supplier fails to furnish a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any lien.

If, after reviewing the Contractor's final application for payment including all documentation required, the Construction Manager determines that the Work is complete, he will recommend that the Owner make final payment, including retainage. The final payment will be due and payable by the Owner within 45 days after any legal notice periods have expired.

## PART 7 MEASUREMENT AND PAYMENT

### 7.01 LIMITATIONS OF FUNDS

#### A. TERMS OF CONTRACT AND MONETARY OBLIGATION OF THE OWNER

1. Term: This Contract is for a term not to exceed one year and will terminate absolutely and without further obligation on the part of the Owner at the close (December 31) of the calendar year in which it was executed and at the close (midnight, December 31) of each succeeding calendar year in which it is renewed. This Contract will automatically renew at 12:01 AM, January 1 of the following calendar year unless the Owner notifies the Contractor in writing 10 days prior to the termination that the Contract will not be renewed.
2. Total Monetary Obligation: The total monetary obligation of the Owner under this Contract is shown above as the Contract Price. This Contract will terminate immediately and absolutely at such time as appropriated or unobligated funds are no longer available to satisfy the obligations of the Owner. This Contract does not create a debt of the Owner for payment of any sum beyond the calendar year of execution or, in the event of a renewal, beyond the calendar year of such renewal.
3. Annual Monetary Obligation: The amounts of the annual obligation indicated in the Contract/Agreement at the time of award and execution are percentages of the Contract Price, based on the Owner's perception at the time of award of the probable cash flow requirements for the Project. The Contract will be amended by a Supplemental Agreement at the beginning of each renewal year to adjust the amount of the monetary obligation, based on the Contractor's current schedule and cash flow projections. The cash flow projections will be determined by the Construction Manager from an evaluation of the Contractor's periodic schedule update, submitted in accordance with the requirements of Section 01310 of these Contract Documents.

#### B. ADMINISTRATION OF FUNDS

1. Appropriations: The initial amount indicated in the Agreement/Contract has been appropriated for this Project and is available for payments to the Contractor during the first calendar year of the Contract. It is expected that the Owner will make appropriations for future renewal years and that the Contract will be amended as necessary.
2. Earnings in Excess Of Appropriations: If earnings will be such that funds appropriated for the Contract will be exhausted before the end of any calendar

year, the Contractor shall give written notice to the Construction Manager of the estimated date of exhaustion and the amount of additional funds that will be needed to meet payments due to or to become due under the Contract during that calendar year. This notice shall be given no later than 60 days prior to the estimated date of exhaustion.

3. Suspension of Work: An equitable adjustment, in conformance with the Suspension Procedures clause of these Contract Documents, shall be made if suspension of the Work is made necessary by the exhaustion of funds. However, any suspension, delay or interruption of the Work arising as a result of an exhaustion of funds shall not constitute a breach of this Contract.
4. Excess Funds: If at any time it becomes apparent that the funds appropriated for any given calendar year are in excess of the funds required to meet all payments due or to become due the Contractor because of work performed or to be performed under the Contract during the calendar year, the Owner reserves the right to reduce said appropriation by the amount of such excess.

## 7.02 PAYMENTS TO CONTRACTOR

### A. BREAKDOWN OF CONTRACT PRICES:

Except in cases where unit prices form the basis for payment under the Contract, the Contractor shall, within 14 days of receipt of the Notice to Proceed, submit a breakdown of the Contract Price for the Construction Manager's review and approval showing the value assigned to each part of the Work including an allowance for profit and overhead. In submitting the breakdown, the Contractor certifies that it is not unbalanced and that the value assigned to each part of the Work represents his estimate of the actual cost, including profit and overhead, of performing that part of the Work. The breakdown shall be sufficiently detailed to permit its use by the Construction Manager as one of the bases for evaluating requests for payment.

### B. PROJECT STATUS REVIEW:

Contractor and Construction Manager shall meet each month prior to the Contractor submitting the progress payment request for the previous month. The purpose of the meeting is to review Project status in relation to the construction schedule; review values of Work completed during the previous month; and, if applicable, review Contractor's plans to return Project status to that required by the schedule. Within five days following this meeting, the Contractor shall submit a written progress report comprising:

1. A copy of the current construction schedule marked up to indicate percent complete, actual completion or start dates since the previous review, and the estimated remaining duration for each activity in progress.
2. Reasons any activities are behind schedule and of the corrective steps being taken.

C. PROGRESS PAYMENTS:

1. Payment Request Procedures: Each month, the Contractor shall submit to the Construction Manager a partial payment estimate filled out and signed by the Contractor covering acceptable Work performed during the previous month, or since the last partial payment estimate was submitted. If requested by the Construction Manager, the Contractor shall provide such additional data as may be reasonably required to support the payment estimate. Such data may include satisfactory evidence of payment for equipment, materials and labor including payments to subcontractors and suppliers. Request for payment for delivered and stored equipment and material shall be accompanied by certified invoices by the suppliers and, in the case of equipment stored off site, documentation of insurance coverage. Such equipment and material shall be suitably and safely stored at the site of the Work or at an off-site location previously approved by the Owner. The Owner reserves the right to accept or reject pay requests for stored equipment or to limit payments to stored equipment which, in his opinion, is necessary for continuing satisfactory Project progress.

The monthly payment request shall be accompanied by a separate submittal consisting of the invoices received during the pay period for materials and equipment incorporated or to be incorporated into the Work. The invoices should include the amount of Georgia sales tax paid. If sales tax is not included in the invoiced amount, the Contractor shall submit documentation evidencing the amount of sales tax paid to the State for the purchased materials and equipment. During the progress of the Work, each request for payment shall be accompanied by Contractor's updated Project schedule, progress photographs, required invoices, and other data specified herein or reasonably required by Engineer and/or Construction Manager.

2. Review Procedures: Within 10 days after receipt of the partial payment estimate, the Construction Manager will review the estimate and either indicate in writing to the Owner's Representative his concurrence with the estimate and his recommendation that payment be made, or indicate in writing to the Contractor his reasons for not concurring with the estimate. If the Construction Manager recommends payment and the Owner's Representative concurs, the Owner will, after receipt of the Construction Manager's recommendation, pay the Contractor a progress payment on the basis of the approved partial payment estimate. The payments will take into account the retention provisions provided for herein.

In the event the Construction Manager does not concur with the estimate, the Contractor may make the changes necessary to obtain the Construction Manager's concurrence and resubmit the partial payment estimate, or submit the original progress payment estimate directly to the Owner's Representative, indicating in writing his reasons for refusing to make the changes necessary to obtain concurrence.

3. Retention: The Owner shall retain a percentage of each payment except as specified below. The retained amount is available for the protection and

payment of the person, or persons, mechanics, subcontractors, or materialmen who shall perform labor upon the Contract or work thereunder, and persons who shall supply such person, or persons, or subcontractors with components and supplies for carrying on such work.

The Owner shall retain 10 percent of each progress payment except and at the sole discretion of the Owner:

- a. Until the value of the Work completed is at least fifty percent (50%) of the Contract amount, the Owner shall retain ten percent (10%) of the value of all Work satisfactorily completed.
- b. After construction is fifty percent (50%) complete, the total amount retained to date will be held by the Owner, and all further Applications for Payment will be paid in full subject to the requirement that the total retention shall not be less than five percent (5%) of the Contract Amount, provided that, in the opinion of the Construction Manager, the Contractor is making satisfactory progress and there is no specific cause for greater withholding. Monies in retainage shall not become due the Contractor until after Substantial Completion is attained. The Construction Manager shall make his recommendation to the Owner's Representative for final approval of reduction of retainage. If there are any remaining incomplete minor items at the time Substantial Completion is attained, an amount equal to 200 percent of the value of each item, as determined by the Construction Manager, shall be withheld until such item or items are completed.

In no case will retainage be less than required by applicable laws and regulations. At any time during the Project the Contractor fails to maintain the progress of the Work on or ahead of schedule, the Owner may resume retainage of 10 percent of the amount of total progress payments to date until the Contractor is on or ahead of schedule or until final completion.

Retainage will be invested by the Owner and any interest earned will be paid to the Contractor when the Project has been completed within the time limits and for the price specified in the Contract or any approved amendments or change orders.

4. Withholding: The Construction Manager may refuse to recommend the whole or any part of any payment if in the Construction Manager's opinion it would be incorrect to make such recommendation to the Owner. The Construction Manager may also refuse to recommend any such payment, or because of subsequently discovered evidence or the result of tests, may nullify any such payment previously recommended to such extent as may be necessary in the Construction Manager's opinion to protect the Owner from loss as a result of:
  - a. Defective or damaged work.
  - b. A deductive change order.

- c. Persistent failure of the Contractor to perform the Work in accordance with the Contract Documents, including failure to maintain the progress of the Work in accordance with the construction schedule. Persistent failure to maintain the progress of the Work shall mean that for a period of two consecutive months following a written notice from the Construction Manager, the Contractor fails to correct a behind-schedule condition at a rate that would reasonably indicate that he will finish the Project on schedule.
- d. Disregard of authority of the Construction Manager or the laws of any public body having jurisdiction.

The Owner may refuse to make payment of the full amount recommended by the Construction Manager because of claims made against the Owner on account of Contractor's performance or furnishing the Work or because liens have been filed in connection with the Work or there are other items entitling Owner to reduce the amount recommended. In such case, the Owner shall give Contractor prompt written notice with copy to the Construction Manager stating the reasons for each action.

#### D. FINAL PAYMENT:

The Owner will make final payment to the Contractor in the manner provided by law following the expiration of 45 calendar days after acceptance of the Work and issuance of the Notice of Completion by the Owner providing no liens or claims are outstanding. Final payment shall include the entire sum found to be due hereunder after deducting from previous payments and such other lawful amounts as the terms of this Contract describe. Prior estimates and payments, including those relating to extra work or work omitted, shall be subject to correction by the final payment.

Acceptance by the Contractor of final payments shall be and shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts that may be specifically excepted by the Contractor for things done or furnished in connection with this Work and for every act and neglect of the Owner and others relating to or arising out of this Work. Payment by the Owner shall not release the Contractor or his surety from any obligation under the Contract or under the Performance Bond and Payment Bond.

### 7.03 CHANGES IN THE WORK

#### A. GENERAL:

The Owner may, at any time, without notice to any surety, order additions, deletions or revisions in the Work. At the Owner's discretion, these changes may be compensated for from allowance monies included in the Contract Price, from credits for omitted Work, or from an increase in the Contract Price by a Change Order approved by the Board of Commissioners. Upon receipt of a Directive issued by the Owner's representative or the Construction Manager, the Contractor shall promptly proceed with the Work.

1. Owner-Initiated Changes: When the Owner desires a change in the Work, the Construction Manager will issue a Request for Proposal to the Contractor. The Contractor shall respond within the time indicated by the Construction Manager, or 15 days, whichever is less. If the Contractor fails to meet the submittal time required by this provision, the CONTACTOR will be solely liable for any delays or impacts caused by the delayed submittal of the proposal.

If the Owner and the Contractor agree on the value of any work and the modification to the Contract Time that should be allowed as a result of the Contractor's response to a Request for Proposal, the Contractor shall proceed with the change upon receipt of a written notice from the Construction Manager. The final approval of any extension of Contract Time must be made by action of the Board of Commissioners.

2. Contractor-Initiated Changes: Any request by the Contractor for a change in the Contract Price or Contract Time shall be based upon a written notice of intent delivered by the Contractor to the Construction Manager promptly, but in no event later than 7 days after the start of the occurrence giving rise to the request for adjustment.

A notice of the amount of the request for adjustment in cost and/or time with supporting data shall be delivered within 14 days after the start of the occurrence, unless the Construction Manager allows an additional period of time to ascertain more accurate data in support of the request.

No claim by the Contractor for an equitable adjustment hereunder shall be allowed if asserted after final payment under this Contract.

3. Contractor Change Proposal Requirements: The Contractor's change proposal submitted for any potential change to the Contract shall be in a form acceptable to the Construction Manager. The Contractor's itemized estimate shall detail all applicable elements of cost, including, but not limited to, labor man-hours and payroll costs, quantities, crew mixes, production rates, material costs, subcontractor and supplier costs, equipment costs and supplemental costs. The proposal shall include sales tax. Where a change in Contract Time is sought, the proposal shall include a detailed schedule analysis demonstrating the impact to the controlling item(s) in the schedule. With respect to work during other than normal hours, the labor charges associated with such work shall consist of straight time wages and burden plus the appropriate overtime or shift premium with no additional burden (i.e. fringe benefits) on the premium portion.

The submittal shall cover all aspects of the Work involved, whether deleted, added or revised. Amounts for subcontractors or suppliers of any tier shall be similarly supported.

No submittal for an adjustment in Contract Price or Contract Time shall be valid unless submitted in accordance with this Section.



The Contractor is required to comply with the Construction Manager's documentation requirement regarding format and level of detail for the change order process.

The Owner reserves the right to direct the Contractor to solicit competitive bids for additional work. If required by Owner, the Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner who will determine, with the advice of the Engineer and Construction Manager, which bids will be accepted.

**B. EXTRA WORK:**

Extra work means the providing of materials and equipment and the performing of work not directly or by implication called for by the Contract. Changes in measured quantity under a unit price contract or item shall not be considered extra work. If the Owner requires extra work he may:

1. Do it himself,
2. Employ others to do it,
3. Direct the Contractor to perform the extra work at unit bid price or a combination of such items,
4. Direct the Contractor to perform the extra work at a mutually agreed upon lump sum, or
5. Direct the Contractor to perform the extra work on a time and expense basis, or
6. Direct the Contractor to perform the extra work at a lump sum amount determined by the Owner. Such lump sum amount determined by the Owner may be subject to appeals provisions of Article 2.05 of these General Conditions.

**C. OMITTED WORK:**

The Owner may, by written order to the Contractor, omit work, equipment and material to be provided under the Contract, and the value of the omitted work, equipment and material, including allowances for overhead and profit as described in paragraph 00700-7.03.E, will be deducted from the Contract Price. The deducted value will be a lump sum or unit bid price agreed upon in writing by the Contractor and Owner based on breakdown and cost information submitted by the Contractor and will be deducted from the Base Bid amount of the Contract Price and added to the contract allowances amount.

**D. UNIT BID PRICE CHANGE:**

Increases or decreases in the quantity of a Contract item of Work will be made by comparing the total pay quantity of such item of Work with the Construction

Manager's estimate therefore. When changes in quantities exceed 25 percent above or below the original bid quantity and the total dollar change of that bid item is significant, the Owner will review the unit price to determine if a new unit price should be negotiated. Adjustment in the unit price shall be applied only to the quantities above 125 percent or below 75 percent of the estimated quantity. The total payment for any item adjusted for decreased quantity shall not exceed 75 percent of the total amount originally bid for the item.

E. LUMP SUM CHANGES:

Changes in the Base Bid amount or the Contract Price resulting from extra work will be determined by a mutually agreed upon lump sum price. The Contractor's proposal for such changes shall be as outlined in paragraph 00700 - 7.03.A.3. Construction equipment costs shall be computed as outlined in paragraph 00700 - 7.03 F.5.

If the change involves extra work to be performed entirely by the Contractor, compensations for such extra work shall be based on the direct costs as listed in the detailed proposal, plus 15 percent of direct costs for overhead and profit, plus 1 percent of such direct costs for bond. When the extra work involves subcontractors, compensation for such work shall be based on direct costs as listed by the subcontractor plus 15 percent of such direct costs for the subcontractor's overhead and profit. The Contractor may add 5 percent to the subcontractor proposal for overhead and profit, and 1 percent for bond. The 5 percent subcontractor markup shall be applied only once regardless of the number of tiers of subcontractors. The above allowances for overhead and profit shall include full compensation for overhead, including superintendence, and additional overhead attributable to a time extension granted because of the change order. For extra work that is funded from contract allowances, the 1 percent additional cost for bonds shall not be applied.

F. TIME AND EXPENSE CHANGES:

1. General: Whenever the Contractor is directed to perform extra work on a time and expense basis, he has a duty to control costs and to maintain accurate records. Each day a record of labor, materials and equipment costs will be submitted to the Construction Manager for verification. These records will reflect the actual and necessary expenses pertaining to the extra work and shall be available for audit. Audits conducted under this provision shall be in accordance with generally accepted auditing standards and established procedures and guidelines of the reviewing or audit agencies.

Payment to the Contractor for extra work performed on a time and expense basis shall consist of the actual necessary expense for doing the extra work, plus an allowance of 15 percent of labor, material and equipment rental for overhead, general superintendence and profits, plus 1 percent for bond. This basis of payment applies to work done directly by the Contractor and to work done by a subcontractor, except the 1-percent allowance for bond shall not apply to work performed by a subcontractor. When a subcontractor does the work, the Contractor may add 5 percent to the subcontractor's charges to cover

overhead and profit and 1 percent for bond. For extra work that is funded from contract allowances, the 1 percent additional cost for bonds shall not be applied.

In determining time and expense compensation, the term "actual necessary expense" shall mean the sum of:

- a. Materials,
- b. Labor,
- c. Supervision,
- d. Construction equipment,
- e. Professional services, and
- f. Other costs.

Charges for such items shall mean the actual cost whether incurred by the Contractor, a subcontractor or others. The items making up "actual necessary expense" are defined as follows.

2. Materials:

- a. For materials accepted by the Construction Manager and used as an integral part of the finished Work, Contractor shall receive the actual cost of such materials delivered to the Work site, including transportation charges paid by the Contractor, exclusive of machinery rentals as hereinafter set forth.
- b. If materials are procured by Contractor by a method that is not a direct purchase from and a direct billing by the actual supplier, the cost of such material shall be deemed to be the lowest current wholesale price at which such materials are available in the quantities concerned and delivered to the site of the Work.
- c. For other materials used in the construction that are not an integral part of the finished Work, such as but not limited to sheeting, false work and form lumber, Contractor shall be reimbursed in the amount agreed upon by the Construction Manager before such work is begun. The salvage value of such material shall be taken into consideration in determining the amount of reimbursement.

3. Labor:

- a. The cost of labor shall be the sum of actual wages, labor surcharge, and subsistence and travel allowances. Actual wages paid shall include employer payments to or on behalf of the worker for health and welfare, pension, vacation and similar purposes. The labor surcharge includes

applicable labor related taxes, Workers Compensation Insurance premiums, public liability and property damage insurance premiums, and other legally required costs directly related to labor. Where subsistence and travel allowance are required for performance of extra work, the charges shall consist of the actual amount paid to each worker for these items.

- b. For all labor and for authorized foreman supervision in direct charge of the specific operations, Contractor shall receive the actual rate of wage in effect at the time the work is performed for each and every hour that said labor force is actually engaged in such work.
  - c. The charges for labor shall NOT include charges for such overhead personnel as assistant superintendents, superintendents, office personnel, timekeepers, QA/QC manager, safety manager and maintenance mechanics.
4. Supervision: If, in the Owner's judgment, full-time supervision of the extra work above the level of foreman is required, it will be authorized in writing by the Construction Manager and charges for such supervision will be included as an actual necessary expense.
5. Construction Equipment:
- a. Individual pieces of equipment or small tools having a replacement value of \$500 or less shall be considered expendable and no payment therefor shall be made.
  - b. Contractor shall be paid for the use of Contractor-owned or rented equipment at seventy percent of the suggested monthly rental rates listed for such equipment in the Rental Rates for Construction Equipment Blue Book (published by Equipment Watch, PRIMEDIA), except as modified below, which edition shall be the latest edition in effect at the time of commencement of the time and expense work. Hourly rental rates shall be calculated by dividing the listed monthly rates by 176 hours. The rental rate of equipment used in excess of eight hours per day shall be fifty percent of the hourly rates as calculated above. The rental rates for standby equipment, when authorized by the Construction Manager, shall be at the rate of fifty percent of the hourly rate for equipment in use eight hours per day. No payment for standby equipment shall be made for more than eight hours per day and no payment shall be made for weekend days or legal holidays. No payment for standby equipment shall be made when the equipment has been used at least eight hours in a 24-hour period. If it is deemed necessary by the Contractor to use equipment not listed in the applicable edition of the Blue Book Rental Rates, Contractor shall furnish the necessary cost data and paid invoices to the Construction Manager for his use in establishment of such rental rate(s).
  - c. Equipment must be in good operating condition. The rates paid for operating the equipment shall be in addition to the rental rates identified above and shall be calculated at one-hundred percent of the operating rates

as provided for in the Rental Rates for Construction Equipment Blue Book (published by Equipment Watch, PRIMEDIA). The operating costs shall cover the costs of fuel, oil, lubricants, supplies, small tools, necessary attachments, repairs and maintenance of all kinds, and all incidentals. The Contractor will be paid the equipment operating rate only for those hours the equipment is actually used. No payment of operating costs shall be made for standby equipment.

- d. The rental time to be paid for equipment on the Work site shall be the time the equipment is required for the time and expense work being performed. The time shall include the time required to move the equipment to the location of the time and expense work and return it to the original location or to another location. Moving time will not be paid if the equipment is used at the site of the time and expense work on other than such time and expense work. Loading and transporting costs will be allowed, in lieu of the moving time, when the equipment is moved by means other than its own power. No payment for loading and transporting will be made if the equipment is used at the site of the time and expense work on other than such time and expense work. Compensation will not be allowed while equipment is inoperative due to breakdown.
  - e. For the use of equipment moved in on the Work and used exclusively for work paid for on a time and expense basis, providing the Construction Manager has agreed to such move, Contractor will be paid the equipment use rate provided for herein, for the costs of transporting the equipment to the location of the Work and its return to its original location, and for the cost of loading and unloading the equipment, all in accordance with the following provisions:
    - 1) The cost for transporting equipment shall not exceed the applicable minimum established rates by the Georgia Public Service Commission.
    - 2) The equipment use period shall begin at the time the equipment is unloaded at the site of the Work and shall include each day the equipment is at the site of the Work excluding weekends and legal holidays unless the time and expense work is performed on those days and shall terminate at the end of the day on which the Construction Manager instructs the Contractor to discontinue the use of such equipment. The maximum time to be paid per day shall not exceed eight hours unless the equipment is in operation for a longer time.
6. Subcontract Work: Where the Change applies to work being performed under a subcontract, reimbursement, including overhead and profit for the subcontractor's work performed on a time and expense basis shall be computed in precisely the same manner as if performed by Contractor. One additional allowance of five percent of the subcontractor's total costs will be granted to Contractor for overhead and profit regardless of the tier of the subcontractor.

If the subcontractor elects to contract out changed work to a third (or lower) level contractor or supplier of purchased equipment, he shall not be entitled to fees, overhead or profit for such third (or lower) level work or materials.

The Owner reserves the right to direct the Contractor to contract directly with a third (or lower) level subcontractor or supplier of purchased equipment in order to avoid paying multiple fees, overhead and profit for such third (or lower) level subcontractor or supplier of purchased equipment.

If similar work is not being performed at the Work site and if required by the Construction Manager, Contractor shall obtain three competitive bids for the requirements of the Change and the Contract Documents from subcontractors acceptable to the Construction Manager. Selection of the subcontractor shall be subject to the approval of the Construction Manager and the Owner.

7. Professional Services: Professional services shall be included in "actual necessary expense" provided both the Owner has determined that such services are necessary and the Construction Manager has authorized in writing the provision of such services.
8. Other Costs: Charges for items not included in paragraphs 7.03 F.1 through 7 may be included as "actual necessary expense" if such additional items are authorized in advance and in writing by the Construction Manager.
9. Compensation: The compensation as set forth above shall be received by the Contractor as payment in full for work done on a time and expense basis. At the end of each day, the Contractor and Construction Manager shall compare records of the work performed including classification of laborers, ordered on a time and expense basis.
10. Statements: No payment shall be made for work performed on a time and expense basis until Contractor furnishes the Construction Manager itemized statements of the cost of such time and expense work. Time and expense work lasting more than one day shall require the Contractor to submit and receive the approval of the itemized statements, detailed to the satisfaction of the Construction Manager as to its contents. The itemized statements will typically include:
  - a. Labor – Name, classification, date, daily hours, total hours, rate and extension of each laborer and foreman.
  - b. Equipment – Size, type, identification number, date, daily hours, total hours, rental rate and extension of each unit of machinery and equipment.
  - c. Materials – Quantities of supplies and materials, prices including transportation costs and extensions.
  - d. Bonds and insurance premiums, as applicable.

- e. Subcontract work – time and expense details as above, or progress quantities and prices of unit price or lump sum subcontracts.
  - f. Payment for items listed above shall be conditioned upon Contractor's presentation of original receipted invoices for materials used and transportation charges. If, however, the materials used in the time and expenses work are not specially purchased for such work but are taken from Contractor's stock, then in lieu of the original invoices, the statements shall contain or be accompanied by an affidavit of Contractor that shall certify that such materials were taken from his stock and that the price and transportation of the material as claimed represents actual cost.
11. If, in the Construction Manager's opinion, Contractor or any of his subcontractors, in performing time and expense work, is not making efficient use of labor, material or equipment and/or is proceeding in a manner that is expensive to the Owner, the Construction Manager may request the Contractor to make more efficient use of labor, material and equipment. Contractor shall in good faith comply with such requests as are reasonable. If the Contractor fails to comply with such requests, the Construction Manager may independently determine the reasonable cost for the work and the Contractor will be entitled only to such costs.

#### G. CHANGES IN CONTRACT TIME

1. Critical Path Schedule Analysis: An extension in Contract Time will not be granted unless the Contractor can demonstrate through an analysis of the critical path method progress schedule that the increases in the time to perform the Work beyond the Contract Time arise from causes beyond the control of the Contractor and his/her subcontractors or suppliers. The Contractor must demonstrate that such causes lead to completion of the Work beyond the corresponding Contract Time, despite the Contractor's reasonable and diligent actions to guard against those effects.
2. Avoidable Delays: The Owner may grant an extension of time for avoidable delay if he deems it in his best interest. If the Owner grants an extension of time for avoidable delay, the Contractor agrees to pay actual costs, including charges for engineering, construction management, inspection, and administration, as specified in paragraph 00700-7.05 incurred during the extension.
3. Unavoidable Delays: For delays that the Contractor considers to be unavoidable, he/she shall submit to the Construction Manager complete information demonstrating the effect of the delay on the controlling item in his/her construction schedule. The Construction Manager shall review the Contractor's submission and determine the number of days of unavoidable delay and effect of such on controlling operations of the Work. The Owner will grant an extension of time to the extent that unavoidable delays affect controlling operations in the construction schedule. During such extensions of time, engineering, construction management, inspection and administration costs, nor damages for delay will be charged to the Contractor. It is

understood and agreed by the Contractor and Owner that time extensions due to unavoidable delays will be granted only if such unavoidable delays involve controlling operations that would prevent completion of the whole Work within the specified Contract Time.

4. Use of Float: Total float and Contract float are not for the exclusive benefit of the Contractor, but is an expiring resource available to the Owner, Construction Manager, Engineer, their consultants, or the Contractor, to accommodate changes in the Work, however originated, or to mitigate the effects of events that may delay performance or completion of all or part of the Work within the scheduled late dates, the Contractor's anticipated completion, or Contract Time. Contract Time extensions for Contract performance will be granted only to the extent that delays or disruptions to affected work paths exceed total float along those paths when the baseline or revised baseline schedule is compared against the working schedule in effect at the time of delay or disruption and will be limited to those provisions related to the extension of time identified within this Section. Delays and disruptions must cause the end date of the Work to exceed the Contract completion date and must be beyond the control and without fault or negligence of the Contractor or any subcontractor or supplier of any tier to be considered for time extension. In the event that the delays or disruptions impact an already negative float path, the Contractor shall not receive a time extension unless and until the activity with the highest negative float is driven even further negative. Delays or disruptions are not considered a basis for time extension to this Contract unless such delays or disruptions qualify for time extensions as set forth within this Section.

## H. ALLOWANCES

The amounts listed in the Bid Form for designated Allowance Items are part of the Contract Price; however the use of these funds will follow the procedures set forth herein for Changes in the Work. If the item involves Owner-initiated work, a request for proposal will be issued to the Contractor and, following receipt and review of the proposal and negotiation of the scope of work and cost, a Directive will be issued. If the work involves the response to eligible unforeseen conditions, the scope of the work and method of payment will be determined by the Construction Manager following notification by the Contractor and an assessment of the situation.

### 7.04 CHARGES TO CONTRACTOR

The Contractor shall pay everything charged to the Contractor under the terms of this Contract to the Owner on demand. Such charges may be deducted by the Owner from money due or to become due to the Contractor under the Contract. The Owner may recover such charges from the Contractor or from his surety.

### 7.05 COMPENSATION TO OWNER FOR TIME EXTENSION

The Owner, in exchange for granting an extension of time for avoidable delay, shall be compensated by the Contractor for the actual costs to the Owner of engineering,



construction management, inspection, and administration expenses which are directly chargeable to the work and which accrue during the period of such extension. The actual costs do not include charges for final inspection and preparation of the final estimate by the Owner.

END OF SECTION

**SECTION 00750  
INSURANCE REQUIREMENTS FOR CONTRACTORS**

The Contractor shall procure and maintain for the duration of the Contract, insurance against claims for injuries to persons or damages to property which may arise from or in connection with performance of the work hereunder by the Contractor, his agents, representatives, employees, or subcontractors.

Attention: The Contractor is advised that certain provisions contained herein require specific endorsements of your insurance policy. Do not assume that your standard policy will be suitable to meet the requirements of Cobb County. The submittal of incomplete or non-conforming documents will delay the issuance of the Notice-to-Proceed for the Project.

**1. MINIMUM LIMITS OF INSURANCE**

- A. Statutory Workers' Compensation Insurance. The statutory limits as established by the General Assembly of the State of Georgia shall be met by Contractor and/or subcontractor. The workers' compensation policy must include Coverage B - Employer's Liability with minimum limits of:

Bodily Injury by Accident -\$1,000,000 each accident

Excess liability coverage may be used in combination with the base policy to obtain these limits. The Contractor shall require all subcontractors, of any tier, performing work under the contract to obtain an insurance certificate showing proof of Workers' Compensation and Employers Liability Coverage or shall certify that the subcontractors are covered by the Contractor's insurance.

- B. Commercial General Liability Insurance. The Contractor shall procure and maintain a Commercial General Liability Insurance Policy covering bodily injury, property damage liability and personal injury. The policy or policies must be on an "occurrence" basis ("Claims Made" coverage is not acceptable) insuring personal injury and property damage against the hazards of premises and operations, products and completed operations, blasting and explosion, collapse, underground damage, independent contractor's and contractual liability (specifically covering the indemnity) and have the minimum limits of liability listed below. The Commercial General Liability policy shall also include contractual liability coverage. The Commercial General Liability policy must include separate aggregate limits per project. Excess liability coverage may be used in combination with the base policy to obtain the following limits.

Premises and Operations	\$1,000,000 per Occurrence
Products and Completed Operations	\$1,000,000 per Occurrence
Personal Injury	\$1,000,000 per Occurrence
Contractual	\$1,000,000 per Occurrence

- C. Auto Liability Insurance. The Contractor shall procure and maintain a Business Automobile Liability Policy with liability limits of not less than \$1,000,000 per

person and \$1,000,000 per occurrence or a policy with a Combined Single Limit of not less than \$1,000,000 covering any owned, non-owned or hired autos. Excess liability coverage may be used in combination with the base policy to obtain these limits. The form of coverage must be as follows and/or cover the following areas:

Comprehensive form covering all owned, non-owned, leased, hired, and borrowed vehicles  
Additional Insured Endorsement  
Contractual Liability

- D. Commercial Umbrella Liability Insurance. The Contractor shall provide Commercial Umbrella Liability Insurance to provide excess coverage above the Commercial General Liability, Commercial Business Automobile Liability, and the Workers' Compensation and Employers' Liability to satisfy the minimum limits set forth herein. The Umbrella coverage shall follow form with the Umbrella limits required as follows:

\$2,000,000 Combined Single Limits per Occurrence

- E. Builder's Risk Insurance. The Contractor shall secure "All-Risk" type of Builder's Risk insurance covering work performed under the Contract, and materials equipment or other items to be incorporated therein, while the same are located at the construction site, stored off-site, or at the place of manufacture. The policy limit shall be for 100% of the value of the Contract. The policy shall cover not less than losses due to fire, flood, explosion, hail, lightning, weather, vandalism, malicious mischief, wind, collapse, riot, aircraft, smoke or other cataclysmic events, until the date of final acceptance of the work.

The making of progress payments to the Contractor shall not be construed as relieving the Contractor or his subcontractors or the insurance company or companies providing the coverage described herein of responsibility for loss or direct physical loss, damage or destruction occurring prior to final acceptance.

## 2. OTHER INSURANCE PROVISIONS

The policies are to contain, or be endorsed to contain, the following provisions:

- A. Additional Insured Endorsement – General Liability, Automobile Liability, and Umbrella Liability
1. The "Owner, Construction Manager, Engineer and their respective officers, officials, employees, and volunteers" are to be covered as Additional Named Insureds as respects all liabilities to be insured against by the policies described in Subsections 1.B, 1.C, and 1.D above.
  2. The coverage shall contain no special limitation on the scope of protection afforded to the Owner, Construction Manager, Engineer and their respective officers, officials, employees, or volunteers. Nothing in this paragraph shall be construed to require the Contractor to provide liability insurance coverage to the Owner, Construction Manager, or Engineer for

claims asserted against the Owner, Construction Manager, or Engineer for their sole negligence.

3. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
4. Provide a separate endorsement for each policy, signed by the authorized agent and citing individual policy numbers.
5. The coverage shall be primary and shall contain no special limitations on the scope of protection afforded to the Certificate Holder/Additional Insured.
6. Coverage shall be provided on a "pay on behalf" basis, with defense costs payable in addition to policy limits. There shall be no cross-liability exclusion.
7. In lieu of a separate endorsement, a copy of the declaration page for the Umbrella Liability Policy may be provided, listing the policy numbers for each type of insurance covered by the Umbrella.

B. Waiver of Subrogation Endorsement – Each policy of insurance required by this Contract.

1. The insurer shall agree to waive all rights of subrogation against the Owner, Construction Manager, Engineer and their respective officers, officials, employees, and volunteers for losses arising from work performed by the Contractor for the Owner under the Contract.
2. Provide a separate endorsement for the policy, signed by the authorized agent and citing individual policy number.

C. Notice of Cancellation Endorsements – Each policy of insurance required by this Contract.

1. Each insurance policy shall be endorsed to state that should any coverage be suspended, voided, cancelled or reduced in coverage or in limits, thirty days prior written notice will be given to the Certificate Holder. Notice of cancellation for non-payment of premium shall be not less than ten days.
2. Provide a separate endorsement for each policy, signed by the authorized agent and citing individual policy numbers.
3. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Owner, Construction Manager, Engineer and their respective officers, officials, employees, or volunteers.

D. Deductibles and Self-insured Retentions

Any deductibles or self-insured retentions must be declared to and approved by the Owner. At the option of the Owner, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the Owner, Construction Manager, Engineer and their respective officers, officials, and employees; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

All deductibles shall be paid by the Contractor.

E. Failure of Insurers

The Contractor is responsible for any delay resulting from the failure of its insurance carriers to furnish proof of coverage in the prescribed form. The summary table shown below in paragraph 4.C can serve as a checklist to confirm the submittal of all required endorsements.

F. Contractor's Property and Equipment

The Contractor is responsible for insuring its own property and equipment.

