

# **REQUEST FOR PROPOSAL**

## **CONSTRUCTION OF ON-CALL SANITARY SEWER REHABILITATION**

**Bid Number: 00920**

**PUBLIC UTILITIES DEPARTMENT  
UNIFIED GOVERNMENT  
OF  
ATHENS-CLARKE COUNTY  
GEORGIA**

**JULY 2019**





**THE UNIFIED GOVERNMENT OF  
ATHENS-CLARKE COUNTY(ACCUG)**

**DATE:** July 17, 2019

**TO:** Sewer Rehabilitation Contractors

**SUBJECT:** RFP #00920 On-Call Sewer Rehabilitation FY19

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You are invited to submit a proposal to provide on-call sanitary sewer rehabilitation services for mains, sewer services, and manholes for the Public Utilities Department. Inquiries regarding proposals should be made to Julie Ann Donahue, CPPB, Purchasing Administrator, or Toro Holt, Senior Buyer, (706) 613-3068, fax (706) 613-1975, or [accbids@accgov.com](mailto:accbids@accgov.com). Technical questions may be directed to Craig Hensley, PE, CH2M at (678) 530-4656 or email: [craig.hensley@ch2m.com](mailto:craig.hensley@ch2m.com).

**A MANDATORY pre-proposal conference** to respond to all inquiries with regards to this project will be held at **10:00 AM ET, July 31, 2019** in the Training Room at the Athens-Clarke County Public Utilities Building at 124 E. Hancock Avenue, Athens, GA 30601. Potential Contractors are **Required** to attend.

The annual estimated range of this project is between \$500,000 to \$1,000,000.

Attached hereto is the Request for Proposal (RFP) instruction document. The written requirements contained in this (RFP) shall not be changed or superseded except by written addendum from the Unified Government of Athens-Clarke County Purchasing Division of the Finance Department. Failure to comply with the written requirements for this proposal may result in rejection of the proposal by the Unified Government of Athens-Clarke County.

**One (1) USB Flash drive with a copy of the Proposal WITHOUT Pricing, One (1) paper copy(s) without pricing, and One (1) Separately Sealed paper copy of section V-D Price Proposal Schedule** must be submitted. Proposals are to be sealed, marked with the Contractor's name and address and labeled, **"RFP #00920 ON-CALL SEWER REHABILITATION FY19"** and delivered to:

The Unified Government of Athens-Clarke County  
Finance Department, Purchasing Division  
375 Satula Avenue  
Athens, Georgia 30601

Not later than **3:00 P.M. ET, Thursday August 15, 2019.**

A qualified interpreter for the hearing impaired is available upon request at least 10 (ten) days in advance of the proposal opening date. Please call (706) 613-3088 for more information. This service is in compliance with the Americans with Disabilities Act (ADA).

Hand delivered copies may be delivered to the above address ONLY between the hours of 8:00 a.m. and 5:00 p.m. E.T., Monday through Friday, excluding holidays observed by the Unified Government of Athens-Clarke County.

The Unified Government of Athens-Clarke County reserves the right to reject any and all proposals, to waive any technicalities or irregularities, and to award the contract based on the highest and best interest of the Unified Government of Athens-Clarke County.



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## SECTION I - REQUEST FOR PROPOSAL SUBMISSION INSTRUCTIONS

ALL PROPOSALS RECEIVED WILL BECOME A PART OF THE OFFICIAL CONTRACT FILE AND MAY BE SUBJECT TO DISCLOSURE.

### **A complete signed proposal must include the documents listed below:**

**PROPOSAL FORMAT:** Contractors are expected to examine the specifications, price schedule, and all instructions. Failure to do so will be at the Contractor's risk. Each Contractor shall furnish the information required by the solicitation. *The proposal and price schedule must be signed by an officer of the company, who is legally authorized to enter into a contractual relationship in the name of the Contractor.*

All proposals received will become a part of the official contract file and may be subject to disclosure.

**PROPOSAL FORMAT:** All proposals should include the information outlined below and **in the following order:**

- 1) **Cover Letter:** A brief cover letter of introduction and interest.
- 2) **Table of Contents:** Including all sections and subsections.
- 3) **Business Information:** State the full name and address of your organization and the branch office or subordinate element that will perform the services described in this proposal. Include a telephone number, the point of contact and official signature of an authorized company representative. Indicate whether you operate as a single proprietorship, partnership, or corporation. Include the state(s) in which you are incorporated and/or licensed to operate.
- 4) **Product Information:** Include the product information required in Attachment C, New Product Review (NPR) Form for all products that you propose for the work. This form is required for each product submitted. Complete one form for each proposed product.
- 5) **Qualifications and Experience:** Include an organization chart and summary resumes of key personnel proposed for the project, including designations of the team leader, the consultant responsible for design, the project architect, the person responsible for all proposed communications with the owner and all proposed sub-consultants and a description of their roles.
  - a. **Current Project Assignments:** Identify the current project assignment(s) and the currently identified completion date(s) for projects currently being managed by the key individuals proposed for our project.

- b. **Understanding of the Project:** Statement of the firm's understanding of the project and proposed approach for providing requested services.
  - c. **Additional Services Required:** Based on the firm's understanding of the project, identify any additional services that might be required for a successful program.
- 6) **References:** Include a minimum of three references for contracts of a similar nature, preferably public sector references. Include the name, address, telephone number, point of contact and description of the contract for each reference. Include a list of sewer rehabilitation products used and quantities of the installation. Examples of no more than three "reference projects" which represent the design teams approach to design solutions for projects of similar scale and complexity, and the information on these projects must indicate the contributions of proposed key personnel in the design and development of the "referenced projects" cited in the submittal.
- 7) **Time/Cost Procedures:** A statement discussing your firm's procedures for controlling project time and cost during the design and construction phase.
- 8) **Project Manual – Mandatory Forms:** The following forms are included in the Project Manual (Attachment B) and are required submittals. This list may also be found in Section 0100 Instructions to Bidders, paragraph 3.7.5 in the Project Manual.
- a. Section 00300 Bid Form
  - b. Section 00417 Corporate Certificate
  - c. Section 00419 Subcontractor Listing Form
  - d. Section 00425 Utility Contractor's License Certification
  - e. Section 00427 Georgia Security and Immigration Compliance Act Affidavits
  - f. Section 00480 Non-collusion Affidavit of Prime Bidder
  - g. Section 00481 Non-collusion Affidavit of Subcontractor
- 9) **Quality Assurance and Control Plan:** Contractor must submit an adequate QA/QC Plan and procedures.
- 10) **Other Relevant Information:** Include any other relevant information concerning the project in this section.

**SUBMITTAL FORMAT:** ALL proposal copies must be submitted in a sealed envelope or container with the **OUTERMOST** container stating the company name, address, telephone number, the RFP number and TITLE (**RFP #00920 On-Call Sewer Rehabilitation FY19**). If you have an ACCUG Vendor Number please include it on the sealed envelope or container. If you do not know your vendor number, please call **706-613-3088** or email: [accpurchasing@accgov.com](mailto:accpurchasing@accgov.com). If you do not have a vendor number, please fill out a bid list application found at [Bid List Application](https://www.athensclarkecounty.com/DocumentCenter/View/45180) (<https://www.athensclarkecounty.com/DocumentCenter/View/45180>) so one may be issued to your company. **The ACCUG Vendor Number is not required to submit a Bid but we encourage companies to apply.**

- ☐ One (1) USB Flash drive with a copy of the Proposal WITHOUT Pricing
- ☐ One (1) paper copies of the signed proposal WITHOUT price
- ☐ One (1) Separately Sealed paper copy of section V-D Price Proposal Schedule  
(Must be submitted separately in a sealed envelope)

Contractors are responsible for informing any commercial delivery service, if used, of all delivery requirements and for ensuring that the required address information appears on the outer wrapper or envelope used by such service. No responsibility shall attach to the Unified Government of Athens-Clarke County for the premature opening of a proposal not properly addressed and identified, and/or delivered to the proper or Improper address. **Proposals via facsimile will NOT be considered.**

**ALL DOCUMENTS SUBMITTED ON USB  
FLASH DRIVE MUST BE IN A SINGLE PDF  
FILE**

**THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY  
REQUEST FOR PROPOSAL (RFP)  
00920 ON-CALL SEWER REHABILITATION FY19  
PUBLIC UTILITIES DEPARTMENT  
ATHENS, GEORGIA**

**SECTION II - REQUEST FOR PROPOSAL OVERVIEW AND PROCEDURES**

**A. INTRODUCTION**

**PURPOSE**

The Unified Government of Athens-Clarke County desires to solicit competitive proposals from responsible vendors to provide on-call sanitary sewer rehabilitation services for the Public Utilities Department (PUD), Athens, Georgia for a one-year period, with the option to extend the contract for four additional one-year terms if agreed upon by all parties.

The contractor will provide services per the scope of services as indicated in Section III of this request for proposal (RFP).

**B. RFP TIMETABLE**

The anticipated schedule for the RFP and contract approval is as follows:

Proposal Documents Available..... **Wednesday, July 17, 2019**  
Pre-Proposal Conference ..... **10:00 AM ET Wednesday, July 31, 2019**  
Deadline for submission of questions ..... **4:00 PM ET Thursday, August 8, 2019**  
Deadline for receipt of proposal ..... **3:00 PM ET Thursday, August 15, 2019**  
Proposals Valid Until..... **120 Days after Proposal Opening Date**

**C. CONTACT PERSON**

The contact person for this RFP is Julie Ann Donahue, CPPB, Purchasing Administrator or Toro Holt, Senior Buyer. Explanation(s) desired by the Contractor(s) regarding the meaning or interpretation of this RFP must be requested from the contact person, in writing via facsimile at (706) 613-1975 or [accbids@accgov.com](mailto:accbids@accgov.com). Technical questions may be directed to Craig Hensley, PE, CH2M at (678) 530-4656 or email: [craig.hensley@ch2m.com](mailto:craig.hensley@ch2m.com).

Contractors are encouraged to contact only the contact persons stated above to clarify any part of this RFP. Any such unauthorized contact shall not be used as a basis for responding to this RFP and also may result in the rejection of the Contractor's submittal.

**D. MINIMUM PROPOSAL ACCEPTANCE PERIOD**

Proposals shall be valid and may not be withdrawn for a period of 120 days from the date specified for receipt of proposals.

**E. ADDITIONAL INFORMATION/ADDENDA**

The Unified Government of Athens-Clarke County will issue responses to inquiries and any other corrections or amendments it deems necessary in written addenda issued prior to the proposal due date. Contractors should not rely on any representations, statements or explanations other than those made in this RFP or in any addendum to this RFP. Where there appears to be a conflict between the RFP and any addenda issued, the last addendum issued will prevail.

Request for additional information or clarifications must be made in writing no later than the date specified in the RFP Timetable. The request must contain the Contractor's name, address, phone number, and fax number, and email address. Faxes will be accepted at (706) 613-1975.

***Contractors must acknowledge any issued addenda. Proposals which fail to acknowledge the Contractor's receipt of any addendum will result in the rejection of the proposal if the addendum contained information which substantively changed the Owner's requirements***

Contractors who obtain this Request for Proposal from Georgia Procurement Registry or Athens Clarke County/Purchasing (<https://www.athensclarkecounty.com/Bids.aspx>) or from other than the Purchasing Division are advised to re-visit the above websites to obtain any addenda which may be issued prior to the proposal closing date. The Unified Government of Athens-Clarke County assumes no responsibility for Contractors' failure to acknowledge any addenda issued

**F. LATE PROPOSALS, WITHDRAWALS, MODIFICATIONS AND REJECTIONS**

Proposals shall not be modified, withdrawn, or canceled by the Contractor for a period of one-hundred twenty (120) days following the time and date designated for the receipt of proposals, and each Contractor so agrees in submitting his proposal. Negligence on the part of the Contractor in the preparation of his proposal shall not be grounds for the modification or withdrawal of a proposal after the time set for proposal closing. Proposals received after the proposal due date and time are late and will not be considered. Modifications received after the proposal due date are also late and will not be considered

**G. PROPOSAL CLOSING**

Proposal schedule prices will not be opened or read aloud publicly. A list of names of firms providing proposals may be obtained from [Georgia Procurement Registry](#) or [Athens Clarke County Bids](#) or via email request to E-Mail: [accbids@accgov.com](mailto:accbids@accgov.com) after the proposal due date and time stated herein. A tabulation of prices may be obtained upon award.

**H. REQUIRED FORMS**

Contractor must complete all forms listed in 00100 Instructions to Bidders of the Project Manual in Attachment B.

**I. COST INCURRED BY CONTRACTORS**

All expenses involved with the preparation and submission of proposals to the Unified Government of Athens-Clarke County, or any work performed in connection therewith shall be borne by the Contractor(s). No payment will be made for any responses received or for any other effort required of or made by the Contractor(s) prior to the commencement of work as defined by a contract approved by the governing body of the Unified Government of Athens-Clarke County.

**J. MINORITY BUSINESS ENTERPRISE POLICY STATEMENT**

It is the policy of the Athens-Clarke County government that no person or business shall be excluded from participation, denied the benefits of, or otherwise discriminated against in relation to the award and performance of any contract or subcontract on the grounds of race, color, creed, national origin, age, or sex.

**K. HOLD HARMLESS AND INDEMNIFICATION**

The Contractor agrees, insofar as it legally may, to indemnify and hold harmless the Unified Government of Athens-Clarke County, its officers, employees and agents from and against all loss, costs, expenses, including attorneys' fees, claims, suits and judgments, whatsoever in connection with injury to or death of any person or persons or loss of or damage to property resulting from any and all operations performed by Contractor, its officers, employees, and agents under any of the terms of this contract.

**L. SITE VISIT**

Contractors are urged and expected to inspect the site where services are to be performed and to satisfy themselves regarding all general and local conditions that may affect the cost of contract performance, to the extent that the information is reasonably obtainable. In no event, shall failure to inspect the site constitute grounds for a claim after contract award.

**M. PRODUCT DEMONSTRATIONS**

The need for product demonstration or sample may be requested by PUD to gain a better understanding of the product. All costs associated with the supply and delivery of the product for demonstrations purposes will be incurred by the applicant.

**N. AWARD OF CONTRACT**

This is a past performance/technical/price trade-off source selection in which competing Contractor's past and present performance history and technical ability will be evaluated on a basis approximately equal to price. Award will be made to the responsible Contractor whose proposal represents the best value after evaluation in accordance with the factors listed in Section IV herein. The Unified Government of Athens-Clarke County may reject any or all proposals if such action is in the Unified Government's interest.

**O. MULTIPLE AWARDS**

The Unified Government of Athens-Clarke County reserves the right to make multiple awards or to award a contract by individual line items or alternatives, by a group of line items or alternatives, or to make an aggregate award, whichever is deemed most advantageous to the Unified Government. If the Unified Government determines that an aggregate award to one Contractor is not in the Unified Government's best interest, "all or none" offers shall be rejected.

**P. PLACE OF PERFORMANCE**

The Unified Government of Athens-Clarke County will not contemplate traveling outside the City of Athens to the contractor's facility for custom fitting or alterations. The Contractor shall insert in the spaces provided in the price schedule the address of the plants or facilities location(s) that he intends to use.

**Q. QUALIFICATION OF CONTRACTORS**

The Unified Government of Athens-Clarke County may make such reasonable investigations as deemed proper and necessary to determine the ability of the Contractor to perform the work and the Contractor shall furnish to the Unified Government all such information and data for this purpose as may be requested. The Unified Government reserves the right to reject any proposal if the evidence submitted by, or investigations of, such Contractor fails to satisfy the Unified Government that such Contractor is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

The Unified Government of Athens-Clarke County contractors/vendors must have a current Athens-Clarke County business license if they are physically located in Athens-Clarke County or if they perform a service in Athens-Clarke County.

Proposals from any Contractor that is in default on the payment of any taxes, license fees, or other monies due to the Unified Government will not be accepted.



**R. ALTERNATE PROPOSALS**

Alternate proposals or proposals that deviate from the requirements of this solicitation will not be considered. Contractors shall not insert in their proposal any written statement which will have the effect of making any material change or changes in the Scope of Services or in any contract between the parties covering subject matter thereof.

**S. OPEN RECORDS**

In accordance with OCGA Section 50-18-72(a)(34) Any trade secrets obtained from a person or business entity that are required by law, regulation, bid, or request for proposal to be submitted to an agency. **An entity submitting records containing trade secrets that wishes to keep such records confidential under this paragraph shall submit and attach to the records an affidavit affirmatively declaring that specific information in the records constitute trade secrets pursuant to Article 27 of Chapter 1 of Title 10.** If such entity attaches such an affidavit, before producing such records in response to a request under this article, the agency shall notify the entity of its intention to produce such records as set forth in this paragraph. If the agency makes a determination that the specifically identified information does not in fact constitute a trade secret, it shall notify the entity submitting the affidavit of its intent to disclose the information within ten days unless prohibited from doing so by an appropriate court order. In the event the entity wishes to prevent disclosure of the requested records, the entity may file an action in superior court to obtain an order that the requested records are trade secrets exempt from disclosure. The entity filing such action shall serve the requestor with a copy of its court filing. If the agency makes a determination that the specifically identified information does constitute a trade secret, the agency shall withhold the records, and the requester may file an action in superior court to obtain an order that the requested records are not trade secrets and are subject to disclosure;

### **SECTION III – SCOPE OF SERVICES**

The contractor shall provide all personnel, equipment, tools, materials, supervision, and other items and services necessary for On-Call Sanitary Sewer Rehabilitation as per the scope of services outlined below and in ATTACHMENT C: PROJECT MANUAL – ON-CALL SANITARY SEWER REHABILITATION FY19.