**3. ACCEPTABILITY**

- A. The insurance purchased by the Contractor must be issued by a company licensed by the Insurance Commissioner to transact business in the State of Georgia or by a company acceptable to the State if the company is an alien insurer.
- B. Insurance is to be placed with insurers with a Best Policyholders Rating of "A" or better and with a financial size rating of Class VII or greater, or be otherwise acceptable to the Owner.

**4. VERIFICATION OF COVERAGE**

- A. The Contractor shall furnish the Owner with four original Certificates of Insurance, each with endorsements effecting coverage required by this Section of the Contract Documents. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.
- B. The insurance certificate must provide the following:
  - 1. Name and address of authorized agent.
  - 2. Name and address of insured. Name of insured must appear exactly as shown on Contractor's seal on Contract with Owner.
  - 3. Name of insurance company(ies).
  - 4. Description of policies.
  - 5. Policy number(s).
  - 6. Policy period(s).

7. Name and address of Owner as Certificate Holder (see Subsection D below).
8. Cobb County Water System Program Name and Number.
9. Signature of authorized agent.
10. Telephone number of authorized agent.

C. The required endorsements to be submitted are summarized in the following table:

**ENDORSEMENT SUMMARY TABLE**

<b>Type of Insurance</b>	<b>Endorsement</b>
Commercial General Liability	Owner, etc. as Additional Insured
Commercial General Liability	Waiver of Subrogation
Commercial General Liability	Notice of Cancellation
Automobile Liability	Owner, etc. as Additional Insured
Automobile Liability	Waiver of Subrogation
Automobile Liability	Notice of Cancellation
Commercial Umbrella Liability	Owner, etc. as Additional Insured <sup>1</sup>
Commercial Umbrella Liability	Waiver of Subrogation
Commercial Umbrella Liability	Notice of Cancellation <sup>1</sup>
Workers' Compensation	Waiver of Subrogation
Workers' Compensation	Notice of Cancellation
Builder's Risk	Waiver of Subrogation
Builder's Risk	Notice of Cancellation

<sup>1</sup>Declarations pages may be submitted for Umbrella policies.

D. The Certificate Holder must be shown as:

Cobb County, Georgia  
 Attention: Cobb County Water System  
 Engineering & Records Division  
 660 South Cobb Drive  
 Marietta, GA 30060-3105

E. The certificates and endorsements naming additional insureds and indicating required waivers are to be submitted with the executed Agreement/Contract and Performance and Payment Bonds, for approval by the Owner before work commences. The Owner reserves the right to require the submittal of complete, certified copies of all required insurance policies at any time.

**5. SUBCONTRACTORS**

Contractor shall include all subcontractors as additional insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. Coverage for subcontractors shall be subject to all of the requirements stated herein. Owner may request evidence of subcontractor's insurance. Contractor shall ensure that all subcontractors comply with the insurance requirements and provisions of this Section.

**END OF SECTION**

**SECTION 00751  
BUSINESS LICENSE**

Attention is drawn to Section 78-31 of the Official Code of Cobb County, Georgia which reads as follows:

**Sec. 78-31. Scope and Levy.**

- (a) *Generally.* Pursuant to O.C.G.A. § 36-1-22, O.C.G.A. § 48-13-6 et seq., the authority of 1986 Ga. Laws (Act No. 1364), page 5450, and H.B. 175, 1995 Ga. Laws, page 419 et seq., all persons, including professional corporations, engaged in business in the unincorporated area of the county are hereby required to register their business or office and obtain a business registration certificate therefore, and pay the amount now or hereafter fixed as the occupation tax thereon. The occupation tax levied in this section is for revenue purposes only and is not for regulatory purposes. The occupation tax applies only on businesses and occupations which are covered by the provisions of O.C.G.A. §§ 48-13-5 through 48-13-26. Other applicable businesses and occupations are subject to county taxes pursuant to pertinent general law and/or county ordinance.
- (b) *Businesses with no location or office in state.*
- (1) The provisions of this article shall apply to those businesses and practitioners of professions and occupations with no location or office in the state if the business or practitioner:
- a. Has one or more employees or agents who exert substantial efforts within the unincorporated part of the county for the purpose of soliciting business or serving customers or clients; or
- b. Owns personal or real property which generates income and which is located in the unincorporated part of the county.
- (2) In no event shall a business or practitioner subject to this subsection be required to pay an occupation tax to more than one local government in the state and then only to the local government in which the largest dollar volume of business is done or service is performed by the individual business or practitioner.
- (3) If a business or practitioner subject to this subsection provides to the supervisor of the business license office proof of payment of a local business or occupation tax in another state, or county or municipality of this state which purports to tax the business's or practitioner's sales or services in this state, the business or practitioner shall be exempt for the levy of any occupational tax under this section.
- (c) *Permit for persons exempted from paying tax.* Even though a person may be exempt under state or other law from paying an occupation tax, nevertheless, such person must apply to the business license office for a free permit to engage in or carry on any business provided for in this article and submit proper and lawful credentials exempting applicant from paying the occupation tax.

(Ord. of 10-25-94; Code 1977, § 3-7-1(a)--(c); Ord. of 6-27-95(1))

**State law references:** General authority to levy occupation tax, O.C.G.A. §§ 48-13-5--48-13-9.

**SECTION 00752**

**COBB COUNTY  
SUBCONTRACTOR NOTIFICATION LIST**

List the name, address, and Business License number for each subcontractor that may perform work on this Project. Indicate whether or not the subcontractor is a Disadvantaged Business Enterprise. All Subcontractors must be reported on this form for License Inspection purposes. Submit this form with the Agreement, Bonds, and Insurance Certificates at the time of Contract execution. This information will be forwarded to the Cobb County Business License Division.

CONTRACTOR/DEVELOPER: \_\_\_\_\_

PROJECT LOCATION: \_\_\_\_\_

-----

SUBCONTRACTOR: \_\_\_\_\_

\* DBE? Yes \_\_\_ No \_\_\_ (If Yes, approx. percent of Contract Amount \_\_\_%)

SUBCONTRACTOR: \_\_\_\_\_

\* DBE? Yes \_\_\_ No \_\_\_ (If Yes, approx. percent of Contract Amount \_\_\_%)

SUBCONTRACTOR: \_\_\_\_\_

\* DBE? Yes \_\_\_ No \_\_\_ (If Yes, approx. percent of Contract Amount \_\_\_%)

SUBCONTRACTOR: \_\_\_\_\_

\* DBE? Yes \_\_\_ No \_\_\_ (If Yes, approx. percent of Contract Amount \_\_\_%)

\* DBE (Disadvantaged Business Enterprise)

BUSINESS LICENSE NO.: \_\_\_\_\_

PROJECT IMPLEMENTATION DATE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

-----

BUSINESS LICENSE NO.: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

BUSINESS LICENSE NO.: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

BUSINESS LICENSE NO.: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

BUSINESS LICENSE NO.: \_\_\_\_\_

ADDRESS: \_\_\_\_\_



## **DIVISION 1**

# **GENERAL REQUIREMENTS**

**SECTION 01001  
SUMMARY OF WORK**

**PART 1 – GENERAL**

**1.01 SCOPE**

- A. The Work to be performed under this Contract shall consist of furnishing all plants, tools, equipment, materials, supplies, and manufactured articles and furnishing all labor, transportation, and services, including fuel, power, water; and essential communications; and performing all work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The Work shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents, which may be necessary for the complete and proper construction of the Work in good faith, shall be provided by the **Contractor** as though originally so indicated, at no increase in cost to the **Owner**.

**1.02 PROJECT LOCATION**

- A. West of East-West Connector and Mesa Valley Way, Cobb County GA:

**1.03 WORK COVERED BY THE CONTRACT DOCUMENTS**

- A. The Work includes the cleaning and CIPP Liner or Machine Spiral Wound PVC Liner rehabilitation of selected portions of the underground sewer main. The Work includes but is not limited to the below items:
1. CIPP or Machine Spiral Wound PVC lining of approximately 500 linear feet of 30-Inch diameter reinforced concrete pipe sewer main, between MH 261-0030 and MH 261-0029.
- B. Other work associated with the above items.

**1.04 WORK PROVIDED BY THE OWNER**

- A. The 30-inch reinforced concrete pipe between MH 261-0030 and MH 261-0029, was cleaned and inspected on March 1-4, 2021 and the Pipe Graphic Report and CCTV Video of the results of this inspection are included in Appendix C and D.

Should the Contractor decide to conduct its own Lining Pre-Installation Cleaning and CCTV Inspection, it shall include the cost of such work in its unit price for installation of the 30-Inch CIPP Liner or 30-Inch Machine Spiral Wound PVC Liner.

- B. The Owner has constructed a temporary access road as shown on the map in Appendix A. Contractor shall examine this road to determine if it will meet its needs for equipment and personnel access to the site of the work. If the Contractor determines that the existing temporary access road is not adequate to meet its needs, Contractor shall be responsible for making any improvements to the temporary access road that it deems necessary. The cost of any such improvements is to be included in the Contractor's unit price for installing the CIPP or Spiral Wound PVC liner.

Contractor shall not be responsible for removing the temporary access road upon completion of its work.

#### **1.05 WORK COORDINATION**

- A. The **Contractor** shall also coordinate the Work with Cobb County Water System Maintenance Staff where access is required for the performance of the work.

#### **1.06 CONDITIONS AT THE SITES**

- A. The 30-inch reinforced concrete pipe sewer to be rehabilitated was recently repaired by the Owner at a location approximately 34 feet downstream from MH 261-0030.
- B. The 30-inch reinforced concrete pipe sewer to be rehabilitated crosses a Colonial Pipe Company Easement starting at a point approximately thirty (36) feet downstream from MH 261-0030 as shown on the Record Drawing included in Appendix A.
- C. The **Contractor** shall make all necessary investigations to determine the existence and location of underground utilities.
- C. The **Contractor** will be held responsible for any damage to and for maintenance and protection of existing utilities, structures, and personal property.
- D. Nothing in these Contract Documents shall be construed as a guarantee that such utilities are in the location indicated or that they actually exist, or that other utilities are not within the area of the operations.

END OF SECTION 01001

**SECTION 01010  
PROJECT PROCEDURES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

Section Includes:

1. Lands and Rights-of-Way
2. Access to and Contractor's use of the site.
3. Coordination requirements.
4. Construction procedures.

**1.02 LANDS AND RIGHTS-OF-WAY**

- A. Access to the work shall be limited to the right-of-way or easement area provided for execution of the work. The **Contractor** shall not enter any adjacent private property without prior written approval from the property owner. Proof of such approval shall be furnished to the **Owner** upon request.
- B. If the Contractor performs any work or service for any property owner outside the specified scope of the **Contractor's** agreement with the **Owner** or has any agreements with a private property owner for access to or for temporary use of property outside of the right-of-way or easement area, a written agreement shall be entered into, with the private property owner(s) prior to any work or service being performed or prior to any use by **Contractor** of the private property and such agreement shall be provided to **Owner**. The agreement shall contain the following language, in addition to the terms agreed to between the **Contractor** and the property owner.

“The Property Owner understands that Cobb County is not a party to this Agreement, exercises no control over the means, methods, and execution of this agreement, and that Cobb County assumes no responsibility for the Contractor's compliance with the terms of this agreement. The Contractor shall be solely liable for any and all claims, demands, and judgments related to loss or damage to property or person (including death) arising from or in any way related to the Contractor's acts or omissions related to the agreement”.

**1.03 ACCESS TO AND CONTRACTOR'S USE OF THE SITE**

- A. The space available to the **Contractor** for the performance of the work, either exclusively or in conjunction with others performing other construction as part of the project, is shown on the drawings.
- B. The **Owner** will continue to utilize the existing wastewater collection system during the rehabilitation of the sewer system.
  1. The **Owner** will endeavor to cooperate with the **Contractor's** operations when the **Contractor** has notified the **Owner** in advance of need for changes in operations in order to accommodate construction operations.
  2. The **Contractor** shall conduct the Work so as to cause the least interference with the **Owner's** operations.

- C. Adequate signage will be provided by the **Contractor** as necessary.

#### 1.04 COORDINATION REQUIREMENTS

- A. Coordination with **Owner**:
1. Limit access through occupied areas to those days and times which the **Owner** approves. Occupied areas include all areas in which the **Owner's** regular operations will be going on or to which the **Owner** requires access during the construction period.
  2. When the following must be modified, provide alternate facilities acceptable to the **Owner**:
    - a. Emergency means of egress.
    - b. Utilities which must remain in operation.
    - c. Informational signage.
  3. The **Contractor** shall notify the **Owner** of any circumstances which may jeopardize or have interrupted utility service.
- B. Security Procedures:
1. Limit access to the site to persons involved in the work.
  2. Provide secure storage for materials.
  3. Secure completed work as required to prevent loss.
- C. Coordination of Work:
1. Inform each party involved, in writing, of procedures required for coordination of the work; include requirements for giving notice, submitting reports, and attending meetings.
  2. Inform the **Owner** when coordination of its work is required.
  3. Furnish coordination drawings, as required, where limited space available may cause conflicts in the locations of installed products, and where required to coordinate installation of products.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

##### 3.01 SEWER REHABILITATION PROCEDURES

- A. General Examination Requirements:
1. Prior to performing work, examine the applicable areas and the conditions under which the work is to be performed.
  2. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding.
  3. Notify the **Owner** promptly of any modifications required due to existing conditions or previous work.
  4. Before starting work which might affect existing construction, verify the existence and location of:
    - a. Underground utilities.
    - b. Other underground construction.
  5. Prepare preconstruction and postconstruction photographic documentation in conformance with the requirements of Section 01380 of these specifications.

- B.** General Preparation Requirements:
  - 1. The **Contractor** shall obtain and pay for all required permits.
  - 2. Take field measurements as required to properly conduct the work.
- C.** Cleaning and Protection
  - 1. Keep work area clean, and clean again when soiled by other operations.
- D.** Final Cleaning:
  - 1. Remove materials and equipment which are not part of the work and all debris from the site prior to substantial completion.
  - 2. Dispose of debris in a lawful manner.
  - 3. Perform final cleaning after substantial completion has been certified, but before final payment.
  - 4. Clean entire project site and grounds.

### **3.02 HEALTH AND SAFETY CONSIDERATIONS**

- A.** Take precautions to prevent fires and to facilitate fire-fighting operations.
- B.** Take precautions to prevent accidents due to physical hazards.
- C.** Maintain working conditions in order to keep the site and adjacent public ways free of hazardous and unsanitary conditions and public nuisances.
- D.** Maintain working conditions in order to control rodents and other pests; prevent infestation of adjacent sites and buildings due to pests on this site.
- E.** Keep public streets free of debris due to this work.
- F.** Provide adequate traffic control by means of signs, signals, and flaggers, as necessary.

### **3.03 ENVIRONMENTAL PROTECTION**

- A.** General.

Contractor shall conduct its operation in a manner to prevent pollution of the environment surrounding the area of work by every means possible and shall be responsible for furnishing all necessary items for fulfilling the work described herein.

- B.** Material Transport

Contractor shall comply with Chapter 118, Traffic and Vehicles of the Official Code County of Cobb Georgia pertaining to the duties of the Contractor in hauling material over County owned rights-of-way. This includes but is not limited to, approval of proposed haul routes, prevention of dropping of materials or debris on the streets from trucks arriving and leaving the site, providing a suitable vehicle inspection and cleaning installation with permanent crew, and the removal of any material spilled in public areas at no additional cost to the local government agency.

C. Waste Materials

No waste or erosion materials shall be allowed to enter natural or manmade water or sewage removal systems. Erosion materials from excavations, borrow areas, or stockpiled fill shall be contained within the work area. **Contractor** shall develop methods for control of waste and erosion, which shall include such means as filtration, settlement, and manual removal to satisfy the above requirements.

D. Burning

No burning of waste shall be allowed.

E. Dust Control

The **Contractor** shall at all times control the generation of dust by its operations. Control of dust shall be accomplished by water sprinkling or by other methods approved by the **Owner**.

F. Noise Control

The **Contractor** shall take every action possible to minimize the noise caused by its operations.

When required by agencies having jurisdiction, noise-producing work shall be performed in less sensitive hours of the day or week as directed by the **Owner**.

The **Contractor** shall provide equipment that operates with the least possible noise. The use of noisy equipment is prohibited. Hoists and compressor plants shall be electrically operated unless otherwise permitted. The air intake of compressors shall be equipped with silencers, and machinery operated by gearing shall be provided with a type of gearing designed to reduce noise to a minimum. Internal combustion engines shall be equipped with mufflers in good order.

Noise generated by mobile construction equipment, stationary construction equipment, and other equipment involved in the construction of the work shall not exceed the decibel levels indicated below. Noise generated by mobile and stationary construction equipment will be measured three to 6 feet from building lines, and on the A weighing network of Type-2 general purpose sound level meter set at fast response.

	Combined Residential and Commercial
Allowable Sound Levels of Mobile Construction Equipment: - From 7 a.m. to 10 p.m., Monday thru Saturday, Except Legal Holidays - At times other than those listed above	85 dBA  70 dBA
Allowable Sound Levels of Stationary Construction Equipment: - From 7 a.m. to 10 p.m., Monday thru Saturday, Except Legal Holidays - At times other than those noted above	70 dBA  60 dBA

G. Use of Chemicals

All Chemicals used during construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either EPA or FDA. Use of all such chemicals and disposal of residues shall be in conformance with instructions.

H. By-Passing During Construction

No wastewater shall be by-passed at sewage collection or treatment facilities during project construction unless a by-passing schedule has been approved by the **Owner**. It shall be the responsibility of the **Contractor** to prepare and secure the approval of any by-passing not specifically identified in the Agreement Documents.

I. Responsibility for Spills and Accidental Discharges

In the event that the **Contractor** causes or has a spill or accidental discharge for which the County is fined by the State of Georgia EPD, the **Contractor** agrees to remediate the spill or discharge immediately in accordance with current EPD regulations and to pay any fines assessed against the County and/or Contractor, and pay for the County's cost associated with efforts to remediate the situation.

J. Odor Control

**Contractor** shall provide such temporary odor control measures as required to control objectionable odors resulting from its cleaning and/or bypass pumping operations. Temporary odor control measures, when required, shall include odor control filters, additional ventilation and/or covering of manholes.



### 3.04 PROTECTION OF THE WORK

- A. Conduct operations so that no part of the work is subjected to damaging operations or influences which are in excess of those to be expected during normal occupancy conditions.
- B. All equipment and vehicles used on Water system projects shall be clearly marked with the **Contractor's** name and telephone number. The identifying markings may be in the form of magnetic signs, decals, or painted lettering and shall be located on both sides of the equipment/vehicle. The lettering shall be legible, of a contrasting color to the background surface, and at least two inches in height. All markings shall be in place upon initiation of the work on the project site.
- C. A copy of the project's Notice to Proceed letter issued by the Water System shall be available at all times on the job site as proof of the contractual relationship of the **Contractor** with the Water System. The letter shall be presented for review upon request by regulatory agencies or other County departments that visit the job site.
- D. The **Contractor** shall maintain copies of all permits on the project site at all times.

### 3.05 NOTIFICATION OF SERVICE INTERRUPTION

During progress of work under this Contract, it may be necessary to temporarily interrupt water, sewer or other utility service to a limited number of customers in the vicinity of the work. It shall be the **Contractor's** responsibility to coordinate the service outage with the utility owner and to provide proper advance notification (a minimum of 48 hours) to the affected customers.

The **Contractor** is alerted to the fact that due to the nature of businesses and traffic in certain projects' areas, water outages for connections, service changeovers, and other work may not be allowable during normal work hours. Considerations of this are to be factored into bid price submitted. Coordination, special lighting, traffic control, employee overtime, special customer notification, etc. shall be included in these considerations by the **Contractor**.

**END OF SECTION**

## SECTION 01012 – SPECIAL REQUIREMENTS

### PART 1 - GENERAL

#### 1.01 SUMMARY

- A. The intent of this Section is to provide an overview of this project and to convey to the Contractor special requirements which are unique for this Project. Some of the requirements are a result of negotiations with various entities and organizations which have an interest in this Project. Some requirements are based on technical aspects of this Project which are not otherwise conveyed elsewhere in the Contract Documents. The provisions of this Section shall supersede the provisions of the Specifications in Divisions 1 through 16.

#### 1.02 WORK BY OTHERS

- A. The Owner will furnish the following materials:  
1. *None.*
- B. The Owner will perform the following work:  
1. *None.*
- C. Other contracts issued by the Owner for this Project are as follows:  
1. *None.*
- D. Contractor shall cooperate with and coordinate its Work with the work of any other contractor, supplier, utility owners, or Owner's employees.

#### 1.03 STATUS OF PERMITS

- A. Status of Permits: The following status of permits and easements related to this project is presented pursuant to the requirements of OCGA § 36-91-20(b)(4)(A) and (B).  
1. The Contractor is responsible for obtaining any necessary road closure or lane closure permits as specified in Section 01550 – Traffic Regulation.

#### 1.04 SEQUENCING OF WORK

- A. General  
1. The Contractor shall be solely responsible for all construction sequencing.

#### 1.05 STORMWATER DISCHARGES

- A. It is not anticipated that the area of land disturbance will be more than one acre; therefore, compliance with NPDES General Permit No. GAR 100002, as issued by the State of Georgia, Department of Natural Resources, Environmental Protection Division, is not required.

## **1.06 EXISTING FACILITY OPERATIONS**

- A.** The existing facilities shall remain in operation while the new construction is in progress. Temporary pumps, pipelines and other accessories required for sewage flow diversion shall be provided in accordance with Section 02750 – Bypass Pumping and other applicable Sections to assure customers have uninterrupted service and no illegal sewage spills occur.

## **1.07 LANDSCAPE DISTURBANCE AND RESTORATION**

- A.** Prior to disturbance of landscaped areas, the Contractor shall employ a professional landscape company to identify and list by address the predominant grass type found (or type preferred by the property owner) and existing trees, shrubs and ground covers. A copy of this information shall be provided to the Owner.
- B.** Disturbed lawn areas are to be replaced in kind with sod where lawns have been maintained. Seeding and mulching shall be utilized for restoration in areas where lawns are not being maintained.

**END OF SECTION 01012**

## SECTION 01380 - PHOTOGRAPHIC DOCUMENTATION

### PART 1 - GENERAL

#### 1.01 SCOPE OF WORK

- A. The Contractor shall clearly document site conditions prior to the start of construction and upon the completion of construction by use of video recording. The Contractor shall document the progress of construction (including significant events such as tie-ins) with still photographs. The cost of all photographic documentation shall be included in the Contract Price.

#### 1.02 PROCEDURES

- A. The pre/post-construction video recording and periodic still photographs shall be taken from identifiable reference points along the construction corridor. The same reference points will be used through the life of the project to achieve an accurate record of construction.
- B. The Contractor will ensure that any areas of sensitivity such as driveways, fences, hardscape and landscape areas, lake or stream banks, or areas surrounding existing structures are adequately documented. Of particular concern shall be the existence, or non-existence, of any faults, fractures or defects.

#### 1.03 PRE/POST-CONSTRUCTION VIDEO RECORDING

- A. The pre-construction and post-construction conditions of the project corridor shall be documented by audio-video recording methods.
- B. The video portion of the recording shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion or any other picture imperfection. Panning, zoom-in and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object. The audio portion of the recording shall reproduce precise and concise explanatory notes by the camera operator with proper volume, clarity and freedom from distortion. The Owner reserves the right to reject any audio-video recording because of poor quality, unintelligible audio, or uncontrolled pan or zoom. Any rejected video shall be re-recorded at no additional cost to the Owner.
- C. All video recordings shall, by electronic means, display on the screen the time of day, the month, day and year of the recording. This time and date information must be continuously and simultaneously generated with the actual recording.
- D. The DVDs used for the recordings shall be new, professional quality 12 cm color DVD media that conforms to either DVD-R or DVD+R recording standards using high quality DVD video and audio bitrates. Reprocessed disks will not be acceptable. The recorded DVDs shall be compatible with any standard DVD- R or DVD+R player for television viewing or with media player software for viewing on a computer.

- E. All DVDs and their storage cases shall be identified by the CCWS project number and title, date recording was made, and a unique reference number if multiple DVDs are submitted. A printed log of the recording contents shall be inserted in the storage case of each DVD. The log shall include the disc reference number and shall describe the various segments of coverage contained on that DVD in terms of the names of streets or easements, coverage beginning and end limits – either listed by station numbers or addresses, directions of travel, and the time on the recording where the particular street or easement can be found.

#### **1.04 SUBMITTALS**

- A. The **Contractor** shall furnish to the **Owner** one copy of the video digital file and one set of the still photographs, taken of existing conditions, prior to start of the Work and before the submittal of the first request for payment. The initial pay request will not be processed before the submittal of the video records and still photographs.
- B. The **Contractor** shall furnish to the **Owner** one copy of the video digital file and one set of the still photographs, taken upon completion of the Work and prior to submittal of the final request for payment. The pay request will not be processed before the submittal of the video records and still photographs.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01550  
TRAFFIC REGULATION**

**PART 1 - GENERAL**

**1.01 SCOPE**

- A. The work specified in this section includes the provision of products, permits, services, procedures and personnel by the **Contractor** to effect traffic control during the Work.

**1.02 TRAFFIC CONTROL MANAGER REQUIREMENTS**

- A. The **Contractor** shall designate a qualified individual as the Traffic Control Manager (TCM) who shall be responsible for selecting, installing and maintaining all traffic control devices in accordance with the Plans and Specifications and the Manual of Uniform Traffic Control Devices (MUTCD). A written resume documenting the experience and credentials of the TCM shall be submitted and accepted by the **Owner** prior to beginning any work that involves traffic control. The TCM shall be available on a twenty-four (24) hour basis to perform its duties. If the work requires traffic control activities to be performed during the daylight and nighttime hours it may be necessary for the **Contractor** to designate an alternate TCM. An alternate TCM must meet the same requirements and qualifications as the primary TCM and be accepted by the **Owner** prior to beginning any traffic control duties. The Traffic Control Manager's traffic control responsibilities shall have priority over all other assigned duties.
- B. As the representative of the **Contractor**, the TCM shall have full authority to act on behalf of the **Contractor** in administering the Traffic Control Plan. The TCM shall have appropriate training in safe traffic control practices in accordance with Part VI of the MUTCD. In addition to the TCM all other individuals making decisions regarding traffic control shall meet the training requirements of Part VI of the MUTCD. The TCMs shall supervise the initial installation of traffic control devices. The **Owner** prior to the beginning of construction will review the initial installation. Modifications to traffic control devices as required by sequence of operations or staged construction shall be reviewed by the TCMs.

**PART 2 - PRODUCTS**

**2.01 SIGNS, SIGNALS, AND DEVICES**

- A. The **Contractor** shall provide post-mounted and wall-mounted traffic control and informational signs as specified and required by local jurisdictions.
- B. The **Contractor** shall provide automatic traffic control signals as approved by local jurisdictions.

- C. The **Contractor** shall provide traffic cones and drums, and flashing lights as approved by local jurisdictions.
- D. The **Contractor** shall provide flagmen and equipment as required by local jurisdictions.

## **PART 3 - EXECUTION**

### **3.01 PERMITS**

- A. The **Contractor** shall obtain permits from authorities having jurisdiction over road closures before closing any road. The **Contractor** shall use forms provided by authorities having jurisdiction (Cobb County Department of Transportation, GDOT, etc).
- B. The **Contractor** shall either fax or hand carry permit applications to the Cobb County Department of Transportation. Permit applications shall indicate the time (in days); length (in feet); the number of lanes; and the purpose of the closure.
- C. All permits are approved for operations during off-peak hours 9:00 a.m. to 4:00 p.m. unless special approval is received.
- D. Operations between the hours of 6:00 p.m. and 10:00 p.m. and Saturdays and Sundays must be approved by the **Owner**
- E. Full street closures permits require ninety-six (96) hours advance notice prior to road closure. The following additional information is required prior to approval:
  - 1. The recommended detour route with signage and Traffic Management Plan as per the Manual of Uniform Traffic Control Devices (MUTCD).
  - 2. A copy of the resident and/or business notification letters about the closure. The residents/businesses located between the detour route must be notified about the closure at least five (5) business days prior to the proposed closure.
- F. The Cobb County Department of Transportation will return full road closure permit applications to the **Contractor** with a cover letter to the Fire Chief, Chief of Police, Hospitals, CCT, and the Cobb County Board of Education. The **Contractor** shall have received the permit application and cover letter at least seventy-two (72) hours before commencing road closure activities.
- G. Lane closures shall require a minimum of forty-eight (48) hour notice prior to closure. The **Contractor** shall continuously maintain the safety of the traveling public during lane closures in accordance with the requirements of the MUTCD and as stipulated by public officers. Lane closure permits are issued between 8:30 a.m. and 1:00 p.m. Mondays through Fridays.

### 3.02 PREPARATION OF TRAFFIC CONTROL PLANS

- A. The **Contractor** shall develop detailed staging and traffic control plans for performing specific areas of the Work including but not limited to all requirements for certified flagmen, additional traffic control devices, traffic shifts, detours, paces, lane closures or other activities that disrupt traffic flow. The **Contractor** shall submit these plans in accordance with the Specifications to receive final approvals from permitting agencies and provide any and all required traffic control devices as required by both the permitting agencies and these specifications at no additional cost to the **Owner**.

### 3.03 CONSTRUCTION PARKING CONTROL

- A. The **Contractor** shall control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and **Owner's** operations.
- B. The **Contractor** shall monitor parking of construction personnel's vehicles in existing facilities and maintain vehicular access to and through parking areas.
- C. The **Contractor** shall prevent parking on or adjacent to access roads or in non-designated areas.

### 3.04 MAINTENANCE OF TRAFFIC

- A. Whenever and wherever, in the **Owner's** opinion, traffic is sufficiently congested or public safety is endangered, the **Contractor** shall furnish uniformed officers to direct traffic and to keep traffic off the highway area affected by construction operations.
- B. When the Contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the **Contractor's** performance of Work that is otherwise provided for in the Plans and these Specifications, the **Contractor** shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to safely accommodate traffic. The **Contractor** shall furnish, erect and maintain barricades, warning signs, flagmen, and other traffic control devices in conformity with the requirements of the Georgia Department of Transportation and other Local Jurisdictions. The **Contractor** shall also construct and maintain in a safe condition any temporary connections necessary to ingress to and egress from abutting property or intersecting roads, streets, or highways. The **Contractor** shall maintain traffic in accordance with any traffic control plans furnished with and made a part of the drawings..
- C. The **Contractor** shall make its own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of traffic as specified in this section.
- D. Unless specified in the Plans or these Specifications and subject to the approval of the **Owner**, the cost of maintaining traffic specified in this section shall be



considered incidental to the Work and no separate measurement or payment will be made.

### **3.05 UNIFORMED POLICE OFFICER FOR TRAFFIC CONTROL**

- A. The **Contractor** shall provide uniformed police officers to regulate traffic when construction operations encroach on public traffic lanes, as approved by the **Owner**.
- B. Officers will be currently employed by a local jurisdiction, be in full uniform and have full arrest power while working.
- C. Officers will be employed and paid by the **Contractor**.
- D. It is the Officers' responsibility to assist in the direction of traffic within the construction site.

### **3.06 FLAGMEN**

- A. The **Contractor** shall provide trained and equipped flagmen to regulate traffic when construction operations or traffic encroach on public traffic lanes.

### **3.07 FLASHING LIGHTS**

- A. The **Contractor** shall use flashing lights during hours of low visibility to delineate traffic lanes and to guide traffic.

### **3.08 HAUL ROUTES**

- A. The **Contractor** shall consult with authorities and establish public thoroughfares to be used for haul routes and site access.
- B. The **Contractor** shall confine construction traffic to designated haul routes.
- C. The **Contractor** shall provide traffic control at critical areas of haul routes to regulate traffic and minimize interference with public traffic.

### **3.09 ROAD CLOSURES ON COUNTY ROADS**

- A. No street, road, or highway shall be closed without the permission of the owner of any street, road, or highway and the fire department having jurisdiction. Prior to closing a street, road, or highway, signs shall be posted for a minimum of seven (7) days prior to actual closing, forewarning of the imminent closing. The **Owner** shall determine the information to be placed upon the signs by the **Contractor**. Where traffic is diverted from the Work, the **Contractor** shall provide all materials and perform all work for the construction and maintenance of all required temporary roadways, structures, barricades, signs, and signalization.

- B. To obtain approval to close a road or street maintained by the County, the **Contractor** must proceed as follows:
1. The **Contractor** must obtain approval of its traffic plan from the Cobb County Department of Transportation unless a traffic plan approved by the **Owner** is included in the Plans. The traffic plan must be in accordance with the requirements of the Georgia Department of Transportation (where applicable) and the Cobb County Department of Transportation.
  2. The **Contractor** must obtain a utility permit.
  3. The **Contractor** must apply in writing to the Cobb County Department of Transportation and obtain a permit to close the road on a specific date. Routine permit approval by the Cobb County Department of Transportation requires from one (1) to two (2) weeks depending on when the application is received.
  4. The **Contractor** must obtain a permit from the Cobb County Department of Transportation before posting closure signs. Signs must be posted for seven (7) days prior to the first day of closure. Signs must be acceptable to the County.
  5. Emergency road closures will be handled by the **Owner**.

### 3.10 PROCEDURES FOR TRAFFIC DETOUR ROUTE PLAN

- A. The **Contractor** shall provide a sketch map showing its traffic detour route plan to the Cobb County Department of Transportation. The sketch map need not be drawn to scale but should resemble, as closely as possible, the actual location. The sketch map shall be drawn in a manner so as to provide emergency agencies a better understanding of the detour for quick response. The sketch map shall include directional arrows showing the flow of traffic.
- B. "Road Closed Ahead" signs shall be erected before the start point of the detour indicating the name of the street closed.
- C. Detour signs with appropriate directional arrows shall be erected at every intersection along the detour route until the end of the detour, when the traffic is back to the original street.
- D. The **Contractor** shall erect an "End Detour" sign at the end of the detour.
- E. Each detour and "End Detour" sign shall be accompanied by an accessory plate indicating the name of the street being detoured.

- F. The **Contractor** shall apply appropriate traffic control measures in accordance with the requirements of the MUTCD and Cobb County codes.

### 3.11 BARRICADES AND WARNING SIGNS

- A. The **Contractor** shall furnish, erect, and maintain all barricades and warning signs for hazards necessary to protect the public and the Work. When used during periods of darkness, such barricades, warning signs and hazard markings shall be suitably illuminated or reflectorized.
- B. For vehicular and pedestrian traffic, the **Contractor** shall furnish, erect, and maintain barricades, warning signs, lights, and other traffic control devices in conformity with the requirements of the Georgia Department of Transportation and Cobb County Department of Transportation.
- C. The **Contractor** shall furnish and erect all barricades and warning signs for hazards prior to commencing Work which requires such erection and shall maintain the barricades and warning signs for hazards until their dismantling is directed by the **Owner**.

### 3.12 REMOVAL

- A. The **Contractor** shall remove equipment and devices when no longer required and repair damage caused by installation.

END OF SECTION

**DIVISION 2**

**SITE WORK**

**SECTION 02113  
ACCESS ROAD CLEARING AND CONSTRUCTION**

**PART 1 – GENERAL**

**1.01 SCOPE**

- A. The extent of temporary access road clearing is that minimum degree of clearing necessary to carry out cleaning, CCTV inspection and rehabilitation, as well as other additional clearing needed for access purposes.
- B. Temporary access roads are restricted to those areas specified in Paragraph 1.02 of Section 01010.
- C. The **Contractor** shall plan and implement its work to minimize disruption to the neighborhood and shall adjust access road clearing and construction plans to avoid important landscaping features where practicable.
- D. Route 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. Clearing
  - 4. Removing above-grade improvements
  - 5. Removing underground improvements
  - 6. Restoring damaged improvements
  - 7. Protecting above-grade and underground improvements
  - 8. Erosion control of disturbed areas
- D. All costs for access road clearing and construction shall be included in the unit price for the specific work item where access road clearing and construction is required.

**1.02 QUALITY ASSURANCE**

- A. The **Contractor** shall comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction over the Project. All required permits of a temporary nature shall be obtained for cleaning and internal condition assessment operations by the **Contractor**.
- B. Burning of cleared materials on site is not permitted. The **Contractor** shall remove of all material arising from any necessary clearing and grubbing.

## 1.03 JOB CONDITIONS

### A. Protection of Existing Improvements:

1. Provide barricades, coverings, or other types of protection necessary to prevent unnecessary damage to existing improvements.
2. Protect improvements on adjoining properties as well as those on the project site. Restore improvements damaged by this work to original condition, as acceptable to the Owners or other parties or authorities having jurisdiction. Replace property line monuments (such as iron pins) removed or disturbed by clearing operations. This work shall be performed by a Land Surveyor licensed in the State of Georgia.

### B. Protection of Existing Trees and Vegetation:

1. Protect existing trees and other vegetation 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 lines, excess foot or vehicular traffic, or parking of vehicles or equipment within drip line. Provide temporary fences, barricades or guards as required to protect trees and vegetation to be left standing.
2. Provide protection for tree roots over 1-1/2 inches diameter that are cut during any construction operation. Coat the cut faces with emulsified asphalt, or other acceptable coating, especially formulated for horticultural use on cut or damaged plant tissues. Temporarily cover all exposed roots of trees with wet burlap to prevent roots from drying out; provide earth cover as soon as possible.
3. Repair or replace unnecessarily damaged trees and vegetation, as determined by the **Owner**, resulting from any cleaning and internal condition assessment operation, in a manner acceptable to the property owner and the **Owner**. A qualified nurseryman shall perform tree damage repair. Replace unnecessarily damaged trees that cannot be repaired and restored to full-growth status, as determined by the tree surgeon.

### C. Protection of Adjacent Property:

1. Protect improvements, trees and vegetation on adjoining property as well as those on property requiring route-clearing work.

2. Execute work so as not to create a nuisance to any person including persons utilizing adjacent property.
3. 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 work area.

## **PART 2 – PRODUCTS**

### **2.01 EQUIPMENT**

- A. The **Contractor** shall furnish equipment of the type normally used in clearing and grubbing operations including, but not limited to, tractors, trucks, loaders, mowers and clippers.

## **PART 3 – EXECUTION**

### **3.01 CLEARING**

- A. Route clearing operations shall begin no more than seven days before beginning cleaning and internal condition assessment work for any area.
- B. Materials to be cleared, grubbed and removed from the project site include but are not limited to vegetation, trees, stumps, roots, lawns, shrubbery, gardens, paving, miscellaneous structures, debris, and abandoned utilities to the minimum practicable extent to complete the work. Limit clearing to a single lane work route without provision for construction vehicles to pass utility operation. Accurately determine limitations of construction easement or right-of-way, and keep cleaning and internal condition assessment activity within such limits.
- C. Grubbing shall consist of completely removing roots, stumps, trash and other debris from all graded areas so that topsoil is free of roots and debris. Topsoil is to be left sufficiently clean so that further picking and raking will not be required.
- D. All stumps, roots, foundations and planking embedded in the ground shall be removed and disposed of. Piling and butts of utility poles shall be removed to a minimum depth of two feet below the limits of excavation for structures, trenches and roadways or two feet below finish grade, whichever is lower.
- E. Landscaping features shall include, but are not necessarily limited to: fences, cultivated trees, cultivated shrubbery, property corners, man-made improvements, subdivision and other signs shall be moved off the easement. The **Contractor** shall take extreme care in moving landscape features and shall re-establish these features as directed by the **Owner**.

- F. Surface rocks and boulders shall be grubbed from the soil and removed from the site if not suitable as Rip Rap.
- G. Where the tree limbs interfere with utility wires, or where the trees to be felled are in close proximity to utility wires, the tree shall be taken down in sections to eliminate the possibility of damage to the utility.
- H. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.
- I. All fences adjoining any excavation or embankment that, in the **Contractor's** opinion, may be damaged or buried, shall be carefully removed, stored and replaced. Any fencing that, in the **Owner's** opinion, is significantly damaged shall be replaced with new fence material of equal or better quality and construction.
- J. Stumps and roots shall be grubbed and removed to a depth not less than two feet below grade. All holes or cavities which extend below the subgrade elevation of the proposed work shall be filled with crushed rock or other suitable material, compacted to the same density as the surrounding material.
- K. The **Contractor** shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, etc. situated within the limits of any temporary easements, but not directly within the permanent easements. The **Contractor** shall be held liable for any damage the **Contractor's** operations have inflicted on such property.
- L. The **Contractor** shall be responsible for all damages to existing improvements outside the permanent easement resulting from **Contractor's** operations.
- M. Remove lawn sod by cutting into maximum size which can be handled without tearing, stripping sod and underlying topsoil, and stockpiling for use in restoring the surface area. Water sod and otherwise maintain sod in viable, growing condition. Alternative means of lawn sod replacement may be considered by the **Owner**.
- N. Remove above-grade structures only where specifically authorized.
- O. Remove conflicting fences and provide effective, temporary measures to prevent domestic animals from wandering to other lands. Reconstruct fences promptly.



### 3.02 HOLES AND DEPRESSIONS

- A. Fill holes, depressions and voids created or exposed by clearing operations with non-organic 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 at least equal to adjacent original ground.

### 3.03 DISPOSAL OF WASTE MATERIALS

- A. Disposal General Requirements: Accomplish disposal of cleared matter daily so as to maintain site in a safe and neat condition throughout the contract period. Owners of the property may remove merchantable timber, buildings or other items of value from the work site before the **Contractor** begins operations, and no assurance exists that any such material will be on the work site when the **Contractor** begins work.
- B. On-Site Disposal:
  - 1. Unless property owner requests complete removal, cut tree trunks and limbs, over two inches in diameter, into 48 inch lengths and neatly stack within work limits having the same property ownership as that on which the tree originally grew.
  - 2. On undeveloped property, distribute brush, trees and limbs less than two inches in diameter, within the work area from which cut, in such a way as not to be objectionable to the property owner. On developed property, remove all such clearing waste and properly dispose of it off-site.

### 3.04 DISPOSAL OF DEBRIS

- A. The debris resulting from the clearing and grubbing operation shall be hauled to a disposal site secured by the **Contractor** and shall be disposed of in accordance with all requirements of federal, state, county and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or in any street or alley. No debris shall be deposited upon any private property except with written consent of the property owner. In no case shall any material or debris of any kind be left on the Project, shoved onto abutting private properties or buried on the Project.

### 3.05 CONSTRUCTION OF TEMPORARY ACCESS ROAD

- A. When required by the **Contractor** for proper execution of its work, a construction access route shall be built for the purpose of accessing manholes and performing all other necessary work within the easement.
- B. Construction access route shall be cut (10) ten feet wide, minimum, and (6) six inches deep below existing grade. Filter fabric shall be placed at the bottom of the cut, and surge stone shall be placed on top of the fabric, filling the six inch depth along the roadway.
- C. The Geotextile filter fabric for use under the stone shall be for use under construction exits or other stone structures designed for vehicle traffic and shall be Mirafi "600X" or approved equal
- D. Surge stone shall be 4" to 6" size (4X6) rip rap type stone, or equivalent. Use sound, tough, durable stones resistant to the action of air and water. Slabby or shaley pieces will not be acceptable. Specific gravity shall be 2.0 or greater. Stones shall have less than 66 percent wear when tested in accordance with AASHTO T-96.

### 3.06 TREE REMOVAL ON EASEMENTS

- A. The **Contractor** shall confirm ownership of all on-site trees within the easement before work commences and submit a tree removal plan to the **Owner**.
- B. The **Owner's** approval shall be obtained prior to the removal of any trees from the easement such concurrence shall be obtained in writing.
- C. The approval of the **Owner** concerning the method and location of disposal of materials must be agreed with the **Owner** before work commences.
- D. All trees that need further processing (wood chips) on-site or disposal off-site must be processed or disposed of in conformance with Federal, State, and local rules and regulations.
- E. **Contractor** shall ensure all utilities are located prior to the commencement of any clearing work in the easement.
- F. **Contractor** must acquire any necessary permits prior to commencement of any type of work done in the easement especially for the removal of trees and crossing of waterways.
- G. Stemmed vegetation such as brush, shrubs, and trees as necessary shall be removed at or near the ground level, leaving the root systems intact.

- H. Trees shall be felled into the cleared construction area or areas to be cleared and not onto vegetation to be preserved.
- I. Trees that have fallen into water bodies, or beyond the work area, shall be removed immediately.

END OF SECTION 02113

**SECTION 02231  
TREE PROTECTION AND TRIMMING**

**PART 1 - GENERAL**

**1.01 SCOPE**

- A. This section includes the protection and trimming of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.
- B. Related Work specified elsewhere:
  - 1. Section 02000 - Site work
  - 2. Section 02920 - Site Restoration

**1.02 SUBMITTALS**

- A. Submittals shall be made in accordance with the requirements of the General Requirements of the Contract Documents and Section 01300. In addition, the following specific information shall be provided:
  - 1. Product Data: For each type of product indicated.
  - 2. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. The **Contractor** shall include lists of completed projects with project names and addresses, names and addresses of engineers and owners, and other information specified.
  - 3. Certification: From a qualified forester that trees indicated to remain have been protected during construction according to recognized standards and that the trees were promptly and properly treated and repaired when damaged.
  - 4. Maintenance Recommendations: From a certified arborist for care and protection of trees affected by construction during and after completing the Work.

**1.03 QUALITY ASSURANCE**

- A. Reference Standards: The **Contractor** shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these Specifications.
  - 1. Hortus Third, 1976.
  - 2. Standardized Plant Names (American Joint Committee on Horticulture Nomenclature).
  - 3. National Arborist Association "Pruning Standards for Shade Trees", latest revision.
  - 4. ANSI A 300 – Trees, Shrubs, and Other Woody Plant Maintenance – Standard Practices.

5. ASTM D 448 – Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
  6. ASTM D 5268 – Standard Specification for Topsoil Used for Landscaping Purposes.
- B. Forester Qualifications: A forester licensed in the State of Georgia.
- C. Tree Pruning Standards: The **Contractor** shall comply with the requirements of ANSI A300 unless more stringent requirements are indicated.
- D. Pre-installation Conference: The **Contractor** shall conduct a pre-installation conference at the site of the Work.
1. Before starting tree protection and trimming, the **Contractor** shall meet with representatives of authorities having jurisdiction, including, the **Owner** and other concerned entities. The **Contractor** shall review tree protection and trimming procedures and responsibilities. The Contractor shall notify participants at least three (3) working days before convening the conference. The **Contractor** shall record discussions and agreements and furnish a copy to each participant.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D448, Size 24, with ninety (90) to one hundred (100) percent passing a two and one half (2½) inch sieve and not more than ten (10) percent passing a three quarter (¾) inch sieve.
- B. Topsoil: Fertile, friable, surface soil, containing natural loam and complying with the requirements of ASTM D5268. The **Contractor** shall provide topsoil that is free of stones larger than one (1) inch in any dimension and free of other extraneous or toxic matter harmful to plant growth. The **Contractor** shall obtain topsoil only from well-drained sites where soil occurs in depth of four (4) inches or more; the **Contractor** shall not obtain topsoil from bogs or marshes.
- C. Filter Fabric: Manufacturer's standard, non-woven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.
- D. Webbed Fabric Fence (temporary fencing): Orange polyethylene webbed fabric, forty six (46) inches high supported by six (6) feet steel channel posts, five (5) feet o.c. The **Contractor** shall set posts two (2) feet below grade.
- E. Chain Link Fence: Shall meet the requirements of Section 02821.

## PART 3 - EXECUTION

### 3.01 IDENTIFICATION

- A. Prior to any construction, the **Contractor** shall flag all trees on the site of the Work scheduled to be protected. All flagging shall be approved by the **Owner** prior to start-up of the Work and construction activities. The **Owner** shall be notified immediately of any conflicts with proposed Work, structures, or utilities.

### 3.02 PREPARATION

- A. Temporary Fencing: The **Contractor** shall install temporary fencing as indicated on the Plans or outside the drip line of trees to protect remaining vegetation from construction damage.
  - 1. The **Contractor** shall install chain link fence according to the requirements of Section 02821.
- B. The **Contractor** shall protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. The **Contractor** shall protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.
- C. The **Contractor** shall not store construction materials, debris, or excavated material within the drip line of remaining trees. The **Contractor** shall not permit vehicles or foot traffic within the drip line. The **Contractor** shall prevent soil compaction over root systems.
- D. The **Contractor** shall not allow fires under or adjacent to remaining trees or other plants.

### 3.03 EXCAVATION

- A. The **Contractor** shall install shoring or other protective support systems to minimize sloping or benching of excavations that could endanger trees.
- B. The **Contractor** shall not excavate within drip line of trees, unless otherwise indicated.
- C. Where excavation for new construction is required within drip line of trees, the **Contractor** shall hand clear and excavate to minimize damage to root systems. The **Contractor** shall use narrow-tine spading forks and comb soil to expose roots.
  - 1. The **Contractor** shall relocate roots in backfill areas where possible. If encountering large, main lateral roots, the **Contractor** shall expose roots beyond excavation limits as required to bend and relocate them without breaking. If encountered immediately adjacent to the location of new construction and relocation is not practical, the **Contractor** shall cut roots approximately three (3) inches back from new construction.

2. The **Contractor** shall not allow exposed roots to dry out before placing permanent backfill. The **Contractor** shall provide temporary earth cover or pack with peat moss and wrap with burlap. The **Contractor** shall water and maintain earth in a moist condition. The **Contractor** shall temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- D. Where utility trenches are required within drip line of trees, the **Contractor** shall tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
1. Root Pruning: The **Contractor** shall not cut main lateral roots or taproots. The **Contractor** shall cut only smaller roots that interfere with installation of utilities. The **Contractor** shall cut roots with sharp pruning instruments. The **Contractor** shall not break or chop roots.

### 3.04 REGRADING

- A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, the **Contractor** shall slope grade away from trees as recommended by the forester, unless otherwise directed by the **Owner**.
1. Root Pruning: The **Contractor** shall prune tree roots exposed during grade lowering. The **Contractor** shall not cut main lateral roots or taproots. The **Contractor** shall cut only smaller roots. The **Contractor** shall cut roots with sharp pruning instruments. The **Contractor** shall not break or chop roots.
- B. Minor Fill: Where existing grade is six (6) inches or less below elevation of finish grade, the **Contractor** shall fill with topsoil. The **Contractor** shall place topsoil in a single un-compacted layer and hand grade to required finish elevations.
- C. Moderate Fill: Where existing grade is more than six (6) inches, but less than twelve (12) inches below elevation of finish grade, the **Contractor** shall place drainage fill, filter fabric, and topsoil on existing grade as follows:
1. Carefully place drainage fill against tree trunk approximately two (2) inches above elevation of finish grade and extend not less than eighteen (18) inches from the tree trunk on all sides. For balance of area within drip line perimeter, the **Contractor** shall place drainage fill up to six (6) inches below elevation of grade.
  2. The **Contractor** shall place filter fabric with edges overlapping six (6) inches minimum.
  3. The **Contractor** shall place fill layer of topsoil to finish grade. The **Contractor** shall not compact drainage fill or topsoil. The **Contractor** shall hand grade to required finish elevations.

### 3.05 TREE PRUNING

- A. The **Contractor** shall prune remaining trees affected by temporary and new construction.
- B. The **Contractor** shall prune remaining trees to compensate for root loss caused by damaging or cutting root system. The **Contractor** shall provide subsequent maintenance during Contract period as recommended by the forester.
- C. Pruning Standards: The **Contractor** shall prune trees according to the most current revision of ANSI A300 following the following types of pruning:
  - 1. Crown cleaning.
  - 2. Crown thinning.
  - 3. Crown raising.
  - 4. Crown reduction.
  - 5. Vista pruning.
  - 6. Crown restoration.
- D. The **Contractor** shall cut branches with sharp pruning instruments. The **Contractor** shall not break or chop branches.
- E. The **Contractor** shall chip branches removed from trees. The **Contractor** shall spread chips where indicated or as directed by the **Owner**.

### 3.06 TREE REPAIR AND REPLACEMENT

- A. The **Contractor** shall promptly repair trees damaged by construction operations within twenty-four (24) hours. The **Contractor** shall treat damaged trunks, limbs, and roots according to written instructions of the certified arborist.
- B. The **Contractor** shall remove and replace dead and damaged trees that the certified arborist determines to be incapable of restoring to a normal growth pattern.
- C. The **Contractor** shall aerate surface soil compacted during construction ten (10) feet beyond drip line and no closer than thirty six (36) inches to tree trunk. The **Contractor** shall drill two (2) inch diameter holes a minimum of twelve (12) inches deep at twenty four (24) inches o.c. The **Contractor** shall backfill holes with an equal mix of augered soil and sand.

### 3.07 DISPOSAL OF WASTE MATERIALS

- A. Burning at the site of the Work is not permitted.
- B. Disposal: The **Contractor** shall remove excess excavated material, displaced trees, and excess chips from the site and dispose of at an approved location.

### 3.08 MAINTENANCE

- A. All protected trees that have been root pruned shall be watered deeply twice a week during periods of hot, dry weather.



### 3.09 REPLACEMENT

- A. The **Contractor** shall be responsible for replacement of any protected trees that are damaged or destroyed during the construction period. Replacement shall be in equal caliper inches (D.B.H.) to those trees damaged or destroyed and shall be in like species unless otherwise determined by the **Owner**.

### 3.10 ADJUSTING AND CLEANING

- A. At the end of the construction period, the **Contractor** shall remove all protection fencing, trash, and debris within the protection area and finish grade and cover in accordance with the requirements of these Specifications.

END OF SECTION 02231

**SECTION 02270  
EROSION AND SEDIMENT CONTROL**

**PART 1 - GENERAL**

**1.01 SCOPE OF WORK**

- A. This section includes requirements for the provision, maintenance, and subsequent removal of temporary and/or permanent erosion and sediment controls as shown on the plans.
- B. The temporary erosion and sediment controls specified herein shall be coordinated with the permanent erosion controls, to assure economical, effective, and continuous erosion and sediment control during sewer cleaning and rehabilitation within acceptable limits. Acceptable limits are as established by the Georgia Erosion and Sedimentation Control Act of 1975, as amended, Section 402 of the Federal Clean Water Act, and applicable codes, ordinances, rules, regulations, and laws of local and municipal authorities having jurisdiction.
- C. Land disturbance activities shall not commence until the Land Disturbance Permit Stream Buffer variance and Notice of Intent, if applicable, have been properly issued.
- D. This section includes the design of project specific devices and practices to meet requirements of the related work and references listed below in conjunction with the **Contractor's** own means, methods, and techniques, schedules and sequences of work, and actual conditions encountered. Design shall be performed by professionals experienced and familiar with storm water and drainage characteristics as well as the requirements of references listed below.

**1.02 RELATED WORK**

- A. Erosion and Sediment Control Plan.
- B. Section 02485 - Seeding.
- C. Section 02486 – Sodding.
- D. Section 02490 – Trees, Shrubs, and Groundcovers
- E. Section 02920 – Site Restoration

**1.03 REFERENCES**

- A. Cobb County Soil Erosion and Sedimentation Control Ordinance.
- B. Cobb County Comprehensive Stormwater Management and Stormwater Quality Ordinance.
- C. Manual for Erosion and Sediment Control in Georgia, as published by the Georgia Soil and Water Conservation Commission (current edition).

- D. Federal Clean Water Act.
- E. Georgia Erosion and Sedimentation Act of 1975, as amended.
- F. Georgia Department of Natural Resources, Environmental Protection Division General NPDES Permit # 100002.

#### **1.04 QUALITY ASSURANCE**

The **Contractor** shall provide at least one representative involved in the project's land disturbing activities that has successfully completed the erosion and sediment control education and certification program as administered by the Georgia Soil and Water Conservation Commission; this "certified person" must have completed as a minimum, the Level 1A (Fundamentals) course. A "certified person" must be present onsite **at all times** when work is being performed. Failure to maintain a certified person onsite at all times may result in a stop work order or other appropriate enforcement action.

#### **1.05 SUBMITTALS**

Certification credentials of all persons that have completed the Georgia Soil and Water Conservation Commission's erosion and sediment control education and certification program and that will be involved in the project shall be provided to the **Owner** prior to the start of any land disturbing activities.

### **PART 2 – PRACTICES AND PRODUCTS**

#### **2.01 GENERAL**

- A. The following paragraphs generally describe the erosion and sediment control practices and products typically employed on a utility construction project. The detailed requirements for these, as well as for other measures which may be needed to achieve effective erosion control, shall be as specified in the Standards and Specifications for General Land Disturbing Activities of the Manual for Erosion and Sediment Control in Georgia.
- B. The paragraph titles and alpha-numeric codes refer to specific structural and vegetative type practices included in the aforementioned Standards. All practices are considered as temporary erosion and sediment control features, except the channel stabilization, gabions and grassing/sodding, trees, shrubs, and groundcovers, which are considered as permanent measures.

#### **2.02 STRUCTURAL PRACTICES**

- A. CONSTRUCTION EXIT - Co
  - 1. A construction exit consists of a stone-stabilized pad with a geotextile underliner located at any point where traffic will be leaving a construction site to a public right-of-way, street, alley, sidewalk, or parking area.

2. Construction exits are used to reduce or eliminate transport of mud from the construction area.
3. Construction exits shall consist of graded 1.5 to 3.5 inch stone meeting National Stone Association grade R-2. The geotextile underliner shall be a non-woven fabric equal to No. C-45NW as manufactured by Contech Construction Products, Inc. or equal.

**B. CHANNEL STABILIZATION (RIP RAP) - Ch**

1. Channel stabilization consists of structures to stabilize an open channel for water conveyance. Such stabilization is typically applied in these locations where the channel banks and bed have been disturbed by excavation for a pipeline crossing.
2. Channels shall be stabilized using a rock rip rap lining. The lining shall consist of filter bedding stone and graded rip rap stone. Sizes of stone shall be as classified by either the National Stone Association (N.S.A.) or the Georgia Department of Transportation (GDOT.). Rip rap stone shall be equal to GDOT Type 1 or Type 3. Filter bedding stone shall be graded stone not exceeding 6-inches in diameter. An appropriate geotextile fabric may be substituted for filter stone.

**C. GABIONS – Ga**

Gabions are large, multi-celled mesh boxes used in channel revetments, retaining walls, abutments, check dams, etc. Boxes shall be constructed of PVC coated wire mesh and filled with 4-inch to 8-inch pieces of durable stone. Stone placement shall be principally by hand or gentle mechanical dumping in no more than 12-inch layers with PVC coated wire cross and diagonal supports in each cell to retain and support basket sides at those intervals. Minimum size for box gabions shall be 6'-0" x 3'-0" x 3'-0". Minimum size for reno mattresses shall be 9'-9" x 6'-6" x 0'-9". Gabions shall be manufactured by Macaferri or equal.

**D. TEMPORARY STREAM CROSSING - Sr**

1. A temporary stream crossing is a structure installed across a flowing stream for use by construction equipment.
2. Structures may include bridges, round pipes, and pipe arches. The structure shall be large enough to convey the full bank flow of the stream and be designed by the **Contractor** to withstand flows from a 2-year, 24-hour frequency storm.

**E. CHECK DAMS - Cd**

1. Check dams are barriers composed of stone or haybales placed across a natural or constructed drainageway to prevent erosion in areas of concentrated flows.

2. Stone check dams shall not be utilized where the drainage area exceeds five acres. Haybale check dams should not be used where drainage areas exceed 2 acres. Check dams shall not be installed in live streams.
3. Stone check dams should be constructed of graded size 2 to 10 inch stone.

F. SEDIMENT BARRIER

1. STAKED HAYBALES - Sd1

- a. Haybale barriers are placed in a single row on natural ground where the most likely erodible areas are located to restrain sediment particles carried by sheet flow.

2. SILT FENCE - Sd1

- a. Silt fences are temporary measures to retain suspended silt particles carried by sheet flow.
- b. Silt fence consists of silt fabric, as specified in the GDOT list #36, wood or steel posts, and wire or nail fasteners.
- c. Type A silt fence is a non-woven 36-inch wide filter fabric and shall be used on developments where the life of the project is greater than or equal to six (6) months. The flow rate (gallon/minute/square foot) is 25. Additionally, Type A fabric has a color mark.
- d. Type C silt fence is a woven 36-inch wide filter fabric with wire reinforcement. The wire reinforcement is necessary because this fabric allows almost three times the flow rate as Type A silt fence. The flow rate (gallon/minute/square foot) is 70. Additionally, Type C fabric does not have a color mark.

G. INLET SEDIMENT TRAP - Sd2

1. Inlet sediment traps are temporarily protective devices formed around a storm drain inlet to trap sediment.
2. Inlet sediment traps are used to prevent sediment from leaving a site or from entering storm drain systems prior to permanent stabilization of the disturbed area.

H. ROCK FILTER DAM - Rd

1. Rock filter dams are installed across small non-actively flowing drainageways and are applicable for projects that involve grading activity directly in those drainageways.
2. Rock filter dams consist of rip rap faced with smaller rock on the

upstream side for additional filtering affect.

I. STREAM DIVERSION - PIPED DIVERSION (DV1), PUMPED DIVERSION (DV2), ENGINEERED DIVERSION STRUCTURES (DV3))

1. Installation of water and sewer pipelines designed to cross natural streams shall be accomplished only in "dry channel" conditions (i.e. in the absence of stream flow in the work area). Provisions shall be implemented to divert a constant quantity and quality of stream waters around the construction area by means of adequately sized pipes, pumps, or engineered diversion structures or other methods proposed by the **Contractor** and approved by the **Owner**. These diversion devices will be maintained throughout the duration of construction within the stream channel. The structures shall be designed by professionals familiar with storm water drainage characteristics and applicable requirements to withstand flows from a 2-year, 24 hour frequency storm event unless otherwise noted on the drawings. Stream diversion devices shall not be removed until all disturbed areas of the stream channel bottom and banks are returned to original contours and stabilized to prevent erosion. The planning, scheduling, and sequencing of work by the **Contractor** shall be described in a detailed submittal to the **Owner** for approval. The final implementation schedule will only be determined in conjunction with forecasted weather conditions for the period anticipated for diversion.

a. Piped Diversion - Dv1

Piped diversions shall be installed and implemented in conjunction with and as an extension of Temporary Stream Crossings - (Sr). Pipes shall be sized as shown on the drawings with sufficient coordination and planning as to their locations, elevations, etc. to allow subsequent water/sewer pipeline construction to occur in "dry channel" conditions.

Necessary sandbags or other sealing devices, dewatering, etc. shall be provided to accomplish this piped diversion as well as other "Best Management Practices" to ensure that erosion and sedimentation is controlled.

b. Pumped Diversion - Dv2

Pumped diversions shall be installed and implemented in conjunction with and as an extension of Temporary Stream Crossings -(Sr). Pumps and piping shall be sized as shown on the drawings with sufficient coordination and planning as to their locations, elevations, etc. to allow subsequent water/sewer pipeline construction to occur in "dry channel" conditions.

Necessary sandbags or other sealing devices, dewatering, discharge sediment basins, sediment filter socks, "floc logs", "dirt bags", etc. shall be provided to accomplish this pumped diversion as well as other "Best Management Practices" to ensure that erosion and sedimentation is controlled.

- c. **Engineered Diversion Structure - Dv3**  
Engineered diversion structures such as "Aqua Barrier", "Portadam", interlocked sheet piling, rip-rap cofferdams, etc. shall be installed and implemented to allow subsequent water/sewer pipeline construction to occur in "dry channel" conditions. Sequential work elements may be involved to allow the construction area to progress across a stream, and ensuring that the previously completed segment is reasonably restored and stabilized.

Necessary sandbags, geotextiles, linings, or other sealing devices, dewatering, etc, shall be provided to accomplish this manner of diversion as well as other "Best Management Practices" to ensure that erosion and sedimentation is controlled.

## **2.03 - VEGETATIVE PRACTICES**

### **A. GENERAL**

1. Disturbed areas shall be stabilized as construction progresses. For sanitary sewers or water mains installed within easements, the construction corridor shall not exceed 1,000 linear feet without stabilization. All other projects shall not exceed 300 linear feet without stabilization

### **B. DISTURBED AREA STABILIZATION (WITH MULCHING ONLY) - Ds1**

1. This practice is applicable where disturbed areas, temporarily idle, have not been established to final grade and/or where permanent vegetative cover is delayed for a period not to exceed 6 months.
2. Mulch materials shall consist of dry straw or hay, wood chips, erosion control matting or netting, or polyethylene film. The mulch should be uniform, spread over the designated area from 2 to 4 inches thick.
3. Any and all disturbed areas that have not yet reached final grade shall be stabilized with mulch or temporary grassing within fourteen (14) calendar days of disturbance.

### **C. DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING) - Ds2**

1. Temporary seeding is a measure consisting of seeding and mulching to reduce erosion. All disturbed areas shall be seeded when and where necessary to reduce erosion.
2. This practice is applicable where disturbed areas, temporarily idle, have not been established to final grade and/or where permanent vegetative cover is delayed for up to 6 months.



- a. Temporary seeding consists of a grass or grass-legume mixture suitable to the area and season of the year.

D. DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION) - Ds3

See Section 02485 – Seeding

See Section 02486 – Sodding

See Section 02490 – Trees, Shrubs, and Groundcovers

1. Permanent (perennial) vegetation shall consist of planted grasses, trees, shrubs, and/or perennial vines; a crop of perennial vegetation appropriate for the time of year and region (or to match, in kind, pre-existing maintained vegetation); or a crop of annual vegetation and seeding of target crop perennials appropriate for the region (or to match, in kind, pre-existing maintained vegetation), such that within the growing season a 70% coverage by perennial vegetation shall be achieved.
2. This practice is applicable on disturbed areas at final grade.
3. Permanent perennial vegetation shall be applied on rough graded areas that will be undisturbed for more than (6) months.

E. DISTURBED AREA STABILIZATION (WITH SODDING) - Ds4

See Section 02485 – Seeding

See Section 02486 – Sodding

1. This practice shall consist of ground preparation, furnishing lime and fertilizer and placement of sod.
2. Sod shall be from local area and delivered to the job site in either industry standard blocks or rolls. Sod shall not be delivered to the job site more than 24 hours prior to installation. Sod shall be hand placed with edges butted and cut as required to fit the placement area. The finished installation shall be rolled with a lawn roller and thoroughly watered. The sod will be watered daily for the first five days after installation.
3. Sod shall be anchored on slopes steeper than 3:1.

F. EROSION CONTROL MATTING AND BLANKETS - Mb

1. This practice is a protective covering (blanket) or soil stabilization mat used to stabilize disturbed areas until permanent vegetation on steep slopes, channels, or shorelines can be established.
2. Concentrated flow areas, all slopes steeper than 2.5:1 and with a height of ten feet or greater, and cuts and fills within stream buffers, shall be stabilized with the appropriate erosion control matting or

blankets.

3. All blanket and matting materials shall be on the Georgia Department of Transportation Qualified Products List (QPL #62 for Blankets, QPL #49 for Matting).

G. JOINT PLANTING STABILIZATION (rip-rap and willow stakes)

Joint planting is a system that installs live willow stakes between rip-rap (type 3) placed previously along the stream bank. It is installed to increase the effectiveness of the rock system by forming a living root matt in the base upon which rock has been placed and improve the environmental function and aesthetics of the rock bank. The rock shall be principally placed by hand or gentle mechanical dumping. Willow stake density of installation shall be 3 to 5 cuttings per square yard. Cuttings shall be 2-inch diameter and 3.5 feet in length. The cutting shall be freshly cut and alive. Two thirds (2/3) of live stake shall be in the ground below the previously placed rock. Use only native species willow stakes.

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. At the Preconstruction Conference, the **Contractor** shall submit a schedule for accomplishment of the temporary erosion control work for specific conditions to be encountered on the project.
- B. The **Contractor** shall install all erosion and sediment control devices as required by actual field conditions, as shown on the plans, or as directed by the **Owner** or by any agency having jurisdiction in the locale of the project.
- C. The erosion and sediment control devices shall be installed by the **Contractor** before land disturbing activities begin.
- D. The **Owner** has the authority to direct the **Contractor** to provide immediate, additional temporary erosion control measures to prevent contamination of adjacent waterways and drainage ways. Additional erosion control measures may be used to correct conditions that develop during construction that were not foreseen during the design stage or that are needed prior to installation of the permanent erosion control features.
- E. The **Owner** may limit the area of excavation in progress based on the **Contractor's** capability and progress in keeping the finish grading, mulching, and seeding current, in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures, such as mulching or temporary seeding, shall be taken immediately to the extent feasible and justified.
- F. The **Contractor** shall incorporate all permanent erosion control features (grassing and sodding) into the project at the earliest practicable time.

### 3.02 INSTALLATION

- A. Erosion control measures shall be designed by professionals familiar with storm water drainage characteristics, installed, and maintained in accordance with the "Manual for Erosion and Sediment Control in Georgia" published by the Georgia Soil and Water Conservation Commission.

### 3.03 INSPECTION

- A. Upon completion of installation, the **Owner** or local government authority shall inspect the erosion and sediment control devices for proper installation, flaws, defects, or other damage. The **Contractor** shall repair or replace the unacceptable portions as directed by the **Owner** or local government authority.
- B. All erosion and sediment control devices shall be inspected by the **Contractor** at least weekly and after each rainfall occurrence.
- C. All projects which require compliance with General NPDES Permit 100002 guidelines must have inspections and monitoring in accordance with the specific Comprehensive Monitoring.

### 3.04 MAINTENANCE

- A. The **Contractor** shall maintain the erosion and sediment control devices until the project is completed and all disturbed areas are stabilized. Maintenance of the devices shall include: removal and disposal of silt accumulation; replacement of damaged or deteriorated devices; other repairs; and the installation of additional devices should those devices installed prove to be inadequate at no additional cost to the **Owner**.

**Silt shall be cleaned out once it has accumulated to 1/2 the height of the device or when 1/2 of the available sediment storage capacity has been attained.**

### 3.05 REMOVAL

- A. Temporary erosion and sediment devices shall remain in place until such time as a satisfactory stand of grass has been established, unless the **Owner** or local government authority directs earlier removal. Damaged or otherwise unusable devices shall be removed from the site and disposed of properly.
- B. After erosion and sediment device removal, the **Contractor** shall dress out any disturbed areas in the vicinity of the removed device and grass according to these specifications.