#### **A. INTRODUCTION AND PURPOSE**

The Unified Government of Athens-Clarke County (ACCUG) Public Utilities Department (PUD) provides water and wastewater services to residential, commercial, and industrial customers. ACCUG treats and delivers approximately 15 million gallons of drinking water each day to about 785 miles of water lines. The sanitary sewer system specifically consists of 470 miles of gravity sewers, one pump station, and three water reclamation facilities.

PUD is seeking on-call sewer rehabilitation services. Generally, sewer lines will range in diameter from 8-inch to 36-inch sewer mains and 4-inch to 6-inch sewer services. Rehabilitation will occur in urban, residential, and commercial areas of Athens-Clarke County, including public roadways and landscaped areas within sewer easements. Sewer rehabilitation services are sought for the following rehabilitation methods:

- Cured in Place Pipe (CIPP) Lining for Sewer Mains and Sewer Services
- Pipe Bursting for Sewer Mains and Reconnection of Sewer Services
- Manhole Lining (including Epoxy, Cementous, and Polymer)
- Manhole Chimney Seals (Internal and External)

#### **B. GENERAL REQUIREMENTS**

- 1) Project requirements are specified in ATTACHMENT B: PROJECT MANUAL – ON-CALL SEWER REHABILITATION FY19.

#### **C. ADDITIONAL REQUIREMENTS**

- 1) Project requirements are specified in ATTACHMENT B: PROJECT MANUAL – ON-CALL SEWER REHABILITATION FY19.

#### **D. SPECIFIC TASKS:**

Work shall include, but not be limited to provision of on-call sewer rehabilitation services for one or more of the methods listed below. Contractors may be approved for more than one method.

- CIPP Lining
  - Gravity Sewer Mains
  - Sewer Services

- Pipe Bursting
  - Gravity Sewer Mains
  - Reconnection of Sewer Services
- Manhole Rehabilitation Linings
  - Cementitious
  - Polymer
  - Epoxy
- Manhole Chimney Seals
  - Internal
  - External

## **SECTION IV - SELECTION PROCESS AND EVALUATION CRITERIA**

The Unified Government of Athens-Clarke County intends to evaluate proposals and award a contract after conducting discussions with Contractors whose proposals have been determined to be within the competitive range. If it is determined that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Unified Government may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals. Therefore, the Contractor's initial proposal should contain the Contractor's best terms from a price and technical standpoint.

The evaluation and selection of Contractors will follow a two-phase process. Phase 1 is the evaluation and approval of proposed products. Phase 2 is the evaluation of contractor qualifications. Contractors must gain approval under Phase 1: Proposed Product Evaluation before moving on to Phase 2: Contractor Qualitative Evaluation and Cost/Price Evaluation.

### **PHASE 1: PROPOSED PRODUCT EVALUATION & APPROVAL**

Contractor must submit a New Product Review Form for each proposed product. Product evaluation will be completed prior to evaluating Contractor or price to ensure that products meet PUD's minimum technical standards. Contractors will only be considered for Qualitative Evaluation and Cost/Price Evaluation if their proposed products adhere to the criteria set forth in the NPR Form, Project Manual, and Technical Specifications and those products are approved by PUD.

Refer to the NPR Form (attached as Mandatory Proposal Form C) for specific evaluation criteria for sewer rehabilitation products.

### **PHASE 2: CONTRACTOR QUALITATIVE EVALUATION CRITERIA and COST/PRICE EVALUATION**

Contractors will only be considered for Qualitative Evaluation and Cost/Price Evaluation if their proposed products are approved by PUD. Evaluation criteria to be used in determining the selected firm are:

- 1) **PROJECT EXPERIENCE (25 points)** and performance on similar projects and in each rehabilitation method for which the firm is applying.
  - a. ***References and Reference Projects.*** Assesses customer satisfaction with the vendor on prior projects, including applicable past work with the Athens-Clarke County Government. for a minimum of 5 projects within the last 5 years, including an owner reference that may be contacted to validate any information.
  - b. Contractors may choose to provide a proposal for one or more sanitary sewer rehabilitation methods. For each method proposed, the Reference Projects must have the following information:

- i. CIPP Lining: Gravity Sewer Mains
    - 1. Minimum of 8-inch up to and including 54-inch diameter sewer mains.
    - 2. Minimum of 2,000 linear feet of the rehabilitation product and/or technology being proposed.
    - 3. Included bypass pumping to maintain customer service.
  - ii. CIPP Lining: Sewer Services
    - 1. Minimum of 4-inch to 6-inch diameter sewer services.
    - 2. Minimum of 1,000 linear feet of the rehabilitation product and/or technology being proposed.
    - 3. Included bypass pumping to maintain customer service.
  - iii. Manhole Rehabilitation Linings and Chimney Seals
    - 1. Minimum of 25 sewer manholes on the project.
    - 2. Included bypass pumping to maintain customer service.
  - iv. Pipe Bursting
    - 1. Minimum of 6-inch up to and including 24-inch diameter sewer mains.
    - 2. Minimum of 1,000 linear feet of the rehabilitation product and/or technology being proposed.
    - 3. Installed new polyethylene (PE) pipe and/or ductile iron pipe.
    - 4. Included bypass pumping to maintain customer service.
  - c. 100 Percent of the labor related items on the Project must have been completed by the Applicant's own work force. This requirement does not include traffic control, erosion control, utility locate, or other similar support services.
  - d. Projects currently under construction will not qualify.
- 2) **PROJECT TEAM / STAFF EXPERIENCE (20 Points)** and performance on similar projects and in each rehabilitation method for which applied.
- a. ***Management and Staffing Approach.*** Assesses Contractor's ability to effectively manage personnel, provide experienced and qualified key personnel and respond rapidly to staffing requirements.
  - b. ***Qualifications of Key Personnel.*** Assesses the ability of the contractor to hire, retain and train qualified technical personnel required for the task.

- i. The Superintendent proposed for the new project must have been the Superintendent on at least five (5) replacement projects meeting the criteria in 1.b above.
- ii. Additionally, the Superintendent proposed for the new project must have a minimum of 5 years (career) supervisory field experience.

3) **QUALITY ASSURANCE AND CONTROL PLAN (15 Points)** Assesses whether the contractor has an adequate QA/QC Plan and procedures.

4) **CORPORATE QUALIFICATIONS (20 Points)** as outlined below:

- a. The CONTRACTOR has operated under the current corporate name for the last five years.
- b. The CONTRACTOR currently has sufficient bonding capacity to provide performance and payment bonds, both in the amount of 100 percent of the applicable contract amount.
- c. The CONTRACTOR currently has sufficient resources to provide the minimum insurance requirements as outlined in Attachment B.
- d. The CONTRACTOR has not defaulted on a project or failed to complete a project within the last ten years.
- e. The CONTRACTOR has not filed for bankruptcy nor been judged bankrupt at any time over the last nine years.
- f. The CONTRACTOR has a history of completing projects consistently on time and within the bid amount.
- g. The CONTRACTOR has never abandoned a project (even temporarily) during a dispute.
- h. The CONTRACTOR does not have a history of being involved in litigation or filing claims against owners, construction contract administration firms, or design firms.
- i. The CONTRACTOR, nor any of its affiliated companies, is currently involved in a dispute, formal claim, or litigation with ACCUG, or with any authority or organization with which ACCUG has a vested interest.
- j. The Applicant is a Licensed Georgia Utility Contractor in the State of Georgia.
- k. The CONTRACTOR has a written Safety Programs for their work.
- l. The General Contractor Applicant has the ability to provide a proper and logical schedule to demonstrate the effort required to complete the project in a timely manner.

- 5) **COST/PRICE (20 Points)** Assesses whether the price is reasonable and in concert with industry standards. Cost/Price will be evaluated as a separate factor and will have an independent score awarded.
- a. **00300 Bid Form.** Contractor must complete Bid Form found in the Project Manual (Attachment B)
  - b. After the qualitative score is completed (Items 1 through 4 above), ACCUG Purchasing will release Bid Form to the PUD review team for all approved products and contractors who are deemed qualified by PUD review team. Cost/Price will then be scored by the PUD review team and added to the Qualitative Score.

## SECTION V – PROPOSAL FORMS

**MANDATORY SUBMITTAL**

## SECTION V – MANDATORY PROPOSAL FORMS

Contractor must complete, execute and include with the proposal the following mandatory documents:

- ☐ A. Proposal Form
- ☐ B. Project Construction Experience Information Form
- ☐ C. New Product Review (NPR) Form **(Required for each product submitted. Complete one form per product.)**
- ☐ D. All forms listed in 00100 Instructions to Bidders, Attachment B: Project Manual

## SECTION VI - OPTIONAL FORMS

- ☐ A. Bidder's List Application



**MANDATORY SUBMITTAL**

## SECTION V – PROPOSAL FORMS

### A: PROPOSAL FORM

Proposal of \_\_\_\_\_

(Hereinafter called "Contractor"), organized and existing under the laws of the State of

\_\_\_\_\_, *doing business as* \_\_\_\_\_ \*

In compliance with your RFP, the Contractor hereby proposes and agrees to perform and furnish all work for the requirement known as **RFP #00920 ON-CALL SEWER REHABILITATION FY19** in strict accordance with the Proposal Documents, within the time set forth therein, and at the price proposed.

By submission of this Proposal, the Contractor certifies, and in the case of a joint Offer, each party thereto certifies as to its own organization that:

- 1) The Contractor has examined and carefully studied the Proposal Documents and the Addenda, receipt of all of which is hereby acknowledged at Section V, A.
- 2) The Contractor agrees that this proposal may not be revoked or withdrawn after the time set for the opening of proposals but shall remain open for acceptance for a period of one-hundred and twenty (120) days following such time.

Company:			
Contact:			
Address:			
Phone:		Fax:	
Email:			

- ☐ *By checking this box, I acknowledge that I have reviewed **ATTACHMENT B: PROJECT MANUAL – ON-CALL SEWER REHABILITATION** and have completed and submitted the required forms therein.*
- ☐ *By checking this box, I acknowledge that I have read all insurance requirements and will meet requirements listed in **ATTACHMENT B: PROJECT MANUAL – ON-CALL SEWER REHABILITATION FY19, SECTION 00800 INSURANCE** if awarded.*

\_\_\_\_\_  
Authorized Representative/Title  
(print or type)

\_\_\_\_\_  
Authorized Representative  
(Signature)

\_\_\_\_\_  
Date

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**MANDATORY SUBMITTAL**

**B: PROJECT CONSTRUCTION EXPERIENCE INFORMATION FORM**

Applicant Name: \_\_\_\_\_

Project Title: \_\_\_\_\_

Type of Rehab Method (more than one may be checked)

- ☐ Cured in Place Pipe
- ☐ Pipe Bursting
- ☐ Manhole Lining
- ☐ Manhole Chimney Seals

Project Description (including diameters, material, length, and bypass pumping capacity):

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

Contractor's Office in Responsible Charge: \_\_\_\_\_

Contractor's Superintendent: \_\_\_\_\_

Major Subcontractors:

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

Major Material Suppliers:

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

Project Owner/Municipality:

Owner Name: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Design Firm:

Company Name: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone Number: \_\_\_\_\_

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

---

Construction Contract Administration / Inspection Firm:

Company Name: \_\_\_\_\_  
Contact Person: \_\_\_\_\_  
Phone Number: \_\_\_\_\_

Joint Venture: No \_\_\_\_\_ Yes \_\_\_\_\_

Percentage of Applicant's Joint Venture responsibility: \_\_\_\_\_ %

Name of Joint Venture partner(s) (If applicable): \_\_\_\_\_

Description of JV Work; Basis of Qualification (if applicable):

\_\_\_\_\_

Project Title: \_\_\_\_\_

Percentage of Work performed by Applicant: \_\_\_\_\_ %

Construction Contract:

Bid Date: \_\_\_\_\_  
Bid Price / Initial Contract Price: \_\_\_\_\_  
Final Contract Price: \_\_\_\_\_

Contract Time:

Initial Performance Time: \_\_\_\_\_  
Actual Time to Complete Construction: \_\_\_\_\_  
Completion Date: \_\_\_\_\_

Value / Description of Major Change Orders:

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

Comments:

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

**C: NEW PRODUCT REVIEW FORM**

**MANDATORY SUBMITTAL**

**ATHENS CLARKE COUNTY  
PUBLIC UTILITIES DEPARTMENT (ACC PUD)**

**NEW PRODUCT REVIEW (NPR) FORM  
INFORMATION FOR EVALUATION PURPOSES**

**I. General Information**

Trade Name: \_\_\_\_\_

Product Name: \_\_\_\_\_

Type of Rehab Method (more than one may be checked)

- ☐ Cured in Place Pipe
- ☐ Pipe Bursting
- ☐ Manhole Lining
- ☐ Manhole Chimney Seals

Manufacturer (Company Name): \_\_\_\_\_

Manufacturer Contact Person: \_\_\_\_\_

Address: \_\_\_\_\_  
Street/PO Box City State Zip Code

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail Address: \_\_\_\_\_ Web Address: \_\_\_\_\_

Local Contact: \_\_\_\_\_

(If different from the manufacturer)

Address: \_\_\_\_\_  
Street/PO Box City State Zip Code

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail Address: \_\_\_\_\_ Web Address: \_\_\_\_\_

Is Product Patented? ☐ Yes ☐ No ☐ Applied For

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

---

Recommended Primary Use: \_\_\_\_\_

Alternative Secondary Use: \_\_\_\_\_

Material Composition (Generic Description): \_\_\_\_\_

Alternate or Comparable to Existing Materials/Product: \_\_\_\_\_

Length of Time Product has been on the Market: \_\_\_\_\_

Estimated Cost of Material per Unit: \_\_\_\_\_

Approximate Delivery Days after Receipt of Order: \_\_\_\_\_

Does product comply with ACC PUD Technical Specifications?	Yes	No
--	-----	----

Is availability seasonal?	Yes	No
---------------------------	-----	----

Will special equipment be required to install product?	Yes	No
--	-----	----

List all standards (ie. ASTM, AWWA, NACE) and specifications that product meets:

\_\_\_\_\_

\_\_\_\_\_

If yes, what equipment is required and will the manufacturer provide the equipment and install the material?

\_\_\_\_\_

Are quantities limited?	Yes	No
-------------------------	-----	----

Are educational courses or films available?	Yes	No
---	-----	----

What type of presentation is available? \_\_\_\_\_

Location of field test sites (Contact Person, Telephone Number):

\_\_\_\_\_

Additional Information: \_\_\_\_\_

\_\_\_\_\_

## **II. Required Submittals**

Applicants must submit:

- Completed New Product Review Form for each product they intend to use.
- Manufacturer's literature, technical specifications, and other pertinent information.
- Manufacturer's Quality Assurance and Control Plan, along with any relevant product/laboratory test data.
- Manufacturer's warranty and services during construction, including a letter of endorsement or similar from the Manufacturer.

## **III. Acceptance Criteria**

The New Product Review (NPR) Committee will evaluate new products on the basis of the following criteria.

- Conformance to the ACC PUD Standard Technical Specifications for Sanitary Sewer Rehabilitation.
- Satisfactory Manufacturer's Quality Assurance and Control Plan, adhering to the latest testing standards.
- Satisfactory Manufacturer's Warranty and services during construction, including Manufacturer's Certificate of Proper Installation.

## **IV. Submittal Guidelines**

Manufacturer/Supplier shall submit one (1) electronic copy of the form in addition to copies of the following information in order to substantiate, verify, or clarify its contents: specifications, drawings, sketches, pictures, warranty, installation instructions, material safety data sheet, product/material literature, test data sheets, certification, and test results.

General Notes:

- 1) Manufacturers/suppliers are encouraged to offer a factory demonstration/installation of the proposed materials or to install their materials at a test site, if made available by ACC PUD.
- 2) All test materials and testing will be furnished by the manufacturers/suppliers at no cost to the Athens-Clarke County Public Utilities Department.
- 3) The Manufacturer requesting evaluation of a new product shall submit to the NPR Coordinator one (1) electronic, completed NPR form and all product literature.
- 4) A separate form will be required for each material/system submitted for evaluation.
- 5) Incomplete NPR forms and/or erroneous information furnished as part of this form will result in the material being rejected for evaluation.

- 6) The NPR Coordinator shall review all forms and literature. The Coordinator, if appropriate, shall assign an evaluation number and add the submittal to the addenda of the New Product Review Committee meeting for their review. The Manufacturer shall be notified in writing of the initial committee actions. If the committee decides that the product has a potential use by the department, the Committee shall refer the product to an evaluator. The NPR Coordinator shall inform the Manufacturer of the Committee's willingness to evaluate the product.
- 7) The Committee reserves the right to return all unused samples to the Manufacturer.
- 8) If it is determined that a Presentation, Brown Bag Luncheon, Demonstration, etc. is appropriate, the committee will contact the manufacturer in writing as to the date and time available.
- 9) The manufacturer is hereby notified that the Athens-Clarke County Public Utilities Department reserves the right to release or distribute any of the information included in or attached to this form and the results obtained as part of our laboratory testing and field evaluation.
- 10) The NPR Committee will not consider any new product for testing until this form is completed in accordance with the above notes, signed by a responsible official of the manufacturer which authorizes the evaluation, and returned to the address show below.

All Committee correspondence will be directed to the official of the manufacturer listed below.

Athens-Clarke County Public Utilities Department  
Attention: New Product Review Committee Coordinator  
124 E Hancock Avenue  
Athens, GA 30601

Signed: \_\_\_\_\_  
(Official of Manufacturer)

Name: \_\_\_\_\_  
(Please Type or Print)

Title: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Address: \_\_\_\_\_  
(Street)

\_\_\_\_\_  
(City, State, Zip Code)

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



## SECTION VI - DOCUMENTS CHECKLIST

### PROPOSAL DOCUMENTS CHECKLIST:

- ☐ 1. Cover Letter
- ☐ 2. Table of Contents
- ☐ 3. Business Information

Complete and submit a narrative response to the following directions/instructions.