END OF SECTION 02270

**SECTION 02485  
SEEDING**

**PART 1 - GENERAL**

**1.01 SCOPE OF WORK**

- A. The work covered by this section consists of furnishing all labor, equipment, and material required to place topsoil, seed, commercial fertilizer, agricultural limestone, and mulch material, including seedbed preparation, harrowing, compacting, and other placement operations on graded earthen areas as described herein and/or shown on the Drawings. In general, seeding operations shall be conducted on all newly graded earthen areas not covered by structures, pavement, or sidewalks; all cleared or grubbed areas which are to remain as finish grade surfaces; and on all existing turf areas which are disturbed by construction operations and which are to remain as finish grade surfaces. Areas disturbed by borrow activities shall also be seeded according to these specifications.
- B. The work shall include temporary seeding operations to stabilize earthen surfaces during construction or inclement weather and to minimize stream siltation and erosion. Temporary seeding shall be performed on any disturbed area left exposed for a period greater than 7 days.
- C. Areas disturbed by construction activities, shall be restored to original conditions with regard to surface grading, drainage, grass type (predominate), or other landscape features.

**1.02 RELATED WORK**

- A. Section 02100 – Site Preparation
- B. Section 02270 – Erosion and Sediment Control
- C. Section 02275 – Storm Water Discharges
- D. Section 02486 – Sodding
- E. Erosion and Sediment Control Plan

**1.03 QUALITY ASSURANCE**

- A. Prior to seeding operations, the **Contractor** shall furnish to the **Owner** labels or certified laboratory reports from an accredited commercial seed laboratory or a state seed laboratory showing the analysis and germination

of the seed to be furnished. Acceptance of the seed test reports shall not relieve the **Contractor** of any responsibility or liability for furnishing seed meeting the requirements of this section.

- B. Prior to topsoil operations, the **Contractor** shall obtain representative samples and furnish soil test certificates including textural, pH, and organic ignition analysis from the State University Agricultural Extension Services or other certified testing laboratory.

#### 1.04 ALTERNATE METHODS

The **Contractor** may propose alternate means and methods to establish a satisfactory coverage of healthy grass of the type required. The **Contractor** shall submit sufficient information to enable the **Owner** to assess the acceptability of the alternate approach.

### PART 2 - PRODUCTS

#### 2.01 TOPSOIL

- A. The **Contractor** shall place a minimum of 4 inches of topsoil over all graded earthen areas and over any other areas to be seeded. The quality of topsoil shall be acceptable to the **Owner**.
- B. Topsoil shall be a friable loam containing a large amount of humus and shall be original surface soil of good, rich, uniform quality, free from any material such as hard clods, stiff clay, hardpan, partially disintegrated stone, pebbles larger than ½ inch in diameter, lime, cement, bricks, ashes, cinders, slag, concrete, bitumen or its residue, boards, sticks, chips, or other undesirable material harmful or unnecessary to plant growth. Topsoil shall be reasonably free from perennial weeds and perennial weed seeds, and shall not contain objectionable plant material, toxic amounts of either acid or alkaline elements or vegetable debris undesirable or harmful to plant life.
- C. Topsoil shall be natural topsoil without admixture of subsoil material, and shall be classifiable as loam, silt loam, clay loam, sandy loam, or a combination thereof. The pH shall range from 5.5 to 7.0. Topsoil shall contain not less than 5 percent nor more than 20 percent, by weight, of organic matter as determined by loss on ignition of oven-dried samples to 65°C.

#### 2.02 SEED

- A. Seed shall be delivered in new bags or bags that are sound and labeled in accordance with the U. S. Department of Agriculture Federal Seed Act.

- B. All seed shall be from the last crop available at time of purchase and shall not be moldy, wet, or otherwise damaged in transit or storage.
- C. Seed shall bear the growers analysis testing to 98 percent for purity and 90 percent for germination. At the discretion of the **Owner**, samples of seed may be taken for check against the grower's analysis.
- D. Species, rate of seeding, fertilization, and other requirements shall be as necessary to successfully establish the required stand of grass.

### **2.03 FERTILIZER AND LIMING MATERIALS**

- A. Fertilizer and liming materials shall comply with applicable state, local, and federal laws concerned with their production and use.
- B. Commercial fertilizer shall be a ready mixed material of grade 18-46-0. Container bags shall have the name and address of the manufacturer, the brand name, net weight, and chemical composition.
- C. Agricultural limestone shall be a pulverized limestone having a calcium carbonate content of not less than 85 percent by weight. Agricultural limestone shall be crushed so that at least 85 percent of the material will pass a No. 10 mesh screen and 50 percent will pass a No. 40 mesh screen.

### **2.04 MULCH MATERIAL**

- A. All mulch materials shall be air dried and reasonably free of noxious weeds and weed seeds or other materials detrimental to plant growth.
- B. Mulch shall be composed of wood cellulose fiber, straw, or stalks, as specified herein. Mulch shall be suitable for spreading with standard mulch blowing equipment.
- C. Wood-cellulose fiber mulch shall be as manufactured by Weyerhaeuser Company, Conway Corporation, or equal.
- D. Straw mulch shall be partially decomposed stalks of wheat, rye, oats, or other approved grain crops.
- E. Stalks shall be the partially decomposed, shredded residue of corn, cane, sorghum, or other approved standing field crops.

## 2.05 MULCH BINDER

- A. Mulch on slopes exceeding 3 to 1 ratio shall be held in place by the use of an approved mulch binder. The mulch binder shall be non-toxic to plant life.
- B. Emulsified asphalt binder shall be Grade SS-1, ASTM D 977. Cutback asphalt binder shall be Grade RC 70 or RC 250.

## 2.06 INOCULANTS FOR LEGUMES

- A. All leguminous seed shall be inoculated prior to seeding with a standard culture of nitrogen-fixing bacteria that is adapted to the particular seed involved.

## 2.07 WATER

- A. Water shall be clean, clear water free from any objectionable or harmful chemical qualities or organisms and shall be furnished by the **Contractor**.

## PART 3 EXECUTION

### 3.01 PLACING TOPSOIL

- A. Before placing or depositing topsoil upon any areas, all improvement within the area shall be completed.
- B. The areas in which topsoil is to be placed or incorporated shall be prepared before securing topsoil for use.

### 3.02 SEEDBED PREPARATION

- A. Before fertilizing and seeding, the topsoil surfaces shall be trimmed and worked to true line free from unsightly variation, bumps, ridges and depressions, and all detrimental material, roots, and stones larger than 3 inches in any dimension shall be removed from the soil.
- B. Not earlier than 24 hours before the seed is to be sown, the soil surface to be seeded shall be thoroughly cultivated to a depth of not less than 2 inches with a weighted disc, tiller, pulvimixer, or other equipment, until the surface is smooth.
- C. If the prepared surface becomes eroded as a result of rain or for any other reason, or becomes crusted before the seed is sown, the surface shall again be placed in a condition suitable for seeding.

- D. Ground preparation operations shall be performed only when the ground is in a tillable and workable condition.

### 3.03 FERTILIZATION AND LIMING

- A. Following seedbed preparation, fertilizer shall be applied to all areas to be seeded so as to achieve an application rate 80 pounds per acre.
- B. Fertilizer shall be spread evenly over the seedbed and shall be lightly harrowed, raked, or otherwise incorporated into the soil for a depth of ½ inch.
- C. Fertilizer need not be incorporated in the soil as specified above when mixed with seed in water and applied with power sprayer equipment. The seed shall not remain in water containing fertilizer for more than 30 minutes when a hydraulic seeder is used.
- D. Agricultural limestone shall be thoroughly mixed into the soil at a rate of 1 to 2 tons per acre. The specified rate of application of limestone may be reduced by the Engineer if pH tests indicate this to be desirable. It is the responsibility of the **Contractor** to obtain such tests and submit the results to the **Owner** for adjustment in rates.
- E. It is the responsibility of the **Contractor** to make one application of maintenance fertilizer at one-half the original rates applied in early spring following initial establishment of cover.

### 3.04 SEEDING

- A. Seed of the specified group shall be sown as soon as preparation of the seedbed has been completed. No seed shall be sown during high winds, nor until the surface is suitable for working and is in a proper condition. Seeding shall be performed during the periods shown below. Seed mixtures may be sown together provided they are kept in a thoroughly mixed condition during the seeding operation.
- B. Seeds shall be uniformly sown by any approved mechanical method to suit the slope and size of the areas to be seeded, preferably with a broadcast type seeder, windmill hand seeder, or approved mechanical power drawn seed drills. Hydroseeding and hydromulching may be used on steep embankments, provided full coverage is obtained. Care shall be taken to adjust the seeder for seedings at the proper rate before seeding operations are started and to maintain their adjustment during seeding. Seed in hoppers shall be agitated to prevent segregation of the various seeds in a seeding mixture.



- C. Immediately after sowing, the seeds shall be covered and compacted to a depth of 1/8 to 3/8 inch by a cultipacker or suitable roller.
- D. Leguminous seeds shall be inoculated prior to seeding with an approved and compatible nitrogen-fixing inoculant in accordance with the manufacturer's mixing instructions.

**Seeding Requirements Table**

The seed shall be a mixture as shown in the table below, and shall be applied at the rates shown in the table:

<b>Application</b>		
<u>Season</u>	<u>Kinds of Seed</u>	<u>Pounds Per Acre</u>
Jan.1 – May 15	Unhulled Common Bermuda	45
	Kentucky 31 Fescue	300
	Rebel II Supreme	150
May 16 – Sept. 1	Hulled Common Bermuda	75
Sept. 2 – Dec. 31	Unhulled Common Bermuda	45
	Kentucky 31 Fescue	300
	Rebel II Supreme	150

**3.05 MULCHING**

- A. All areas to be seeded shall be uniformly mulched in a continuous blanket immediately after seeding when using Wheat straw at a minimum of 2 ½ tons per acre or equivalent to 2" to 4" thickness. The rate of application will correspond to a depth of at least one inch and not more than one and one half inches, according to the texture and moisture content of the mulch material. It is intended that mulch shall allow some sunlight to penetrate and air to circulate, at the same time shading the ground, reducing erosion and conserving soil moisture. The **Contractor** shall take steps necessary to prevent loss of mulch or bunching of mulch as caused by the wind.
- B. Mulch on slopes greater than 3 to 1 ratio shall be held in place by the use of an approved mulch binder. Binder shall be thoroughly mixed and applied with the mulch. Emulsified asphalt or cutback asphalt shall be applied at the approximate rate of 5 gallons per 1,000 square feet as required to hold the mulch in place.

- C. The **Contractor** shall cover structures, poles, fence, and appurtenances if the mulch binder is applied in such a way that it would come in contact with or discolor the structures.
- D. Mulch and binder shall be applied by suitable blowing equipment at closely controlled application rates.

### 3.06 WATERING

- A. **Contractor** shall be responsible for maintaining the proper moisture content of the soil to insure adequate plant growth until a satisfactory stand is obtained. If necessary, watering shall be performed to maintain an adequate water content in the soil. Water shall not be applied when there is danger of freezing. In the event that official watering bans or water restrictions are in effect, the Contract shall comply with applicable guidelines on watering for new grassing.
- B. Watering shall be accomplished by hoses, tank truck, or sprinklers in such a way to prevent erosion, excessive runoff, and overwatered spots.

All direct use of water from in-service water mains by the **Contractor** for construction activities shall be metered via the use of meters acquired from the Cobb County Water System. The costs of which shall be included in the bid unit price for this item.

### 3.07 MAINTENANCE

- A. Upon completion of seeding operations, the **Contractor** shall clear the area of all equipment, debris, and excess material and the premises shall be left in a neat and orderly condition.
- B. The **Contractor** shall maintain all seeded area without additional payment until final acceptance of the work by the **Owner**, including any regrading, refertilizing, reliming, reseeding, or remulching required. Seeding work shall be repeated on defective areas until a satisfactory uniform stand is accomplished. Damage resulting from erosion, gulleys, washouts, or other causes shall be repaired at the **Contractor's** expense by filling with topsoil, compacting, and repeating the seeding work.

### 3.08 VEGETATIVE STABILIZATION SCHEDULE

The **Contractor** shall stabilize disturbed areas as construction progresses. The time duration limitations for stabilization of disturbed areas by either temporary mulching (for 7 days or less), temporary grassing, permanent grassing, or

permanent sodding shall be as specified in Section 02270 – Erosion and Sediment Control; however, unstabilized areas of the construction corridor shall not exceed 1,000 linear feet on sanitary sewer sewers or water mains installed with easements and 300 linear feet for all other projects. Stabilization with permanent vegetation is preferred unless seasonal limitations exist.

END OF SECTION 02485

**SECTION 02486  
SODDING**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Sodding shall consist of establishing certain critical areas with sod as designated on the drawings.
- B. Areas disturbed by construction activities shall be restored to original conditions with regard to surface grading, drainage, grass type (predominate), or other landscape features.

**1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Section 02000 – Site Work
- B. Section 02270 –Erosion and Sediment Control
- C. Section 02750 – Bypass Pumping
- D. Section 02486 – Seeding
- E. Erosion and Sediment Control Plan

**1.03 ALTERNATE METHODS**

- A. The **Contractor** may propose alternate means and methods to establish a satisfactory coverage of healthy grass of the type required. The **Contractor** shall submit sufficient information to enable the **Owner** to assess the acceptability of the alternate approach.

**PART 2 - PRODUCTS**

**2.01 SOD**

- A. Sod shall consist of a live, dense, well-rooted growth of turf grass species as noted on the Drawings. The sod shall be free from Johnson grass, nut grass and other obnoxious grasses, of suitable character for the purpose intended and for the soil in which it is to be planted. It shall be uninjured at the time of planting.
- B. Sod shall be uniform in thickness, having not over 2 inches or less than 1 inch of soil.
- C. Sod strips shall have a consistent width of 12 or 18 inches.

**2.02 FERTILIZER**

- A. Fertilizer (10-10-10) used in connection with sodding, shall contain 10 percent nitrogen, 10 percent phosphoric acid and 10 percent potash. The fertilizer shall be furnished in standard containers with the name, weight and guaranteed

analysis of the contents clearly marked. The containers shall ensure proper protection in handling and transporting the fertilizer. All commercial fertilizer shall comply with local, state, and federal fertilizer laws.

- B. Ammonium nitrate shall be a standard commercial product, shall conform to the requirements for other commercial fertilizers as specified above, and shall have a minimum of 33½ percent nitrogen.

### **2.03 LIME**

- A. Agricultural limestone shall contain not less than 85 percent of calcium carbonate and magnesium carbonate combined, and shall be crushed so that at least 85 percent will pass the No. 10 mesh sieve and 50 percent will pass a No. 40 mesh screen.

### **2.04 WEATHER LIMITATIONS**

- A. Sod shall be placed only when the soil is moist and favorable to growth. No placement shall occur unless weather and soil conditions are considered favorable for the successful establishment of the particular sod type being placed.

## **PART 3 - EXECUTION**

### **3.01 SODDING**

- A. The area to be sodded shall be constructed to the lines and grades indicated on the Drawings and the surface loosened to a depth of not less than 3 inches with a rake or other device. As applicable clean, uniform topsoil shall be placed to provide a rich bed for root growth. If necessary, the area shall be sprinkled until saturated at least 1 inch in depth and kept moist until the sod is placed thereon. Immediately before placing the sod, the fertilizer shall be uniformly applied at the rate of 25 pounds of Grade 10-10-10, or equivalent, per 1,000 square feet. Agricultural limestone shall be applied at the rate of 100 pounds per 1,000 square feet.
- B. The entire area shall be thoroughly covered with sod. Sod shall be placed on the prepared surface with edges in close contact and, as far as possible, in a position to break joints.
- C. Sod shall be maintained moist from time of removal until reset but shall be placed as soon as practicable after removal from place where growing. Immediately after placing it shall be rolled with a roller or hand tamped to the satisfaction of the **Owner**.
- D. Sod on slopes steeper than 3 to 1 shall be held in place by wooden pins about 1 inch square and 6 inches long, driven through the sod into the soil until they are flush with the top of the sod.

### 3.02 WATERING AND MAINTENANCE

- A. Sod shall be watered for a period of 2 weeks after which ammonium nitrate shall be applied at the rate of 3 pounds per 1,000 square feet and the sod given a final watering. Water shall not be applied when there is danger of freezing. In the event that official watering bans or water restrictions are in effect, the **Contractor** shall comply with applicable guidelines on watering for new grassing.
- B. The **Contractor** shall not allow any equipment or material to be placed on any planted area and shall erect suitable barricades and guards to prevent his equipment, workers, or the general public from traveling over any area planted with sod.
- C. It shall be the obligation of the **Contractor** to secure a satisfactory growth of grass before final acceptance of the project.

### 3.02 VEGETATIVE STABILIZATION SCHEDULE

- A. The **Contractor** shall stabilize disturbed areas as construction progresses. The time duration limitations for stabilization of disturbed areas by either temporary mulching (for 7 days or less), temporary grassing, permanent grassing or permanent sodding shall be as specified in Section 02270 – Erosion and Sediment Control; however unstabilized areas of the construction corridor shall not exceed 1,000 linear feet on sanitary sewer sewers or water mains installed within easements and 300 linear feet for all other projects. The permanent vegetative stabilization method is preferred unless seasonal limitations exist.

END OF SECTION 02486

**SECTION 02490  
TREES, SHRUBS AND GROUND COVERS**

**PART I - GENERAL**

**1.01 SCOPE**

- A. This Section includes furnishing all equipment, materials, and labor necessary for soil preparation; planting of trees, shrubs, ground cover, or vines as applicable; protection, maintenance, guarantee, and replacement of plants; and all related items necessary to restore the site after the construction work is completed.
- B. Products and procedures specified in this section shall apply to the following job-specific conditions:
  - 1. Replacement of trees, shrubs and ground covers removed or damaged as the result of construction activities. The cost of such work will be included in the Contract Price. Such replacement work may include: the relocation and re-installation of existing plant materials; the replacement of removed plants with new materials, matching quantities, species and arrangement; or, a combination of these options.
  - 2. Installation of new materials in accordance with prior agreements made with property owners, as described in the Easement Stipulations. The cost of this work shall be included in the Contract Price.
  - 3. Installation of new materials at the direction of the **Owner**. Such installation is considered to be extra work and will be paid for through an Allowance included in the Contract Price.
- C. Related Work Specified Elsewhere
  - 1. Section 02000 – Site work
  - 2. Section 02270 – Erosion and Sediment Control
  - 3. Section 02920 – Site Restoration

**1.03 EXISTING CONDITIONS**

- A. Before commencing any work required by this Section, the **Contractor** shall ascertain the location of all utilities, subsurface drainage, irrigation systems, and underground construction so that proper precautions may be taken not to disturb or damage any subsurface improvements. The **Contractor** will be held responsible for making, at its own expense, all repairs to damaged utilities and structures resulting from the work.
- B. It is not contemplated that planting shall occur where the depth of soil over underground construction or obstructions is insufficient to accommodate the roots or where impervious soil will require drainage. Where such conditions are encountered in excavation of planting areas, other locations for the planting may be designated by the **Owner**.

- C. Removal of underground obstructions, relocation of construction and provision of drainage for planting areas shall be done only as directed by the **Owner**.
- D. If changes in the location of the work or if removal of obstructions involve additional work, the **Contractor** shall proceed in accordance with the "General Conditions" of the Contract for construction.
- E. The **Contractor** shall take all necessary precautions during planting operations to avoid damage to existing sidewalks, fencing, paving, curbs, lighting, and other site improvements. Any damage that does occur shall be corrected to the **Owner's** satisfaction at the **Contractor's** expense.
- F. The **Contractor** shall make a dimensional sketch of existing landscaped areas before such areas are disturbed, and shall use said sketch for layout during restoration of these areas. The Preconstruction Video and any still photographs taken prior to construction activities will also be used to verify the restoration work.

#### 1.04 QUALITY ASSURANCE

- A. All planting shall be performed by a company specializing in landscape development construction, particularly soil preparation, lawns, and live plant materials; with at least five years experience in such work. Evidence of this experience must be provided, citing similar projects, prior to the initiation of the work.
- B. Size, quality, root ball preparation, and grading standards shall conform to the American Association of Nurserymen, Inc., as published in the "American Standard for Nursery Stock,: ANSI 260.1, latest approved revision.
- C. The **Contractor** shall be responsible for all certificates of inspection of plant materials that may be required by federal, state, or other authorities to accompany shipments of plants. All plants must be inspected and approved by the **Owner** before they are planted. Inspection and approval of plants upon delivery shall be for quality, size, and variety only and shall not in any way impair the right of rejection for failure to meet other requirements during progress of the work.
- D. Fertilizer shall conform to the local, state, and federal laws applicable to its manufacture and labeling.

#### 1.05 PLANT GUARANTEE AND REPLACEMENT

- A. Guarantee - Plants shall be alive, healthy, and vigorous at the end of the Guarantee period. The guarantee period shall be at least one year and shall terminate at the end of the first full growing season. The first full growing season begins on April 1 after planting and ends on November 1.
- B. Replacement - Any plant installed under this contract that is dead or not in satisfactory growth, will be removed from the site; these and any plants missing



due to the **Contractor's** negligence shall be replaced as soon as conditions permit. In case of any question regarding the condition and satisfactory establishment of a rejected plant, the **Contractor** shall notify the **Owner** immediately in writing, and the **Owner** shall determine acceptability. All replacement plants shall be guaranteed for the duration of one full growing season as described in Paragraph 1.04.A above.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Topsoil shall be natural, fertile, agricultural soil, capable of sustaining vigorous plant growth. It shall be of uniform composition without admixture of subsoil. It shall be free of stones ( $\frac{1}{2}$  inch in diameter or larger), clods of hard earth, live plants, roots, sticks, or other extraneous matter harmful to plant growth.
  - 1. Topsoil shall have an acidity range of ph. 6.0 to 6.5 and shall contain not less than 6 percent organic matter.
  - 2. Topsoil shall be obtained from naturally well drained areas which have never been stripped before.
  - 3. Topsoil shall not be delivered in a frozen or muddy condition.
- B. The commercial fertilizer shall be a complete formula, 6-12-12, and shall conform to the applicable state fertilizer laws. It shall be uniform in composition, dry and free flowing and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which is caked or otherwise damaged, making it unsuitable for use, will not be accepted.
- C. Pine straw mulch shall be freshly baled straw capable of producing desired results and not contain excessive amounts of pine cones, branches or forest litter.
- D. All mulch shall be clean, and free of weeds, moss, sticks, insects, and debris, and shall be satisfactory to the **Owner**.
- E. Pre-emergent used shall be "Ronstar" or approved equal.
- F. Pine bark shall be good quality commercial stock of  $\frac{1}{2}$ " - 1" size pieces (mini-nuggets) or "Nature's Helper".
- G. Lime shall be ground limestone with analysis showing not less than 85 percent total carbonates. Lime shall be delivered in original unopened containers. Any caked or hardened lime shall not be used.
- H. Water shall be supplied by the **Contractor**, along with all necessary hose or other watering equipment required for installation and maintenance of plant materials.
- I. Herbicide used shall be "Round-up" or approved equal.

## 2.02 PLANT MATERIALS

- A. Plant materials used will depend on job-specific conditions, as follows:
  - 1. Trees, shrubs and ground covers removed or damaged as the result of construction activities shall be replaced with new materials of the same size and type, except; mature trees and shrubs shall be replaced in kind with the following minimum size requirements: trees - 2 inch caliper; shrubs - 2 gallon container; or,
  - 2. Plant materials will be of the size, type and quantity listed in the Easement Stipulations; or,
  - 3. Plant materials will be as directed by the **Owner**.
- B. Plant materials shall comply with State and Federal Laws relating to inspection for diseases and insect infestation.
- C. Plant materials shall conform to American Standard Nursery Stock (May 2, 1989, ANSI 260.1-1986). Names shall conform to those given in Standardized Plant Names, 1942 Edition prepared by the American Joint Committee on Horticultural Nomenclature.
- D. Plants shall have a habit of growth that is normal for the species and shall be sound, healthy, vigorous, and free from insect pests, plant diseases and injuries. All plants shall equal or exceed the measurements specified in the plant list before pruning.
- E. Plants shall be nursery grown unless otherwise specified.
- F. Substitutions will be permitted only upon submittal of proof that the specified plant is not obtainable. A substitute of nearest equivalent size or variety will be used with equitable adjustment of Contract Price when approved in writing by the **Owner**.
- G. Plants designated "B & B" in the plant list shall be adequately balled with firm natural balls of soil sized as set forth in the American Standard for Nursery Stock. Balls should be firmly wrapped with burlap or similar bio-degradable material and bound with twine, or wire mesh. No balled plant shall be planted if the ball is cracked or broken during shipment or during the planting process.
- H. Insofar as is practicable, all plant material shall be planted on the day of delivery. Plants that cannot be planted immediately upon delivery shall be protected from the sun and wind. B & B plants shall be covered with moist soil, mulch, or other acceptable material. B & B plants and container grown plants shall be shaded and well watered. Plants shall not remain unplanted for longer than three days after delivery.
- I. Plants shown as container grown in the plant list shall have sufficient root to hold earth intact after removal from containers but without being root-bound.

- J. Caliper of tree trunks shall be measured six inches above the natural ground level for trees up to and including four inch caliper size.

## **PART 3 - EXECUTION**

### **3.01 TIME OF PLANTING**

- A. Planting operations shall be conducted immediately under favorable weather conditions in conformance to the seasonal restrictions as follows:
  - 1. Deciduous Material: September 15 to June 15. Materials must be in dormant condition if planted after November 1 and prior to April 1. Soil, plant material, and environmental conditions must be suitable for planting.
  - 2. Evergreen Materials: Spring: March 15 to June 15; Fall: September 1 to November 1.
  - 3. Perennials: Spring: March 30 to June 30; Fall: September 1 to November 1.
  - 4. Annuals: In season.
  - 5. Planting periods may be extended or reduced according to weather and soil conditions at the time. Preparations for planting may begin earlier than specified seasons, if approved.
- B. At the option and on the full responsibility of the **Contractor**, planting operations may be conducted under unseasonable conditions without additional compensation; however, prior written approval must be obtained from the **Owner** and the guarantee period shall remain as specified in Paragraph 1.04.A herein.

### **3.02 PRODUCT HANDLING AND STORAGE**

- A. Balled and burlapped plants shall be dug and prepared for shipment in a manner that will not damage roots or branches.
- B. Protection After Delivery - The balls or roots of plants not planted immediately upon delivery shall be covered with moist soil or mulch, or other protection from drying winds and sun. All plants shall be watered as necessary, until planted. Balled plants shall not be lifted by the trunk of the plant.

### **3.03 TREES AND SHRUBS**

- A. Locations for all plants and outlines for planting areas shall be staked on the ground and must be approved by the **Owner** before plants are set. Orientation of plants, foliage, and branching shall be approved before installation. Any adjustments in locations and/or outline must be approved in writing by the **Owner**.
- B. Care shall be exercised to have pits dug and soil prepared prior to moving plants to pits for planting. Circular pits with vertical sides shall be excavated for all plants. Diameter of planting pits shall be twice the diameter of the ball or root spread. The depth of the pits shall be sufficient to accommodate the ball or roots when the plant is set to finished grade allowing for six inches of topsoil in the bottom of the pit.

The soil at the bottom of the planting pit shall be loosened to a depth of three inches and mixed with topsoil. Any rock, rubble, hard pan, or other underground obstruction shall be removed to permit proper installation and drainage. The **Contractor** shall assure positive drainage away from all planting beds.

- C. Soil used in planting shall be a topsoil mixture. One cubic yard of pine bark "Nature's Helper" and twenty pounds of commercial 6-12-12 fertilizer or bone meal shall be mixed with every six cubic yards of topsoil.
- D. Unless otherwise specified, all plants shall be planted in pits, centered, and set at a depth so that the finished grade level will be the same as that at which the plant was grown.
- E. For balled and burlap material, all wire and string binding shall be removed from around the root ball. After placing the plant in the planting pit, the burlap shall be cut away or folded back from the top third of the root ball. If balled plants are wrapped with material which is not bio-degradable then this wrapping material must be removed once the plant is set in the planting pit. Care must be taken so not to damage the root system.
- F. The pit shall be backfilled with topsoil placed in layers around the roots or ball. Each layer shall be carefully tamped to avoid air pockets. When the hole is approximately two-thirds full, water should be added. After the water has been absorbed, the hole shall be filled with topsoil and tamped lightly to grade.
- G. A four inch mound of soil shall be formed around each plant to produce a saucer. On slopes an adequate shoulder shall be formed on the downhill side to hold water and avoid erosion.
- H. Guying and Staking
  1. Hose shall be two-ply reinforced hose not less than 3/8" inside diameter.
  2. Wire shall be galvanized pliable, zinc-coated iron not less than No. 16 gage.
  3. Turnbuckles shall be galvanized and have a three inch minimum lengthwise opening fitted with screw eyes. Three turnbuckles are required per tree planting.
  4. Trees shall be supported immediately after planting. All trees shall be guyed or staked.
  5. Guy wires shall consist of two twisted strands of wire encased in hose to prevent direct contact with bark of the tree. Guying shall be spaced equally about each tree. Guy wires shall be placed around the tree trunk or lower branches in a single loop at an angle or about 60 degrees or about two-fifths of the height of the tree. Guy wires shall be fastened to 2" x 2" x 30" wooden stakes driven to approximately six inches above the ground. Guy wires shall be tightened and kept taut by turn-buckles, or other approved methods.
  6. Wood stakes to be used shall be uniform 2" x 2" pressure treated wood

- with one end sharpened. Stakes shall be not less than six feet in length.
7. Tree species less than 3' tall will require slash staking. Wood stakes used shall be uniform 2" x 2" pressure treated wood with one end sharpened. Stakes shall not be less than four feet in length.
  - I. All trees shall be wrapped with standard manufactured tree wrapping paper, brown in color. Tree trunks shall be wrapped spirally overlapping two (2) inches and shall be wound from the ground line to above the lowest main branches. The wrapping shall be securely tied in at least five places, including the top, middle, and bottom, with a jute twine not less than two-ply or other approved bio-degradable material.
  - J. A 4" layer of pine straw mulch and a pre-emergent such as "Ronstar" or equal shall be applied to all planting bed areas.
  - K. Plant beds containing ericaceous plants shall be top dressed with ordinary powdered sulfur at the rate of 3 pints per 100 square feet of area.

### **3.04 GROUND COVERS**

- A. Except as otherwise specified, the **Contractor's** work shall conform to accepted horticultural practices as used in the trade.
- B. Planting areas shall be dug and soil for planting ready before plants are delivered.
- C. Ground cover beds shall be prepared by thorough loosening of existing subgrade and by placement of a minimum of 4 inches of approved topsoil to conform to the final grade. Soil used in planting shall be topsoil mixed with one cubic yard of pine bark "Nature's Helper" and twenty pounds of commercial 6-12-12 fertilizer or bone meal with every six cubic yards of topsoil.
- D. Pre-emergence weed control shall be applied in accordance with manufacturer's instructions.
- E. All planting beds shall be mulched with a 2-inch layer of bark mulch prior to planting. Planting holes shall be dug through the mulch. Insure that roots are surrounded by soil below the mulch.
- F. Biodegradable pots shall be crushed and non-biodegradable pots shall be removed prior to planting. The root systems of all potted plants shall be split or crumbled.

### **3.05 PRUNING AND REPAIR**

- A. Upon completion of the work under the contract, all new trees and shrubs shall have been pruned and any injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of transplanting operations. Pruning shall be done in such a manner as not to change the natural habit or

shape of the plant. All cuts shall be made flush, leaving no stubs. On all bruises or scars on the bark and cuts over 3/4 inch in diameter, the injured cambium shall be traced back to living tissue and removed; wounds shall be smoothed and shaped so as not to retain water; and the treated area shall be coated with shellac or a commercial tree wound dressing.

### 3.06 REUSE OF EXISTING PLANT MATERIALS

- A. Where shown on the Drawings, or as allowed herein, in-situ plant materials may be removed and re-installed in lieu of replacement with new materials. Such reuse shall conform to the following conditions:
1. In those areas indicated on the Drawings, existing trees and shrubs shall be removed and re-installed. The arrangement or location of the re-installed materials may vary from existing conditions. The **Contractor** shall be responsible for removal, proper handling, temporary storage, re-installation, and maintenance for the existing materials; however, no guarantee of survival is required. The cost of this work shall be included in the Contract Price.
  2. If conditions permit, the **Contractor** may, at its own risk, remove and re-install existing trees and shrubs as an alternate to replacement with new materials. The Guarantee and Maintenance requirements shall apply for re-installed existing materials in the same manner as for new materials. The **Contractor** shall obtain written concurrence from the **Owner** of its intention to reuse existing plant materials prior to the execution of the work.
  3. In those areas indicated in the Easement Stipulations or shown on the Drawings, certain existing trees and shrubs may be removed and re-installed by the property owner. The **Contractor** shall provide prior written notification to the property owner (with copy to the **Owner**) advising of the schedule of construction and the required time frame for removal. If the **Contractor** proceeds with construction without providing the required prior notice, any materials that are damaged or destroyed shall be replaced in kind and quantity at the expense of the **Contractor**.
- B. Trees and shrubs shall be dug with firm natural balls of earth of sufficient size and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant.
- C. All plants shall be protected from drying action of the sun and wind during digging and after being dug, while in storage awaiting planting and while being transplanted. Heel plants or properly protect them with soil, wet peat moss or in a manner acceptable to the **Owner**.
- D. All existing trees and shrubs must be replanted promptly, preferably within 24 hours after removal, but in no case longer than 48 hours.

### **3.07 INSPECTION FOR ACCEPTANCE**

- A. Upon completion of all planting, and after receipt of written notification, inspection of the landscape work will be made by the **Owner**. Inspection of the work will be made again by the **Owner** at the end of the maintenance period.

### **3.08 MAINTENANCE**

- A. Maintenance shall begin immediately after each plant is planted and shall continue until all plants are accepted. Planting shall be protected and maintained by watering, fertilizing, and replanting as necessary for at least one full growing season following installation beginning April 1 and ending November 1.

END OF SECTION 02490

## **SECTION 02750 BYPASS PUMPING**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Work described in this Section includes furnishing all materials, labor, equipment and incidentals required to install, test, and maintain a temporary by-pass pumping system for the purpose of diverting wastewater flows around the work area.
  
- B. The objectives of flow bypass and/or diversion pumping are to:
  - 1. Maintain an efficient and uninterrupted level of service to wastewater collection system users while cleaning, CCTV Inspection, CIPP Lining, Internal Point Repairs, Service Lateral Renewal or Manhole Lining operations are facilitated on the segment or segments being bypassed and/or from which flow is being diverted, within the wastewater collection system
  
  - 2. Ensure all levels of wastewater flow are continuously and effectively handled around the segment or segments of sewer being bypassed and/or from which flow is being diverted by:
    - a. Ensuring that bypass and diversion pumps are adequately fueled, lubricated and maintained
    - b. Ensuring backup spare parts are expeditiously applied to the flow bypass and/or diversion pumping system in the event of component breakdown
    - c. Ensure an emergency response plan is immediately implemented in the event of bypass pumping system failure
    - d. Preventing backup, spillage, flooding or overflow onto streets, yards and unpaved areas or into buildings, adjacent ditches, storm drains, and waterways, while flow bypass or diversion pumping takes place and ensure that installation, startup and subsequent disassembly of the flow bypass and diversion pumping system is smoothly transitioned
  
- C. When pumps are operating, an experienced bypass/diversion pump maintenance operator/mechanic and/or assistant shall continuously be on site to monitor the operation of the entire bypass/diversion system. The operator/mechanic and/or assistant shall comprehensively, methodically and continuously:
  - 1. Adjust pump speed as appropriate so as not to adversely impact upstream or downstream flow condition levels
  
  - 2. Check that the bulkheads, dams, diaphragms, plugs, valves, weirs, and all other flow control devices are working effectively and according to plan



3. Check the integrity of hoses and couplings along the entire bypass/diversion system
  4. Monitor fuel tanks and refuel as necessary
  5. Monitor lubrication levels and provide additional lubrication as necessary
  6. Facilitate minor repairs as required
  7. Report to **Owner** on potential problems arising
  8. Inspect bypass-pumping system at least hourly to ensure that the system is working correctly.
  9. Maintain adequate supply of spare parts on site as required.
- D. Bypass pumping systems shall include a maximum of 600 lineal feet discharge piping length.
- E. Related Work Specified Elsewhere
1. Section 01010: Project Procedures
  2. Section 13327: Preconditioning and Cleaning of Sewer Lines
  3. Section 13328: Internal Sewer Condition Assessment
  4. Section 13342: Sewer Rehabilitation by Cured-in-Place Pipe Method
  5. Section 13343: Rehabilitation of Sanitary Sewer Manholes
  6. Section 13522: Cured-in-Place Pipe Method Service Lateral Liner
  7. Section 13523: Cured-in-Place Service Connection Renewal
  8. Section 13524: Cured-in-Place Point Repair

## 1.02 UNIT RESPONSIBILITY

- A. The by-pass pumps, piping, and associated accessories shall be provided by a single supplier to ensure a completely integrated and functional system.