- ☐ Provide name, address and telephone number of Applicant's corporate headquarters, regional offices, subsidiaries and affiliates, if any. Provide name, title, and biographical summary of pertinent corporate officers. Provide a statement that Applicant has operated under the current corporate name for the last five years.
- ☐ Provide a statement of bonding capacity, name of Surety Company, with agent contact persons, and telephone numbers. Define current maximum approved bonding program, allowable single project limit and current bonded work backlog.
- ☐ Provide a statement that Applicant has not defaulted on a project nor failed to complete a project within the past ten years. If this is not the case, explain.
- ☐ Provide a statement that Applicant has not filed for bankruptcy or been judged bankrupt at any time over the past nine years. If this is not the case, explain.
- ☐ Provide a statement that Applicant has not been involved in liquidated damages in the past five years. If this is not the case, explain.
- ☐ Provide a statement that the Applicant has never abandoned a project, even temporarily, during a dispute. If this is not the case, please explain.
- ☐ Provide a statement whether Applicant has or has not been involved in litigation as a plaintiff against an owner, design firm or construction contract administration firm, or served an owner with a claim for additional compensation prepared by an attorney or a claims consultant, excluding routine change order requests, in the past five years. If Applicant has had such involvement, explain. List any lawsuits or administrative actions to which the Applicant is currently a party or has been a party (as either a plaintiff or defendant) during the past ten years. For each suit, list all parties and indicate whether any party was a bonding company, insurance company, an owner, or other. Identify the project giving rise to the suit or administrative action; explain the basis of the claim and whether a settlement was reached or a judgment entered into for or against the Applicant, or the Applicant's bonding company or Insurance Company.

- ☐ Provide a statement that the Applicant, as well as all of its affiliated companies, is not involved in any dispute, formal claim, or litigation with neither the ACCUG, nor any authority or organization with which the ACCUG has a vested interest. If this is not the case, please explain.
- ☐ Provide a statement that the Applicant has a Safety Program. Also provide the date it was last updated. If this is not the case, please explain.
- ☐ Include a copy of the Applicant's Georgia General Contractor License or Georgia Utility Contractor's License.
- ☐ Provide a list of all projects currently under contract with a construction contract amount in excess of \$1 million. Provide Project Name /Title, Project Owner, contract amount and scheduled completion dates.

☐ 4. Qualifications and Experience

Complete and submit **Project Construction Experience - Project Information Form** (Proposal Form B) for each project referenced as documentation of meeting the Criteria. Provide all the information specified in the items listed below for each Project. (The form may be expanded to accommodate information):

- ☐ Name of project as bid, name of owner, owner contact and contact information (current address, phone number and email), name of design firm (lead designer name, phone number and email), name of construction contract administration firm (lead project manager, phone number and email).
- ☐ A summary project description including work performed, major components of the project, equipment utilized, etc.
- ☐ Percent and description of labor-related items performed by the Applicant's own work force.
- ☐ If the project was performed as a joint venture, provide the name of the joint venture partner and the percentage of the Applicant's joint venture responsibility; describe the responsible scope of work conducted by the Applicant and its relationship to qualification of the Applicant.
- ☐ If the Project Construction Experience offered in the Application is that of a Parent Company, sister corporation or subsidiary corporation associated with the General Contractor Applicant describe the associated experience for each entity and its relationship to qualification of the Applicant.
- ☐ Names and contact information for major subcontractors, including earthwork, reinforced concrete, storm sewer, landscape, etc. If work was self-performed, please indicate such.
- ☐ The bid date, bid amount and final cost to owner.
- ☐ The contract performance time as bid, actual time to complete project and completion date.

- ☐ Description and associated value of major Change Orders including impacts/adjustments to contract time.
- ☐ Provide experience, resumes, of proposed on-site Project Manager and Construction Superintendent who would be involved in this project. Experience can be from previous employment but must be pertinent to technical characteristics listed under the Project Construction Experience Criteria. Also provide a staffing plan, if appropriate, identifying other key personnel anticipated to be assigned to the Project. Provide a brief description and title for each position identified in the staffing plan.
- ☐ 5. References/Reference Projects
  - ☐ Provide references and reference projects according to the requirements described in Section IV, Phase 2: Contractor Qualitative Evaluation Criteria and Cost/Price Evaluation.
- ☐ 6. Project Manual – Mandatory Forms:
  - ☐ Provide all required forms listed in Project Manual Section 00100 Instructions to Bidders, paragraph 3.6.5.
- ☐ 7. Quality Assurance and Control Plan
- ☐ 8. Other Relevant Information

## **ATTACHMENT A: What Your Business Needs to Know about Georgia's E-Verify Requirements**

**(Effective July 1, 2013)**

### **E-Verify Contractor Requirements**

Georgia law, O.C.G.A. § 13-10-91, requires all businesses that contract with a public employer for labor or services by bid or by contract in which the labor or services exceed \$2499.99 to sign an affidavit attesting that they are registered for and use E-Verify unless 1) the contractor has no employees (in which case they must present an approved state issued identification card/drivers' license from an approved state as provided on the [Attorney General's website](#) ) or, 2) the contract is with an individual licensed under Title 26, Title 43, or the State Bar of Georgia who is in good standing and that individual is performing that service. Anyone your business subcontracts with for labor and services, as well as the subcontractors of your subcontractors, in furtherance of that contract is also subject to this requirement. E-Verify Contractor, Subcontractor, and Sub-Subcontractor affidavits can be found [here](#).

### **E-Verify Private Employer Requirements**

Georgia law, O.C.G.A. § 36-60-6, requires all businesses, with more than 10 employees that are seeking an occupation tax certificate/business license or other document required to operate a business with a county or city to sign an affidavit attesting that they are registered for and use E-Verify. Businesses with 10 or fewer employees are required to sign an affidavit attesting that they are exempt from this requirement. Once a business has provided this affidavit to the county, all subsequent renewals can be provided with the submission of the E-Verify number, as long as it is the same number as provided on the affidavit, or assertion that your business is exempt. The county will provide the format in which renewal information is collected. E-Verify Private Employer and Exemption Affidavits can be found [here](#).

### **What Is E-Verify?**

E-Verify is a federal Web-based system that electronically verifies the employment eligibility of newly hired employees. It works by allowing participating employers to electronically compare employee information taken from the I-9 Form (the paper-based employee eligibility verification form used for all new hires) against records in the Social Security Administration's database and the records in the Department of Homeland Security immigration databases.

### **Where Do I Find My E-Verify Number?**

The Human Resources Department for your business should have that information, if you have registered. The E-Verify number, which consists of four to six numerical characters, is located directly below the E-Verify logo on the first page of the memorandum of understanding (MOU) entered into between your business and the Department of Homeland Security (DHS) to use E-Verify.

**What if I cannot locate or do not have access to my MOU?**

If the HR director/program administrator for E-Verify from your business has taken the E-Verify tutorial, you may obtain your company ID number by: 1) Logging in to E-Verify with your assigned user ID and password; 2) From 'My Company,' select 'Edit Company Profile;' 3) The Company Information page will display the company ID number. If your HR director/ program administrator has not completed the tutorial, you must contact E-Verify Customer Support at 888-464-4218 or at [E-Verify@dhs.gov](mailto:E-Verify@dhs.gov) for assistance.

**Is the Federal Tax Identification Number/Employer Identification Number (EIN) the same as the E-Verify Number?**

No. While you will be required to provide the Federal Tax Identification Number/EIN for your business to DHS in order to register for E-Verify, a separate number, which consists of four to six numerical characters, will be provided as the E-Verify number for your business by DHS, which will be located on the MOU.

How Do I Register for E-Verify? To register for E-Verify, please visit the [DHS website](#). If you need assistance in completing the registration process or need additional information relating to E-Verify, call their customer service number at 1-888-464-4218, email them at [E-Verify@dhs.gov](mailto:E-Verify@dhs.gov) or visit their website at <http://www.dhs.gov/e-verify>.

**ATTACHMENT B: PROJECT MANUAL – ON-CALL SEWER REHABILITATION  
FY19**

ISSUED FOR BID  
**PROJECT MANUAL**  
FOR  
**CONSTRUCTION OF**  
**ON-CALL SANITARY SEWER**  
**REHABILITATION**

**Bid Number: 00920**

---

**Volume 1 of 1**  
**Bidding Requirements, Specifications, and**  
**Standard Drawings**



**Public Utilities**

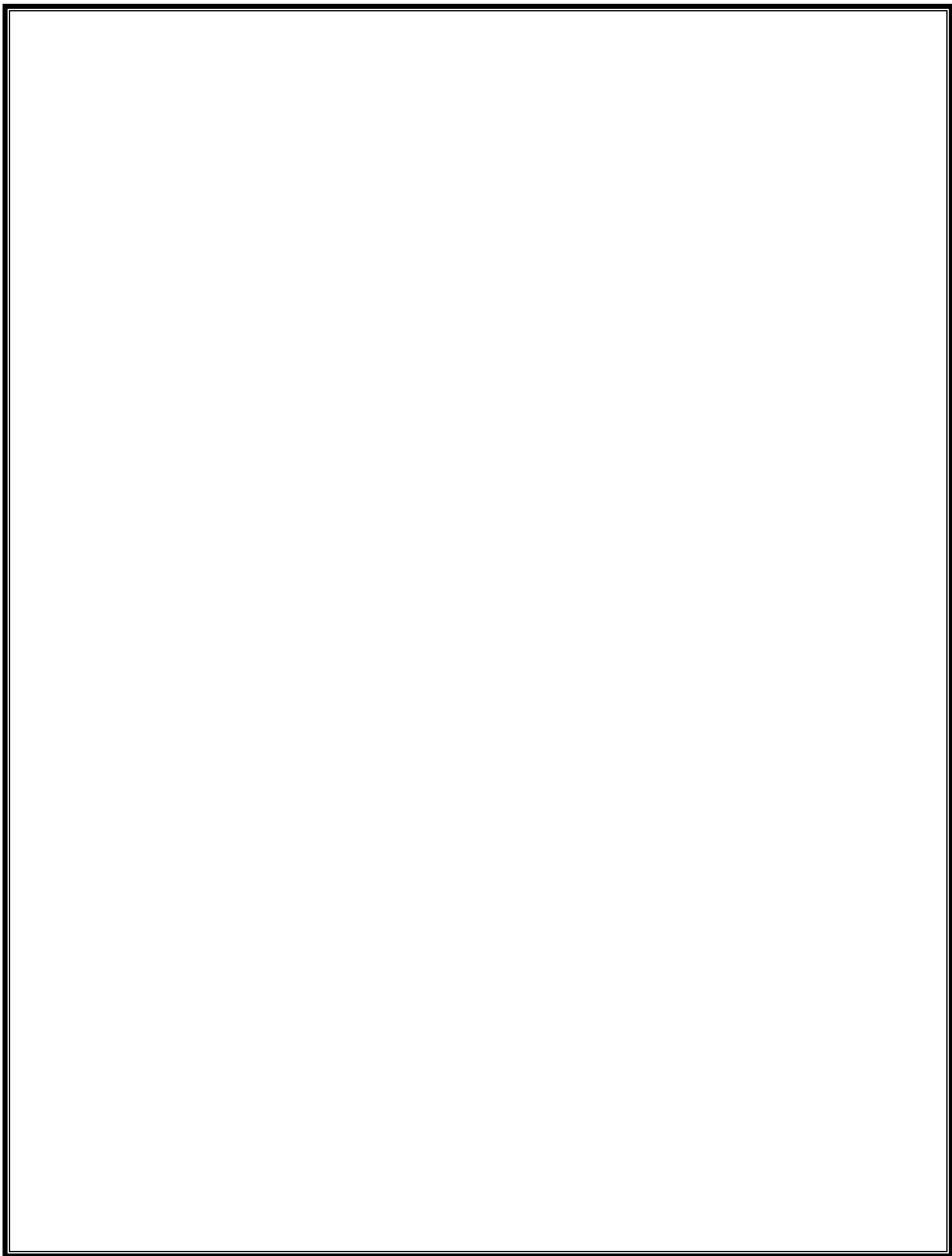
water. wastewater. conservation.

**PUBLIC UTILITIES DEPARTMENT**  
**UNIFIED GOVERNMENT**  
**OF**  
**ATHENS-CLARKE COUNTY**  
**GEORGIA**

**JULY 2019 – REQUEST FOR PROPOSAL**

6600 Peachtree Dunwoody Road  
400 Embassy Row, Suite 600  
Atlanta, Georgia 30328  
770 604 9095

**ch2m.**  
Project No. 698892





ISSUED FOR BID  
**PROJECT MANUAL**  
FOR  
**CONSTRUCTION OF**  
**ON-CALL SANITARY SEWER**  
**REHABILITATION FY19**

**Bid Number: 00920**

---

**Volume 1 of 1**  
**Bidding Requirements, Specifications, and**  
**Standard Drawings**



**Public Utilities**

water. wastewater. conservation.

**REQUEST FOR PROPOSAL**

**PUBLIC UTILITIES DEPARTMENT**  
**UNIFIED GOVERNMENT**  
**OF**  
**ATHENS-CLARKE COUNTY**  
**GEORGIA**



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## **APPENDICES**

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**SECTION 00100**  
**INSTRUCTIONS TO BIDDERS**

1. CONTRACT DOCUMENTS

1.1. The Contract Documents include the Contract Agreement, Request for Proposal (RFP), Contractor's Bid (including all documentation accompanying the Bid and any post-Bid documentation required by the Owner prior to the Notice of Award), Bonds, Specifications, Drawings, and Addendums, together with the Notice to Proceed, Work Change Directives, Change Orders, and the Engineer's written interpretations and clarifications issued in accordance with the General Conditions on or after the date of the Contract Agreement.

1.2. Shop Drawing submittals reviewed in accordance with the General Conditions, geotechnical investigations and soils reports, and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site, are not Contract Documents.

1.3. The Contract Documents shall define and describe the complete work to which they relate.

1.4. All bids received will become a part of the official contract file and may be subject to disclosure under the Georgia Open Records Act.

1.5. Bidders are expected to examine the Specifications, price schedule, and all instructions. Failure to do so will be at the Bidders' risk. Each offeror shall furnish the information required by the solicitation.

2. DEFINITIONS

2.1. Where the following words or the pronouns used in their stead occur herein, they shall have the following meaning:

2.1.1. "Owner" shall mean the Unified Government of Athens-Clarke County, Georgia, party of the first part to the Contract Agreement, or its authorized and legal representatives.

2.1.2. "Engineer" shall mean CH2M HILL Engineers, Inc. (CH2M).

2.1.3. "Design Professional" shall mean TBD.

2.1.4. "Contractor" shall mean the party of the second part to the Contract Agreement, or the authorized and legal representative of such party.

2.1.5. “Work” and “Project” shall mean the entire completed construction required to be furnished under the Contract Documents.

2.1.6. “Contract Time” shall mean the number of consecutive calendar days as provided in the Contract Agreement for completion of the Project, beginning with and inclusive of the date of the Notice to Proceed.

2.1.7. “Liquidated Damages” shall be as stipulated in the Agreement.

2.1.8. “Products” shall mean materials or equipment permanently incorporated into the Project.

2.1.9. “Provide” shall mean to furnish and install.

2.1.10. “Balanced Bid” shall mean a Bid in which each of the unit prices and total amount bid for each of the listed items reasonably reflects the value of that item with regard to the entire job considering the prevailing cost of labor, material, and equipment in the relevant market.

2.1.11. “Unbalanced Bid” shall mean a Bid which, in the opinion of the Owner, is based on prices significantly less than cost for some work, or prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the Bid will result in the lowest overall cost to the Unified Government of Athens-Clarke County even though it may be the low evaluated Bid, or if it is so unbalanced as to be tantamount to allowing an advance payment.

2.1.12. “Substantial completion of the work”, solely for the purposes of Official Code of Georgia Annotated (O.C.G.A.) §13-10-80(b)(2)(c), shall be defined as occurring on the date of the written notification from the Engineer that the Project is ready for final inspection, as specified in the General Conditions.

2.1.13. “Satisfactorily completed”, solely for the purposes of O.C.G.A. §13-10-81(b), shall mean the completion of all work, certifications, and affidavits as specified in the General Conditions.

### 3. PREPARATION AND EXECUTION OF BID

3.1. Each Bid must be prepared to represent that it is based solely upon the materials and equipment specified in the Contract Documents.

3.2. Each Bid must be submitted on the Bid Forms which are attached to the Contract Documents. All blank spaces for Bid prices, both words and figures, must be filled in, in ink. In case of discrepancy, the amount shown in words will govern. All required enclosed certifications must be fully completed and executed when submitted.



3.3. Bid Timetable: The anticipated schedule of the bid process is as follows:

Bid Documents Available:		Wednesday, July 17, 2019
Pre-Bid Conference:	10:00 a.m.	Wednesday, July 31, 2019
Deadline for submission of questions:	4:00 p.m.	Thursday, August 8, 2019
Bid Due Date and Opening:	3:00 p.m.	Thursday, August 15, 2019
Bids valid until:	120 Days after Bid Opening Date	

3.4. Bid Delivery:

3.4.1. Hand-delivered copies may be delivered to the above address only between the hours of 8:00 a.m. and 5:00 p.m. ET, Monday through Friday, excluding holidays observed by the Unified Government of Athens-Clarke County.

3.4.2. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed to the Unified Government of Athens-Clarke County, Finance Department/ Purchasing Division, 375 Satula Avenue, Athens, GA 30601.

3.4.3. Bidders are responsible for informing any commercial delivery service, if used, of all delivery requirements and for ensuring that the required address information appears on the outer wrapper or envelope used by such service. No responsibility shall attach to the Unified Government of Athens-Clarke County for premature opening of a bid not properly addressed and identified, and/ or delivered to the proper designation.

3.5. Any and all Bids not meeting the aforementioned criteria for Bid submittal may be declared non-responsive, and subsequently returned to the Bidder.

3.6. The Contractor, in signing a Bid on the whole or any portion of the Project, shall conform to the following requirements:

3.6.1. The Bid submittal must be signed by a company officer who is legally authorized to enter into a contractual relationship in the name of the Bidder.

3.6.2. Bids which are not signed by individuals making them shall have attached thereto a power of attorney evidencing authority to sign the Bid in the name of the person for whom it is signed.

3.6.3. Bids which are signed for a partnership shall be signed by all of the partners or by an attorney-in-fact. If a Bid is signed by an attorney-in-fact, there should be attached to the Bid a power of attorney executed by the partners evidencing authority to sign the Bid.

3.6.4. Bids which are signed for a corporation shall have the correct corporate name thereof and the signature of the president or other authorized officer of the corporation manually written below the corporate name following the wording "By." The corporation seal shall also be affixed to the Bid and Bid Bond.

3.6.5. The Bidder shall complete, execute, and include the following mandatory documents, which are attached to these Contract Documents. Bids received without all of the mandatory documents may be rejected:

3.6.5.1. Section 00300 Bid Form, to include acknowledgement of all addendums issued.

3.6.5.2. Section 00410 Bid Bond, in the amount of no less than 5 percent of the total base bid.

3.6.5.3. Section 00417 Corporate Certificate, if the Bidder is a corporation, or Section 00418, Partnership Certificate, if the Bidder is a partnership.

3.6.5.4. Section 00425 Utility Contractor's License Certification.

3.6.5.5. Section 00427 Georgia Security and Immigration Compliance Act Affidavits for the Bidder.

3.6.5.6. Section 00480 Non-collusion Affidavit of Prime Bidder.

The following mandatory documents, which are attached to these Contract Documents, shall be submitted by the apparent low bidder in both hard and electronic copy within 24 hours of bid opening, or Bid may be deemed non-responsive:

3.6.5.7. Section 00419 Subcontractor Listing Form.

3.6.5.8. Section 00481 Non-collusion Affidavit of Subcontractor, from all Subcontractors.

3.7. Any and all Bids not meeting the aforementioned criteria for Bid submittal may be declared non-responsive, and subsequently returned.

3.8. Cost Incurred by Bidders: All expenses involved with the preparation and submission of the Bid to the Unified Government of Athens-Clarke County, or any work performed in connection therewith shall be borne by the Bidder. No payment will be made for any responses received or for any other effort required of or made by Bidder(s) prior to commencement of work as defined by a Contract approved by the governing body of the Unified Government of Athens-Clarke County.

4. METHOD OF BIDDING

4.1. The unit or lump sum price for each of the several items in the Bid of each Bidder shall include its 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.

4.2. The Bidder must include a unit or lump sum price for all items shown on the Bid Form; failure to comply may be cause for rejection. Additionally, Unbalanced Bids will be subject to rejection. Conditional Bids will not be accepted. The special attention of all Bidders is called to this provision, for should conditions make it necessary to revise the quantities, no limit will be fixed for such increased or decreased quantities or extra per unit compensation allowed.

4.3. Unbalanced Bids: The Unified Government of Athens-Clarke County may reject a Bid as non-responsive if the prices bid are materially unbalanced between the line items or sub-line items.

4.4. Discrepancy in Unit Price: In case of a discrepancy between a unit price and an extended price and total amount, the unit price will be presumed to be correct, subject, however, to correction to the same extent and in the same manner as any other mistake.

5. ADDENDUMS AND INTERPRETATIONS

5.1. No interpretation of the meaning of the Drawings, Specifications, or other pre-bid documents will be made to any Bidder orally.

5.2. The contact person for this Bid is Julie Ann Donahue, CPPB, Purchasing Administrator, or Toro Holt, Senior Buyer, (706) 613-3068, fax (706) 613-1975, or email [ACCBids@accgov.com](mailto:ACCBids@accgov.com). Explanation(s) desired by offeror(s) regarding the meaning or interpretation of this Bid must be requested in writing from the contact person via facsimile or email at the above number or email address. Technical questions may be directed to the Engineer Project Manager Craig Hensley. Every request for such interpretation should be made in writing via email to [Craig.Hensley@ch2m.com](mailto:Craig.Hensley@ch2m.com) all requests for interpretation or questions must be received by the time and dated stated in the above bid timetable.

5.3. Any and all such interpretations and any supplemental instructions will be in the form of written Addendums to the Contract Documents which, if issued, will be mailed, shipped, or faxed to all prospective Bidders (at the respective addresses furnished) prior to the date fixed for the opening of Bids.

5.4. The Unified Government of Athens-Clarke County will issue responses to inquiries and any other corrections or amendments it deems necessary in written addendums issued prior to the Bid opening date. Bidders should not rely on any representations, statements, or explanations other than those made in this Invitation for Bid or in any addendum to this Invitation for Bid. Where there appears to be a conflict between the Invitation for Bid and any addendum issued, the latest addendum issued will prevail.

5.5. Failure of Bidders to receive or acknowledge any addendum shall not relieve the Bidder of any obligation under the Bid. All addendums shall become part of the Contract Documents.

5.6. Bidders are cautioned to re-visit the Georgia Procurement Registry site to obtain notification of any addendums, which may be issued. The Unified Government of Athens-Clarke County assumes no responsibility for Bidders' failure to receive and acknowledge any addendums issued.

5.7. Each bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any Bidder to inspect the site shall in no way relieve any Bidder from any obligation with respect to his Bid.

## 6. BID MODIFICATIONS

6.1. Bidders may modify their Bids by telegraphic communication at any time prior to the scheduled closing time for receipt of Bids, provided such telegraphic communication is received by the Owner prior to the closing time, and provided further, the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the Bidder was mailed prior to the closing time. The telegraphic communication should not reveal the Bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed Bid is opened. If written confirmation is not received within 2 business days from the closing time, no consideration will be given to the telegraphic modification.

6.2. Late Submittal, Late Modifications, and Late Withdrawals: Bid submittals received after the Bid opening date and time are late and will not be considered. Requests received after the Bid opening date for modifications to or to withdraw bids are also late and will not be considered. No responsibility shall attach to the Unified Government of Athens-Clarke County for the premature opening of a Bid not properly addressed and identified, and/or delivered to the improper designation.

## 7. RECEIPT AND OPENING OF BIDS

7.1. The Owner may consider a minor irregularity of any Bid not prepared and submitted in accordance with the provisions hereof and may waive any minor irregularities 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 opened.

7.2. If a Bidder, after the Bid opening determines that its Bid contained an appreciable error, the Bidder may withdraw its Bid, subject to the provisions of, and, if the mistake meets the criteria in, O.C.G.A. Section 36-91-52.

7.3. Withdrawal of Bid: A Bidder may withdraw its Bid before the expiration of the time during which Bids may be submitted without prejudice to the Bidder, by submitting a written request of withdrawal to the Purchasing Administrator.

7.4. Rejection of Bids: The Unified Government of Athens-Clarke County reserves the right to accept or reject any and all Bids and reserves the right to waive any irregularities or informalities or technical defects and to accept or reject any Bid, if in the judgment of the Unified Government of Athens-Clarke County its best interest will be served.

7.5. Award may be refused to any Bidder who, in the opinion of the Unified Government of Athens-Clarke County, is not a responsible Bidder, is in default of any Bid, proposal, purchase order, or contract with the Unified Government of Athens-Clarke County prior to the date of Bid under consideration, or whose performance under any prior proposal or contract was determined by the Unified Government of Athens-Clarke County to be unsatisfactory. The Bidder's performance on behalf or other entities (public or private) may be considered.

7.6. Bid submittals received after said time or at any place other than the time and place as stated in the notice may not be considered.

## 8. SUBCONTRACTS

8.1. Names of principal subcontractors must be listed using the Subcontractor Listing Form and attached to the Bid. There shall be only one subcontractor named for each classification listed or specific trade.

8.2. The Bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the Owner.

8.3. The Contractor shall not subcontract more than 50 percent of the total cost of the Project.

## 9. CONDITIONS OF THE PROJECT

9.1. Each Bidder must be informed fully of the conditions relating to the construction of the Project and the employment of labor thereon. Failure to do so will not relieve a successful Bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the Contract. Insofar as possible, the Contractor, in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

9.2. The Bidder is advised to examine the location of the Project and to be informed fully as to its conditions; the conformation of the ground; the character, quality, and quantity of the products needed before and during the prosecution of the work; the general and local conditions; and all other matters which can in any way affect the work to be done under the Contract. Failure to examine the site will not relieve the successful Bidder of an obligation to furnish all products and labor necessary to carry out the provisions of the Contract.

9.3. The Bidder shall notify the Owner of the date and time Bidder proposes to examine the location of the Project. The Bidder shall confine examination to the specific areas designated for the proposed construction, including easements and public rights-of-way. If, due to some unforeseen reason, the Owner's proceedings for obtaining the proposed construction site (including easements) have not been completed, the Bidder may enter the site only with the express consent of the property owner. The Bidder is solely responsible for any damages caused by examination of the site.

9.4. The Contractor will not be given extra payments for conditions which can be determined by examining the site and documents.

10. NOTICE OF SPECIAL CONDITIONS

10.1. If any special federal, state, county, or city laws, and municipal ordinances, and the rules and regulations of any authorities having jurisdiction over construction of the Project, enclosed herein referred to, or applicable by law to the Project, conflict with requirements of the Contract Documents, then the most stringent requirement prevails.

11. OBLIGATION OF BIDDER

11.1. By submission of a Bid, the Bidder warrants that Bidder has inspected the site and has read and is thoroughly familiar with the Contract Documents (including all addendums). 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 the Bid.

11.2. By submission of a Bid, the Bidder warrants that it has notified, prior to the opening of Bids, the Engineer and/or Owner, in writing, of any conflict, error, ambiguity, or discrepancy which the Bidder may discover prior to the opening of Bids, which would affect the cost of the Project on the performance of the constructed work.

12. METHOD OF AWARD

12.1. It is the intent of the Owner to award the Contract to the responsive, responsible Bidder submitting the lowest Base Bid complying with the conditions of the Contract Documents. Add alternates may be accepted as part of the initial Contract or by Change Order at the Bid Price at any time during the Contract duration.

12.2. The Bidder to whom the award is made will be notified. The Owner reserves the right to reject any and all Bids and to waive any minor irregularities in Bids received whenever such rejection or waiver is in the Owner's best interest.

12.3. A responsive Bidder shall be one:

12.3.1. Who submits a Bid in the proper form without qualification or intent other than as called for in the Contract Documents;

12.3.2. Who binds himself or herself on behalf of the Bid to the Owner with the proper Bid Bond completed and attached;

12.3.3. Who attends the Mandatory Pre-Qualification Conference;

12.3.4. Who properly completes all forms required to be completed and submitted at the time of the Bidding and, if the apparent low bidder, the documents required within 24 hours of bid opening;

12.3.5. Who shall furnish all data required by these Contract Documents

12.4. A responsible Bidder shall be one who can fulfill the following requirements.

12.4.1. Bidder shall maintain a permanent place of business. This requirement applies to the Bidder where the Bidder is a division of a corporation, or where the Bidder is 50 percent or more owned by a person, corporation, or firm.

12.4.2. Bidder shall demonstrate adequate construction experience and sufficient equipment resources to properly perform the work under and in conformance with the Contract Documents. This evaluation will be based upon a list of completed or active projects and a list of construction equipment available to the Bidder to perform the work. The Owner may make such investigations as deemed necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may reasonably request. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Project contemplated therein.

12.4.3. Bidder shall demonstrate financial resources of sufficient strength to meet the obligations incident to the performance of the work covered by these Contract Documents. The ability to obtain the required Performance and Payment Bonds will not alone demonstrate adequate financial capability.

12.4.4. Possesses a valid Georgia Utility Contractor's License.

12.4.5. Bidder has not failed to complete work awarded to it.

12.4.6. Bidder has not defaulted on a contract.

12.4.7. Bidder has not refused to sign a Contract at the original bid.

12.5. Acceptance of the Bidder's documentation and substantiation or Contract Award by the Owner does not relieve the Bidder of liability for non-performance as covered in the Contract Documents and the Bidder will not be exempted from any other legal recourse the Owner may elect to pursue.

12.6. Notwithstanding any delay in the preparation and execution of the formal Contract Agreement, each Bidder shall be prepared, upon written notice of Bid acceptance, to commence work within 10 days following receipt of official written order of the Owner to proceed, or on a date stipulated in such order.

12.7. The accepted Bidder shall assist and cooperate with the Owner in preparing the formal Contract Agreement, and within 10 business days following its presentation shall execute same and return it to the Owner.

13. EMPLOYMENT OF LOCAL LABOR

13.1. Preference in employment on the Project shall, insofar as practical, be given to qualified local labor.

14. AMERICANS WITH DISABILITIES ACT (ADA)

14.1. A qualified interpreter for the hearing impaired is available upon request at least 10 days in advance of the Bid opening date. Please call (706) 613-3088 for more information for the hearing impaired. This service is in compliance with the Americans with Disabilities Act (ADA).

15. MINORITY BUSINESS ENTERPRISE STATEMENT

15.1. It is the policy of the Unified Government of Athens-Clarke County that no person or business shall be excluded from participation, denied the benefits of, or otherwise be discriminated against in relation to the award and performance of any contract or subcontract on the grounds of race, color, creed, national origin, age, or sex.

16. HOLD HARMLESS AND INDEMNIFICATION

16.1. The Bidder agrees, insofar as it legally may, to indemnify and hold harmless the Unified Government of Athens-Clarke County, its officers, employees, and agents from and against all loss, costs, and expenses, including attorney's fees, claims, suits, and judgments whatsoever in connection with injury to or death of any person or persons or loss of or damage to property resulting from any and all operations performed by Bidder, its officers, employees, and agents under any of the terms of this Contract.



17. INDEPENDENT CONTRACTOR

17.1. The Contractor shall not be an employee of the Unified Government of Athens-Clarke County, but shall be an independent contractor. Nothing in this Contract Agreement shall be construed as authority for the Contractor to make commitments which shall bind the Unified Government of Athens-Clarke County, or to otherwise act on behalf of the Unified Government of Athens-Clarke County, except as the Unified Government of Athens-Clarke County may expressly authorize in writing.

**END OF SECTION**

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**SECTION 00300  
BID FORM**TO: UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY, GEORGIAFROM: \_\_\_\_\_  
(Bidder's Company Name)FOR: Bid #00920, On-Call Sewer Rehabilitation FY19

Submitted: \_\_\_\_\_, 20\_\_

The undersigned Bidder, in compliance with your Invitation to Bid for the construction of this Project, having examined the Contract Documents and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to construct on an as needed basis in accordance with the Contract Documents.

The undersigned Bidder hereby submits prices for the following Sewer Rehabilitation Methods:

- ☐ Cured in Place Pipe
- ☐ Pipe Bursting
- ☐ Manhole Lining
- ☐ Manhole Chimney Seals

The Bidder proposes and agrees, if this Bid is accepted, to contract with the Unified Government of Athens-Clarke County, Georgia, in the form of Contract Agreement specified, to furnish all necessary products, machinery, tools, apparatus, means of transportation, and labor necessary to complete the construction of the Work in full and complete accordance with the reasonably intended requirements of the Contract Documents to the full and entire satisfaction of the Unified Government of Athens-Clarke County, Georgia, with a definite understanding that no money will be allowed for extra work except as set forth in the Contract Documents, for the following prices:

**MANDATORY SUBMITTAL**

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 1 - MOBILIZATION</b>						
a	6	Per Project	Bonds & Insurance	Spec 00500 Spec 00610 Spec 00620 Spec 00828 Spec 01025	\$ /Project	
b	1	EA	Initial Mobilization & Demobilization (Out-of-Town Mobilization Only)	Spec 01025	\$ /EA	
c	6	EA	Work Order Mobilization & Demobilization (Separate from Initial/Out-of-Town Mobilization)	Spec 01025	\$ /EA	
d	25	EA	GPS Locate Manhole & Cleanouts	Spec 01056	\$ /EA	
<b>ITEM 2 - CURED IN PLACE PIPE (CIPP), GRAVITY MAIN</b>						
a	1800	LF	8" CIPP	Spec 02920	\$ /LF	
b	1000	LF	10" CIPP	Spec 02920	\$ /LF	
c	2400	LF	12" CIPP	Spec 02920	\$ /LF	
d	100	LF	15" CIPP	Spec 02920	\$ /LF	
e	1400	LF	18" CIPP	Spec 02920	\$ /LF	
f	100	LF	21" CIPP	Spec 02920	\$ /LF	