## 1.03 SUBMITTALS

- A. Submittals shall be made in accordance with the requirements of the General Conditions of the Contract Documents and Section 01300 Submittals
- B. The design, installation, and operation of the temporary pumping system shall be the **Contractor's** responsibility. The **Contractor** shall employ the services of a vendor that can demonstrate to the **Owner** that the vendor specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least three (3) references of projects of a similar size and complexity as this project, which were successfully performed by the vendor's firm within the past three years. The reference shall include the name of the agency, the name of the project, the date of the project, and the agency contact (telephone, fax, and e-mail). The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.
- C. During the course of the project, the detailed, work-specific Bypass Pumping/Flow Diversion Plan for any bypass utilizing multiple pumps, or a single pump greater than 4" discharge, shall be submitted to the **Owner** at least 10 days before required. This plan shall outline all provisions and precautions, to be taken by the **Contractor**, regarding the handling of existing wastewater flows.

This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to insure proper protection of the facilities. The Plan shall also include details of protection of the access and bypass pumping locations from damage due to the discharge flows, compliance with the requirements and permit conditions specified in these Contract Documents. No work shall begin until all provisions and requirements have been reviewed and authorized by the **Owner**.

- D. The **Contractor** shall submit two copies of the Flow Bypass Pumping/Flow Diversion Plan, described in Item 1.03(C), for each sewer bypass set-up with sufficient detail to show:
1. Staging areas for pumps
  2. Sewer plugging method and types of plugs
  3. Number, size, material, location, and method of installation of suction piping
  4. By-pass pump sizing criteria (i.e. force main size and length, static and dynamic head, flow velocity, maximum wastewater level depths in manholes upstream of by-pass pump operations) and resulting capacity, number of each size to be on site, and power/fuel requirements.
  5. Calculations for selection of bypass pump size and pump curves showing the pump operating range shall be submitted
  6. Standby power generator size, location
  7. Downstream discharge plan
  8. Method of protecting discharge manholes or structures from erosion and damage
  9. Thrust and restraint block sizes and locations
  10. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill where required
  11. Method of noise control for each pump and/or generator
  12. Any temporary pipe supports, including rollers and elevated rollers, as well as anchoring required
  13. Design plans and computation for access to bypass pumping locations indicated on the drawings
  14. Schedule for installation of and maintenance of bypass pumping lines
  15. Plan indicating selected location of bypass pumping lines
  16. The Plan shall indicate the means by which flows from service laterals will be accommodated
- E. All proposed flow control arrangements, including flow bypass and/or diversion pumping plans for sewers, shall also include an emergency response plan to be followed in the event of a failure of the bypass pumping and/or diversion system.
- F. The **Contractor** shall notify the **Owner** 24 hours prior to commencing actual flow bypass and/or diversion pumping operations. The **Contractor's** Bypass Pumping/Flow Diversion Plan and Emergency Response Plan shall be agreed to by the **Owner** before the **Contractor** shall be allowed to commence wastewater bypass pumping and/or diversion.

## 1.04 ENVIRONMENTAL PROTECTION

- A. The **Contractor** shall take necessary precautions to ensure that by-pass operations do not result in wastewater overflows, sewer backups, or related threats to the public health and do not cause flooding or damage to public or private property.
- B. The pumped wastewater shall be in an enclosed hose or pipe that is adequately protected from traffic and shall be redirected to the sanitary sewer system. The dumping or free flow of wastewater on public and private property, gutters, streets, sidewalks, or into storm drains is prohibited. Open channels or trenches shall not be used to convey wastewater flow.
- C. Should any liquid or solid matter from the wastewater collection system be spilled, discharged, leaked, or otherwise deposited to the environment, the **Contractor** shall immediately clean and disinfect the affected area and notify the **Owner**. In addition, due care and attention shall be provided to prevent the leakage of pump fuel or lubrication oil.
- D. Any wastewater overflows, backups, leaks, odors or property damage resulting from improper setup or failure of the by-pass pumping system shall be the responsibility of the **Contractor**. The **Contractor** shall be responsible for any fines, for the complete clean up of such spills, and for restoration of damaged property at no additional cost to the **Owner**.

## PART 2 - PRODUCTS

### 2.01 BY-PASS PUMPS

- A. The by-pass pumps used shall be fully automatic, self-priming units. The pumps shall possess dry-running capabilities to accommodate the diurnal, cyclic nature of wastewater flow.
- B. By-pass pumps shall be of sufficient capacity to accommodate the daily peak sanitary sewer flows plus any additional flows due to rain events.
- C. The by-pass pumps may be driven by either electric motor or diesel engine.
  - 1. Diesel engines must be provided with acoustic enclosures to minimize noise.
  - 2. The **Contractor** is responsible for providing all necessary and required power and control wiring and associated electrical devices when using electric motors.
- D. Unless otherwise specified or approved by the **Owner**, the pumping equipment shall be sound attenuated; noise levels shall not exceed 75 decibels at 23 feet.
- E. The **Contractor** shall also provide a back up, on-site by-pass pumping system that will automatically energize upon a high water level, indicating the failure of

the primary by-pass pumping unit. The back-up system shall be equal in all respects to the primary system.

- F. The Bypass Pumping system shall be equipped with an electronic remote monitoring device that will notify the **Contractor** and the pump operator in the event of a high water level condition or a malfunction or failure of the Bypass Pumping system.
- G. The by-pass pump equipment supplier shall provide technical support and service 24 hours/day, 7 days/week.

## 2.02 SYSTEM DESCRIPTION

### A. Design Requirements:

- 1. Bypass pumping systems shall have sufficient capacity to pump a peak flow in the pipes that are being cleaned, inspected or lined. The **Contractor** shall provide all pipeline plugs, pumps of adequate size to handle wet weather peak flows, and temporary discharge piping to ensure that the total flow of the main can be safely diverted around the section to be cleaned, inspected or lined. Bypass pumping system will be required to be operated 24 hours per day.
- 2. The **Contractor** shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One standby pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.
- 3. The **Contractor** shall make all arrangements for bypass pumping during the time when the main is shut down for any reason. System must overcome any existing force main pressure on discharge if applicable.

### B. Performance Requirements:

- 1. It is essential to the operation of the existing wastewater collection system that there is no interruption in the flow of wastewater throughout the duration of the project. To this end, the **Contractor** shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the wastewater flow before it reaches the point where it would interfere with its work, carry it past its work, and return it to the existing sewer downstream of its work.
- 2. The design, installation, and operation of the temporary pumping system shall be the **Contractor's** responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

3. The **Contractor** shall provide all necessary means to safely convey the wastewater past the work area. The **Contractor** will not be permitted to stop or impede the main flows under any circumstances.
4. The **Contractor** shall maintain wastewater flow around the work area in a manner that will not cause surcharging of or damage to sewers and that will protect public and private property from damage and flooding.
5. The **Contractor** shall protect water resources, wetlands and other natural resources.

## **PART 3 - EXECUTION**

### **3.01 PLANNING**

- A. The **Contractor** shall be solely responsible for planning and executing wastewater flow control, bypass, and diversion pumping operations. The **Contractor** shall be entirely liable for damages to private or public property that may result from its operations and for all cleanup, disinfection, damages, and resultant fines in the event of a spillage, flooding or overflow.
- B. The **Contractor** shall coordinate the by-pass pump installation and start-up with the **Owner**.
  1. A minimum of 24 hours advance written notice must be given before starting by-pass operations. The by-pass pumping system must be tested for a minimum of 24 hours without incident prior to taking any part of the collection system, including pump stations, out of service. Should any incident occur, the test period shall be restarted. By-pass operations may not start or restart on Fridays.
  2. The **Owner** reserves the right to delay the start of by-pass operations (e.g. in the event of forecasted adverse weather).

### **3.02 GENERAL**

- A. Precautions:
  1. **Contractor** is responsible for locating any existing utilities in the area the **Contractor** selects to locate the bypass pipelines. The **Contractor** shall locate its bypass pipelines to minimize any disturbances to existing utilities and shall obtain approval of the pipeline locations from the **Owner**. All costs associated with relocating utilities and obtaining all approvals shall be paid by the **Contractor**.
  2. During all bypass-pumping operations, the **Contractor** shall protect sewer lines and manholes from damage caused by any equipment. The **Contractor** shall be responsible for all physical damage caused by its activities.

### **3.03 PLUGGING OR BLOCKING**

- A. Insert sewer line plug into the line at a manhole upstream from the manhole or sewer that is to be cleaned, inspected or rehabilitated.
- B. Plugging or blocking of wastewater flows shall incorporate primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance or work, it is to be removed in a manner that permits the wastewater flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

### **3.04 FLOW BYPASS AND/OR DIVERSION PUMPING SCHEDULING**

- A. If the **Owner** is operating or maintaining conventional pumping facilities and/or flow bypass and/or diversion pumping in the construction area of the present Contract, the **Contractor** shall coordinate with the **Owner** as necessary to determine and effect optimum working arrangements.
- B. The **Contractor** shall immediately cease bypass and/or diversion pumping when so ordered by the **Owner**.

### **3.05 PIPE RESIDUE**

- A. When flow bypass and diversion pumping operations are complete, the residual contents of wastewater in piping shall be drained into the existing sewer prior to disassembly.

**END OF SECTION 02750**

**DIVISION 13**  
**SPECIAL CONSTRUCTION**

**SECTION 13327  
PRECONDITIONING AND CLEANING OF SEWER LINES**

**PART 1 – GENERAL**

**1.01 SCOPE**

- A. Work described in this Section includes furnishing all labor, materials, equipment, tools, and incidentals required for complete cleaning of sewer lines and manholes shown on the plans and as authorized by the **Owner** including removal of silt, which is defined as any and all solid or semi-solid materials, including fine and granular material such as sand, grit, gravel, and rock; debris; grease; oil; sludge; slime or any other loose material or encrustation lodged in the sewer line; invading roots; corroded concrete; corroded metal; and any other extraneous debris.
1. To ensure consistency for location of sewer defects, features, service laterals to be rehabilitated and internal point repairs, cleaning and CCTV inspection of each sewer segment listed in the Bid Schedule shall begin at the first manhole for each item as listed in the Bid Schedule. For example: MH 001 to MH 002, start at MH 001.
  2. Sewer lines and manholes shall be considered cleaned if:
    - a. Materials listed under 1.01A are removed and disposed of at an approved site.
    - b. All surfaces shall be free of cleaning agents and their reactant products.
  3. Fulfillment of these requirements (e.g., depth of silt or cleanliness of surface) is to be determined by Closed Circuit Television (CCTV) inspection of each length or segment of sewer line cleaned, unless otherwise approved by the **Owner**. The Closed Circuit Television (CCTV) inspection of each length or segment of sewer line cleaned, that is provided to document compliance with this specification, may be used to meet the requirements of the Lining Pre-Installation CCTV Inspection, provided that the sewer cleaning operations do not interfere with or distort the CCTV Video and provided that the inspection is made in accordance with the requirements of Section 13328 - Internal Sewer Line Condition Assessment. The **Owner** reserves the right to require the Contractor to provide a separate CCTV inspection in accordance with the requirements of Section 13328 - Internal Sewer Line Condition Assessment, following completion of cleaning if the Closed Circuit Television (CCTV) inspection of each length or segment of sewer line cleaned that is provided to document compliance with this specification and acceptance of sewer line cleaning does not comply with the requirements of Section 13328.
  4. During cleaning work and all other associated **Contractor** operations, sewer line functions shall be maintained at all times. This requirement may be changed only with the written approval of the **Owner**.



5. The sewer lines to be cleaned convey sanitary sewage. In many instances such sewer lines are subject to high flows, either continuously or in a periodically varying cycle, due to rainfall and infiltration. The **Contractor** shall include in its bid, provisions for dealing with such variations, and where necessary, plan and schedule its Work to accommodate such variation in flows.

B. Related Work Specified Elsewhere:

1. Section 01010 – Project Procedures
2. Section 02750 – Bypass Pumping
3. Section 13328 – Internal Sewer Line Condition Assessment

## 1.02 DEFINITIONS

- A. The term "cleaning" as used in this Section, shall mean removing sand, dirt, roots, grease and all other solid or semi-solid materials from the sewer line.
- B. "Heavy cleaning" for sewers with a diameter of less than 21", shall be defined as performing cleaning, as defined above, when 4 or more passes of the cleaning nozzle, using a minimum of 80 gpm, is required or when the use of mechanical apparatuses (i.e., buckets, pigs, rodding machines, grinders, etc.), are required to remove debris and/or obstructions from a pipe.
- C. "Heavy cleaning" for sewers with a diameter of 21" or greater, shall be defined as performing cleaning, as defined above, when greater than twenty-five percent of a pipe's cross-sectional area is full of debris, silt, roots, sand, grit, gravel, rock, grease, oil, sludge, slime, or any other loose material or encrustation or when the use of mechanical apparatuses (i.e., buckets, pigs, rodding machines, grinders, etc.), are required to remove debris and/or obstructions from a pipe.

## 1.03 QUALITY ASSURANCE

- A. Reference Standards: The **Contractor** shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these Specifications.
  1. OSHA 29 CFR 1910.146 (permit-required confined-space regulations)
  2. Applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended and applicable state and local codes and standards.
  3. To the extent applicable, the requirements of the Underwriter's Laboratories, Inc. and the National Electric Code.
- B. Experienced Workers
  1. All crew chief(s) responsible for cleaning work shall have a minimum of 3 years previous experience in cleaning and related activities including:
    - a. Use of gas safety monitors/detectors/testers
    - b. Safe working in confined spaces

- c. Utilization of hydraulic pressure jetting/water blasting in sewer lines and confined spaces
  - d. Utilization of root cutters
  - e. Utilization of a wide range of cleaning nozzles in widely differing conditions
- C. The **Contractor** shall maintain on site at all times a qualified field supervisor in charge of the inspection. The field supervisor shall have a minimum of 3 years experience in cleaning operations, and be approved in writing by the **Owner** prior to commencement of Work. Any change of supervision must also be approved in writing by the **Owner** prior to the change. The field supervisor shall be responsible for the safety of all site workers and site conditions as well as ensuring that all work is conducted in conformance with these specifications and to the level of quality specified.
- D. A quality control video inspection of cleaned sewer lines shall be carried out as directed, immediately following completion of cleaning work. If a sewer line has not been cleaned as specified (by visual inspection, video review or field analysis) in the sole opinion of the **Owner**, the sewer line shall be re-cleaned in accordance with the Specification at no additional cost to the **Owner**.
- E. The **Contractor** shall supply copies of the internal sewer line inspection CCTV video, completed in accordance with the applicable requirements of Specification Section 13328.

#### 1.05 SUBMITTALS

- A. Submittals shall be in accordance with the requirements of the General Conditions of the Contract Documents. In addition, the following specific information shall be provided:
- 1. Experience Record of **Contractor** and/or Subcontractor(s). **(With the Bid Documents)**
  - 2. Descriptive details covering full details of equipment to be used including gas safety monitors, ventilation equipment, hydraulic pressure jetting/water blasting equipment, vacuum trucks and root cutters. (At Pre-construction conference)
  - 3. Listing of Safety Precautions and MUTCD Traffic Control Measures. (At commencement)
  - 4. Work plan for pipe cleaning process including details of all materials and equipment to be used during the cleaning process. (At Pre-construction conference)
  - 5. Listing of backup and standby equipment. (At commencement)
  - 6. 2 Copies of Preconditioning & Cleaning Report and Progress Reports The report shall contain a separate sheet for each sewer line segment cleaned. The report shall utilize the form provided at the end of this Specification. (Daily)
  - 7. Post-cleaning video inspection of pipe. (Within 24 hours of completion of cleaning)
  - 8. Bypass pumping or flow diversion plan (if required). (48 hours prior to start of by-pass operations)

B. Daily Cleaning Report:

1. Report of work completed each day. The report shall be submitted to the **Owner** no later than one workday following completion of the work.
2. Upstream and downstream manhole number corresponding to the section of sewer cleaned.
3. Degree and nature of deposits prior to cleaning.
4. Length of sewer line cleaned.
5. Method and man-hours required for cleaning.

- C. The **Contractor** shall immediately notify the **Owner** of any material such as concrete or cast iron appearing in the materials removed from the sewer lines during cleaning activities.

## PART 2 – PRODUCTS

### 2.01 CLEANING EQUIPMENT

- A. The **Contractor** shall certify that sufficient cleaning units can be provided, including standby units in the event of breakdown, in order to complete the work within the contract period. The **Contractor** shall certify that standby or back-up equipment can be delivered to the site within 48 hours in the event of equipment breakdown.
- B. The cleaning unit(s) shall be capable of operating routinely, up to a minimum of 500-feet from the manhole access to the sewer line.
- C. Each cleaning unit shall carry a mobile telephone to facilitate communication with the **Owner** and to comply with relevant safety requirements defined in the safe working procedures approved by the **Owner** for the execution of the work.

### 2.02 CCTV INSPECTION/SURVEY UNITS

- A. All CCTV survey units shall comply with Specification Section 13328 unless otherwise approved by the **Owner**.

### 2.03 WINCHING EQUIPMENT

- A. Winching equipment shall be sufficient for the purposes of attaining the degree of cleanliness specified in Section 1.01A.
- B. The **Contractor** shall provide conventional power winching equipment and all associated equipment, including winching buckets, balls, breakers, kites, scooters, scrapers, tires, tools and safety apparatus. Complete details of equipment proposed for use in cleaning shall be provided to the **Owner** before work commences.
- C. Dredging of sewer lines shall be undertaken by passing various sized buckets, balls, breakers, kites, scooters, scrapers, tires etc, through the sewer lines to physically remove accumulated silt, sludge and other debris. Where conditions dictate, power boring equipment and/or winching equipment shall be used to

loosen the silt prior to its removal. All necessary equipment including cables, lines, and tools must be available at all times as required.

- D. The equipment shall be capable of operating efficiently and effectively in the sizes of sewer lines and depth included in the project at distances of up to 500-feet.
- E. Any item of **Contractor** plant or equipment associated with the Work, which may cause obstruction to the flow in the sewer line, shall be removed from the sewer line at the close of work each day. It shall be permissible to leave a line or winching cable through the sewer line during breaks in the work.
- F. Dredging operations in a particular section of sewer line will generally proceed in a downstream direction, using winch buckets of sizes stated below.
- G. The size of winch bucket used in sewer lines up to 48" shall be 90% of the sewer line diameter up to a maximum of 24". It is anticipated that buckets of smaller sizes than those stated will need to be winched through sections of sewer line prior to the use of the maximum sizes. The maximum size bucket as stated may be varied at the discretion of the **Owner**. However, no buckets larger than these maximum sizes specified shall be used without the approval of the **Owner**.
- H. The **Contractor** is advised that use of the maximum size buckets listed above may not be practical due to restricted access. The **Contractor** shall ensure that its working procedures will not be unduly affected by such restrictions and shall allow for inefficiencies due to all such restrictions in its unit rates.
- I. The winches used to draw buckets, balls, breakers, scooters, scrapers, or tires shall be power driven. They shall incorporate a torque-limiting device to prevent the breaking of winching lines in case the line becomes jammed by obstructions.
- J. Where the operational cleaning equipment is towed by winch and bond through the sewer line, all winches shall be stable with either lockable or ratcheted drums. All bonds shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the equipment. All winches shall be inherently stable under loaded conditions.

#### 2.04 PRESSURE JETTING EQUIPMENT

- A. Pressure jetting equipment used shall be sufficient for the purposes of attaining the degree of cleanliness in sewer lines as specified in Section 1.01.
- B. Jetting units in sewer lines must be capable of jetting a minimum distance of 500-feet either upstream or downstream from an end of a sewer line or manhole. Minimum nominal hose size shall be one-inch diameter.
- C. The **Contractor's** unit prices specified in the bid form shall include jetting in sewer lines both upstream and downstream.
- D. Successive passes using constantly moving pressure jetting techniques shall be applied to sewer lines and manholes until they are cleaned to the level specified. Nozzle hold-time (stationary time), for any particular location, shall not be more than 60 seconds in order to forestall damage to the pipe being cleaned. Nozzles

shall have jet angles of between 30° to 45°. “High efficiency nozzles” (discharging “pencil jets”) with jet angles higher than this figure shall not be allowed to be stationary at any time.

- E. Silt shall be collected at the ends of sewer lines or manholes as specified herein. No silt shall be allowed to pass beyond the section of sewer line being cleaned.
- F. Pass rates (rewind speed) for the jetting head shall be at a consistent speed without jerking and excessive variations. Typical pass rates shall be 4 inches to 8 inches per second. The hose reel shall be power driven in the rewind direction.
- G. The jetting equipment will be operated utilizing the pressures specified unless otherwise noted elsewhere in the document. The proposed equipment shall be categorized from the following table:

CATEGORY	MACHINE TYPE	CAPACITY (GALL/MINUTE)		PRESSURE (p.s.i.)	
		min	max	min	max
<b><u>Sewer lines</u></b>					
1	Low pressure/high volume – HGV	30	50	1,500	2,000
2	Low pressure/high volume – combination	30	75	1,500	3,000
3	Low pressure/high volume – super combination	75	175	2,000	2,500
4	Low pressure/high volume – separate jumbo jetter/suction units	75	200	2,000	2,500

Notes for Table:

1. The categories listed are typical only of the equipment for use in this contract. Exceptions to the duty and equipment shown above will be allowed subject to appropriate notification and approval. The **Contractor** is required to complete the table with details of any other equipment proposed.
2. Discretion shall be used concerning the maximum pressure used for cleaning sewer lines and manholes. In general for concrete pipes or manholes, cleaning pressures shall be limited to 5000 psi (340 bar). For corrugated steel sewer lines cleaning pressures shall be limited to 3500 psi (240 bar) For pitch fiber and plastic pipes cleaning pressures will be limited to 1500 psi (102 bar) and 2500 psi (170 bar) respectively.
3. Higher pre-conditioning pressures in sewer lines may be allowed at the sole discretion of the **Owner**. The **Owner's** agreement to use higher pressures shall not relieve the **Contractor** of its responsibilities for any resultant damage in accordance with the requirements of paragraph 3.07.

- H. Where a jetter is fitted with an airflow suction unit for removal of silt and other material from the sewer line, it shall be capable of removing materials such as sludge, silt and debris from depths up to 32-feet with minimum suction of 2500-cfm. A tank with a minimum capacity of 175-cf shall be provided and be capable of decanting collected liquids and conveying them back to a sanitary sewer manhole approved by the **Owner**. The suction hose of such a system shall have a minimum internal diameter of 6-inches.
- I. Jetting equipment shall be calibrated on an annual basis by an approved body and calibration certificates made available for inspection by the **Owner** as requested. Such equipment shall be maintained on a regular basis in accordance with the manufacturer's Specification. The **Contractor** shall make available copies of its maintenance certificates and/or schedules to the **Owner** as requested.
- J. An automatic pressure relief valve shall be incorporated on the pump discharge chamber to prevent the pressure exceeding the safe maximum for the system as a whole. This may take the form of a pressure relief valve of the bursting disc type in holder or an automatic pressure regulating valve (unloading valve).

**NOTE:** The maximum working pressure is the lowest value of the maximum working pressure ratings of all individual components of the system.

## **2.05 AIR DRIVEN, ELECTRO-MECHANICAL AND/OR MECHANICAL CLEANING TOOLS**

- A. Where necessary, and additional to winching and pressure cleaning equipment, appropriate air driven, electrically driven and/or mechanical tools may be used to needle, hammer, scrape or grind off corroded concrete or cast iron, scarify and remove compacted silt, chip-off spilt grout and detach encrustation. The **Contractor** shall provide prior notification to the **Owner** prior to the use of such equipment and techniques.

## **2.06 VENTILATION OF CONFINED SPACES**

- A. The **Contractor** shall provide, operate, maintain and subsequently remove on completion, adequate ventilation apparatus in the form of blowers and/or fans. The ventilation apparatus shall introduce a fresh air supply to support a safe environment for work in sewer lines and all other confined spaces, which shall be kept free from dangerous, toxic and/or explosive gases, whether generated from stormwater, soil strata or other source.

# **PART 3 – EXECUTION**

## **3.01 GENERAL**

- A. The **Contractor** will be responsible for any cost of water used on the Project. A water meter and backflow device must be obtained from the main office of the Cobb County Water System for recording water usage used for cleaning and other work items requiring water. The office address is 660 South Cobb Drive, Marietta, Georgia. The main office phone number is 770-419-6208.
- B. Prior to the commencement of work, the **Contractor** shall locate all hydrants from which water may be obtained.

- C. All details of the point of water connection, backflow protection, conveyance methods, draw-off rates, times and all local conditions regarding the use of water shall be approved by the **Owner** prior to commencement of work. All equipment, labor, and material required for obtaining water for the work shall be provided by the **Contractor**.
- D. The **Contractor** shall provide constant attendance when water is being drawn off any hydrant.
- E. The **Contractor** must ensure that a 6-inch minimum air gap is maintained at the supply point on desilting/cleaning/jetting equipment or any other receiving apparatus.
- F. The use of any standpipe or hydrant, which has not been approved by the **Owner**, is expressly forbidden.
- G. Traffic Control: The **Contractor** shall be responsible for traffic control during the course of each phase of the work as specified in Section 01550 – Traffic Regulation. A Cobb County Department of Transportation (CDOT) Utility Permit shall be required for all partial and full lane closures. Road closures and / or detours shall require a CDOT Road Closure Permit. **Contractor** shall submit a traffic control plan to the **Owner** a minimum of two weeks prior to partial or fully lane closures and a minimum of four weeks prior to a road closure along with other pertinent information needed for the associated permit application. The traffic control plan shall conform to CDOT requirements and be in conformance with the Manual on Uniform Traffic Control Devices for Streets and Highways. The **Contractor** shall install and maintain traffic control compliant with the approved permit, including but not limited to, trained and properly equipped flagmen to safely control all traffic through the work zone(s). It is the **Owner's** intent that this work be accomplished with as little disturbance to traffic, private property, and the public as is reasonably possible, consistent with timely completion thereof.

### 3.02 CLEANING

- A. All cleaning shall entirely comply with the performance requirements defined in the relevant sub-clauses of article 1.01 of this specification.

### 3.03 HEAVY CLEANING

- A. If during the course of cleaning and/or inspection operations, the **Contractor** believes a pipeline will require “heavy cleaning”, the **Contractor** shall immediately notify the **Owner** of the need for “heavy cleaning” prior to conducting such operations. The **Owner** shall conduct an on-site review of CCTV or digital images of the pipeline(s) which the **Contractor** believes require “heavy cleaning” and if the **Owner** determines that “heavy cleaning” is required, the **Owner** shall direct to the **Contractor** to proceed with “heavy cleaning” of the pipe or pipes determined to require “heavy cleaning”.

### 3.04 PRECAUTIONS

- A. The working area in which machinery and equipment operates is to be kept to a minimum. Equipment not in use shall be removed from the work site so as to minimize disruption to traffic and the general public.
- B. The working area is to be free from silt and debris when the **Contractor** leaves the site at the end of each visit.
- C. Machinery and standing equipment shall be protected at all times.
- D. All unattended open working areas shall be provided with temporary fencing and/or barriers meeting applicable Federal, State, and Cobb County standards and subject to the approval of the **Owner**.
- E. When hydraulically propelled cleaning tools (which depend upon water pressure to provide its cleaning force) or tools which retard the flow line are used, the **Contractor** shall take all necessary precautions to ensure that water quantity and water pressure used does not flood property or buildings served by the sewer line being cleaned.
- F. NOISE CONTROL
  - 1. The **Contractor** shall employ the “best practicable means” to minimize and mitigate noise as well as vibration resulting from operations. Mitigation measures shall include the utilization of sound suppression devices on all equipment and machinery particularly in residential areas and in the near vicinity of hospitals and schools, especially at night.
  - 2. The **Contractor** shall inform the **Owner** before the commencement of any portion of the work of any significant change in the methods of noise attenuation from those previously utilized.
  - 3. All pumps, generators, combination cleaners or other noise emitting equipment be shall be suitably screened to minimize nuisance and noise pollution. This requirement shall not be taken as preventing or prohibiting the execution of work necessary for the saving of life, protection of property, or safety of the personnel and/or facilities. The **Contractor** shall notify the **Owner** of such use of equipment in an emergency situation as soon as practicable.

### 3.05 OPERATIONAL REQUIREMENTS

- A. Each cleaning unit shall carry sufficient numbers of guides and rollers such that, when cleaning, all bonds (e.g. metal winch cable) are supported away from sewer line and manholes.
- B. The system of silt and debris removal shall be capable of operating in such a way as to minimize the obstruction to sewer line flows and cleaning operations.



- C. The **Contractor** shall make its own arrangements for the security of “off road” overnight parking of its vehicles and cleaning equipment and shall comply with all relevant statutory traffic regulations and local laws.

### 3.06 HANDLING AND DISPOSAL OF REMOVED MATERIAL

- A. The **Contractor** shall remove all silt, debris, detritus, etc. resulting from all sewer line and manholes cleaning activities at least once each working day. Such material shall be caught and collected in a suitable trap, weir, or dam at the downstream end of each sewer line segment being cleaned. The **Contractor** shall ensure that the capture method or methods used effectively prevent silt migration downstream. Descriptions of such methods, including details of the equipment used, shall be provided to the **Owner** on request.
- B. All material removed from sewer lines and manholes shall be deposited in suitable closed watertight containers such that the total amount removed can be easily measured if required. The **Contractor** is to give the **Owner** such assistance as may be necessary in carrying out this measurement work.
- C. The type and capacity of containers to be employed for the holding and transport of the removed materials shall be determined by the **Contractor**. The **Contractor** shall not accumulate or store debris, silt, and/or liquid waste or sludge on site. Under no circumstances shall debris, silt or solids be dumped onto the ground surface, ditches or manholes.
- D. The **Contractor**'s work procedures shall be such that sewer line cleaning work is not delayed by a lack of an empty container in which to deposit the materials removed from the sewer line.
- E. The **Contractor** is advised that it may not always be possible for the container to be positioned immediately adjacent to the sewer line from which materials are being removed and that “double handling” of the materials may be necessary. The **Contractor** shall provide for such “double handling” to be carried out safely and efficiently at no additional cost to the **Owner**.
- F. The **Contractor** must make its own arrangements for the proper disposal of materials removed from the sewer line or manhole. The disposal site must be licensed to accept such materials and must be approved by the **Owner** prior to commencement of the work. The **Contractor** shall be responsible for obtaining all necessary disposal permits and for complying with all state and County regulations for handling silt laden wastewater.
- G. All costs associated with disposal permitting and silt handling must be included in the **Contractor**'s rates for work.
- H. The containers for the disposal of materials removed from sewer lines shall be routed through an approved weigh station and a copy of each weight ticket submitted to the **Owner**. Such tickets shall be used to determine the quantities of materials removed.

### 3.07 DAMAGE TO SEWER LINES CAUSED BY CONTRACTOR

- A. The **Contractor** shall use special care in its work methods and take all necessary precautions against improper use of the cleaning equipment to avoid damaging the sewer line or manhole being cleaned. If the **Contractor's** work has caused damage to the sewer line or manhole, the **Contractor** shall repair the damage to the complete satisfaction of the **Owner** at no additional cost to the **Owner**.
- B. If the **Contractor** encounters pre-existing damage to the pipe to be cleaned, which the **Contractor** believes could result in further damage or failure of the pipe if cleaning operations are continued, the **Contractor** shall immediately notify the **Owner** of such conditions. Upon receipt of such notification the **Owner** shall conduct an on-site evaluation of CCTV or digital images of the pre-existing damage and shall either have the pipe segment, with pre-existing damage, replaced or repaired by the **Owner's** on call utility **Contractor** or shall direct the **Contractor** to proceed with cleaning of the pipe. If the **Owner** directs the **Contractor** to proceed with cleaning a pipe segment, for which the **Contractor** has provided prior notification to the **Owner** of pre-existing damage, and further damage or failure of the pipe segment occurs, the **Contractor** shall not be held responsible for such damage or failure.

### 3.08 RESPONSIBILITY FOR SPILLS

- A. It shall be the responsibility of the **Contractor** to schedule and perform its Work in a manner that does not cause or contribute to spills of silt, debris or cleaning water from the sewer line system.
- B. In the event that the **Contractor** Work activities contribute to spills, the **Contractor** shall immediately take appropriate action to contain and stop the spill and clean up the spillage and notify the **Owner** in a timely manner.
- C. **Contractor** will indemnify and hold harmless the County for any fines or third-party claims for personal or property damage arising out of a spill that is fully the responsibility of the **Contractor**, including the legal and administrative expenses of the County in defending such fines and claims.