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
g	1000	LF	24" CIPP	Spec 02920	\$ /LF	
h	100	LF	27" CIPP	Spec 02920	\$ /LF	
i	100	LF	30" CIPP	Spec 02920	\$ /LF	
j	100	LF	36" CIPP	Spec 02920	\$ /LF	
<b>Note: Any CIPP over 36" will be on an individual quote basis</b>						
<b>ITEM 3 - CURED IN PLACE PIPE (CIPP), SERVICE LATERAL</b>						
a	50	LF	4-6" CIPP	Spec 02920	\$ /LF	
<b>ITEM 4 - MANHOLE REHABILITATION LINING</b>						
a	55	EA	Repair Manhole Bench/Table and Invert	Spec 02910	\$ /EA	
b	280	VF	48" diameter – Cementitious	Spec 02910	\$ /VF	
c	100	VF	60" diameter – Cementitious	Spec 02910	\$ /VF	
d	120	VF	72" diameter - Cementitious	Spec 02910	\$ /VF	
e	280	VF	48" diameter – Epoxy	Spec 02910	\$ /VF	
f	100	VF	60" diameter – Epoxy	Spec 02910	\$ /VF	
g	120	VF	72" diameter - Epoxy	Spec 02910	\$ /VF	
h	280	VF	48" diameter – Composite	Spec 02910	\$ /VF	
i	100	VF	60" diameter - Composite	Spec 02910	\$ /VF	
j	120	VF	72" diameter - Composite	Spec 02910	\$ /VF	
k	10	VF	48" diameter - Fiberglass Insert	Spec 02910	\$ /VF	
l	10	VF	60" diameter - Fiberglass Insert	Spec 02910	\$ /VF	
m	10	VF	72" diameter - Fiberglass Insert	Spec 02910	\$ /VF	
n	55	EA	Internal Chimney Seal	Spec 02910	\$ /EA	

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 5 - MANHOLE ADJUSTMENT</b>						
a	14	EA	Remove and Re-set Existing Manhole Frame & Cover	Spec 02730- ¶3.08 Spec 02910- ¶3.06 & 3.07	\$ /EA	
b	10	EA	Remove Existing Manhole Frame & Cover, Replace with New Standard Frame & Cover	Spec 02730- ¶3.08 Spec 02910- ¶3.06 & 3.07	\$ /EA	
c	10	EA	Remove Existing Manhole Frame & Cover, Replace with New Bolt Down Frame & Cover	Spec 02730- ¶3.08 Spec 02910- ¶3.06 & 3.07	\$ /EA	
d	7	EA	Adjust Height of Manhole Frame & Cover, Remove Brick (as needed) & Install Steel Ring	Spec 02730- ¶3.08 Spec 02910- ¶3.06 & 3.07	\$ /EA	
<b>ITEM 6 - PIPE BURSTING, FULL LENGTH REPLACEMENT</b>						
a	6	EA	Insertion/Receiving Pit	Spec 02940	\$ /EA	
b	15	EA	Service Reinstatement	Spec 02735 & 02940-¶3.08	\$ /EA	
c	900	LF	Existing 6" to New 8" PE Pipe	Spec 02940	\$ /LF	
d	1800	LF	Existing 6" to New 10" PE Pipe	Spec 02940	\$ /LF	
e	900	LF	Existing 8" to New 8" PE Pipe	Spec 02940	\$ /LF	
f	1800	LF	Existing 8" to New 10" PE Pipe	Spec 02940	\$ /LF	
g	900	LF	Existing 8" to New 12" PE Pipe	Spec 02940	\$ /LF	
h	1000	LF	Existing 10" to New 10" PE Pipe	Spec 02940	\$ /LF	

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
i	1000	LF	Existing 10" to New 12" PE Pipe	Spec 02940	\$ /LF	
j	1000	LF	Existing 10" to New 14" PE Pipe	Spec 02940	\$ /LF	
k	2400	LF	Existing 12" to New 12" PE Pipe	Spec 02940	\$ /LF	
l	2400	LF	Existing 12" to New 15" PE Pipe	Spec 02940	\$ /LF	
m	2400	LF	Existing 12" to New 18" PE Pipe	Spec 02940	\$ /LF	
n	100	LF	Existing 15" to New 15" PE Pipe	Spec 02940	\$ /LF	
o	100	LF	Existing 15" to New 16" PE Pipe	Spec 02940	\$ /LF	
p	100	LF	Existing 15" to New 18" PE Pipe	Spec 02940	\$ /LF	
q	1400	LF	Existing 18" to New 18" PE Pipe	Spec 02940	\$ /LF	
r	1400	LF	Existing 18" to New 20" PE Pipe	Spec 02940	\$ /LF	
s	1400	LF	Existing 18" to New 21" PE Pipe	Spec 02940	\$ /LF	
t	100	LF	Existing 20" to New 20" PE Pipe	Spec 02940	\$ /LF	
<b>Note: Any pipebursting over 24", greater than 1 standard size increase, or deeper than 12' will be on an individual quote basis.</b>						
<b>ITEM 7 - NEW SEWER SERVICES</b>						
a	5	EA	4" Sewer Service (connect to Pipe or Manhole, Open Cut or similar)	Spec 02735	\$ /EA	
b	10	EA	6" Sewer Service (connect to Manhole only, Open Cut or similar)	Spec 02735	\$ /EA	
c	5	EA	8" Sewer Service (connect to Manhole only, Open Cut or similar)	Spec 02735	\$ /EA	
d	50	LF	4" Sewer Service extension beyond edge of Right of Way or Easement, upon Owner approval	Spec 02735	\$ /LF	
e	50	LF	6" Sewer Service extension beyond edge of Right of Way or Easement, upon Owner approval	Spec 02735	\$ /LF	
f	50	LF	8" Sewer Service extension beyond edge of Right of Way or Easement, upon Owner approval	Spec 02735	\$ /LF	

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 9 - SEWER PIPELINE INSPECTION: PRE/POST-CCTV, LIGHT CLEANING, AND EVALUATION OF GRAVITY SEWER LINES</b>						
a	50	LF	4"-6" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
b	1800	LF	8" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
c	1000	LF	10" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
d	2400	LF	12" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
f	100	LF	15" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
h	1400	LF	18" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
i	100	LF	21" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
j	1000	LF	24" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
k	100	LF	27" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
l	100	LF	30" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
m	100	LF	36" Light Cleaning and CCTV Sanitary Sewer	Spec 02820	\$ /LF	
n	408	LF	Heavy Cleaning	Spec 02750	\$ /LF	
<i>Note: Any CIPP over 36" will be on an individual quote basis</i>						



Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 10</b>	<b>TEMPORARY FLOW CONTROL</b>					
a	1	EA	Bypass Pump Mobilization/Demobilization	Spec 01572	\$ /EA	
b	3	DAY	Bypass Pumping, Up to 15-inch Diameter Pipe	Spec 01572	\$ /DAY	
c	3	DAY	Bypass Pumping, Larger than 15-inch to 24-inch Diameter Pipe	Spec 01572	\$ /DAY	
d	3	DAY	Bypass Pumping, Larger than 24-inch Diameter Pipe	Spec 01572	\$ /DAY	
<b>ITEM 11 - POINT REPAIR: 4 to 6-inch DIP Lateral, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	1	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
<b>ITEM 12 - POINT REPAIR: 8-inch DIP, Up to 20 LF</b>						
a	20	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	20	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	10	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	5	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 13 - POINT REPAIR: 10-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	
<b>ITEM 14 - POINT REPAIR: 12-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	
<b>ITEM 15 - POINT REPAIR: 15-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 16 - POINT REPAIR: 18-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	
<b>ITEM 17 - POINT REPAIR: 21-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	
<b>ITEM 18 - POINT REPAIR: 24-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 19 - POINT REPAIR: 27-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	
<b>ITEM 20 - POINT REPAIR: 30-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	
<b>ITEM 21 - POINT REPAIR: 36-inch DIP, Up to 20 LF</b>						
a	5	EA	0' to 6' cut	Spec 02730	\$ /EA	
b	5	EA	6' to 8' cut	Spec 02730	\$ /EA	
c	3	EA	8' to 12' cut	Spec 02730	\$ /EA	
d	1	EA	12' to 16' cut	Spec 02730	\$ /EA	
e	1	EA	16' to 20' cut	Spec 02730	\$ /EA	
f	1	EA	20' to 24' cut	Spec 02730	\$ /EA	
<i>Note: Any Point Repair over 36" will be on an individual quote basis</i>						

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 22 - REMOVING AND REPLACING PAVEMENT</b>						
a	400	SY	Open Cut Asphalt	Spec 02575	\$ /SY	
b	150	SY	Open Cut Concrete	Spec 02575	\$ /SY	
c	250	SY	Open Cut GAB	Spec 02575	\$ /SY	
d	750	SY	Pavement Overlay	Spec 02575	\$ /SY	
e	50	SY	Pavement Overlay: Additional 1" Depth	Spec 02575	\$ /SY	
f	75	SY	Asphalt Driveway Repair & Replacement	Spec 02575	\$ /SY	
g	75	SY	Concrete Driveway Repair & Replacement	Spec 02575	\$ /SY	
h	75	SY	Sidewalk Repair & Replacement	Spec 02575	\$ /SY	
i	150	LF	Curb & Gutter Replacement	Spec 02575	\$ /LF	
j	2	EA	Curb Cut Wheelchair Ramp		\$ /EA	
k	100	SF	Pedestrian Crosswalk Striping, Thermoplastic		\$ /SF	
l	100	LF	Lane Striping, Thermoplastic		\$ /LF	
m	5	EA	Turn Arrows (Type 2, Single Arrow, Thermoplastic)		\$ /EA	
n	5	EA	Stop Bar Painting, Thermoplastic		\$ /EA	

ACC-PUD BID #00920  
ON-CALL SEWER REHABILITATION FY19

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
<b>ITEM 23 - TRENCH EXCAVATION AND BACKFILL</b>						
a	125	CY	Trench Backfill - Unsuitable Soil Hauling and Disposal	Spec 02225	\$ /CY	
b	250	TN	Trench Backfill - Suitable Soil	Spec 02225	\$ /TN	
c	200	TN	Trench Backfill - GAB	Spec 02225	\$ /TN	
d	100	CY	Trench Backfill - Flowable Fill	Spec 02225	\$ /CY	
e	100	TN	No. 57 Stone Bedding	Spec 02225	\$ /TN	
f	50	TN	No. 4 Stone Bedding	Spec 02225	\$ /TN	
g	600	SF	Geotextile Underlayment (upon Owner Approval)	Spec 02225	\$ /SF	
h	200	CY	Trench Cap - High Strength Concrete	Spec 02225	\$ /CY	
i	100	SY	Temporary GAB Placement and Removal: Typical Depth 2"	Spec 02225	\$ /SY	
j	50	SY	Temporary GAB Placement and Removal: Additional 1" Depth	Spec 02225	\$ /SY	
k	25	CY	Concrete Encasement	Spec 02225	\$ /CY	
<b>ITEM 24 - EROSION, SEDIMENT, AND POLLUTION CONTROL</b>						
a	1	EA	Construction Exits (Co)	Spec 02125	\$ /EA	
b	1000	LF	Silt Fence - Belted "C-Pop" (Sd1)	Spec 02125	\$ /LF	
c	400	LF	Silt Fence - Type "C" (Sd1-C)	Spec 02125	\$ /LF	
d	18	EA	Hay Bale Check Dams (Cd)	Spec 02125	\$ /EA	
e	12	EA	Stone Check Dams (Cd)	Spec 02125	\$ /EA	
f	12	EA	Inlet Sediment Trap (Sd2)	Spec 02125	\$ /EA	
g	20	TN	Rip Rap (Rp), Type 1 or Type 3	Spec 02125	\$ /TN	
h	50	CY	Top Soil	Spec 02125	\$ /CY	
i	250	SY	Slope Matting (Ss)	Spec 02125	\$ /SY	
j	250	SF	Filter Fabric (Geotextile)	Spec 02125	\$ /SF	

Item	Bid Qty	Unit	Description	Spec. Section	Unit Cost	Total (\$)
k	300	LF	Tree Protection Fence (Tr) Orange Barrier Fence/Tree Save	Spec 02125	\$ /LF	
l	1	EA	Temporary Stream Crossing (Sr)	Spec 02125	\$ /EA	
m	500	SF	Grassing - Temporary, including Mulch, Lime, & Fertilizer (DS1, DS2)	Spec 02125	\$ /SF	
n	10000	SF	Grassing - Permanent, including Mulch, Lime, & Fertilizer (DS1, DS3)	Spec 02125	\$ /SF	
o	800	SF	Sod, including Lime, & Fertilizer (DS4)	Spec 02125	\$ /SF	
p	500	SF	Permanent Seed - Riparian Buffer Mix (ERNMX-178)	Spec 02125	\$ /SF	
q	1000	SF	Clearing and Grubbing (incl. Removal) [All brush and trees <12" Diameter Breast Height (DBH)]	Spec 02125	\$ /SF	
r	10	EA	Tree Removal, 12" to 24" DBH	Spec 02125	\$ /EA	
s	5	EA	Tree Removal, greater than 24" DBH	Spec 02125	\$ /EA	
<b>ITEM 25 - CASH ALLOWANCES</b>						
a	1	LS	Laboratory Testing		\$ 10,000.00	\$ 10,000.00
b	1	LS	Traffic Control: Plan, Permitting, and Implementation		\$ 10,000.00	\$ 10,000.00
<b>ITEM 26 - CONTINGENCIES</b>						
a	1	LS	Owner Directed Work		\$ 20,000.00	\$ 20,000.00

**BID TOTAL, ITEMS 1 THROUGH 16, INCLUSIVE, THE AMOUNT OF \_\_\_\_\_**  
\_\_\_\_\_  
DOLLARS (\$\_\_\_\_\_).

The Bidder agrees hereby to commence Work under this Contract, with adequate personnel and equipment, on a date to be specified in the written Notice to Proceed from the Engineer, and to fully complete all Work under this Contract within the time limits stated in the Agreement. The Bidder further agrees to pay as liquidated damages for each consecutive calendar day thereafter required to complete all work as provided in the Agreement.

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

In case of discrepancies between the figures shown in the unit prices and the totals, the unit prices shall apply and the totals shall be corrected to agree with the unit prices. In case of discrepancies between written amounts and figures, written amounts shall take precedence over figures and the sum of all Bid extensions (of unit prices) plus lump sum items shall take precedence over the Bid Total.

The Bidder furthermore agrees that, in the case of a failure to execute the Contract Agreement and Bonds within 10 days after receipt of conformed Contract Documents for execution, the attached Bid Bond accompanying this Bid and the monies payable thereon shall be paid into the funds of the Owner as liquidated damages for such failure, and not as a penalty.

Attached hereto is a Bid Bond for the sum of \_\_\_\_\_  
\_\_\_\_\_  
Dollars (\$\_\_\_\_\_) according to the conditions of "Instructions to Bidders" and provisions thereof.

Bidder acknowledges receipt of the Following Addendums:

Addendum No. __, dated: _____	Addendum No. __, dated: _____
Addendum No. __, dated: _____	Addendum No. __, dated: _____
Addendum No. __, dated: _____	Addendum No. __, dated: _____



Bidder: \_\_\_\_\_

By: \_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*  
Title: \_\_\_\_\_

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

\_\_\_\_\_  
Phone: \_\_\_\_\_

Attest: \_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*  
Title: \_\_\_\_\_

(SEAL)

Note: Attest for a corporation must be by the corporate secretary. For a partnership, the Attest must be by another partner. For an individual, the Attest must be by a notary.

Note: If the Bidder is a corporation, the Bid shall be signed by an officer of the corporation. If the bid is by a partnership, it shall be signed by a partner. If signed by others, authority for signature shall be attached.

The full names and addresses of persons or parties interested in the foregoing Bid, as principals, are as follows:

Name	Address
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

**END OF SECTION**

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**SECTION 00417  
CORPORATE CERTIFICATE**

I, \_\_\_\_\_, certify that I am the Secretary of the Corporation named as Bidder in the foregoing Bid; that \_\_\_\_\_, who signed said Bid on behalf of the Contractor, was then \_\_\_\_\_ of said Corporation; that said Bid was duly signed for and on behalf of said Corporation by authority of its Board of Directors, and is within the scope of its corporate powers; and that said Corporation is organized under the laws of the State of \_\_\_\_\_.

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Corporate  
Secretary:

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

(AFFIX CORPORATE SEAL)

**END OF SECTION**

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**SECTION 00418**  
**PARTNERSHIP CERTIFICATE**

GEORGIA, ATHENS-CLARKE COUNTY

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally who executed the above instrument, who, being by me first duly sworn, did depose and say that he or she is a general partner in the firm

of \_\_\_\_\_

and that said firm consists of himself or herself, and

\_\_\_\_\_

and that he or she executed the foregoing instrument on behalf of said firm for the uses and purposes stated therein, and that no one except the above named members of the firm have any financial interest whatsoever in said proposed contract.

\_\_\_\_\_  
Partner Signature

\_\_\_\_\_  
Partner Signature

\_\_\_\_\_  
Partner Signature

\_\_\_\_\_  
Partner Signature

Subscribed and sworn to me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Notary Public: \_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Commission Expires: \_\_\_\_\_  
*(Date)*

(SEAL)

**END OF SECTION**

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**SECTION 00419**  
**SUBCONTRACTOR LISTING**

Pursuant to bidding requirements for the work titled:

Bid #00920, On-Call Sewer Rehabilitation FY19,

the undersigned proposes to use the following subcontractors. Except as otherwise approved by the Owner, the undersigned proposes to perform all other portions of the work with his or her own force.

**Portion of the Work:**

**Subcontractor Name & Address:**

**Paving (Asphalt)**

**Concrete Paving**

**Rock Excavation and Blasting**

**Erosion and Sediment Control**

_____	_____
	_____
	_____
_____	_____
	_____
	_____
_____	_____
	_____
	_____
_____	_____
	_____
	_____
_____	_____
	_____
	_____

Use additional sheets if required.

Bidder \_\_\_\_\_

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

Title: \_\_\_\_\_

(Provide signature identical to that shown on the Bid Form.)

**END OF SECTION**



**SECTION 00425  
UTILITY CONTRACTOR'S LICENSE CERTIFICATION**

Bidder/Contractor's Company Name: \_\_\_\_\_

Georgia Utility Contractor's License Number: \_\_\_\_\_

Expiration Date of License: \_\_\_\_\_

I certify that the above information is true and correct and that the classification noted is applicable to the Bid for this Project.

Bidder: \_\_\_\_\_

By: \_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title: \_\_\_\_\_

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

**END OF SECTION**

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**SECTION 00427**  
**GEORGIA SECURITY AND IMMIGRATION COMPLIANCE**  
**ACT AFFIDAVITS**

The Unified Government of Athens-Clarke County and Contractor agree that compliance with the requirements of Official Code of Georgia Annotated (O.C.G.A.) § 13-10-91, as amended, are conditions of this Agreement for the physical performance of services.

If employing or contracting with any subcontractor(s) in connection with this Agreement, Contractor further agrees:

- (1) To secure from the subcontractor(s) an affidavit attesting to the subcontractor's compliance with by O.C.G.A. § 13-10-91(b), as amended; such affidavit being in a form similar to and containing the same information as the form attached hereto; and
- (2) To obtain such subcontractor affidavit(s) when the subcontractor(s) is retained. Contractor shall have such forms available for inspection and submit to the Owner, if so requested by the Owner.

The failure of Contractor to supply the affidavit of compliance at the time of the Bid will be cause for the Bid being deemed non-responsive. Failure of Contractor to continue to satisfy the obligations of O.C.G.A. § 13-10-91, as amended, throughout the entire contract period shall constitute a material breach of the contract. Upon notice of such breach, Contractor shall be entitled to cure the breach within 10 days, upon providing satisfactory evidence of compliance with the terms of this Agreement and State law. Should the breach not be cured, the Unified Government of Athens-Clarke County shall be entitled to all available remedies, including termination of the contract and damages.

*SEE AFFIDAVITS ON FOLLOWING PAGES*

**CONTRACTOR AFFIDAVIT & AGREEMENT UNDER O.C.G.A. § 13-10-91(b)(1)  
(effective July 1, 2013)**

By executing this affidavit, the undersigned Contractor verifies its compliance with O.C.G.A. § 13-10-91, as amended, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of The Unified Government of Athens-Clarke County, Georgia, has registered with, is authorized to use, and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the provisions and deadlines established in O.C.G.A. § 13-10-91, as amended.

Furthermore, the undersigned will continue to use the federal work authorization program throughout the contract period and the undersigned Contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

\_\_\_\_\_  
Federal Work Authorization User Identification Number

\_\_\_\_\_  
Date of Authorization

Name of Contractor: \_\_\_\_\_

Name of Project: \_\_\_\_\_

Name of Public Employer: The Unified Government of Athens-Clarke County Georgia

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on \_\_\_\_, \_\_\_\_, 201\_\_ in \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Signature of Authorized Officer or Agent

\_\_\_\_\_  
Printed Name and Title of Authorized Officer or Agent

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

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

**SECTION 00480  
NON-COLLUSION AFFIDAVIT OF PRIME BIDDER**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

\_\_\_\_\_, being first duly sworn, deposes and says that:

(1) He or she is \_\_\_\_\_  
(Owner, Partner, Officer, Representative or Agent)

of \_\_\_\_\_, the Bidder that has submitted the attached Bid;

(2) He or she is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

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

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

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

Bidder: \_\_\_\_\_

By: \_\_\_\_\_  
(name signed)\_\_\_\_\_  
(name printed or typed)

Title: \_\_\_\_\_

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

Subscribed and sworn to me this \_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

Notary Public: \_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Commission Expires: \_\_\_\_\_

(AFFIX CORPORATE SEAL)

**END OF SECTION**

**SECTION 00481**  
**NON-COLLUSION AFFIDAVIT OF SUBCONTRACTOR**

STATE OF \_\_\_\_\_ COUNTY OF \_\_\_\_\_

\_\_\_\_\_, being first duly sworn, deposes and says that:

(1) He or she is the \_\_\_\_\_  
(Owner, Partner, Officer, Representative or Agent)  
of \_\_\_\_\_, hereinafter referred to as the "Subcontractor,"

(2) He or she is fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to \_\_\_\_\_ the Bidder, for certain work in connection with the construction of Bid #00920, On-Call Sewer Rehabilitation FY19;

(3) Such Subcontractor's bid is genuine and is not a collusive or sham bid;

(4) Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including the affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly with any other Bidder, firm, or person to submit a collusive or sham Proposal in connection with such Contract or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Unified Government of Athens-Clarke County or any person interested in the proposed Contract; and

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

Subcontractor: \_\_\_\_\_

By: \_\_\_\_\_  
(name signed)

\_\_\_\_\_  
(name printed or typed)

Title: \_\_\_\_\_

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

Subscribed and sworn to me this \_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

Notary Public: \_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Commission Expires: \_\_\_\_\_

(AFFIX CORPORATE SEAL)

**END OF SECTION**



**SECTION 00500  
AGREEMENT**

**AGREEMENT BETWEEN OWNER AND CONTRACTOR  
FOR CONSTRUCTION CONTRACT**

This Agreement is by and between **Unified Government of Athens-Clarke County, Georgia**, a body corporate and politic and a political subdivision of the State of Georgia (hereinafter called the Owner) and \_\_\_\_\_ (hereinafter called the Contractor). Owner and Contractor, in consideration of the mutual covenants set forth herein, agree as follows:

1. ARTICLE 1 - WORK

1.1. Contractor will furnish all products, tools, construction equipment, skill, and labor of every description necessary to carry out and to complete in a good, firm, substantial workmanlike manner construction of the Bid #00920, ON-CALL SEWER REHABILITATION FY19, and will complete work in strict conformity with the Contract Documents.

2. ARTICLE 2 - THE PROJECT

2.1. Bid #00920, ON-CALL SEWER REHABILITATION FY19 (hereinafter called the Project).

3. ARTICLE 3 – ENGINEER AND DESIGN PROFESSIONAL

3.1. CH2M HILL Engineers, Inc. (hereinafter called the Engineer), which is to act as Owner's representative, assumes all duties and responsibilities, and has the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

3.2. The Project has been designed by the Owner (hereinafter called the Designer and/or Architect), which assumes all duties and responsibilities, when directed by the Engineer, and have the rights and authority assigned to the Designer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

4. ARTICLE 4 - CONTRACT TIMES

4.1. Time of the Essence

4.1.1. All Contract Times and/or time limits as defined by the General Conditions or as may be stated elsewhere in the Contract Documents are of the essence and are an essential element of this Contract.

4.2. Days to Achieve Substantial Completion and Final Payment

4.2.1. The Work shall be Substantially Complete within the time frame agreed upon on a work-order basis.

4.2.2. The Work shall be completed and ready for final payment, Final Completion, in accordance with paragraph 14.07 of the General Conditions within 365 consecutive calendar days after the date when the Contract Times commence to run.

4.3. Liquidated Damages

4.3.1. Contractor and Owner recognize that time is of the essence and is an essential element of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in paragraph 4.2 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal proceeding the actual loss suffered by Owner if the Work is not completed on time.

4.3.2. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500.00 for each day after the time specified in paragraph 4.2 above for Substantial Completion until the Work is Substantially Complete.

4.3.3. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times or any proper extension thereof granted by Owner, Contractor shall pay Owner \$500.00 for each day that expires after the time specified in paragraph 4.2 above for completion and readiness for final payment until the Work is completed and ready for final payment.

4.3.4. If the Contractor abandons the Contract before commencement of the Work or defaults in completion of all the Work after commencement thereof, the Contractor shall be liable for all such liquidated damages. These fixed liquidated damages, as stated above, are not established as a penalty but are calculated and agreed upon in advance by the Owner and the Contractor due to the uncertainty and impossibility of making a determination as to the actual and consequential damages incurred by the Owner and the general public of Athens-Clarke County, Georgia, as a result of the failure on the part of the Contractor to complete the Work on time. Such liquidated damages referred to herein are intended to be and are cumulative and shall be in addition to every other remedy now or hereafter enforceable at law, in equity, by statute, or under the Contract.

5. ARTICLE 5 - CONTRACT PRICE

5.1. The Owner hereby agrees to pay to the Contractor for the faithful performance of this Contract Agreement, in lawful money of the United States of America, for individual work orders and pricing as agreed upon by Contractor and Owner from time to time in accordance with Section 00300, Bid Form, which shall also pay for loss or damage arising out of the nature of the Work aforesaid, or from the action of the elements, or from unforeseen obstructions or difficulties encountered in the prosecution of the Work, and for all expenses incurred by or in consequence of the Work, its suspension or discontinuance and for well and faithfully completing the Work and the whole thereof, as herein provided, and for replacing defective work or products for a period of 1 year after Final Completion, in accordance with paragraph 14.07 of the General Conditions.

6. ARTICLE 6 - PAYMENT PROCEDURES

6.1. Submittal and Processing of Payments

6.1.1. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.2. Progress Payments; Retainage

6.2.1. Owner shall make progress payments, no more than once monthly, based upon the Contract Price and the Contractor's Applications for Payment, as recommended by Engineer, during performance of the Work as provided below. All such payments will be measured by the Schedule of Values established as provided in paragraph 2.07.A of the General Conditions.

6.2.2. If the Contractor has made application for payment as provided above, the Engineer will issue a Certificate for Payment to the Owner, with a copy to the Contractor, for such amount as the Engineer determines to be properly due, or the Engineer will state, in writing, itemized and specific reasons for withholding a Certificate as provided herein.

6.2.3. After the Engineer has issued a Certificate for Payment, the Owner will pay to the Contractor the amount covering work completed plus stored products, less retention, less such amounts as Engineer may determine or Owner may withhold as set-offs, including but not limited to liquidated damages, and less aggregate of previous payments made.

6.2.4. Retention: The Owner will retain the following amounts from each properly certified Application for Payment:

6.2.4.1. Until the value of the Work completed, including stored materials, is at least 50 percent of the total Contract Price, the Owner will retain 10 percent of the value of all work satisfactorily completed, including stored materials.

6.2.4.2. When the value of the completed work totals at least 50 percent of the Contract Price, the Owner will discontinue retaining additional amounts provided the Work is progressing satisfactorily and there is no specific cause for retaining a larger sum.

6.2.4.3. The Owner may elect to reinstate retention of 10 percent of the value of the Work completed if at any time the Contractor fails to make satisfactory progress, any Contract Times are not met, or if there is other specific cause. Satisfactory progress is identified as conforming to the construction Progress Schedule as required by the Contract Documents.

6.2.4.4. No form of collateral in lieu of cash will be acceptable as retainage.

6.2.4.5. Amounts retained by the Contractor from payments due to suppliers and subcontractors (expressed as a percentage) shall not exceed that being retained by the Owner.

6.2.5. All prior certificates or estimates upon which payments have been made are approximate only, and subject to correction by subsequent estimates and/or in the final payment.

6.2.6. In the event of a conflict, Official Code of Georgia Annotated (O.C.G.A.) Sections 13-10-80 through 13-10-83 shall supersede and control any provisions to the contrary in this Article 6.

### 6.3. Final Payment

6.3.1. Will be made in accordance with paragraph 14.07 of the General Conditions and upon final completion and acceptance of the Work as recommended by Engineer.

## 7. ARTICLE 7 - INTEREST

7.1. All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest in accordance with the requirements of paragraph 14.02 of the General Conditions.

8. ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS

8.1. In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

8.1.1. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

8.1.2. Contractor is familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

8.1.3. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work. Contractor is familiar with state and/or local watering uses and restrictions, if any, that are in place at the time Bid is made.

8.1.4. Contractor has carefully studied all Technical Data: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all Drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the Supplementary Conditions as provided in paragraph 4.06 of the General Conditions.

8.1.5. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site that may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.

8.1.6. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

8.1.7. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

8.1.8. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

8.2. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

8.3. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## 9. ARTICLE 9 - CONTRACT DOCUMENTS

### 9.1. Contents

9.1.1. The Contract Documents consist of the following:

9.1.1.1. RFP #00920 On-Call Sewer Rehabilitation FY19

9.1.1.2. Specifications as listed in the table of contents of the Project Manual, including:

- Section 00300 Contractor's Bid Form
- Section 00500 Agreement
- Sections 00610 and 00620 Bonds

9.1.1.3. Appendices as listed in the table of contents of the Project Manual.

9.1.1.4. Drawings as listed in the table of contents of the Project Manual.

9.1.1.5. \_\_\_\_\_ Addendums issued and as acknowledged in the Bidding Documents and conformed in the Project Specifications and Drawings.

9.1.2. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:

9.1.2.1. Notice to Proceed.

9.1.2.2. Work Change Directives.

9.1.2.3. Change Order(s).

9.1.2.4. Engineer's written interpretations and clarifications issued in accordance with the General Conditions on or after the date of the Contract Agreement.

9.1.3. The documents listed in paragraph 9.1.1 are attached to this Agreement (except as expressly noted otherwise above).

9.1.4. There are no Contract Documents other than those listed above in this Article 9.

9.1.5. The Contract Documents may only be amended, modified, or supplemented as provided in paragraph 3.04 of the General Conditions.

## 10. ARTICLE 10 - MISCELLANEOUS

### 10.1. Terms

10.1.1. Terms used in this Agreement will have the meanings stated in the General Conditions.

### 10.2. Assignment of Contract

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

### 10.3. Successors and Assigns

10.3.1. Owner and Contractor each bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto, their partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

### 10.4. Severability

10.4.1. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.5. Bonding

10.5.1. During the entirety of this Agreement, including any renewals hereof, Contractor shall provide a performance bond and payment bond in the amount of one-hundred percent (100%) of the stated contract price of each and every Work Order. Such performance and payment bonds shall be required before Owner issues a Work Order Notice to Proceed. Said bonds shall meet the requirements set forth in the Contract Documents, including, but not limited to, any and all requirements set forth in the General Conditions. In the event of conflict between any of the Contract Documents and this provision regarding the necessity of a performance bond and payment bond for each and every Work Order, this provision shall govern.



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

This Agreement will be effective on \_\_\_\_\_, 20\_\_ (which is the Effective Date of the Agreement).

APPROVED AS TO FORM BEFORE EXECUTION

By: \_\_\_\_\_  
Athens-Clarke County Attorney's Office

Owner: UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY, GEORGIA

By: \_\_\_\_\_  
(name signed)

NANCY B. DENSON

Title: MAYOR

Address: 301 COLLEGE AVENUE  
ATHENS, GEORGIA

Attest: \_\_\_\_\_  
(name signed)  
JEAN SPRATLIN

Title: CLERK OF COMMISSION  
(SEAL)

Contractor: \_\_\_\_\_

By: \_\_\_\_\_  
(name signed)

\_\_\_\_\_  
(name printed or typed)

Title: \_\_\_\_\_

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

Attest: \_\_\_\_\_  
(name signed)

\_\_\_\_\_  
(name printed or typed)

Title: \_\_\_\_\_  
(SEAL)

Note: If the Contractor is a corporation, the Contract Agreement shall be signed by the president or vice president, attested by the secretary, and the corporate seal affixed. If the Contractor is a partnership, the Contract Agreement shall be signed in the partnership name by one of the partners, with indication that he or she is a general partner.

**END OF SECTION**

**SECTION 00550  
PRE-AWARD OATH**

STATE OF GEORGIA

COUNTY OF CLARKE

In accordance with Official Code of Georgia Annotated (O.C.G.A.) §36-91-21(e), we, the undersigned of \_\_\_\_\_  
being first duly sworn, depose and say that:

We have not directly or indirectly violated O.C.G.A. §36-91-21 (d), and more specifically, we have not

Prevented or attempted to prevent competition in such bidding or proposals by any means whatever,

Prevented or endeavored to prevent anyone from making a bid or proposal thereof by any means whatever, nor

Caused or induced another to withdraw a bid or proposal for the work.

We, the undersigned, to the best of our knowledge, affirm that no other officers, agents, or other persons acted for or represented the Contractor in the bidding for and procurement of this Contract.

Signature	Printed Name	Title	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Subscribed and sworn before me on this \_\_\_\_ day of \_\_\_\_\_, 20\_\_

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

(SEAL)

**END OF SECTION**

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**SECTION 00610**  
**PERFORMANCE BOND**

GEORGIA, ATHENS-CLARKE COUNTY

BOND NO. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_,  
as Principal (hereinafter known as Contractor), and we, \_\_\_\_\_, as Surety,  
do hereby acknowledge ourselves indebted and firmly bound and held unto the Unified  
Government of Athens-Clarke County, Georgia, for use and benefit of those entitled thereto, in  
the sum of \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_) for the payment of which will and  
truly to be made, in lawful money of the United States of America, we do hereby bind ourselves,  
successors, assigns, heirs, and personal representatives.

BUT THE CONDITION OF THE FOREGOING OBLIGATION OR BOND IS THIS:

WHEREAS, the Owner has engaged the said Contractor for the sum of \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_) for construction of  
Bid #00920, On-Call Sewer Rehabilitation FY19 as more fully appears in a written Contract  
Agreement bearing the date of \_\_\_\_\_, 20\_\_\_\_, a copy of which Contract Agreement is by  
reference hereby made a part hereof.

NOW, THEREFORE, if said Contractor shall fully and faithfully perform all the undertakings  
and obligations under the said Contract Agreement hereinbefore referred to and shall fully  
indemnify and save harmless the said Owner from all costs and damage whatsoever which it may  
suffer by reason of any failure on the part of said Contractor to do so, and shall fully reimburse  
and repay the said Owner any and all outlay and expense which it may incur in making good any  
such default, and shall correct all defects in products and workmanship appearing within 1 year  
of the completion of all work, then this obligation shall be null and void, otherwise, it shall remain  
in full force and effect.

And for value received it is hereby stipulated and agreed that no change, extension of time,  
alteration or addition to the terms of the said Contract Agreement, or in the work to be performed  
thereunder, or the Specifications accompanying the same shall in any way affect the obligations  
under this Contract Agreement or Bond, and notice is hereby waived of any such damage,  
extension of time, alteration or addition to the terms of the Contract Agreement or to the work or  
to the Contract Documents.