**END OF SECTION 13327**

**PRECONDITIONING and CLEANING REPORT  
(To be Completed and Submitted Daily)**

Date: \_\_\_\_\_ Sheet \_\_\_\_\_ of \_\_\_\_\_  
 Crew: \_\_\_\_\_  
 Time of Arrival: \_\_\_\_\_  
 Site: \_\_\_\_\_  
 Upstream Manhole No.: \_\_\_\_\_ Downstream Manhole No.: \_\_\_\_\_  
 Time of Departure: \_\_\_\_\_

Location (street No., Easement Site)	Sewer Length (Feet)	Pipe in Highway (Yes/No)	Sewer Material	Silt Depth (Inches)	Sewer Dia. (Inches)	Length Cleaned (Feet)	Comments
Typical Comments (Initial)	Bad Joints (BJ)	Excessive Silt/Grrease (DES/DEG)	Intense Odor (O)	Concrete Debris (DECO)	Roots (Size) R	High Levels (HWL)	

Note: Continue on next line where extensive comments or space is required

Signed \_\_\_\_\_ (Owner's Representative) \_\_\_\_\_ (Contractor's Representative)

END OF SECTION

**SECTION 13328**  
**INTERNAL SEWER LINE CONDITION ASSESSMENT**

**PART 1 – GENERAL**

**1.01 SCOPE**

- A. Work described in this Section includes furnishing all labor, materials, equipment, tools and incidentals required for the Lining Pre-Installation CCTV inspection prior to the installation of CIPP lining and the post installation CCTV inspection. CCTV inspections shall be performed using pan and tilt color Closed Circuit Television (CCTV) cameras.
- B. To ensure consistency for location of sewer defects, features, service laterals to be rehabilitated and internal point repairs; CCTV inspection of each sewer segment listed in the Bid Schedule shall begin at the first manhole for each sewer segment as listed in the Bid Schedule. For example: MH 001 to MH 002, start at MH 001.
- C. It is the responsibility of the **Contractor** to comply with all applicable OSHA safety regulations, including Confined Space Entry requirements as stated in the General Conditions of this Specification. When requested by the **Owner**, the **Contractor** shall provide a completed Confined Space Entry form to demonstrate compliance with these standards. The **Contractor** shall provide written documentation that all workers have received the training required under these regulations and guidelines.
- D. All reporting and defect coding shall be in accordance with the latest version of PACP standards and guidelines in effect at the time of Bid.
- E. Related Work Specified Elsewhere
  - 1. Section 02112 - Access Road Clearing
  - 2. Section 02750 - Bypass Pumping
  - 3. Section 13342 - Sewer Rehabilitation by Cured-In-Place Pipe Method
  - 4. Section 13522 - Cured-In-Place Service Lateral Liner
  - 5. Section 13523 - Cure-In-Place Service Connection Renewal
  - 6. Section 13524 - Cured-In-Place Point Repair
  - 7. Section 13327 - Preconditioning and Cleaning of Sewer Lines

**1.02 SUBMITTALS**

- A. Submittals shall be made in accordance with the General Conditions of the Contract Documents and Section 01300 - Submittals. In addition, the following specific information shall be provided:
  - 1. Listing of CCTV equipment. (At Pre-construction conference)
  - 2. Listing of Safety Precautions and MUTCD Traffic Control Measures. (At commencement)
  - 3. Listing of backup and standby equipment. (At commencement)
  - 4. Current PACP Definitions and Codes. (At Pre-construction conference)
  - 5. Daily Logs and Progress Reports. (Daily)

6. CCTV videos, reports and database for importation into **Owner's** PipeLogix System. (Monday of the week following completion of the inspection of a section)
- B. Daily reports shall be provided via e-mail to the **Owner**, unless otherwise instructed. Daily reports shall be provided no later than 5:00 PM on the second day following completion of the survey.
  - C. The **Contractor** shall complete a daily written record (diary) detailing the work carried out and any small items of work which were incidental to the contract. The **Contractor** shall include in its daily record, reference to:
    1. Delays: e.g. Dense traffic, lack of information, sickness, labor or equipment shortage
    2. Weather: conditions, e.g. rain, etc.
    3. Equipment: on site, e.g. specialist cleaning, by-pass equipment, etc.
    4. Submittals: to the **Owner**
    5. Personnel: on site by name, e.g., all labor, Specialist Services, etc.
    6. Accident: report, e.g. all injuries, vehicles, etc.
    7. Incident: report, e.g. damage to property, property **Owner** complaint, etc.
    8. Major defects encountered, including collapsed pipe, if any: e.g. cave-ins, sink holes, etc.
    9. Visitors: on site
  - D. The **Owner** shall certify receipt of the daily record noting any items and adding any observations with reference to claims for payment to the **Contractor**. The **Owner** may at its discretion, for which the **Contractor** must receive direction in writing, grant an exception to this requirement and allow weekly submission of progress reports.

### 1.03 QUALITY ASSURANCE

- A. The **Contractor** shall inspect sewer lines with color pan and tilt CCTV equipment as specified so as to record all relevant features and to confirm the structural and service condition. Inspections of pipelines shall be carried out in accordance with the reporting format approved by the **Owner**. A sample report sheet is attached to this specification (Attachment A) and includes the recording of both target total length of sewer main inspected between manholes as well as actual length inspected.
- B. All CCTV inspection personnel responsible for direct reporting of sewer line condition shall have a minimum of 3 years previous experience in surveying, processing, and interpretation of data associated with CCTV equipment inspections. All operators shall be PACP certified to record inspections. The **Contractor** shall provide the **Owner** with written documentation that all CCTV equipment survey operators meet these experience requirements which shall include a list of projects undertaken as well as client name and telephone number for reference.

#### 1.04 INSPECTION UNITS

- A. The **Contractor** shall provide sufficient inspection units and all relevant ancillary equipment, including standby units in the event of breakdown, in order to complete all sewer line inspections as specified and shall certify that standby or back-up equipment can be delivered to the site within 24 hours in the event of equipment breakdown.

#### 1.05 INSPECTION VEHICLE

- A. The inspection vehicle shall comprise two totally separate areas. One of these, designated as the viewing area, shall be insulated against noise and extremes in temperature, include the provision for air conditioning, and shall be provided with means of controlling external and internal sources of light in a manner capable of ensuring that the monitor screen display is in accordance with the specification. Seating accommodation shall be provided by the **Contractor** to enable two people, in addition to the operator, to view clearly the on-site monitor.
- B. The working area shall be reserved for equipment, both operational and stored, and no equipment utilized within the sewer line shall be allowed to be stored in the viewing area.
- C. Subject to the approval of the **Owner**, an exception to the requirement under 1.05 A for two totally separate areas in the inspection vehicle shall be made when the **Contractor** utilizes CCTV equipment mounted on an All Terrain Vehicle (ATV) to conduct internal condition assessment work in sewers located in easements and rights-of-way where access with other types of CCTV equipment is not feasible or would require construction of temporary access roads.

#### 1.06 INSPECTION AND OPERATIONAL EQUIPMENT REQUIREMENTS

- A. Inspection equipment shall be towed, self propelled or floating, depending on the sewer line access and/or level of flow conditions. The inspecting equipment shall be capable of inspecting a length of sewer main up to at least 1,500 ft. when entry into the sewer main may be obtained at each end and up to 100 ft. by rodding or up to 750 ft. where a self propelled unit is used, where entry is possible at one end only. The **Contractor** shall maintain this equipment in full working order and shall satisfy the **Owner** at the commencement of each working shift that all items of equipment have been provided and are in full working order.
- B. Each inspection unit shall contain a means of transporting the inspection equipment in a stable condition through the sewer main under survey and/or inspection. Such equipment shall ensure the maintained location of the inspection equipment when used independently on or near to the central axis of a circular shaped sewer main when required in the prime position.
- C. Where the inspection equipment is towed by winch and bond through the sewer main, all winches shall be stable with either lockable or ratcheted drums. All bonds shall be steel or of an equally non-elastic material to ensure the smooth

and steady progress of the inspection equipment. All winches shall be inherently stable under loaded conditions.

- D. Each unit shall carry sufficient numbers of guides and rollers such that, when surveying or inspecting, all bonds are supported away from pipe and manhole structures and all cables and/or lines used to measure the equipment location within the sewer main are maintained in a taut manner and set at right angles where possible, to run through or over the measuring equipment.
- E. Each unit shall carry a range of flow control plugs or diaphragms for use in controlling the flow during the inspection. A minimum of one item of each size of plug or diaphragm ranging from 8 inches to 2 feet diameter inclusive shall be carried.
- F. Each inspection unit shall have on call equipment available to carry out the flushing, rodding and jetting of and sewer lines as and when such procedures are deemed to be necessary.

#### **1.07 FIELD SUPERVISION BY CONTRACTOR**

- A. The **Contractor** shall maintain on site at all times a qualified field superintendent in charge of the inspection. The field superintendent shall be approved in writing by the **Owner** prior to commencement of Work. Any change of supervision must also be approved in writing by the **Owner** prior to the change. The field superintendent shall be responsible for the safety of all site workers and site conditions as well as ensuring that all work is conducted in conformance with these specifications and to the level of quality specified.

#### **1.08 TELEVISION CAMERA AND MONITOR**

- A. The camera(s) shall be operative in 100 percent humidity/submerged conditions. The CCTV camera equipment shall provide a view of the pipe ahead of the equipment and of features to the side and rear of the equipment through turning and rotation of the lens. The camera shall be capable of tilting at right angles along the axis of the pipe while panning the camera lens through a full circle about the circumference of the pipe. The lights on the camera shall also be capable of panning 90-degrees to the axis of the pipe. If the equipment proves to be unsatisfactory, it shall be replaced with adequate equipment. The camera unit shall have sufficient quantities of line and video cable to inspect sewer mains with access as far apart as 1,500 feet.
- B. The television camera, electronic systems and monitor shall provide an image that meets the following requirements:
  - 1. The gray scale shall show equal changes in brightness ranging from black to white with a minimum of five stages.
  - 2. With the monitor control correctly adjusted, the six colors -Yellow, Cyan, Green, Magenta, Red, and Blue, plus Black and White, shall be clearly resolved with the primary colors in order of decreasing luminance.

3. The picture shall show no convergence or divergence over the whole of the picture. The monitor shall be at least 13 inches diagonally across the screen.
4. The live picture on the CCTV monitor shall be capable of registering a minimum of 500 lines horizontal resolution and be a clear, stable image with no interference.
5. Lighting intensity shall be remote controlled and shall be adjusted to minimize reflective glare. Lighting and camera quality shall provide a clear, in-focus picture of the entire inside periphery of the sewer mains and laterals for all conditions except submergence. Under ideal conditions (no fog in the pipeline) the camera lighting shall allow a clear picture up to five pipe diameter lengths away for the entire periphery of the sewer main. The lighting shall provide uniform light free from shadows or hot spots.
6. Camera focal distance shall be remotely adjustable through a range of 6 inches to infinity.
7. The monitor and software shall be able to capture and save screen images of typical pipeline details and all defects. Screen image files shall be named using pipeline segment number and footage and submitted as required under Part 3 of this Specification.

#### **1.09 RESPONSIBILITY FOR OVERFLOWS OR SPILLS**

- A. It shall be the responsibility of the **Contractor** to schedule and perform its work in a manner that does not cause or contribute to incidence of overflows or spills of sewage from the sewer main system.
- B. In the event that the **Contractor** work activities contribute to overflows or spills, the **Contractor** shall immediately take appropriate action to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify the **Owner** in a timely manner.
- C. **Contractor** will indemnify and hold harmless the County for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully the responsibility of the **Contractor**, including the legal, engineering and administrative expenses of the County in defending such fines and claims.

#### **PART 2 – PRODUCTS (Not Used)**

#### **PART 3 – EXECUTION**

##### **3.01 CLEANING PRIOR TO PRE-INSTALLATION CCTV INSPECTOR**

- A. The sewers to be rehabilitated by CIPP were cleaned and inspected by CCTV during the period of July 2008 to June 2019 and the CCTV Videos and Condition Assessment reports for these segments are included in the Contract Documents.



The **Contractor** is responsible for reviewing these CCTV videos and reports to determine if additional cleaning is required for proper installation of the CIPP liner. All costs associated with such cleaning shall be included in the **Contractor's** unit prices for CIPP lining.

- B. Cleaning shall be carried out in conformance with Section 13327 – Preconditioning and Cleaning of Sewer Lines.

### 3.02 INSPECTION EQUIPMENT – GENERAL

- A. CCTV Camera Prime Position: The CCTV camera shall be positioned to reduce the risk of picture distortion. In circular sewer mains the CCTV camera lens shall be positioned centrally (i.e. in prime position) within the sewer main. In non-circular sewer mains, picture orientation shall be taken at mid-height, unless otherwise agreed, and centered horizontally. In all instances the camera lens shall be positioned looking along the axis of the sewer main when in prime position. A positioning tolerance of  $\pm 10\%$  of the vertical sewer main dimension shall be allowed when the camera is in prime position.
- B. CCTV Color Camera: The **Contractor** shall provide a color pan and tilt camera(s) to facilitate the survey and inspection of all laterals, including defects such as hydrogen sulfide corrosion in the soffit of sewer mains and benching or walls of manholes over and above the standard defects that require reporting, where directed by the **Owner**. These will be carried out as part of the normal internal assessment as the survey or inspection proceeds when instructed by the **Owner**. A 360° rotational scan indicating general condition must be implemented at every 50 feet interval (min.) along sewer mains, and at manholes and any salient, specified, defect features. The tilt arc for the CCTV Camera must not be less than 225°.
- D. Linear Measurement:
  - 1. The monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the footage of the camera or center point of the transducer, whichever unit is being metered, from the cable calibration point. The relative positions of the two center points should also be noted.
  - 2. The **Contractor** shall use a suitable metering device, which enables the cable length to be accurately measured; this shall be accurate to  $\pm 1\%$  or 3 inches whichever is the greater.
  - 3. The **Contractor** shall demonstrate compliance with the tolerance in Sub-clause 3.03 D.2, using one or both of the following methods in conjunction with a linear measurement audit form which shall be completed each day during the survey:
    - a. Use of a cable calibration device
    - b. Tape measurement of the surface between manholes

4. A quality control form will be completed and submitted by the **Contractor** depicting the level of accuracy achieved.
5. If the **Contractor** fails to meet the required standard of accuracy, the **Owner** shall instruct the **Contractor** to provide a new device to measure the footage. The **Owner** retains the right to instruct the **Contractor** in writing, to re-survey those lengths of sewer main first inspected with the original measuring device using the new measuring device.
6. Automatic, linear measurement shall not be required for manned entry inspections using hand held cameras.

E. Data Display, Recording and Start of Inspection:

1. At the start of each sewer main length being inspected and each reverse set-up, the length of pipeline from zero footage, the entrance to the pipe, up to the cable calibration point shall be recorded and reported in order to obtain a full record of the sewer main length. Only one survey shall be indicated in the final report. All reverse set-ups, blind manholes, and buried manholes shall be logged on a separate log. Video digits shall be recorded so that every recorded feature has a correct tape elapsed time stamp. Each log shall make reference to a start (ST) and finish (FH) manhole unless abandonment took place because of blockage. Manhole number shall be indicated in the remark's column of the detail report.
2. The footage reading entered on to the data display at the cable calibration point must allow for the distance from the start of the inspection to the cable calibration point such that the footage at the start of the survey is zero.
3. In the case of inspecting through a manhole where a new header sheet must be completed, the footage shall be set at zero with the camera focused on the outgoing pipe entrance.
4. At the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and subsequently on the USB Flash Drive or external hard drive recording, a record of data in alpha-numeric form containing the following minimum information:
  - a. Automatic update of the inspection equipment's footage position in the sewer main line from adjusted zero
  - b. Sewer main dimensions
  - c. Manhole/pipe length reference numbers
  - d. Date of inspection
  - e. Road name/location
  - f. Direction of inspection
  - g. Time of start of inspection
  - h. Sewer main use (SW- Stormwater Drain; S-Sanitary Sewer)

- i. Material of construction of the pipe
  5. The size and position of the data display shall be such as not to interfere with the main subject of the picture.
  6. Once the survey of the pipeline is under way, the following minimum information shall be continually displayed:
    - a. Automatic update of the camera's footage position in the sewer main line from adjusted zero (see Sub-clause A4)
    - b. Sewer main dimensions in inches
    - c. Manhole or pipe length reference number (PLR). General convention allows upstream manhole number to be designated PLR
    - d. Direction of survey, i.e., downstream or upstream
  7. Correct adjustment of the recording apparatus and monitor shall be demonstrated by use of the test tape or other device approved by the **Contractor**. Satisfactory performance of the inspection equipment shall be demonstrated by the recording of the appropriate test device at the commencement of each day for a minimum period of 30 seconds.
  8. Footage and corresponding time elapsed video digit shall be given throughout inspection for all construction features encountered unless otherwise agreed.
  9. Where silt encountered is greater than 10 percent of the diameter of the pipe, the depth of silt shall be measured and recorded at approximately 50-foot intervals.
  10. USB Flash Drive or external hard drive capacity shall be adequate to record two hours of video inspection. Recording of a single segment shall not extend over more than one USB Flash Drive or external hard drive. No unrecorded gaps shall be left in the recording of a segment between surveys/inspections as the original video tape.
  11. Only segments between manholes on the same sewer main reach or basin shall be included on one USB Flash Drive. There shall be no "split surveys" or "split-basins" between USB Flash Drive.
  12. All continuous defects shall incorporate a start and finish abbreviation in the log report
- F. Coding: Material, Shape, and Lining Coding, and conventions used throughout the project shall comply with the Pipeline Assessment and Certification Program (PACP) of the National Association of Sewer Service Companies (NASSCO). The **Contractor** must ensure that all operators conform to the detailed requirements of the reporting procedure concerning feature description and feature definition.

### 3.04 SURVEY DATA SPECIFICATION

#### A. Reporting:

1. The data shall meet the requirements of PACP and shall be capable of being imported into the **Owner's** "PipeLogix" software. Prior to initiation of the condition assessment work, the **Contractor** shall demonstrate to the satisfaction of the **Owner** that survey software used by **Contractor** is compatible with the **Owner's** PipeLogix software by providing a sample of **Contractor's** proposed database for import into **Owner's** PipeLogix software.
2. No later than the Monday following the completion of a pipeline inspection, **Contractor** shall provide a USB Flash Drive or external hard drive to the **Owner** containing all Internal Condition Assessment Reports, data transfer file and the CCTV videos. The supplied data and information shall remain the property of the **Owner**.
3. The **Contractor** shall furnish all equipment and software required for taking videos of the view which appears on the monitor. Digital Video will be used to record location of taps and service connections, severe leaks, holes, collapses, misalignments, and serve as a record of the pre- and post- installation conditions of the sanitary sewer main and rehabilitated service laterals. Standard header information such as upstream and downstream manhole numbers, direction of survey, pipe size, pipe material, date performed, person performing the inspection and length of survey shall be captured utilizing inspection software approved by the **Owner** and which meets the requirements of PACP.
4. The report shall be computer validated using software approved by the **Owner** and which meets the requirements of PACP, and provided to the **Owner** on a USB Flash Drive or external hard drive to provide a summary listing of the number and type of features including defects found for each section of pipeline. The report format shall meet the requirements of PACP.
5. The **Contractor** shall provide electronic copies of completed "Internal Condition Tabular Report" and "Pipe Graphic Report" at the time of the inspection and shall email these sheets to the **Owner's** representative, preferably each day, but at least every other day, together with a daily report on progress. (See Attachment A for examples). The **Contractor** may submit its own Tabular and Graphic report format to the **Owner** for approval, however, the **Owner** reserves the right to require that the **Contractor** submit the reports in the format as shown in Attachment A.
6. Inspection reports shall contain all header information. A summary observation shall be included as a comment in the header indicating the general condition of the segment for which the inspection was required. The detailed section of the report will include coding for the start (ST) manhole (MH), water level (WL), finish manhole (MH), where appropriate,

and finish (FH) or survey abandoned (SA) as appropriate, together with all the supplemental information otherwise required for the "survey".

- B. Site Coding Sheets: Each sewer line between two consecutive manholes, shall be entered electronically on a separate coding sheet. Thus where **Contractor** elects to "pull through" a manhole during an inspection a new coding sheet shall be started at the manhole "pulled through" and the footage re-set to zero on the coding sheet. Where a length of sewer line between consecutive manholes is inspected from each end (due to an obstruction) two coding sheets should be used. Where a length of sewer line between consecutive manholes cannot be inspected or attempted for practical reasons a (complete header) coded sheet shall be made out defining the reason for abandonment. At uncharted manholes a new coding sheet must be started and the footage re-set to zero.
- C. Measurement Units: All dimensions shall be in feet and inches. Measurement of sewer main diameters shall be to the nearest inch and sewer lengths to the nearest tenth of a foot.
- D. Photographs:
1. Photographs shall be taken of all defective laterals and pipeline defects. Where a defect is continuous or repeated the photographs shall be taken at the beginning of the defect and at not less than 10 foot intervals thereafter. Where photographs are not otherwise required a general condition photograph shall be taken not more than 50 feet after the previous photograph.
  2. CCTV Photographs must clearly and accurately show what is displayed on the monitor, which shall be in proper adjustment.
  3. Photographs must be durable and 3"x5" size and shall be supplied in a suitable album or storage drawer approved by the **Owner**.
  4. Still photographs shall be durable and clearly identified in relation to the photograph number (cross referenced to the site survey sheet) street location, sewer main dimensions, manhole start and finish numbers, survey direction, footage and date when the photograph was taken.
  5. The annotation shall be clearly visible and in contrast to its background, shall have a figure size no greater than 14 point, and be type printed in upper case.
  6. The annotation shall be positioned so as not to interfere with the subject of the photograph.
  7. The **Contractor** shall provide color photographs using digital camera or such other mutually agreed upon hard copy color image together with electronic copy.
- E. Control Sample Photographs: The **Owner** may issue a written instruction to the **Contractor** to provide a sample of the photographs and/or CCTV video taken

during the contract period which the **Contractor** shall provide within 5 working days of receiving the written instruction.

### 3.05 SERVICE LATERAL INSPECTION

- A. For service line inspections launched from the mainline during a mainline inspection:
1. **Contractor** will assess and document the internal condition of all Service Laterals that are listed in the Bid Schedule for CIPP Service Connection Renewal, CIPP Lateral Liner or Lateral Cleaning and Inspection, using the previously described procedures, with the exception of ending abandoned service line inspections launched from the mainline. Use "GOA" to note abandonment.
  2. A number will be entered into the "Photo No." field that represents a sequential numbering of the services found. The services will be numbered 01, 02, 03, etc. When the inspection is a reverse setup and the number of services has not exceeded 50, the numbering shall begin with 51 on the reverse.
  3. The end of the inspection of the service line at the property line shall be entered "MGO" (General Observation code), along with the service line number in the "Photo No." column, and the distance to the end of the survey in the "Remarks" column. The "Distance" will also be the same as for the Connection. When a survey is abandoned, the code "MSA" shall be used and the reason for the abandonment stated in the "Remarks" column.
  4. Measurements shall be taken from the wall of the mainline pipe.
- B. For service line inspections conducted from a cleanout (or as a separate inspection launched from the mainline), the inspection shall be recorded as a normal mainline inspection with the following exceptions:
1. When the mainline is inspected or surveyed, all services shall be numbered using a number in the "Photo No." field, as explained above.
  2. The "Start Manhole" shall be entered as the upstream manhole followed by "\_01", "\_02", etc. Where the "\_01" corresponds to the service number assigned when the mainline was surveyed.
  3. The upstream manhole shall be entered as the PLR.
  4. The "Address" shall be the address of the house connected by the service line.
  5. If the inspection begins at a cleanout, the "Direction" is entered as "D". If the inspection begins from the mainline, the "Direction" is entered as "U".
  6. "=Service Line=" shall be entered in the "Location Details" field.

### 3.06 CCTV PERFORMANCE

- A. Color CCTV: All CCTV work shall use color CCTV reproduction.
- B. CCTV Picture Quality:
1. An approved test device shall be provided and be available on site throughout the Contract, enabling the tests specified in this clause to be checked.
  2. The test card shall be Marconi Regulation Chart No. 1 or its approved derivatives with a color bar, clearly differentiating between colors, with no tinting, to show the following: White, Yellow, Cyan, Green, Magenta, Red, Blue, and Black.
  3. At the start of each working shift, the camera shall be positioned centrally and at right angles to the test card at a distance where the full test card just fills the monitor screen. The **Contractor** shall ensure that the edges of the test card castellations coincide with the edges of the horizontal and vertical scan (raster). The card shall be illuminated evenly and uniformly without any reflection. The illumination shall be to the same color temperature as the color temperature of the lighting that recorded for subsequent use by the **Owner**, the recording time to be at least 30 seconds. The type of camera used is to be identified on the test recording. The recording must show the camera being introduced into the test device and reaching its stop position. Other test devices may be used subject to approval by the **Owner**. Test recordings shall also include the time and date of the recording. Test recordings shall be delivered to the **Owner** on a weekly basis. The test recordings shall be delivered on USB Flash Drive.
  4. The electronic systems, television camera and monitor shall be of such quality as to enable the following to be achieved:
  5. Shades of Gray: The gray scale shall show equal changes in brightness ranging from black to white with a minimum of five clearly recognizable stages.
  6. Color: With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance. The gray scale shall appear in contrasting shades of gray with no tint.
  7. Linearity: The background grid shall show squares of equal size, without convergence/divergence over the whole of picture. The center circle shall appear round and have the correct height/width relationship ( $\pm 5\%$ ).
  8. Resolution: The live picture must be clearly visible with no interference and capable of registering a minimum number of TV lines/pictures height lines. The resolution shall be checked with the monitor color turned down. In the case of tube cameras this shall be 600 lines.

7. Color Constancy: To ensure the camera shall provide similar results when used with its own illumination source, the lighting shall be fixed in intensity prior to commencing the survey. In order to ensure color constancy, generally no variation in illumination shall take place during the survey.
  - a. The **Contractor** shall note that the **Owner** may periodically check both the live and picture color consistency against the color bar. Any differences will require re-survey of the new length or lengths affected, at the **Contractor's** expense.

C. Playback and USB Flash Drive Labeling:

1. USB Flash Drive playback imaging shall be linked to electronic out put of alpha-numeric data so that if necessary direct interrogation of database can take place with simultaneous viewing of CCTV images.
  2. Each USB Flash Drive shall be labeled by reference to the header record for the survey section completed together with the following information:
    - a. Client Name: "Cobb County Water System"
    - b. Project Name: "FY19 Sewer System Rehabilitation"
    - c. **Contractor's** Name:
    - d. **Contractor's** logo is optional:
    - e. Survey date(s):
    - f. Survey Method: "CCTV – Internal Sewer main Condition Assessment":
    - g. DVD Label – "XXXXXXYYZZTT", where:
      - i. XXXXXX is the Sewer Basin abbreviation, as provided by the County
      - ii. YY is the Company abbreviation, as provided by the County
      - iii. ZZ is the unique crew leader initials
      - iv. TT is a sequence number maintained for the crew leader
    - h. Video Filename(s): Alphanumeric using any convention. Filename is to be included in the header field as specified. Filename is limited to 5 characters (e.g. "00001" to "00004")
- I. CCTV Focus/Iris/Illumination: The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The adjustment of focus and iris shall provide a minimum focal range from 6 inches in front of the camera's lens to infinity. The distance along the sewer main in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer main. The illumination must allow an even distribution of the



light around the sewer main perimeter without the loss of contrast picture, flare out or shadowing.

J. **Contractor's Data Quality Control Procedure:**

1. The **Contractor** shall operate a quality control system, approved by the **Owner**, which will effectively gauge the accuracy of all survey reports produced by the operator.
2. The system shall be such that the accuracy of reporting is a function particularly of:
  - a. The number of faults not recorded (omissions).
  - b. The correctness of the coding and classification of each fault recorded.
3. The minimum levels of accuracy to be attained under the various survey headings are as follows:
  - a. Header Accuracy 95%
  - b. Detail Accuracy 85%

**3.07 COLLAPSED SEWER LINES/DEFECTIVE MANHOLES**

- A. Any sewer line found with greater than 10% deformation (i.e. collapsed or near to collapse) must be reported to the **Owner** immediately for remedial action.
- B. Any manholes found broken, cracked, with missing covers or surcharged, must be reported to the **Owner** immediately for remedial action.
- C. Any sewer line found where the existing conditions pose a threat of personal injury to the public, such as a collapsed sewer main with attendant depression to roadway, must be protected by the **Contractor** until the **Owner** arrives at the job site.
- D. Any manhole found where the existing conditions pose a threat of personal injury to the public, such as broken, cracked or missing covers or covers found in traveled portions of any sidewalk or roadway must be protected by the **Contractor** until the **Owner** arrives at the job site.

END OF SECTION 13328

**ATTACHMENT A**

**INTERNAL SEWER MAIN INTERNAL ASSESSMENT LOG AND PIPE GRAPHIC CONDITION  
ASSESSMENT REPORT  
SAMPLE REPORTS**

**(For use with County Database)**

## COBB COUNTY - INTERNAL CONDITION ASESMENT LOG

USB Volume Label <input type="text"/>	Contractor/ Inspector <input type="text"/>	Basin Number <input type="text"/>	Sub Basin Number <input type="text"/>	Reverse <input type="text"/>	Spare <input type="text"/>	PLR <input type="text"/>
--	--	---	---	---------------------------------	-------------------------------	-----------------------------

Date (mmddy) <input type="text"/>	Time <input type="text"/>	Address (Street Number, Name, NSEW, ) <input type="text"/>
--------------------------------------	------------------------------	---

Start Locaton <input type="text"/>	Start Depth <input type="text"/>	Start Cover <input type="text"/>	Start Invert <input type="text"/>	Finish Location <input type="text"/>	Finish Depth <input type="text"/>	Finish Cover <input type="text"/>	Finish Invert <input type="text"/>
---------------------------------------	-------------------------------------	-------------------------------------	--------------------------------------	---	---	--------------------------------------	--

Use <input type="text"/>	Direction <input type="text"/>	Size 1 Dia/Hght <input type="text"/>	Size 2 Width <input type="text"/>	Shape <input type="text"/>	Material/Lining <input type="text"/>	Pipe Length <input type="text"/>	Total Length <input type="text"/>	Year Installed <input type="text"/>
-----------------------------	-----------------------------------	--	---	-------------------------------	---	--	--------------------------------------	---

Video Name <input type="text"/>	Spare <input type="text"/>	Comments <input type="text"/>
------------------------------------	-------------------------------	----------------------------------

Purpose <input type="text"/>	Weather <input type="text"/>	Location <input type="text"/>	Location Details <input type="text"/>	Category Code <input type="text"/>	Pre- Cleaned <input type="text"/>
---------------------------------	---------------------------------	----------------------------------	--	--	---

Video No.	Photo/Svc No.	Distance	Defect Cont.	Defect Code	Dia.	Circumferential		Percent Intrusion	Remarks
						Clock At	Clock To		

**SECTION 13342**  
**SEWER MAIN REHABILITATION BY CURED-IN-PLACE PIPE METHOD**

**PART 1 - GENERAL**

**1.01 SCOPE**

- A.** The work covered under this Section includes furnishing all labor, material and equipment and performing all operations necessary for the installation of a Cured-In-Place Pipe (CIPP) liner to stabilize structural defects in sewer mains forming a new pipe within an existing pipe. Once installed, the liner shall extend from specified start to end points in a continuous tight fitting watertight pipe-within-a-pipe. All work shall be performed only as directed by the **Owner** or as shown on the Drawings. The liner shall be smooth, hard, strong, and chemically inert. When cured, the CIPP will be formed to the original sewer main. The CIPP shall provide flow capacity not less than 100% of the original pipe's flow capacity when new.
- B.** The sewer main rehabilitation work shall be accomplished by the insertion of a flexible lining tube consisting of two concentric, tubular, woven seamless polyester jackets with a water tight polymeric membrane bonded to the interior layer. Prior to installation, the tube shall be impregnated and saturated with a thermosetting resin. The liner shall be inserted into the existing sewer man either by direct inversion (ASTM F1216) using a head of water or by pulling the tube into place by winching and then inflating it (ASTM F1743). The thermosetting resin shall be cured only by circulating hot water through the tube to cure the resin into a hard impermeable pipe. The use of hot air or circulating steam **shall not** be permitted during the installation process. The finished product shall be a jointless pipe lining formed to the profile of the existing host pipe. The pipe lining shall be designed to structurally support all internal pressure and external hydrostatic loads, and as applicable, dead and live loads.
- C.** The work shall include all cleaning of the existing sewer main host pipe and disposal of waste materials to facilitate the video inspection.
- D.** **Contractor** shall perform video inspection after sewer main cleaning to document the condition of the existing host pipe and shall perform video inspection after completion of the pipe lining operation to document the condition of the cured-in-place pipe and inspect the work for compliance and acceptance by the **Owner**
- E.** Any cost associated with the removal of an unsatisfactorily installed liner and the subsequent, satisfactory reinstallation of an approved liner shall be borne solely by the **Contractor**, and it shall not make any claim against the **Owner** for this additional required work.

**1.02 REFERENCE STANDARDS**

- A.** Except as otherwise indicated, the current editions of the following apply to as a minimum to the Work of this Section. The latest revisions of all standards in effect on date of advertisement are applicable. Where discrepancies exist between this Specification and referenced product/process standards, this Specification shall

govern.

1. ASTM D638 Standard Test Method for Tensile Properties of Plastics
2. ASTM D790 Test Method(s) for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.
3. ASTM F1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
4. ASTM F1743 Rehabilitation of Existing pipelines and conduits by pulled-in-place installation of cured-in-place thermo-setting resin pipe.
5. ASTM D638: Test Method for Tensile Properties of Plastics
6. ASTM D2990: (Tensile Compressive and Flexural Creep and Creep-Rupture of Plastics)

### 1.03 RELATED SECTIONS

- A.** The Work of the following Sections specifically apply to the Work of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of Work.
1. Section 01010: Project Procedures
  2. Section 01012: Special Requirements
  3. Section 02750: Bypassing
  4. Section 13327: Preconditioning and Cleaning of Sewer Mains
  5. Section 13328: Internal Sewer Main Condition Assessment

### 1.04 QUALITY ASSURANCE

- A.** In order to establish minimum product quality and **Contractor** capability, the following minimum requirements shall be met.
- B.** CIPP System Manufacturer: The Cured-in-Place (CIPP) sewer main lining system must have a minimum proven performance record of 50,000 linear feet of sewer main or water main lining installed in North America, in diameters of 30-inches or greater.
- C.** The **Contractor** performing the sewer main rehabilitation work shall have a minimum of five (5) years experience of CIPP sewer main or water main lining installation and shall have installed a minimum of 15,000 linear feet of CIPP in diameters of 30-inches or greater in North America.
- D.** On-Site Field Superintendent: The On-Site Superintendent shall have a minimum of five (5) years experience with the installation of cured-in-place pipe. In addition, the Superintendent shall have supervised three (3) successfully completed projects totaling a minimum of 10,000 linear feet of CIPP installation for sewer main or water main rehabilitation, with a diameter of 30-inches or greater.
- E.** The Installation Crew shall have a minimum of two members with three years CIPP installation experience. Installers shall have 10,000 linear feet and/or 300 line sections of successful CIPP sewer main or water main lining installation experience

- F. The Curing Technician shall be certified and approved as an operator by the rehabilitation system manufacturer or an independent testing agency for the proposed CIPP technology. The **Contractor** shall supply the **Owner** with the name and certification of the Curing Technician.
- G. The cured-in-place-pipe liner manufacturer shall certify that the **Contractor** is a fully trained user of the liner method. Installation of the liner method shall be performed by trained personnel. Such training shall have been conducted by a qualified representative of the liner method manufacturer. Certificates of such training for all personnel involved in the operation of the liner method shall be provided to the **Owner** prior to the start of liner installation.
- H. Resin Class
1. The **Contractor** shall designate a wet-out facility and shall provide wet-out liner tubes from this designated facility only. Multiple facilities to supply wet-out liner tubes for the duration of this Contract may not be used without prior approval of the **Owner**.
  2. The **Contractor** shall place a sampling valve in-line at a point in the resin/catalyst mixing stage so that a sample of non-catalyzed resin may be taken. A second sampling valve shall be placed in-line at a point after the resin/catalyst mixing stage, but prior to catalyzed resin injection site into the liner so that a resin sample may be taken. Both sampling valves shall be left in place for the duration of the Contract.
  3. The **Owner** shall have the right to inspect the designated wet-out facility and draw samples from one or both sampling valves without prior notice to the **Contractor** for the duration of the Contract.
  4. Infrared Analysis
    - a. The **Owner** reserves the right to subject resin samples to an infrared analysis (IR Scan). This standard analytical test involves shining a beam of light in the infrared frequency region through a thin sample of subject resin. The frequency of light is then varied across the infrared spectrum. Chemical functional groups present in the resin being analyzed will absorb infrared light at specific frequencies and with characteristic absorption intensities.
    - b. A spectrum created from the measurement of light transmitted through the sample across the range of infrared frequencies shall be used to determine the resin's chemical fingerprint. For Standard Polyester resin, an overlaid IR spectrum of Reichhold PolyLite® 33420 shall be used as a baseline comparison for the purpose of a test under this Contract. For Enhanced Polyester resin, an overlaid IR spectrum of Reichhold PolyLite® 33420\_E shall be used as a baseline comparison for the purpose of a test under this Contract.
    - c. The **Owner** may perform random Infrared Scans (IR Scans) and/or composite burn-offs to insure resin quality and consistency

throughout the duration of the Contract and shall be responsible for the cost of IR testing.

## 1.05 SUBMITTALS

- A. The following shall be submitted to the **Owner** in writing prior to or at the time indicated in accordance with General Conditions. Failure to do so will prevent progression of the Work to the next step. In addition, the following information shall be submitted to the **Owner**:
1. Certified copies of manufacturer test reports on physical properties and chemical resistance of the proposed resin **(At Pre-Construction Meeting)**.
  2. Information from the resin manufacturer including specifications, characteristics, properties, type test information and methods of application, including a written certification that the resin material is appropriate for the intended application **(At Pre-Construction Meeting)**.
  3. Prior to use of the lining materials, satisfactory written guarantee of its compliance with these specifications and the liner manufacturer's standards for all materials (woven and seamless polyester jackets, watertight polymeric membrane bonded to the interior, and the thermosetting resin) and techniques being used in the method **(At Pre-Construction Meeting)**.
  4. Prior to the start of work the types of resins and the resultant cure schedules for each length and size of sewer main to be lined. The finished liner shall incorporate thermosetting materials that will withstand the corrosive effects of normal existing chemical additives to the water supply **(At Pre-Construction Meeting)**.
  5. Process Control Sheet to include Temperature/Time Log Information, Tap Cut Information and Curing Cycle. **(After Completion of Each Pipe Section – See Attachment A for Process Control Sheet form)**.
  6. CIPP Repair Methods [If Required] **(Before Repairs Are Made)**.
  7. Daily Logs **(Weekly)**
  8. Physical Sample **(After Completion of Each Section)**
    - a. Samples removed for testing shall be individually labeled and logged to record the following:
      - 1) **Owner's** project number and title
      - 2) Sample number
      - 3) Segment number of line as noted on plans
      - 4) Date and time of sample
      - 5) Name of **Contractor**
      - 6) Date, location and by whom tested
      - 7) Results of test

- b. Samples shall be numbered as follows:
- 1) Sample #/A: Resin sample
  - 2) Sample #/B: Flat plate sample
  - 3) Sample #/C: Upstream thickness test
  - 4) Sample #/D: Downstream thickness test
9. Data establishing the structural capabilities, chemical composition, thickness, and other mechanical properties of the liner system proposed.
  10. Detailed design calculations for the proposed liner thickness for each pipe size and depth category, along with a certification signed and sealed by a professional engineer registered in the State of Georgia, to the effect that the proposed liner thicknesses were calculated based on the parameters specified in Article 2.02 of this Section of the Specifications and the site specific internal and external loads. The design submittal shall identify the physical properties used for design calculations.
  11. The number and location of access points required for installation of the sewer main lining **(At Pre-Construction Meeting)**.
  12. Pre- and post-installation videos and logs in accordance with Section 13328, CCTV Sewer Main Inspection.
  13. Catalyst system and resin/catalyst ratio.
  14. The proposed curing schedules/process shall be approved by the resin manufacturer in writing. Cure schedules shall include specific information on “step curing” procedures, “cooking times”, duration and “cool down” procedures – all to be approved by the resin manufacturer in writing.
  15. Written certification by the CIPP manufacturer that the lining system proposed complies with all applicable requirements of these Specifications **(At Pre-Construction Meeting)**.
  16. Proposed plan for ensuring that the finished and installed CIPP meets the minimum thickness requirements. The plan shall include detailed inversion procedures to reduce stretching and resin loss and to minimize shrinkage **(At Pre-Construction Meeting)**.
  17. Names and experience and certifications of Installation Crew Members and Curing Technician to demonstrate compliance with paragraph 1.04 of this Specification **(At Pre-Construction Meeting)**.

## 1.06 WARRANTY

- A.** The **Contractor** shall warrant all work and materials, excluding surface restoration, installed under this Section of the Specifications for five (5) years from the date of final acceptance. The date of final acceptance shall be the date final payment is made to the **Contractor**.



## PART 2 - PRODUCTS

### 2.01 LINER SIZE AND LENGTH

- A. The liner shall be fabricated to a size that when installed will neatly fit the internal circumference of the sewer main to be lined. The liner thickness shall be designed to adequately resist the full internal pressure and all external pressures and conditions (e.g. deflection, ring bending, buckling and minimum stiffness). The length of the liner shall be that deemed necessary to effectively span the distance and carry out the insertion and seal of the liner at the end points. The **Contractor** shall verify the lengths in the field before cutting the liner to length. Prior to the start of work the manufacturer of the cured-in-place-pipe liner will be required to submit design calculations for wall thickness to the **Owner**.

Allowance for circumferential and longitudinal stretching of the liner during insertion shall be made as per the manufacturer's standards.

### 2.04 CIPP DESIGN

A. Liner Thickness

1. The **Contractor** shall submit liner thickness calculations to the **Owner** for review. The liner thickness calculations shall be reviewed, signed and stamped by an independent Professional Engineer licensed in the State of Georgia. The CIPP shall be designed in accordance with the applicable provisions of ASTM F1216 for "fully deteriorated gravity pipe conditions" and shall meet the following design conditions:
  - a. AASHTO H-20 Live Load whether under a road or not.
  - b. A dead load based on the depth of the pipe shown on the drawings and a soil modulus of elasticity of 1,000 psi, soil weight of 120 pounds per cubic foot and a coefficient of friction of  $Ku'=0.130r$ .
  - c. Short-term flexural modulus and long-term modulus when tested in accordance with ASTM D790.
    - i. Standard Polyester: 250,000 psi and 125,000 psi, respectively
    - ii. Enhanced Polyester: 400,000 psi and 200,000 psi, respectively
  - d. Minimum flexural strength of 4,500 psi when tested in accordance with ASTM D790.
  - e. Safety factor of 2.0 shall be used.
  - f. Groundwater elevation at the ground surface.
  - g. Maximum pipe ovality: 5%.
  - h. Poisson ratio of 0.3.
  - i. Enhancement factor (K) of 7.
  - j. Service temperature range shall be 40 to 140 degrees.
  - k. Maximum long-term deflection shall be 5%.
  - l. Any and all other site specific external loads. The **Contractor** shall be responsible for identifying and determining specific external loads.
2. The liner thickness shall be reviewed by the **Owner** prior to tube manufacture. The liner shall not be less than the minimum acceptable thickness listed in the following table:

Pipe Diameter (Inches)	Minimum Thickness (Finished & Installed)
30	16.5 mm

1. The liner thickness shall be reviewed by the **Owner** prior to tube manufacture.
- B. The finished CIPP will provide a uniform smooth, interior wall surface with a Manning "n" coefficient of 0.011.
  - C. Liner material shall be tested in accordance with ASTM F1216, Section 8 - Inspection Practices. Certificates of tests shall be provided to the **Owner**.

### 2.03 LINER MATERIAL

- A. The cured-in-place-pipe liner shall be composed of one or more layers of absorbent or non-woven felt fabric with glass-fiber mat reinforcement material that meets the requirements of ASTM F1216, Section 5.1. The polymeric inner membrane shall be designed to ensure water tightness and shall be constructed to withstand installation pressures and stretch to fit irregular pipe sections. The fully cured-in-place-pipe liner shall conform to the minimum structural standards as follows:

Tensile Strength @ Yield	3,000 psi	ASTM D638
Flexural Strength	4,500 psi	ASTM D790
Flexural Modulus	250,000 psi	ASTM D790

- B. Resin systems used shall be designed for use in pressurized sewer mains. These resins shall be Vinyl Ester.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. All rehabilitation of existing sewer mains using an approved CIPP product shall be performed in strict accordance with this Specification and the latest revision of ASTM F1216.
- B. The **Contractor** shall carry out its operations in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving work on an elevated platform, entry into a confined space, and the operation of high temperature equipment.
- C. The tube shall be fabricated to a size that, when installed, will neatly fit the internal circumference of the conduit(s) designated for CIPP. Allowance shall be made for the circumferential stretching during insertion of the tube.
- D. The **Contractor** shall be responsible for determining the minimum length to effectively span the distance from the termination points and shall verify the length of the fabric tube in the field before the tube is either cut to length or wet-out with resin. The tube may run through one or more sections with the approval of the **Owner**.

- E. The **Contractor** will be responsible for locating all access points.
- F. The **Contractor** will be responsible for any cost of water used on the Project. A water meter and backflow device must be obtained from the main office of the Cobb County Water System for recording water usage used for cleaning, inversion and other work items requiring water. The office address is 660 South Cobb drive, Marietta, Georgia. The main office phone number is 770-419-6208.
- G. Traffic Control: The **Contractor** shall be responsible for traffic control during the course of each phase of the work. A Cobb County Department of Transportation (CDOT) Utility Permit shall be required for all partial and full lane closures. Road closures and / or detours shall require a CDOT Road Closure Permit. **Contractor** shall submit a traffic control plan to the **Owner** a minimum of two weeks prior to partial or full lane closures and a minimum of four weeks prior to a road closure along with other pertinent information needed for the associated permit application. The **Owner** will submit the permit application to CDOT. The traffic control plan shall conform to CDOT requirements and be in conformance with the Manual on Uniform Traffic Control Devices for Streets and Highways. The **Contractor** shall install and maintain traffic control compliant with the approved permit, including but not limited to, trained and properly equipped flagmen, to safely control all traffic through the work zone(s). It is the **Owner's** intent that this work be accomplished with as little disturbance to traffic, private property, and the public as is reasonably possible, consistent with timely completion thereof.

### 3.02 DAILY WORK SCHEDULE

- A. To the extent possible, work shall be scheduled so that the lining of the pipe and curing of the tube can be accomplished in a single working day or shift. Prior approval must be obtained from the **Owner** if work is to be performed at night or on weekends to minimize traffic disturbance.

### 3.03 SAFETY

- A. The **Contractor** shall carry out its operations in strict accordance with all OSHA and manufacturer's safety requirements. Emphasis shall be placed upon safety requirements for entering confined spaces and working with hot water.
- B. The **Contractor** shall erect such signs and other devices as are necessary for the safety of the work site and shall secure the site and perform all work to the safety requirements of all pertinent regulatory agencies.

### 3.04 AIR QUALITY

- A. The **Contractor** is advised that all liner installation work shall be carried out in full compliance with all County, State, and Federal laws, rules, and regulations regarding Air Quality and Safety.

### 3.05 PREPARATION OF EXISTING SEWER MAIN

#### A. Cleaning

1. Prior to CIPP installation, the pipe shall be cleaned in accordance with Section 13327 of these Specifications
2. The cleaning method shall remove all rust, scales, tuberculation, deposits, loose or deteriorated remains of any original coatings and other foreign materials from the inside of the pipe so as to produce a smooth metal surface finish that will allow the new composite liner to adhere to the existing host pipe.
3. After cleaning, and again immediately before pipe liner insertion the main shall be plunged with a tight fitting rubber plunger and foam swab to clear the pipe bore of debris and water.

#### B. Pre-Installation Video Inspection:

1. The sections of sewer main designated for CIPP installation shall be televised its full length using a remote television camera in accordance with Section 13328B of these Specifications to determine that the rust and scale deposits have been adequately removed, that the latest condition of the sewer main makes lining feasible.

### 3.06 LINER INSTALLATION

**A.** The **Contractor** shall use equipment which is recommended and approved by the cured-in-place-pipe liner manufacturer. A letter from the CIPP liner manufacturer approving the **Contractor's** equipment shall be provided to the **Owner** prior to the start of CIPP installation.

**B.** The **Contractor** shall provide suitable temperature and pressure gauges in accordance with the manufacturer's standards and specifications. Puller unit/winch cable shall be equipped with manufacturer recommended tension gauge and shall be smooth running and variable speed. The cutting device shall be a remote monitored device for use inside the lined pipe.

**C.** The **Contractor** shall prepare and inspect all necessary tools and any spare parts that are required for equipment that suffer frequent breakdowns, and shall ensure that said tools and spare parts are available at the site. The **Contractor** shall also prepare and make operable all necessary communication equipment for its field crew.

#### D. Preparing and Inserting the Liner

1. The **Contractor** shall designate a location, on job site, where the uncured resin in the original containers and the unimpregnated liner will be impregnated prior to installation. The **Contractor** shall allow the **Owner** to inspect the materials and chemical impregnation "wet out" procedure. A resin and catalyst system recommended by the liner manufacturer and approved by the **Owner** shall be used. The quantities of the liquid

thermosetting materials inserted into the lining tube shall be as per manufacturer's standards so as to fully saturate the liner material and provide the lining thickness specified.

2. Immediately after cutting and prior to installation of liner, the ends of the adjacent existing sewer main that are not to be lined at the insertion/extraction points shall be covered/plugged so that no debris shall enter into them during reconstruction work. The chemical impregnated liner material shall be inserted into the sewer main being reconstructed through the insertion point by either the direct inversion method or by the pull-in-place method, as recommended by the manufacturer. The head used to extend the liner tube shall be sufficient to fully extend the tube both circumferentially and longitudinally. The shaping of the liner may be achieved by pushing a pig through the hose using water pressure. The head used shall comply with the manufacturer's guidelines to insure that a proper finished thickness is achieved and that the liner fits snug to the existing pipe wall producing dimples at service connections and flared ends at the entrance and exit points.
3. Inflation of liners used shall be accomplished in accordance with manufacturer's standards and specifications. However, only circulating hot water shall be used as a heat source to cure the resin into a hard impermeable pipe. Use of hot air or circulating steam shall not be permitted during installation process.

#### **E. CURING OF LINER**

1. After inflation or inversion is completed, the **Contractor** shall supply a hot water heat source. The equipment shall be capable of delivering hot water to the far end of the liner to uniformly raise the temperature in the entire liner above the temperature required to initiate and effect curing of the resin system. The temperature shall be determined by the resin/catalyst system employed. The heat source shall be fitted with suitable monitors to gauge the temperature and pressure of the incoming and outgoing heat exchanger circulating heating medium. Thermocouples or temperature gauges or infra-red gun shall be used at insertion and extraction points so as to determine and record the temperature of the liner and time of exotherm.
2. Initial cure shall be deemed to be completed when inspection of the exposed portions of the liner show it to be hard and sound; and when temperature reading(s) at the interface of the liner with the host pipe indicate sufficient heating has occurred. The cure period shall be of a duration recommended by the resin manufacturer; modified for the site specific conditions at the time curing is effected. During this cure time, the temperature inside the liner will be continuously maintained in the range required.

3. Once the cure is complete, the **Contractor** shall cool the hardened liner to a temperature below one hundred degrees Fahrenheit (100°F) before relieving the internal pressure. Cool down shall be accomplished as recommended by the manufacturers. Care shall be taken in the release of the internal pressure so that a vacuum will not develop that could damage the newly installed liner.
4. The finished lining shall be continuous over the entire length and be free from visual defects such as foreign inclusions, dry spots, pinholes and delaminations. The lining shall be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to the inside of the lined pipe.
5. If at the insertion/extraction ends the lining fails to make a tight seal, the **Contractor** shall apply a seal of a resin mixture compatible with the liner.

### 3.07 CCTV TELEVISION INSPECTION OF INSTALLED LINER

- A. After the liner is sufficiently cool (below one hundred degrees Fahrenheit (100°F)) a CCTV inspection and video recording of the newly installed liner shall be performed to determine if the liner is properly installed.

### 3.08 TESTING OF CIPP

- A. The **Contractor** shall collect samples of the cured CIPP. The samples shall be for laboratory determination of flexural strength, flexural modulus and wall thickness for each test sample. These three individual analyses shall comprise one completed test. All samples shall be collected per the sampling protocols set forth in ASTM F1216.
- B. At the point most distant from the heat source, the **Contractor** shall remove one restrained sample of the installed liner at least 12 inches in length for testing. For sewer mains 15 inches and larger, plate samples may be taken and cured in the same water as the installed CIPP. For each sample taken, the **Contractor** shall cut and deliver a 12-inch wide representative sample (taken at least 2 inches from the end of the specimen) to the **Owner**. The sample delivered to the **Owner** shall be labeled and removed from any restraining mold. The **Owner** may return such samples to the **Contractor** for disposal.
- C. The tests shall be used to verify that the installed CIPP meets these specifications. CIPP thickness shall be measured in accordance with ASTM D2122. Flexural properties shall be determined per ASTM D790. The **Contractor** shall label and date all samples and deliver the samples directly to the **Owner**. All testing shall be performed by an independent, ASTM-certified testing laboratory of the **Owner's** designation. Payment to the **Contractor** shall be withheld pending the **Owner's** acceptance of the CIPP test results.
- D. Any liner that does not meet the specified strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the

**Contractor** in a manner approved by the **Owner** at no additional cost. The **Owner's** decision on how to correct deficient CIPP installations shall be final. Options for correcting deficient liners that will be considered by the **Owner** include removing the liner and re-lining the sewer main, excavating and replacing the sewer main from manhole to manhole, or providing the **Owner** with a credit. The primary option that will be considered will be to re-line the sewer main. Credits will only be authorized for CIPP that does not meet required thickness. If a credit is acceptable to the **Owner**, the credit shall be calculated by multiplying the bid price by the percent that the liner thickness is below the required installed thickness as follows:

$$\text{Credit} = (1 - \text{Installed CIPP thickness}/\text{required CIPP thickness}) \times \text{bid price}$$

- E. The **Contractor** shall not assume a credit will be acceptable to the **Owner** in any case.
- F. The laboratory cost for CIPP testing under this section shall be paid from an allowance included in the Bid Schedule.

### 3.09 FINAL ACCEPTANCE

- A. Post-installation videos shall be conducted and submitted to the **Owner** in accordance with Section 13328 of these Specifications. The finished CIPP shall be continuous over the length of pipe between manholes and shall be an impermeable, joint-less conduit, free from visual defects such as foreign inclusions, dry spots, pin holes, lifts, or delamination.
- B. The finished CIPP shall be continuous and free from visual defects such as foreign inclusions, dry spots, pinholes, de-lamination and wrinkles specified above. Any section of lining with such defects shall be removed and replaced at no additional cost to the **Owner**. Wrinkles in the CIPP, (other than minor, longitudinal pressure wrinkles) will not be acceptable. The **Owner** shall determine as to the acceptability of pressure wrinkling with that decision being final.
- C. After curing of the resin is completed, the hardened CIPP shall extend to the termination point designated providing a structurally sound, corrosion-resistant, watertight conduit that excludes exfiltration and infiltration, is tight-fitting within the existing pipe, and is free of voids or annular spaces between the CIPP and the existing pipe walls. K-Factor for tightness shall equal 7.0 or greater. All terminations into the manhole walls shall be watertight at the time of final inspection. No annular space shall be visible between the CIPP and manhole wall.
- D. The finished pipe must be such that when the thermosetting resin cures, the total wall thickness will be a homogeneous, monolithic felt and resin composite matrix that will be chemically resistant to withstand internal exposure to domestic sewage. When cured, the CIPP must form a mechanical bond with the host pipe.
- E. Payment for CIPP installation will be made by **Owner** upon final acceptance.

### 3.10 SITE RESTORATION

- A. All lawn and other areas maintained by property owners that were damaged by the **Contractor's** operations are to be replaced in kind (predominant) with sod, regardless of the apparent method of original planting. The **Contractor** shall utilize a professional landscape company to identify and list by address the predominant grass type found prior to disturbance or preferred by the property owner. Seeding and mulching shall be utilized in areas not maintained by owners as lawns. Sod and seeding are to be installed in conformance with the requirements in Section 02485 (Seeding) and Section 02486 (Sodding) of these Specifications.
- B. Fences, which have been removed or damaged by the **Contractor's** operations, shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of the **Contractor's** operations. Suitable materials and methods shall be used for such restoration.
- C. If the event the **Contractor's** operations cause any property damage outside the sewer main easement, the **Contractor** shall restore the damaged property to a condition at least equal to that in which the property was found immediately prior to the beginning of the **Contractor's** operations. Trees, shrubs and ground covers are to be installed in conformance with the requirements of Section 02490 (Trees, Shrubs and Ground Covers).
- D. Restoration shall be done as promptly as practicable and shall not be left until the end of the construction period. Compensation for any restoration work required shall be included in the payment item for Cured-In-Place Pipe.

END OF SECTION 13342



## ATTACHMENT A PROCESS CONTROL SHEET - CIPP LINER

The Contractor shall complete a Process Control Sheet for each pipe lined and shall submit a copy to the Owner immediately following the lining operation and its inspection. The Process Control Sheet shall include the information listed below unless otherwise approved by the Owner. In the event there is more than one contractor or inspector confirming the process completion, each section shall be initialed by the performing contractor/inspector. All sections that are not completed due to lack of applicability to the rehab method shall be marked "N/A".

Date(s) of Rehabilitation: \_\_\_\_\_

Date Process Completed: \_\_\_\_\_

General Process Control Section			
<b>General</b>	WEATHER ETC:		
	Prior to Lining (Include air temperature)		
	During Lining (Include air temperature)		
	Has the Post-Installation CCTV inspection been completed and approved? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	If no explain here:		
	Has the line been cleaned and prepared for Lining? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	If no explain here:		
<b>Location</b>	Street Name(s)/Address		
	Pipe Material		
	Pipe Diameter (Inches)		
<b>CIPP Installation</b>	INSTALLATION METHOD**		
	Inversion Start Time		
	Inversion Finish Time		
	Inversion Pressure (H <sub>w</sub> /t) Start Time		
	CURING DETAILS:	Temperature (°F)	
		Time to Soak (minutes)	
	Curing Time	Start Time	Finish Time
	Cooling Time	Start Time	Finish Time
Temperature at Release			
<b>Temperature Monitoring</b>	THERMOCOUPLE: Type		
	Temperature Range		
	Entry Point		
	Exit Point		
<b>Testing</b>	Item A: Hydrostatic Test Complete? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Item B: Pipe Sample Complete? <input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>Signatures</b>	<u>Contractor</u>	<u>Inspector</u>	
	By signing below, I agree that the above General Process Control section has been inspected and confirmed. I understand that I have the right to indicate by my initials, which sections I am confirming if I have not completed the inspection myself. I am aware that all sections left blank will be considered incomplete and may be sent back with a request for additional information.		
	Type Name:	Type Name:	
	Signature:	Signature:	

\* Testing Note: All samples removed for testing shall be individually labeled and logged to record the following: (1) Owner's project number and title (2W) Sample number, (3) Line Segment, (4) date and Time of sample, (5) Contractor name, (6) Date, location and name of tester and (7) results of test

\*\*\* Indicate which method was used: e.g. Tower (T), CHIP unit (CHIP) or winched-in-Place (WIP)

## SECTION 13546

### SANITARY SEWER REHABILITATION BY MACHINE SPIRAL WOUND LINER METHOD USING PVC PROFILES

#### PART 1 - GENERAL

##### 1.01 SCOPE

- A. Work described in this Section includes furnishing all labor, materials, equipment, tools and incidentals required for a complete and operable installation of spiral wound PVC conduit renewal system in full conformity with the Contract Documents. All materials shall be installed, adjusted, tested and placed in operation in accordance with these Specifications, the manufacturer's recommendations and as shown on the Drawings. The general requirements herein, together with the detailed requirements of the specifications, establish the work necessary to furnish and install the liner system.
- B. Contract documents refer only to functional features and some of the required external connections. They do not specify all components required for a complete installation nor exact dimensions particular to any manufacturer's lining system. Contractor shall supply all parts, devices and equipment necessary to meet the requirements of the Contract Documents and shall make all dimensional adjustments required for the lining system being furnished. All costs associated with such changes and adjustments shall be considered as being included in the price bid for the Work shown and specified.
- C. The spiral wound PVC profile renewal system shall utilize an extruded polyvinyl chloride (PVC) single profile strip that is machine spiral wound into an existing conduit (host pipe). The machine wound extruded profile strip shall be mechanically double locked together on the grouting side by virtue of the profile design and the use of the winding machine.
- D. The Work of this Section shall comply with the current versions, with revisions, of the following:
  - 1. OSHA 29 CFR 1910.146 (permit-required confined-space regulations)
- E. All work and testing shall comply with the applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and applicable state and local codes and standards; and to the extent applicable with the requirements of the Underwriter's Laboratories, Inc. and the National Electrical Code.
- F. Related Work Specified Elsewhere;
  - 1. Section 13327 – Preconditioning and Cleaning of Sewer Lines
  - 2. Section 13328 – Internal Sewer Line Condition Assessment
- G. The sewer lines, rehabilitated with the spiral wound conduit renewal system shall be capable of withstanding an earthen overburden with a depth of 30 feet and a HS-20 Truck load together with a 6-inch earthen overburden.

- H. The rehabilitated sewer line shall have an improved coefficient of friction sufficient to compensate for the reduced diameter of the rehabilitated pipe and shall at least have the same capacity as the existing pipe when presumed to be flowing full in outlet controlled hydraulic conditions.
- I. The sewer lines to be cleaned convey sanitary sewage. In many instances such sewer lines are subject to high flows in a periodically varying cycle, due to rainfall. The **Contractor** shall include in its bid provisions for dealing with such variations, and where necessary, plan and schedule its Work to accommodate such variation in flows.

## 1.02 SUBMITTALS

- A. Submittals shall be in accordance with the requirements of the General Conditions of the Contract Documents. In addition, the following specific information shall be provided:
  - 1. Product Data: Descriptive details and shop drawings covering full details of liner and full details and cuts of all materials to be incorporated into the Work. **(At Pre-construction Meeting)**
  - 2. Manufacturer's Installation Instructions including any special procedures required to install products specified. **(At Pre-construction Meeting)**
  - 3. Manufacturer's Certificate: Manufacturer's certificate certifying that products meet or exceed the requirements of ASTM F1697-09 and ASTM F-1784-03 for PVC profile;. **(At Pre-construction Meeting)**
  - 4. Letter from the spiral wound profile manufacturer certifying the fitness of its products for use in the spiral wound lining system and conformance to the requirements of this specification and all other applicable contract requirements. Certification shall also provide the history of successful application of the product. **(At Pre-construction Meeting)**
  - 5. Manufacturers' references meeting the requirements of 1.03 B. **(At Pre-construction Meeting)**
  - 6. Contractors or installation subcontractors' references meeting the requirements of 1.03 C. **(At Pre-construction Meeting)**
  - 7. Initial structural design calculations initial (used for bidding) **(At Pre-construction Meeting)** and final (after the Contractors inspection) prepared **(within 14 days of Completion of Inspection)** and signed and sealed by a Professional Engineer licensed in the state of Georgia. Liner design calculations shall be supported by field analysis, technical assumptions, requirements of this specification and ASTM F1741. The calculations shall demonstrate compliance with Section 1.01.
  - 8. A site-specific safety plan shall be submitted and shall address ventilation, lighting, ingress/egress, rescue procedures, and training certification of employees. **(At Pre-construction Meeting)**
  - 9. Host pipe cleaning method(s). **(At Pre-construction Meeting)**
  - 10. Pre-installation video survey of host pipe. **(Upon completion)**
  - 11. Work plan for spiral winding process including details of all materials and equipment to be used during the winding process. **(At Pre-construction Meeting)**

12. Documentation for the profile strip material confirming that the material satisfies the requirements of this specification and the Contractor's design submittal. **(At Pre-construction Meeting)**
13. Within 2 weeks of final acceptance of the work the Contractor shall submit a post-installation video survey of the renewed conduit.

### 1.03 QUALITY ASSURANCE

- A. Reference Standards: The Contractor shall comply with the applicable provisions and recommendations of the latest editions of the following standards, except as otherwise shown on the Plans or specified in these Specifications.
  1. ASTM D256-06 Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
  2. ASTM D638-03 Standard Test Method for Tensile Properties of Plastics
  3. ASTM D648-06 Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
  4. ASTM D 790 : Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
  5. ASTM F1697-09 Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Strip for Machine Spiral Wound Liner Pipe Rehabilitation of Existing Sewers and Conduits.
  6. ASTM F1741-08 Standard Practice for Installation of Machine Spiral Wound Poly(Vinyl Chloride) (PVC) Liner Pipe for Rehabilitation of Existing Sewers and Conduits.
  7. ASTM D1784-03 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compound.
  8. ASTM D 2412 : Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
  9. ASTM D 2444 : Test for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)
  10. ASTM D 3350 : Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
- B. Manufacturer's Experience. The manufacturer of the spiral wound liner system shall have a minimum of 125,000 linear feet (LF) of sewer main successfully installed of equal size or larger than proposed for the project. The Manufacturer shall submit references from a minimum of five separate projects to meet these requirements.
- C. Contractor's Experience. The Contractor or the installation subcontractor shall have a minimum of 10 years experience and shall have installed a minimum of 2,000 linear feet (LF) of 30-inch, or larger, spiral wound profile liner for sewer or storm water drain rehabilitation. The Contractor or the installation subcontractor shall submit references from a minimum of three separate projects to meet these requirements.
  1. Field Superintendent. The Contractor shall submit the name, qualifications and references for each proposed field superintendent for the project. The Contractor is required to have at least one qualified and APPROVED

superintendent on the job site at all times during all lining activities. The field superintendent must have supervisory field experience on a minimum of two successfully completed sewer lining projects installing the proposed spiral wound system of similar size and complexity within the last three years.

2. Installation Crew. At least one person other than the field superintendent from each lining installation crew shall have a minimum of one successfully completed sanitary sewer lining project installing the proposed spiral wound system of similar size and complexity within the last three years.

D. Warranty.

1. The Contractor shall warrant and shall obtain from the manufacturer its written warranty that the liner system conforms to the installation requirements and these specifications and will be free from defects in materials and workmanship for period of five years from the date of completion of this project. The manufacturer's warranty shall be in a form acceptable to and for the benefit of the Owner and shall be submitted by the Contractor as a condition of final payment. The Contractor shall repair or replace, at the Owner's discretion and at no cost to the Owner, any work found to be defective within the five years warranty period. Such repair or replacement shall include all costs of removal and reinstallation.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

A. PVC Spiral Wound Profile Strip (Sewers up to 33-Inch Diameter):

1. The extruded profile strip shall be made from unplasticised PVC compounds meeting the minimum requirements for cell classification 13354 or higher, as defined in ASTM D 1784.
2. PVC profile strip for machine spiral wound liner pipe rehabilitation of existing sewers shall comply with ASTM F 1697, except as modified herein.

### **2.02 Material and Equipment Acceptance (Sewers up to 33-Inch Diameter):**

- A. The Spiral Wound PVC Profile Liner shall be SPR™ EX as manufactured by Sekisui SPR Americas, LLC or approved equal.
- B. At the time of manufacture, each lot of extruded profile strip shall be inspected for defects and tested for physical properties as specified. A "lot" is defined as a continuous extrusion run of a given profile designation on a spool.

Profile Type	Minimum Width		Minimum Height		Minimum Waterway Wall		Minimum Initial Stiffness Factor (EI)	
	mm	in.	mm	in.	mm	in.	MPa-mm <sup>3</sup>	(in <sup>3</sup> -lbf/in <sup>2</sup> )
1	51.0	2.0	5.5	0.216	1.4	0.0551	21.2x10 <sup>3</sup>	188.0
2	80.0	3.14	8.0	0.314	1.4	0.0551	63x10 <sup>3</sup>	561.0
3	121.0	4.76	13.0	0.511	1.6	0.0630	21.2x10 <sup>3</sup>	2148.0
7	121.0	4.76	19.0	0.748	2.1	0.0830	21.2x10 <sup>3</sup>	3983.0

Note: Initial Stiffness Factors are derived from testing in accordance with ASTM D 790 as modified by ASTM F1697, using flat strips of profile

- C. The following values of modulus of elasticity of PVC shall be used in design:  
Short Term: 400,000psi (2,750 MPa)  
Long Term: 116,000psi (800 MPa)
- D. Sealants and gaskets necessary for effective interlocking of the edges of PVC strip are pre-applied at the time of manufacture. They shall be suitable for use in a sewer environment.

### 2.03 MATERIAL TESTING

- A. Prior to installation of the liner, a sample of profile from each production run shall be tested to confirm that the value of initial stiffness factor specified in Table 1 exceeds specified minimum values.
- B. Payment for testing shall be made from the Testing Allowance.

### 2.05 PRODUCT HANDLING

- A. The spiral profiles shall be shipped on appropriately sized reels for ease of handling and product protection. The product shall be inspected for defects at the time of manufacture and again in the field prior to installation. Defects to the profiles include, but are not limited to, gouges, abrasion, flattening, cuts, punctures, and ultra-violet (UV) degradation. Defective product shall not be installed and shall be removed from the jobsite. Handling and storage of the profile reels shall be in accordance with the manufacturer's instructions.
- B. All other products required to complete the spiral wound lining renewal process shall be handled and stored in accordance with the manufacturer's instructions. Each product shall be accompanied by its relevant specification and MSDS information.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Perform all work in accordance with applicable OSHA standards.
- B. All work shall conform to ASTM F 1741-08, "Standard Practice for Installation of Machine Spiral Wound Poly (vinyl) Chloride (PVC) Profile Strip Liner for Rehabilitation of Existing Sewers and Conduits", and the manufacturer's recommendations and these Specifications.

### **3.02 PREPARATION**

- A. Host Pipe Access:
  - 1. Unless otherwise specified by the Owner, the Contractor may utilize any of the existing catch basins, junction boxes or headwalls in the project area as access points.
- B. Cleaning:
  - 1. All debris and obstructions shall be removed from the host pipe and disposed of in accordance with the requirements of the contract, and local codes and ordinances.
  - 2. Water jetting shall be used to clean and prepare the surface of the host pipe. All loose material, acids, grease and other deleterious substances shall be removed during cleaning.
- C. Pre-Installation Inspection and Surveying:
  - 1. After cleaning, and prior to winding the profile, the Contractor shall notify the Owner and inspect the host pipe to ensure there are no excessive variations in the host pipe profile and no obstructions that would hinder the spiral winding process. Contractor shall also verify that the sizing of the profile (wound geometry) will be suitable for the host pipe geometry.
  - 2. The Contractor shall perform a pre-installation video survey of the host pipe.

### **3.03 INSTALLATION AND FIELD INSPECTION**

- A. Installation of machine spiral wound PVC liner pipe for rehabilitation of existing sewers shall comply with ASTM F 1741 except as modified herein.
- B. The existing pipeline shall be cleaned of any obstructions, to a standard suitable for installation of the liner, and televised. All existing live service connections shall be precisely located longitudinally and radially, and logged for subsequent reinstatement following installation of the liner.

- C. Bypass pumping is not mandatory for installation of the spiral wound liner. The Contractor shall be responsible for deciding the need for flow diversion to allow successful liner installation.
- D. During installation, the winding machine shall perform the following operations simultaneously:
  - 1. A continuous ribbed liner profile strip is supplied from a reel and fed down through the existing manhole to the winding machine positioned at the base of the manhole.
  - 2. Joint lubricating sealant shall be placed into the primary lock of the self-interlocking edges of the ribbed profile (Note: An elastomeric adhesive, which prevents the liner from expanding prematurely during winding, is applied to the secondary lock during manufacture of the ribbed profile).
  - 3. High tensile wire shall be inserted (Note: The wire remains only temporarily as it is pulled out during the expansion stage).
  - 4. The winding machine winds the PVC strip into a liner pipe by interlocking the edges
  - 5. Winding continues until the full length of the deteriorated pipe between manholes has been lined.
  - 6. The liner is then radially expanded by mechanical means, without the application of heat, until the liner makes contact with the inside wall of the existing pipe.
  - 7. End seals between the liner pipe and the existing pipe shall be installed with a sealing material that is compatible with the liner pipe material.
  - 8. The transition between the liner invert and the invert in the manhole base shall be rendered smooth to reinstate the sewer flow line.