This bond is given pursuant to and in accordance with the provisions of Official Code of Georgia  
Annotated (O.C.G.A.) Section 36-91-1 *et seq.* and all the provisions of the law referring to this  
character of Bond as set forth in said Sections or as may be hereinafter enacted, and these are  
hereby made a part hereof to the same extent as if set out herein in full.

IN WITNESS WHEREOF, the said Contractor has hereunder affixed its signature and seal, and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, executed in four counterparts.

Contractor – Principal:

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

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title: \_\_\_\_\_

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

Attest: \_\_\_\_\_

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title: \_\_\_\_\_

\_\_\_\_\_  
(SEAL)

Surety:

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

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title: \_\_\_\_\_

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

Attest: \_\_\_\_\_

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title: \_\_\_\_\_

\_\_\_\_\_  
(SEAL)

Note: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located. Surety and Insurers must have an A.M. Best Financial Strength Rating of A or higher, with a Financial Size Category of VII or higher.

**END OF SECTION**

**SECTION 00620  
PAYMENT BOND**

GEORGIA, ATHENS-CLARKE COUNTY

BOND NO. \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_, as Principal (hereinafter known as Contractor), and we, \_\_\_\_\_ as Surety, are held and firmly bound unto the Unified Government of Athens-Clarke County, Georgia, (hereinafter called the Owner), in the penal sum of \_\_\_\_\_

Dollars (\$\_\_\_\_\_) lawful money of the United States of America, for the payment of which sum will and truly to be made, we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Contractor has entered into a certain Contract Agreement with said Owner, dated \_\_\_\_\_, 20\_\_, for construction of Bid #00920, On-Call Sewer Rehabilitation FY19 (hereinafter called the Contract), which Contract Agreement and the Contract Documents for said work shall be deemed a part hereof as fully as if set out herein.

NOW, THEREFORE, the condition of this obligation is such, that if said Contractor and all subcontractors to whom any portion of the Work provided for in said Contract Agreement is sublet and all assignees of said Contractor and of such subcontractors shall promptly make payments to all persons supplying them with labor, products, services, or supplies for or in the prosecution of the work provided for in such Contract Agreement, or in any amendment or extension of or addition to said Contract Agreement, and for the payment of reasonable attorney's fees, incurred by the claimant in suits on this Bond, then the above obligation shall be void; otherwise, it shall remain in full force and effect.

HOWEVER, this Bond is subject to the following conditions and limitations:

- (a) Any person, firm, or corporation that has furnished labor, products, or supplies for or in the prosecution of the work provided for in said Contract Agreement shall have a direct right of action against the Contractor and Surety on this Bond, which right of action shall be asserted in a proceeding, instituted in the county in which the work provided for in said Contract Agreement is to be performed or in any county in which Contractor or Surety does business. Such right of action shall be asserted in proceedings instituted in the name of the claimant or claimants for its use and benefit against said Contractor and Surety or either party (but not later than 1 year after the final settlement of said Contract Agreement) in which action such claim or claims shall be adjudicated and judgement rendered thereon.
- (b) The Principal and Surety hereby designate and appoint the \_\_\_\_\_, as the agent of each party to receive and accept service of process or other pleading issued or filed in any proceeding instituted on this Bond and hereby consent that such service shall be the same as personal service on the Contractor and/or Surety.

- (c) In no event shall the Surety be liable for a greater sum than the penalty of this Bond, or subject to any suit, action, or proceeding thereon that is instituted later than 1 year after the final settlement of said Contract Agreement.
- (d) This Bond is given pursuant to and in accordance with provisions of Official Code of Georgia Annotated (O.C.G.A.) Section 36-91-1 *et seq.* hereinafter, and all the provisions of law referring to this character of Bond as set forth in said Sections or as may be hereinafter enacted, and these are hereby made a part hereof to the same extent as if set out herein in full.

IN WITNESS WHEREOF, the said Contractor has hereunder affixed its signature and seal, and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, executed in four counterparts.

Contractor – Principal:

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

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title: \_\_\_\_\_

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

Attest: \_\_\_\_\_

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title: \_\_\_\_\_

\_\_\_\_\_  
(SEAL)



Surety:

By:

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title:

Address:

Attest:

\_\_\_\_\_  
*(name signed)*

\_\_\_\_\_  
*(name printed or typed)*

Title:

\_\_\_\_\_  
(SEAL)

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

Surety and Insurers must have an A.M. Best Financial Strength Rating of A or higher, with a Financial Size Category of VII or higher.

**END OF SECTION**

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**SECTION 00700  
GENERAL CONDITIONS**

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## ARTICLE 1 DEFINITIONS AND TERMINOLOGY

### 1.01 Defined Terms

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

- reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*: The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).
  14. *Contract Times*: The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
  15. *Contractor*: The individual or entity with whom Owner has entered into the Agreement.
  16. *Cost of the Work*: See paragraph 11.01A for definition.
  17. *Designer*: shall be an individual or entity named as such in the Agreement.
  18. *Drawings*: That part of the Contract Documents prepared or approved by Engineer that graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
  19. *Effective Date of the Agreement*: The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
  20. *Engineer*: The individual or entity named as such in the Agreement.
  21. *Field Order*: A written order issued by Engineer that requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
  22. *Final Completion*: The time at which the Work has progressed to a point where, in the opinion of the Engineer, the Contractor has satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents, and other documents as specified in the Contract Documents.
  23. *General Requirements*: Sections of Division 01 of the Specifications. The General Requirements pertain to all sections of the Specifications.
  24. *Hazardous Environmental Condition*: The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.
  25. *Hazardous Waste*: The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.



26. *Laws and Regulations; Laws or Regulations:* Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
27. *Liens:* Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
28. *Liquidated Damages:* amounts shall be as stipulated in the Agreement and/or Section 01011, Unique Requirements. Liquidated damages shall apply to the Contract Times for the Project. Liquidated Damages shall be both additive and cumulative. Liquidated Damages shall end upon Substantial Completion, Completion of the Work associated with each Milestone Date, and upon final completion of the Work.
29. *Milestone:* A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
30. *Notice of Award:* The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
31. *Notice to Proceed:* A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
32. *Owner:* The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
33. *PCBs:* Polychlorinated biphenyls.
34. *Petroleum:* Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
35. *Progress Schedule:* A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
36. *Project:* The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
37. *Project Manual:* The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
38. *Radioactive Material:* Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
39. *Related Entity:* An officer, director, partner, employee, agent, consultant, or subcontractor.

- 40. *Resident Project Representative*: The authorized representative of Engineer who may be assigned to the Site or any part thereof.
- 41. *Samples*: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
- 42. *Schedule of Submittals*: A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
- 43. *Schedule of Values*: A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
- 44. *Shop Drawings*: All drawings, diagrams, illustrations, schedules, specified design-related submittals, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
- 45. *Site*: Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
- 46. *Specifications*: That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
- 47. *Subcontractor*: An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
- 48. *Substantial Completion*: The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, to provide the following:
  - a. The Owner full time, uninterrupted, continuous operation of the Work; and
  - b. All required functional, performance, and operational or startup testing has been successfully demonstrated for all components, devices, equipment, and systems to the satisfaction of the Engineer in accordance with the requirements of the Specifications; and
  - c. All required inspections and other work necessary for the Engineer to certify "substantially complete" have been completed.The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.
- 49. *Submittals*: All administrative documents, Shop Drawings, Samples, product data, manufacturer's literature, quality control documents, design related documents, record documents, contract close-out documents, and/or any other

- specified document prepared or assembled by or for Contractor and submitted by Contractor to the Owner and/or Engineer.
50. *Successful Bidder*: The Bidder submitting a responsive Bid to whom Owner makes an award.
51. *Supplementary Conditions*: That part of the Contract Documents which amends or supplements these General Conditions.
52. *Supplier*: A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.
53. *Underground Facilities*: All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, stormwater, other liquids or chemicals, or traffic or other control systems.
54. *Unit Price Work*: Work to be paid for on the basis of unit prices.
55. *Work*: The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
56. *Work Change Directive*: A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## 1.02 Terminology

- A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.
- B. Intent of Certain Terms or Adjectives:
1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives

of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.09 or any other provision of the Contract Documents.

C. Day:

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

D. Defective:

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

E. Furnish, Install, Perform, Provide:

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

- F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## **ARTICLE 2 PRELIMINARY MATTERS**

### **2.01 Delivery of Bonds and Evidence of Insurance**

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
1. Agreement and bonds shall not be dated when delivered to the Owner for signature. Owner will date both the bonds and Agreement with the same date when the Agreement is executed.
  2. Certified copies of Power of Attorney for the bonds must be dated prior to submittal to the Owner with a date which is within the previous 15 days.
  3. Certified copies of Power of Attorney and bonds must each have original corporate seal of surety. Each counterpart bond shall have its own individual certified Power of Attorney.
  4. Signature of attorney-in-fact for Surety Company on bonds must be one of persons authorized to sign on certified copies of Power of Attorney.
  5. If Contractor is a corporation, Agreement and bonds must have original corporate seal of Contractor affixed, must show title of person signing on behalf of Contractor, and must be attested by Corporate Secretary or Assistant Corporate Secretary.
- B. Evidence of Insurance: Before any Work at the Site is started, Contractor shall deliver to the Owner, with copies to each additional insured, certificates of insurance (and other evidence of insurance which Owner or any additional insured may reasonably request) which Contractor is required to purchase and maintain in accordance with ARTICLE 5.

### **2.02 Copies of Documents**

- A. Owner will furnish to Contractor up to four printed or hard copies of the Contract Documents. Additional copies will be furnished, upon request, at the Owner's cost of reproduction.
- B. Owner may also, if requested by Contractor, furnish Contractor with one electronic copy of the Drawings and other Contract Documents. Contractor agrees it will only use the same for performing the Work and will not disseminate the same except to its subcontractors where necessary to perform the Work. Contractor shall obtain written acceptance of any subcontractor to these limitations before disseminating the same to such subcontractor. Electronic copies of the Contract Documents will be provided as a convenience to Contractor. The Owner and Engineer assume no liability and shall

be held harmless for any discrepancies between the hard copy and electronic copy of the Contract Documents.

2.03 Commencement of Contract Times, Notice to Proceed

- A. Contract Times will commence to run on the date established in the Notice to Proceed. A Notice to Proceed may be given at any time within 120 days after the Effective Date of the Agreement.

2.04 Starting the Work

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

2.05 Before Starting Construction

- A. Preliminary Schedules: Within 10 days after the Commencement of Contract Time (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
  - 1. A preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
  - 2. A preliminary Schedule of Submittals which indicates each required Submittal and the dates for submitting, time for reviewing and processing each Submittal (periodic Submittals may be listed by a common monthly date); and
  - 3. A preliminary schedule of values for all of the work in a format acceptable to the Engineer and in accordance with the requirements specified in the General Requirements.

2.06 Preconstruction Conference

- A. A Preconstruction Conference shall be held at a Time and Place determined by the Engineer.

2.07 Initial Acceptance of Schedules

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with paragraph 2.05A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor. The Progress Schedule may subsequently be adjusted in accordance with paragraph 6.04 and applicable provisions of the General Requirements.
  2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals. The Schedule of Submittals may subsequently be adjusted in accordance with paragraph 6.04 and applicable provisions of the General Requirements.
  3. Contractor's Schedule of Values will be acceptable to the Engineer as to form and substance if it is provided in accordance with the requirements specified in the General Requirements.
- B. Before any work at the site is started which is governed by the Construction Industry Licensing Board of Georgia (Official Code of Georgia Annotated [O.C.G.A.] Section 43-14-1 et seq.), or its rules or regulations, Contractor shall inform himself of those rules and regulations, and qualifications for licensure, and if requested shall deliver proof of compliance to the Owner and Engineer.

### **ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE**

#### **3.01 Intent**

- A. The individual components of the Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in paragraph 3.04.
- D. Where the word "similar" occurs on the Plans, it shall have a general meaning and not be interpreted as being identical, and all details shall be worked out in relation to their location and their connection with other parts of the Work.
- E. Each and every clause or other provision required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any

such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

- F. Wherever in the Contract Documents the terms “as ordered,” “as directed,” “as required,” “as allowed,” “as approved” or terms of like effect or import are used, or the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” or “satisfactory” or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of the Engineer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to the Engineer any duty or authority to supervise or direct the furnishing or performance of Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.09 or any other provision of the Contract Documents.
- G. “Imperative” or “Command” type language is used in the Contract Documents. This command language refers to and is directed to the Contractor.
- H. All products (material or equipment) identified in the Contract Documents and all products incidental to the identified products, shall be new and unused and provided by Contractor unless specified otherwise.
- I. Emphasis, such as italics or quotes, has been used throughout the Contract Documents. Use of emphasis shall not change the meaning of the term emphasized.

### 3.02 Reference Standards

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



authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

### 3.03 Reporting and Resolving Discrepancies

#### A. Reporting Discrepancies:

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

#### B. Resolving Discrepancies:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents, and:
  - a. The provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
  - b. The provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).
  - c. In resolving discrepancies within the Contract Documents, precedence shall be given in the following descending order:
    - 1) Change Orders.
    - 2) Work Change Directives.
    - 3) Field Orders.

- 4) Engineer's written interpretations and clarifications.
- 5) Notice to Proceed.
- 6) Addenda.
- 7) Contract Agreement.
- 8) General Conditions.
- 9) Specifications.
- 10) Drawings (Figure dimensions on Drawings shall take precedence over scale dimensions and detailed drawings shall take precedence over general drawings).
- 11) Bidding Requirements.

#### 3.04 Amending and Supplementing Contract Documents

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

#### 3.05 Reuse of Documents

- A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:
  1. Have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or
  2. Reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Designer.
- B. The prohibition of this paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 Electronic Data

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

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

4.01 Availability of Lands

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in paragraph 10.05.
- B. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.
- C. Owner has begun to obtain all lands, rights-of-way and easements as indicated in the Contract Documents. However, delays obtaining such lands may occur. If Owner is unable to obtain lands as indicated in the Contract Documents, Owner will notify the Contractor of those lands which are not yet acquired and those areas where lands are available. Contractor shall begin the Work upon such land and rights-of-way as Owner has acquired in accordance with the Notice to Proceed.

#### 4.02 Subsurface and Physical Conditions

##### A. Reports and Drawings:

1. Those reports of explorations and tests of subsurface conditions at or contiguous to the Site used in preparing the Contract Documents; and
2. Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) used in preparing the Contract Documents.
3. It shall be the Contractor's responsibility to review the "Report of Geotechnical Exploration" and become familiar with the existing Subsurface and Physical Conditions at each site.
4. Technical Data for this contract is as follows:
  - a. none.

##### B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified above. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

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

#### 4.03 Differing Subsurface or Physical Conditions

##### A. Notice: If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. Is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in paragraph 4.02 is materially inaccurate; or
2. Is of such a nature as to require a change in the Contract Documents; or
3. Differs materially from that shown or indicated in the Contract Documents; or
4. Is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

5. Then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.
- B. Engineer's Review: After receipt of written notice as required by paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.
- C. Possible Price and Times Adjustments
1. The Contract Price or the Contract Times, or both, may be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
    - a. Such condition must meet any one or more of the categories described in paragraph 4.03.A; and
    - b. With respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.07 and 11.03.
  2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
    - a. Contractor knew or should have known of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
    - b. The existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
    - c. Contractor failed to give the written notice as required by paragraph 4.03.A.
  3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs)

sustained by Contractor on or in connection with any other project or anticipated project.

#### 4.04 Underground Facilities

- A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in these General Conditions:
1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and
  2. The cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    - a. Reviewing and checking all such information and data,
    - b. Locating all Underground Facilities shown or indicated in the Contract Documents,
    - c. Coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
    - d. The safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- B. Not Shown or Indicated:
1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
  2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment may be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner

and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in paragraph 10.05.

- C. The dimensions and descriptions given on the Drawings for adjacent work by others, if any, (including any existing facilities or utilities previously constructed for Owner) are based on the design drawings and not as-built drawings. Prior to commencing the Work, the Contractor shall verify all as-built conditions and information whenever existing facilities or utilities may impact the Work. Failure of Contractor to so verify all as-built conditions prior to commencing the Work shall bar Contractor from later seeking additional compensation for conflicts with existing facilities or utilities.
- D. Prior to the construction or installation of any proposed facility or pipeline, the Contractor shall expose all existing utilities true to their vertical and horizontal location, within the vicinity of the Work. To avoid conflicts between existing and proposed facilities or utilities, the Contractor shall either relocate the existing or proposed utility on a temporary or permanent basis, or shall take whatever means necessary to protect the existing facilities or utilities during the installation of proposed utilities, as approved by the Engineer. No separate payment will be made for the relocation of existing utilities or for any work associated with the protection of existing facilities or utilities.

#### 4.05 Reference Points

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.
- B. Engineer may check the lines, elevations, reference marks, batter boards, and the like, set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work. Contractor shall furnish personnel to assist Engineer in checking lines and grades.
- C. The Contractor shall review the Contract Documents and determine the presence and location of any property or rights-of-way monuments or markers, and assess the possibility of disruption to these monuments or markers. It will be the Contractor's responsibility to flag, erect guard post, or provide offset references for the protection or the re-monumentation of these property or rights-of-way monuments or markers.