### 3.04 COMPLETION OF WORK AND SITE RESTORATION

- A. Ends of Renewed Conduit:
  - 1 The ends of the spiral wound conduit shall be securely grouted in position. The conduit shall be sealed to the host pipe with material capable of achieving a watertight seal.
  - 2 The step in the flow line at the ends of the renewed conduit shall be blended into the existing flow line using appropriate materials
- B. At points where temporary excavation was required for access to the host pipe or lateral connections, appropriate encasement shall be provided for the exposed spiral wound profile and/or connecting pipes. Encasement materials may consist of concrete, sand slurry, epoxy grout or other suitable materials as approved by the Owner for the anticipated service.



C. Final Inspection and Acceptance:

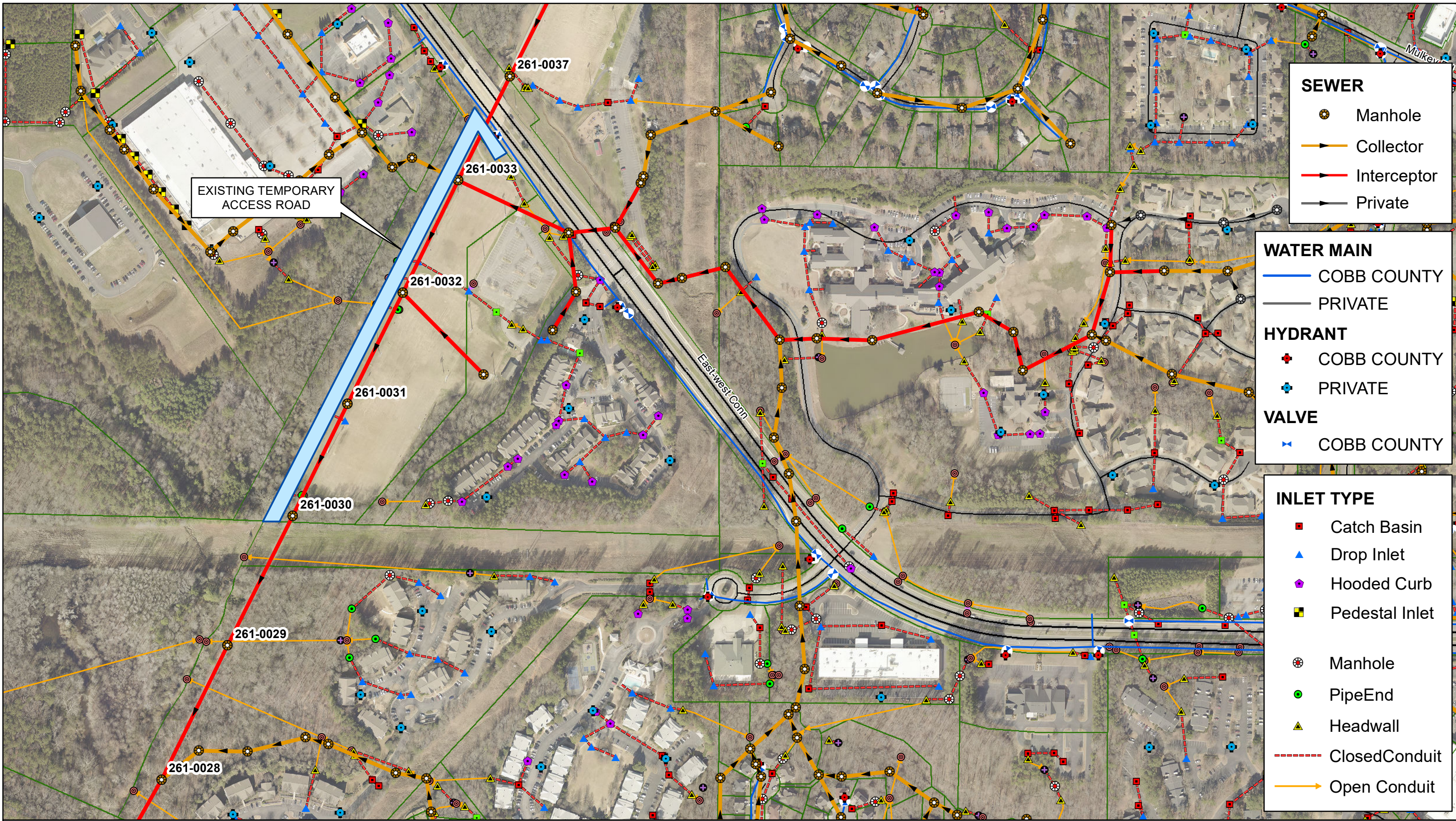
1. After the installation of the liner, lateral reinstatement and repair and manhole rehabilitation, the liner shall be visually inspected in accordance with Section 13328 of these Specifications. Where lateral connections have been damaged or where there are other deficiencies, the damaged section of the liner, lateral connection or manhole shall be corrected at no additional cost to the Owner.
2. The spiral wound profile lining in the renewed conduit shall be continuous over the entire length of an installation run and be free from defects such as foreign inclusions, holes, cuts, tears, bulges and restrictions. The renewed conduit shall be impervious against leakage out of the conduit to the surrounding ground or into the conduit from the surrounding ground.
3. Any defect that will or potentially could affect the structural integrity or performance of the renewed conduit shall be repaired at the Contractor's expense using means and methods approved by the Owner.

END OF SECTION 13546

# APPENDIX A

## INTERCEPTOR SEWER LOCATION MAP AND RECORD DRAWING





**SEWER**

- Manhole
- Collector
- Interceptor
- Private

**WATER MAIN**

- COBB COUNTY
- PRIVATE

**HYDRANT**

- COBB COUNTY
- PRIVATE

**VALVE**

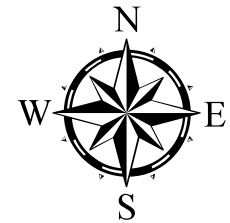
- COBB COUNTY

**INLET TYPE**

- Catch Basin
- Drop Inlet
- Hooded Curb
- Pedestal Inlet
- Manhole
- PipeEnd
- Headwall
- Closed Conduit
- Open Conduit

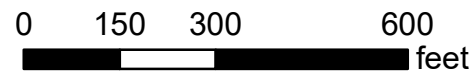


**Cobb County Water System**  
 660 South Cobb Drive  
 Marietta, GA 30060

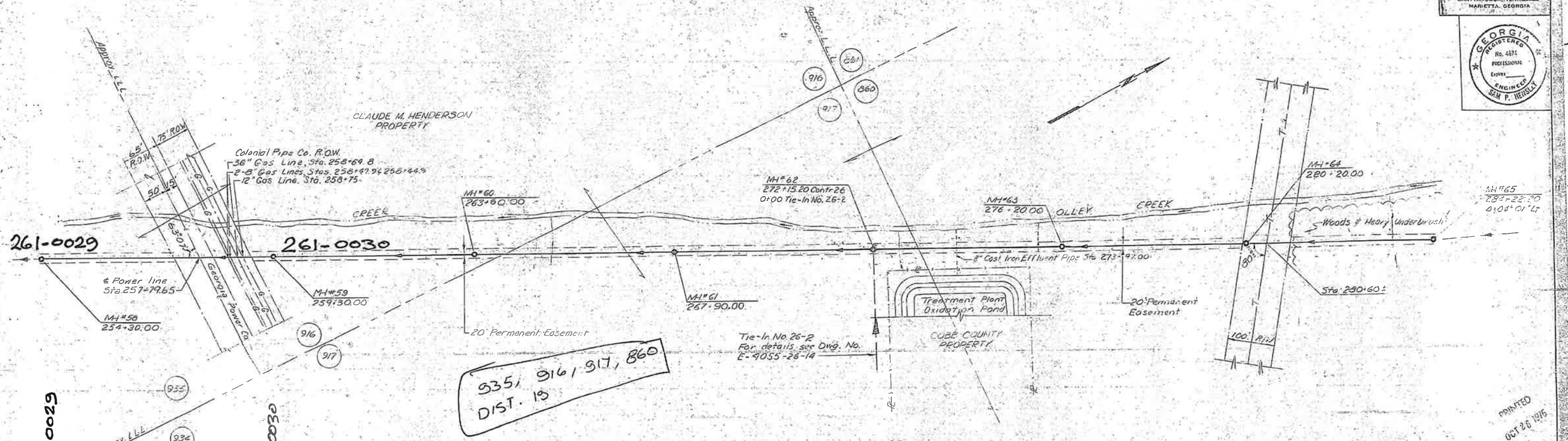


**TRAMORE INTERCEPTOR**  
**MH 261-0030 to MH 261-0029**

1 inch = 300 feet



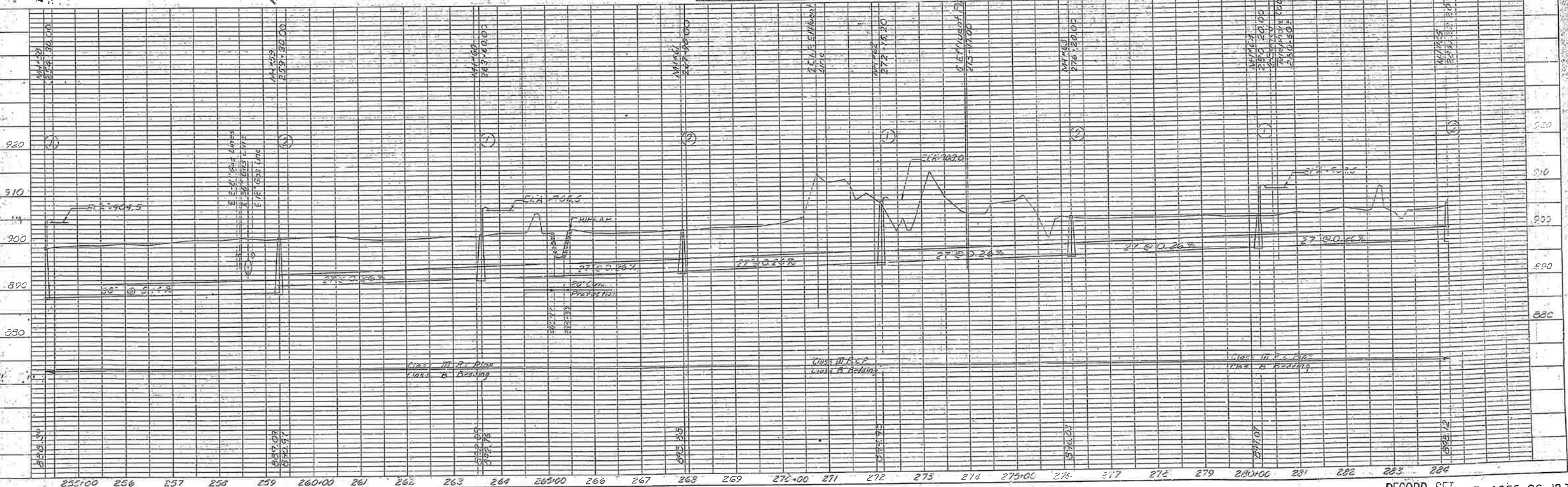




935, 916, 917, 860  
DIST. 19

**OLLEY CREEK INTERCEPTOR SEWER  
CONTRACT NO 26**

0.3	CGW	7/76	REVISED TO RECORD SET
0.2	SJM	1-15-75	ADDED ADDITIONAL COLONIAL PIPELINE GAS LINE
0.1	SW	9/73	CHANGED SHEET NO.



PRINTED  
OCT 26 1976

NO. 4512 REGISTERED PROFESSIONAL ENGINEER SAM P. HENSLEY

SCALE: 1" = 40' (VERTICAL) 1" = 100' (HORIZONTAL)

DATE: 10/26/76

DRAWN BY: [unintelligible]

## **APPENDIX B**

### **EROSION AND SEDIMENT CONTROL STANDARD DETAILS**

**Detail 02270-1 – Sediment Barrier (Silt Fence)**

**Detail 02270-2 – Sediment Barrier (Staked Hay Bale)**

**Detail 02270-3 – Inlet Sediment Trap**

**Detail 02270-4A – Curb Inlet Filter Trap (Catch Basin – In Line)**

**Detail 02270-16 – Construction Exit**

# DETAIL 02270-1

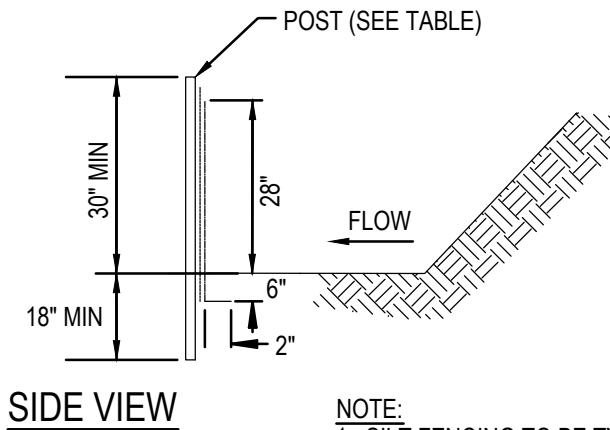
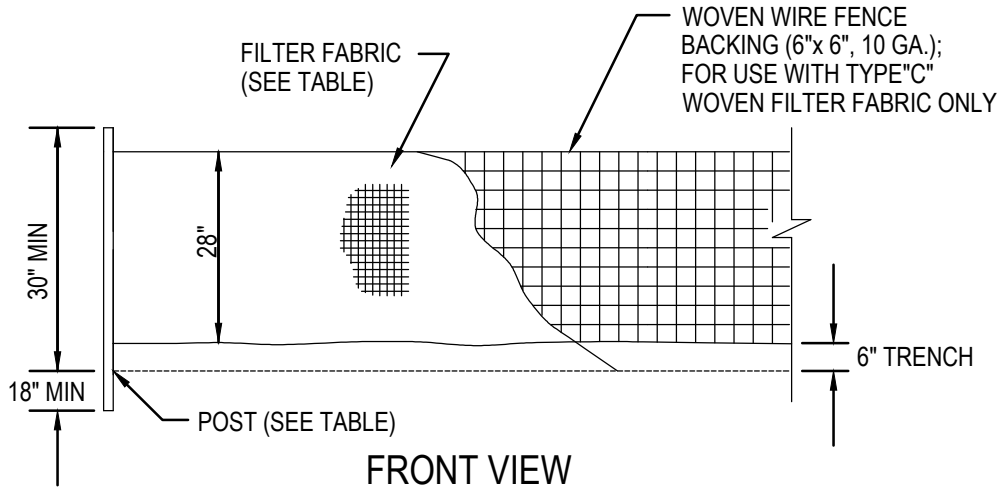
## COBB COUNTY WATER SYSTEM

### SEDIMENT BARRIER (SILT FENCE)

(Sd1)

APRIL 4, 2002

\_\_\_\_\_  
AGENCY DIRECTOR



FILTER FABRIC TYPE	POST TYPE
A NON-WOVEN	3" DIA. OR 2x4 (SOFT WOOD) OR; 1.5"x1.5"(OAK) OR; 1.3 LB/FT (STEEL) 6' O.C.
C WOVEN	1.3 LB/FT (STEEL) 4' O.C. ONLY

**NOTE:**

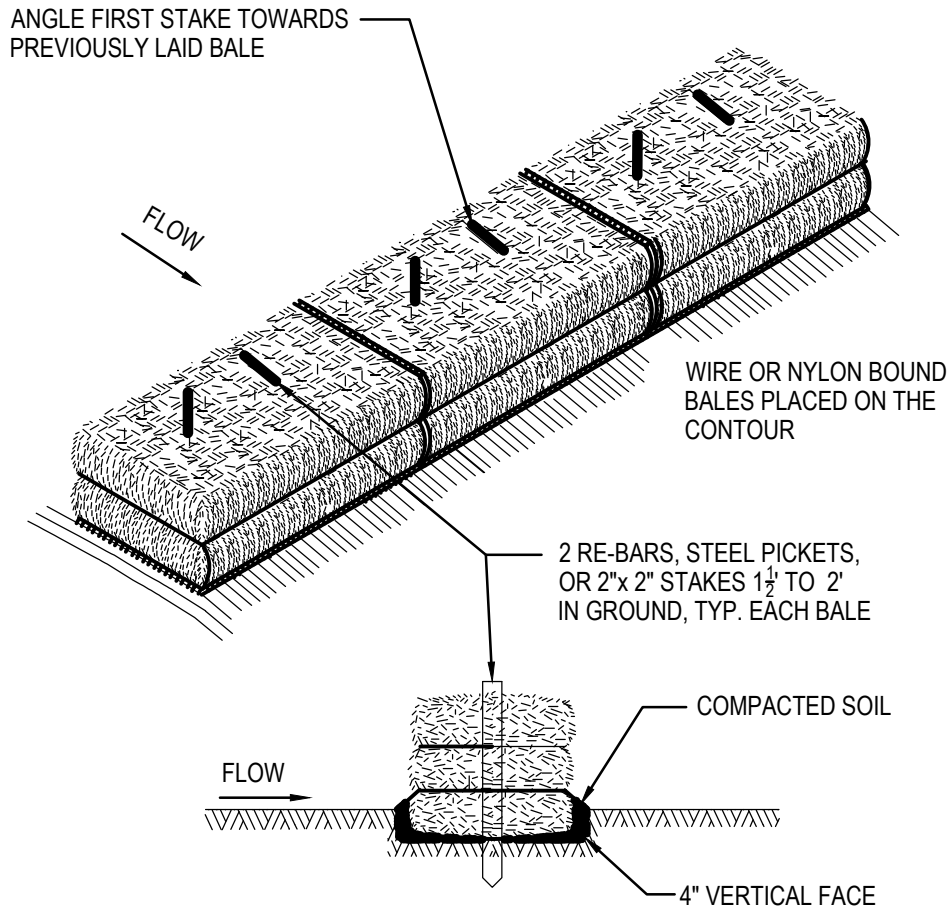
1. SILT FENCING TO BE TYPE "A" OR TYPE "C"  
AS NOTED ON EROSION CONTROL PLAN.
2. FABRIC (TYPE "A" OR "C")  
AS SPECIFIED IN GA. D.O.T. LIST #36

# DETAIL 02270-2 COBB COUNTY WATER SYSTEM SEDIMENT BARRIER (STAKED HAY BALE)

Sd1

AUGUST 8, 2001

AGENCY DIRECTOR

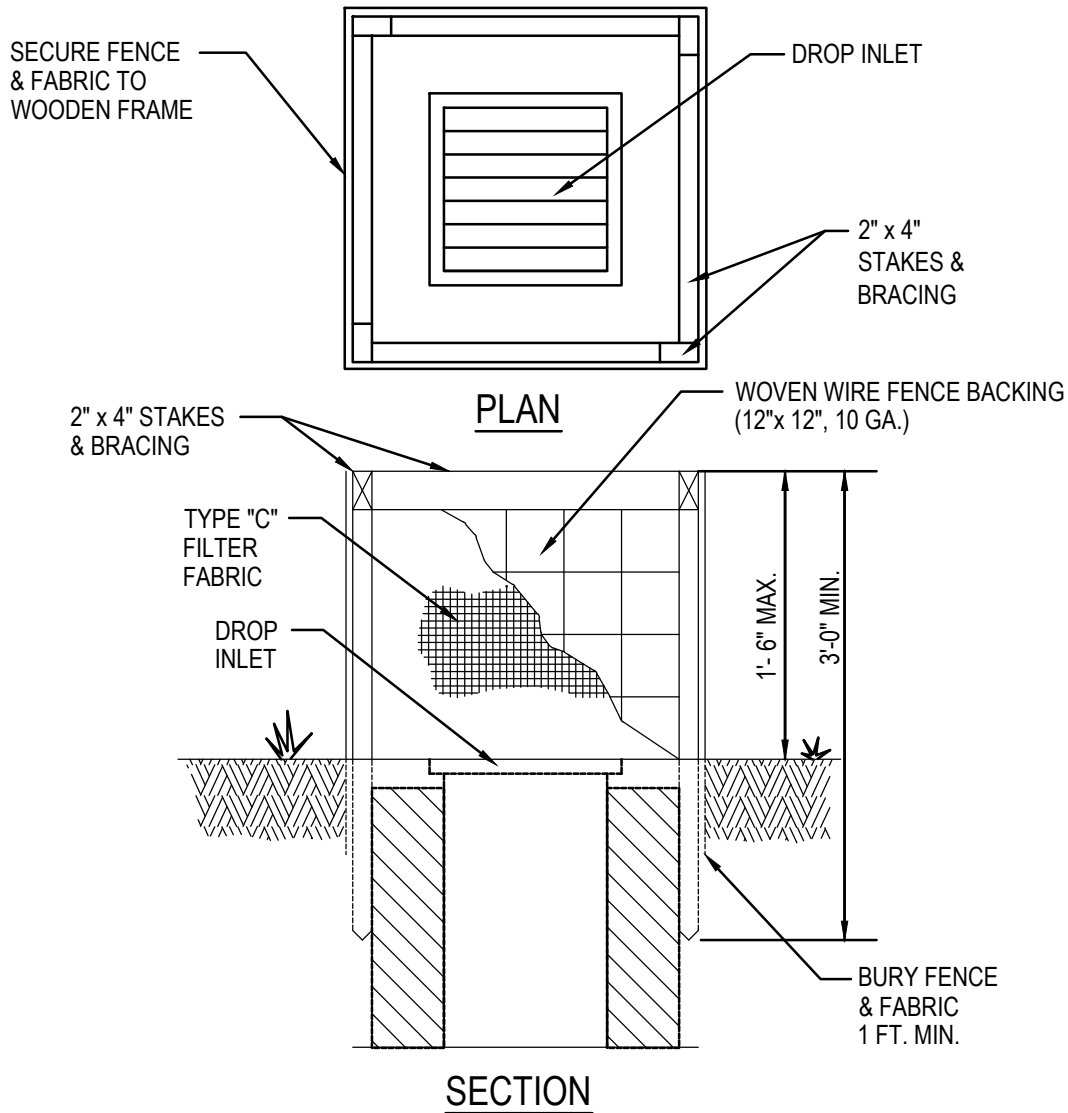


# DETAIL 02270-3 COBB COUNTY WATER SYSTEM

## (Sd2) INLET SEDIMENT TRAP

MAY 7, 2002

AGENCY DIRECTOR





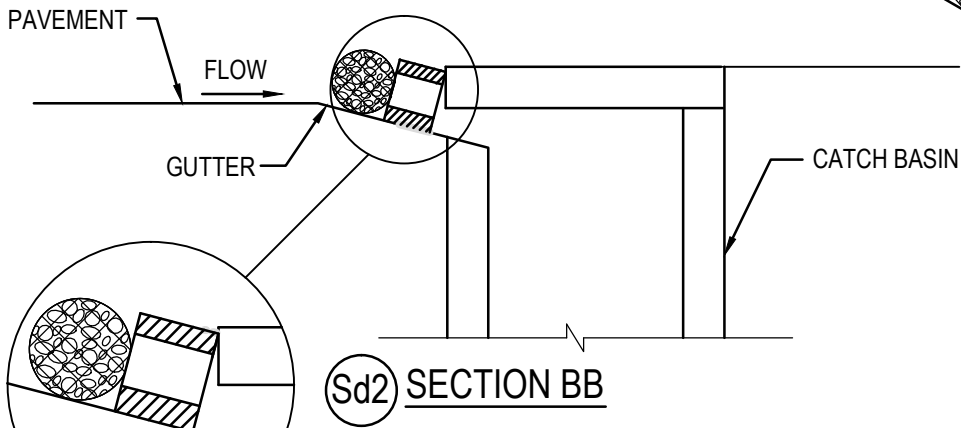
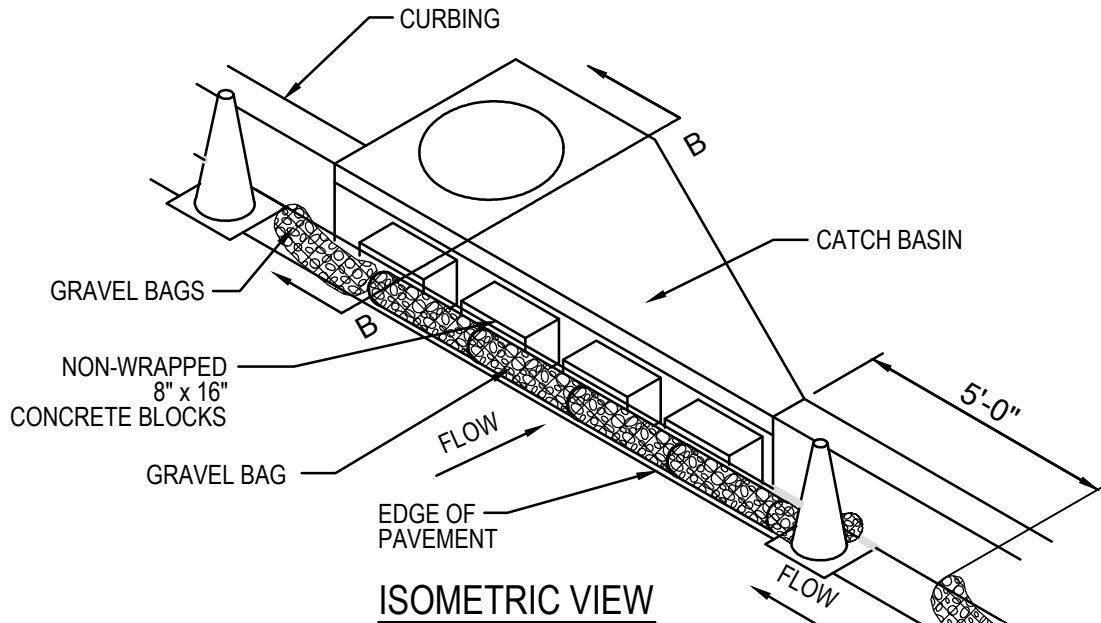
# DETAIL 02270-4A

## COBB COUNTY WATER SYSTEM

Sd2 CURB INLET FILTER TRAP  
 (CATCH BASIN - IN LINE)

OCTOBER 18, 2010

\_\_\_\_\_  
AGENCY DIRECTOR



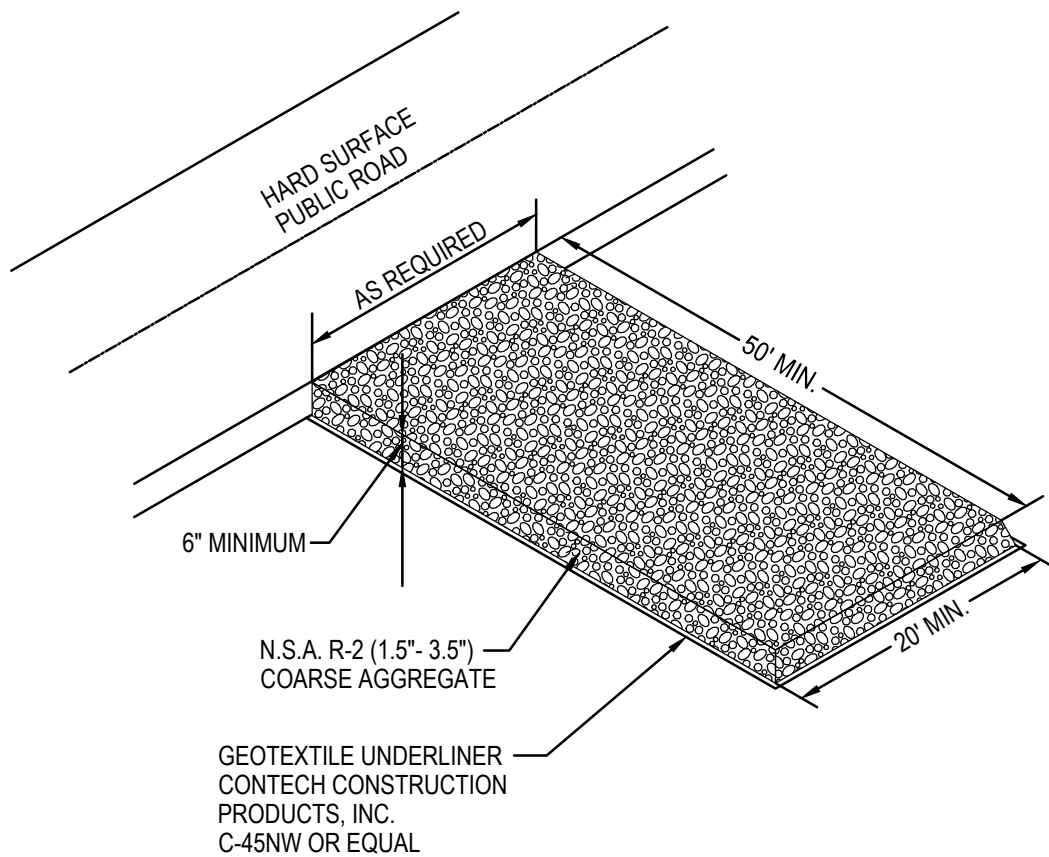
NOTE: CURB INLET FILTER SHALL BE INSPECTED AND MAINTAINED AFTER EVERY RAIN EVENT OR AS DIRECTED

# DETAIL 02270-16 COBB COUNTY WATER SYSTEM

## Co CONSTRUCTION EXIT

AUGUST 8, 2001

AGENCY DIRECTOR



**APPENDIX C**  
**CCTV INSPECTION VIDEOS**

**(BIDDERS MAY DOWNLOAD CCTV VIDEOS FOR MAIN LINE AND LATERAL  
INSPECTIONS FROM SharePoint. Contact George Barnes:**

**[George.Barnes@cobbcounty.org](mailto:George.Barnes@cobbcounty.org) or Linda Weaver:**

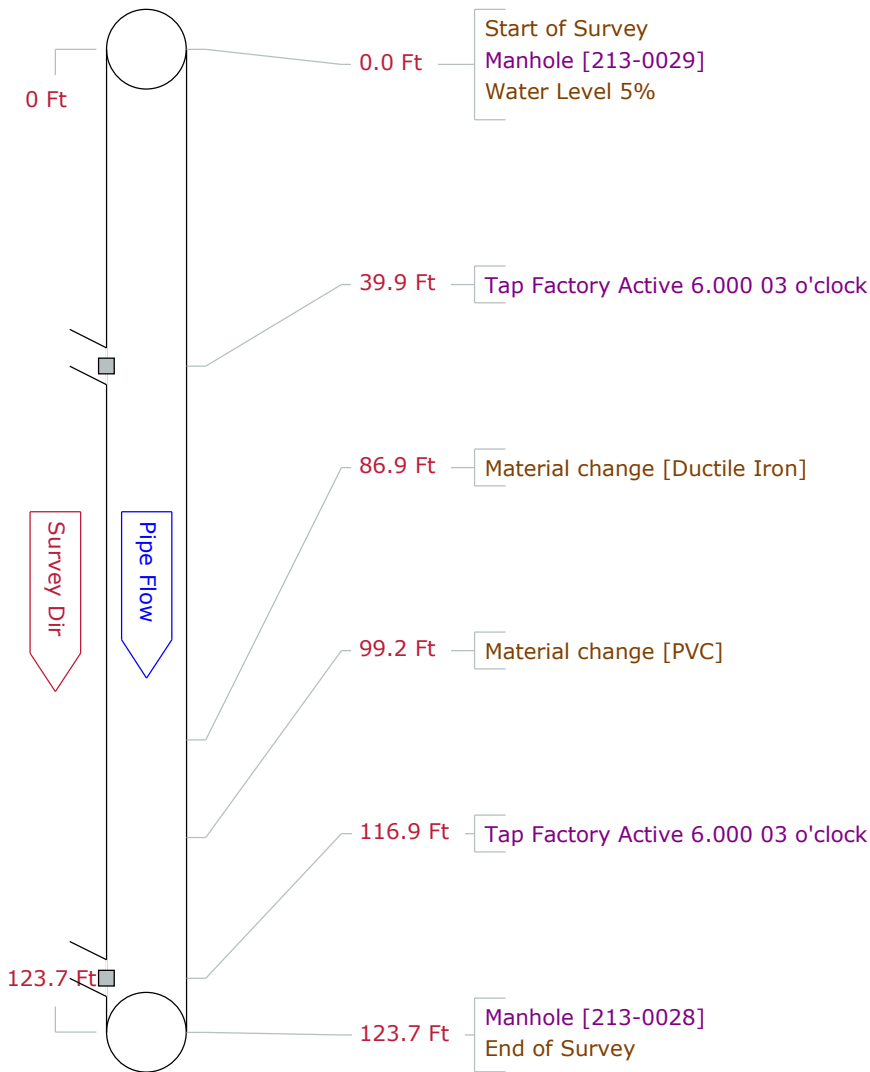
**[Linda.Weaver@cobbcounty.org](mailto:Linda.Weaver@cobbcounty.org) and a link to SharePoint will be provided for  
downloading the CCTV videos.)**

**Mainline CCTV Videos: 352 MB**

**APPENDIX D**  
**SEWER INSPECTION PIPE GRAPHIC REPORT**

**Pipe Graphic Report of PSR 213-0029 X for Cobb County Water System**

<b>Setup</b> 20	<b>Surveyor</b> JFH	<b>Certificate #</b> U-108-6304	<b>System Owner</b>		
<b>Drainage</b>		<b>Survey Customer</b>			
<b>P/O #</b>	<b>Date</b> 2017/07/27	<b>Time</b> 9:52	<b>Street</b> 1857 Haven Park Cir		
<b>City</b> Smyrna	<b>Further location details</b>				
<b>Up</b> 213-0029	<b>Rim to invert</b> 9.50	<b>Grade to invert</b>	<b>Rim to grade</b>	<b>Ft</b>	
<b>Down</b> 213-0028	<b>Rim to invert</b>	<b>Grade to invert</b>	<b>Rim to grade</b>	<b>Ft</b>	
<b>Use</b> Sanitary	<b>Direction</b> Downstream	<b>Flow control</b>		<b>Media No</b>	
<b>Shape</b> Circular	<b>Height</b> 8	<b>Width</b>	<b>ins</b>	<b>Preclean</b> N	<b>Date Cleaned</b>
<b>Material</b> Ductile Iron Pipe	<b>Joint length</b> Ft	<b>Total length</b> 123.7 Ft	<b>Length Surveyed</b> 123.70 Ft		
<b>Lining</b>	<b>Year laid</b>	<b>Year rehabilitated</b>	<b>Weather</b> Dry		
<b>Purpose</b> Infiltration/Inflow Investigation	<b>Cat</b>				
<b>Additional info</b> Precast Mh.			<b>Structural</b>	<b>O &amp; M</b>	<b>Constructional</b>
<b>Location</b> Main Highway - Suburban/Rural			<b>Miscellaneous</b>	<b>Hydraulic</b>	
<b>Project</b> Basin200	<b>Work Order</b>				
<b>Northing</b>	<b>Easting</b>		<b>Elevation</b>		
<b>Coordinate System</b>	<b>GPS Accuracy</b>				



**PipeLogix Inc.**  
**Phone:866-299-3150**  
**Fax:760-406-6023**