- In the event these monuments or markers are covered over or disrupted, it will be the Contractor's responsibility to re-establish those monuments or markers of property or rights-of-way, which were present prior to Work on the project.
- D. It shall be the Contractor's responsibility to verify all reference points shown on the Contract Documents prior to beginning Work on the site. This verification shall be conducted by professionally qualified personnel in a manner which will verify the accuracy of the information shown in the Contract Documents. On projects that involve the connection to, or additions to existing structures, the elevations of these existing structures shall also be verified. Any findings that differ from those shown on the Contract Documents shall be submitted in writing to the Engineer for resolution.
- E. Additional surveys necessary for the construction staking shall be performed by the Contractor, the cost of which shall be incorporated into the appropriate items of Work. On projects in which payment is classified by depth of cut, the construction staking shall be performed in a manner that will allow for the determination of cut classification. During construction of the project, the Contractor shall keep a daily log and record of the location of all underground pipes, all structures, and any deviation from the Drawings. The Contractor shall keep and furnish this daily log and record in a manner which will allow the Engineer to incorporate these items into the Contract Documents.

#### 4.06 Hazardous Environmental Condition at Site

- A. Reports and Drawings: Reference is made to paragraph 4.02A for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been used by the Engineer in the preparation of the Contract Documents.
- B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified herein, paragraph 4.02A. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:
1. The completeness of such reports and Drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  2. Other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  3. Any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.



- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by paragraph 6.16A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work, based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may issue a Work Change Directive or Change Order as appropriate. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with ARTICLE 7.
- G. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this paragraph 4.06.G shall obligate Contractor to indemnify

any individual or entity from and against the consequences of that individual's or entity's own negligence.

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

## **ARTICLE 5 BONDS AND INSURANCE**

### **5.01 Performance, Payment, and Other Bonds**

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

### **5.02 Licensed Sureties and Insurers**

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

1. All bonds, insurance contracts, and certificates of insurance shall be either executed by or countersigned by a licensed resident agent of the surety or insurance company having its place of business in the State of Georgia and in all ways complying with the insurance laws of the State of Georgia. Surety shall be in good standing with Georgia's Insurance Commissioner's Office.
2. Surety and Insurers must have an A.M. Best Financial Strength Rating of A or higher, with a Financial Size Category of VII or higher.
3. The surety shall have an underwriting limitation in Circular 570 in excess of the Contract Amount.

#### 5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured identified in Section 00828, Insurance certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured identified in Section 00828, Insurance certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) that Owner is required to purchase and maintain, if any.

#### 5.04 Contractor's Liability Insurance

- A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
  1. Claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  2. Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  4. Claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    - a. By any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    - b. By any other person for any other reason;

5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
  6. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this paragraph 5.04 shall:
1. With respect to insurance required by paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in Section 00828, Insurance all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
  2. Include at least the specific coverages and be written for not less than the limits of liability provided in Section 00828, Insurance or required by Laws or Regulations, whichever is greater;
  3. Include completed operations insurance;
  4. Include contractual liability insurance covering Contractor's indemnity obligations under paragraphs 6.11 and 6.20;
  5. Contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in Section 00828, Insurance to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to paragraph 5.03 will so provide);
  6. Remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with paragraph 13.07; and
  7. With respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.
    - a. Contractor shall furnish Owner and each other additional insured identified in Section 00828, Insurance to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and 1 year thereafter.
- C. The limits of liability for the insurance required by paragraph 5.04.B.2 of the General Conditions shall provide coverage specified in Section 00828, Insurance or greater where required by Laws and Regulations.

5.05 Owner's Liability Insurance

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

5.06 Property Insurance

- A. Contractor shall purchase and maintain property insurance as required in Section 00828, Insurance.

5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with paragraph 5.06 by Contractor will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified herein as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Contractor as trustee or otherwise payable under any policy so issued.

5.08 Receipt and Application of Insurance Proceeds

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

5.09 Acceptance of Bonds and Insurance, Option to Replace

- A. If Owner has any objection to the coverage afforded by or other provision of the insurance required to be purchased and maintained by Contractor in accordance with this ARTICLE 5 on the basis of its not complying with the Contract Documents, Owner will notify Contractor in writing thereof within 10 days of the date of delivery of such certificate to Owner in accordance with paragraph 2.01. Contractor will provide such additional information in respect of insurance provided by Contractor as Owner may reasonably request.

5.10 Partial Use, Acknowledgement of Property Insurer

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

**ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES**

6.01 Supervision and Superintendence

- A. Contractor shall supervise, provide quality control, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent Superintendent thereto who shall not be replaced, except under extraordinary circumstances, without written notice to Owner and Engineer. Contractor shall also designate, in writing, a representative, hereinafter referred to as Project Manager, assigned to the Project on a full-time basis during execution of the Work who shall have authority to act on behalf of Contractor, including executing the orders or directions of the Engineer without delay. This Superintendent and/or Project Manager shall have full authority to promptly supply products, tools, plant equipment, and labor as may be required to diligently prosecute the Work. All communications given to or received from the Superintendent and/or the Project Manager shall be binding on Contractor.

- C. If at any time during the Project the Superintendent or Project Manager leaves the Project site while Work is in progress, Engineer shall be notified and provided with the name of Contractor's representative having responsible charge.
- D. Contractor also shall designate the person responsible for Contractor's quality control while Work is in progress. Engineer shall be notified in writing prior to any change in quality control representative assignment.
- E. Prior to the execution of the Agreement, Contractor shall furnish to the Owner and Engineer the names, resumes, 24-hour contact information and other relevant information associated with the Project Manager and the Superintendent that are to be assigned to this project. The Project Manager and Superintendent must be acceptable to the Owner and Engineer.

#### 6.02 Labor, Working Hours

- A. Contractor shall provide competent, skilled, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site. Contractor shall, upon demand from the Engineer, immediately remove any manager, superintendent, foreman, or workman whom the Engineer or Owner may consider incompetent or undesirable.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.
- C. Regular working hours are defined as 8 hours per day, Monday through Friday, excluding holidays, occurring between the hours of 7:00 a.m. and 7:00 p.m., or as specified elsewhere. Requests to work other than regular working hours shall be submitted to Engineer not less than 48 hours prior to any proposed weekend work or scheduled extended work weeks. Occasional unscheduled overtime on weekdays may be permitted provided reasonable notice is given to Engineer.
- D. Contractor shall pay all extra costs incurred by the Owner associated with work, outside of normal working hours, including additional support services, inspection services, testing services, utilities or other applicable costs. The cost associated with the Owner's inspection overtime will be in the range of \$75.00 to \$120.00 per hour per individual, depending upon individuals assigned to the Project, the type of work being inspected, and the date of the invoice (that is, allowing for salary escalation). Contractor will not be responsible for extra costs associated with inspection overtime

for work in excess of 40 hours per week when such overtime work is explicitly required by the Contract Documents.

- E. Except in the case of emergencies or other unusual circumstances, no work shall be permitted on the project on Sunday.
- F. The Engineer will determine to what extent extraordinary onsite personnel work is required during Contractor's overtime work or working hours outside regular scheduled work hours.

#### 6.03 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, startup, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All products provided on this Project shall be products currently manufactured by the manufacturer (that is, products shall not be discontinued or out-of-date products nor shall they be of the last production run of the product). Contractor shall incorporate the previous sentence in any contract or agreement between Contractor and subcontractor or supplier supplying products provided on this Project. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.
- D. Without limiting the responsibility or liability of the Contractor pursuant to this agreement, all warranties given by manufacturers on materials or equipment incorporated in the work are hereby assigned by the Contractor to the Owner. Such assignment shall be effective upon completion of Contractor's warranty period. If requested, the Contractor shall execute formal assignments of said manufacturer's warranties to the Owner. All such warranties shall be directly enforceable by the Owner. Such assignment shall in no way affect the Contractor's responsibilities and duties during the warranty period.



6.04 Progress Schedule

- A. Contractor shall provide all resources, labor, materials, equipment, services, and the like necessary to adhere to the Progress Schedule established in accordance with paragraph 2.07 and the General Requirements as updated and adjusted from time to time as provided below.
1. Contractor shall submit to Engineer for acceptance (to the extent indicated in paragraph 2.07 and the General Requirements) an updated Progress Schedule and an updated Schedule of Submittals with each partial payment request, but no less than monthly. Contractor's failure to provide acceptable updated Progress Schedule and Schedule of Submittals will delay processing of the pay request until receipt of the acceptable updated Progress Schedule and/or an updated Schedule of Submittals. Such updates and adjustments shall comply with any provisions of the General Requirements applicable thereto.
  2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of ARTICLE 12. Adjustments in Contract Times may only be made by a Change Order.
  3. If the Progress Schedule reflects a completion date prior to the completion date established by the Agreement, this shall afford no basis to claim for delay should Contractor not complete the Work prior to the projected completion date. Instead, all "float" between the completion date in Contractor's schedule and the completion date established in the Agreement shall belong to and is exclusively available to the Owner. Should a change order be executed with a revised completion date, the Progress Schedule shall be revised to reflect the new completion date.
  4. Number of anticipated abnormal weather conditions, as defined in the General Requirements, shall be included on the critical path of Project Schedule.

6.05 Substitutes and "Or-Equals"

- A. See Section 01630, Substitution and Options of the Specifications.

6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier or other person or organization, (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, to whom or which Owner may have reasonable objection. Acceptance of any Subcontractor, other person or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work. Contractor shall not be required to employ any Subcontractor, other person or organization against whom Contractor has reasonable objection. If more than 25 percent of the work (as measured by dollar value and not including specialty work that is customarily subcontracted) is to be performed by one or more subcontractors then Contractor is obligated to notify Owner in writing of this intent with the

- submission of the Bid and to provide such supplemental information within 5 days of the bid as outlined under the Bidding Requirements.
- B. If the General Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the General Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. Shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor
  2. Shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier

which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

- H. Owner or Engineer may furnish to any Subcontractor, Supplier, or other person or organization, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor's Applications for Payment.
- I. Specialty Subcontractors: Contractor shall use the services of Specialty Subcontractors on those parts of the Work which is declared specialty work in Specifications and which, under normal contracting practices, is best performed by Specialty Subcontractors, as required by the Engineer in Engineer's sole discretion, at no additional cost to the Owner. If Contractor desires to perform specialty work, Contractor shall submit a request to the Owner, accompanied by evidence that Contractor's own organization has successfully performed the type of work in question, is presently competent to perform the type of work, and the performance of the work by Specialty Subcontractors will result in materially increased costs or inordinate delays.

#### 6.07 Patent Fees and Royalties

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

#### 6.08 Permits

- A. Unless otherwise provided in Section 01060 or these General Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the

Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

#### 6.09 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in paragraph 10.05.
- D. Where professional Engineering and or Architectural services are required in connection with any of the components required by the Contract, all Bidders and component suppliers must make certain that there is full compliance with all applicable laws of the State of Georgia and any other state governing professional Engineering and/or Architecture. The Owner and Engineer do not warrant that any entity listed as an acceptable manufacturer is or will be in compliance with such laws.
- E. Any fines levied against the Owner for failure of Contractor to properly maintain required National Pollutant Discharge Elimination System (NPDES) erosion and sediment control measures or any other related requirements will be doubled in their amounts and deducted as set-offs from payments due Contractor.

#### 6.10 Taxes

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

6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas:

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

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

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for use by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

6.12 Record Documents

- A. Contractor shall maintain the Site Record Documents in a safe place as specified in the General Requirements. Upon completion of the Work, these record documents, Samples, and Shop Drawings shall be delivered to Engineer for Owner.

6.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
  - 1. All persons on the Site or who may be affected by the Work;
  - 2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
  - 3. Other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. All damage, injury, or loss to any property referred to in paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

- E. The property, improvements or facilities at the site shall be replaced or restored to a condition as good as when Contractor entered upon the Work. In case of failure on the part of Contractor to restore such property, or make good such damages or injury, the Owner may, after 48 hours written notice or sooner in the case of an emergency, proceed to repair, rebuild, or otherwise restore such property, improvements, or facilities as may be deemed necessary. The cost thereof will be deducted from any monies due or which may become due Contractor under this Contract.

#### 6.14 Safety Representative

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

#### 6.15 Hazard Communication Programs

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

#### 6.16 Emergencies

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

#### 6.17 Shop Drawings, Samples and Other Submittals

- A. Contractor shall submit Submittals to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by paragraph 2.07). Each submittal will be identified as Engineer may require.
  - 1. Shop Drawings:
    - a. Submit number of copies specified in the Specifications.
    - b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by paragraph 6.17.D.

2. Samples:
  - a. Submit number of Samples specified in the Specifications.
  - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require enabling Engineer to review the submittal for the limited purposes required by paragraph 6.17.D.
- B. Where any Submittal is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. Submittal Procedures:
  1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:
    - a. All field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
    - b. The suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;
    - c. All information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and
    - d. Shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.
  2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
  3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.
- D. Engineer's Review:
  1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with



the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of paragraph 6.17.C.1.

E. Resubmittal Procedures:

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

F. Excessive Submittal Resubmission: Engineer will record time required by Engineer and/or Designer for excessive Submittal review occasioned by Contractor's resubmission, in excess of two resubmissions of any required Submittal, caused by unverified, unchecked or un-reviewed, incomplete, inaccurate or erroneous, or nonconforming Submittals. Upon receipt of Engineer's accounting of time and costs, Contractor will reimburse Owner for the charges of Engineer review for excessive resubmissions through set-offs from the recommended Owner payments to Contractor as established in paragraph 14.02.D.1.c of these General Conditions.

G. In the event that Contractor requests a substitution for a previously approved item, Contractor shall reimburse Owner for Engineer's charges for such time as may be required to perform all reviews of the substitute item, unless the change is specifically requested by the Owner.

6.18 Continuing the Work

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

6.19 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
  - 1. Abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  - 2. Normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
  - 1. Observations by Engineer;
  - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
  - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  - 4. Use or occupancy of the Work or any part thereof by Owner;
  - 5. Any review and approval of a Submittal or the issuance of a notice of acceptability by Engineer;
  - 6. Any inspection, test, or approval by others; or
  - 7. Any correction of defective Work by Owner.

6.20 Indemnification

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

of them may be liable. If through the negligent act or omission on the part of Contractor, any other contractor or any subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other Contractor or subcontractor by agreement or arbitration if such other Contractor or Subcontractor will so settle. If such other contractor or Subcontractor shall assert any claim against Owner, Engineer, and/or Designer on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall indemnify and save harmless Owner, Engineer, and/or Designer against any such claims.

- B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. Contractor, Subcontractors, Suppliers and others on the Project, or their sureties, shall maintain no direct action against the Engineer and/or Designer, their officers, employees, affiliated corporations, consultants, and Subcontractors, for any claim arising out of, in connection with, or resulting from the engineering services performed. Only the Owner will be the beneficiary of any undertaking by the Engineer and/or Designer.

#### 6.21 Delegation of Professional Design Services

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

## **ARTICLE 7 OTHER WORK AT THE SITE**

### **7.01 Related Work at Site**

- A. Owner may perform other work related to the Project at the Site with Owner's employees or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
  - 1. Written notice thereof will be given to Contractor prior to starting any such other work; and
  - 2. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that may be allowed as a result of such other work, a Claim may be made therefor as provided in paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this ARTICLE 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

#### 7.02 Coordination

- A. If Owner contracts with others for the performance of other work on the Site, Contractor shall attend and participate in coordination meetings with the other on-site contractors.
- B. Unless otherwise provided in these General Conditions, Owner shall have sole authority and responsibility for such coordination with other contractors.

#### 7.03 Legal Relationships

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

#### 7.04 Claims Between Contractors

- A. Should Contractor cause damage to the work or property of any separate contractor at the site, or should any claim arising out of Contractor's performance of the Work at the site be made by any separate contractor against Contractor, Owner, Engineer, and/or Designer or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by mediation, arbitration, or at law.
- B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, and/or Designer and the officers, directors, employees, agents, and other consultants of each and any of them harmless from and against all claims, costs, losses and damages, (including, but not limited to, all fees and charges of Engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising directly, indirectly or consequentially out of

- or resulting from any action, legal or equitable, brought by any separate contractor against Owner, Engineer, and/or Designer or the officers, directors, employees, agents, or other consultants of each and any of them to the extent based on a claim arising out of Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of work by any separate contractor at the site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, and/or Designer or the officers, directors, employees, agents, or other consultants of each and any of them or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any mediator or arbitrator which seeks to impose liability on or to recover damages from Owner, Engineer, and/or Designer or the officers, directors, employees, agents, or other consultants of each and any of them on account of any such damage or claim.
- C. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a claim for an extension of times in accordance with ARTICLE 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and/or Designer and the officers, directors, employees, agents, or other consultants of each and any of them for any delay, disruption, interference or hindrance caused by any separate contractor. This paragraph does not prevent recovery from Owner, Engineer, and/or Designer for activities that are their respective responsibilities.

## **ARTICLE 8 OWNER'S RESPONSIBILITIES**

### **8.01 Communications to Contractor**

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

### **8.02 Replacement of Engineer**

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer whose status under the Contract Documents shall be that of the former Engineer.

### **8.03 Furnish Data**

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

### **8.04 Pay When Due**

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

8.05 Lands and Easements, Reports and Tests

- A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been used by Engineer in preparing the Contract Documents.

8.06 Insurance

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

8.07 Change Orders

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

8.08 Inspections, Tests, and Approvals

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

8.09 Limitations on Owner's Responsibilities

- A. The Owner shall not supervise, direct, or have control or authority over, or be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 Undisclosed Hazardous Environmental Condition

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

8.11 Evidence of Financial Arrangements

- A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in these General Conditions.

## **ARTICLE 9 ENGINEER'S STATUS DURING CONSTRUCTION**

### **9.01 Owner's Representative**

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

### **9.02 Visits to Site**

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

### **9.03 Project Representative**

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



9.04 Authorized Variations in Work

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

9.05 Rejecting Defective Work

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

9.06 Shop Drawings, Change Orders and Payments

- A. In connection with Engineer's authority and limitations thereof, as to Shop Drawings and Samples, see paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see ARTICLE 10, ARTICLE 11, and ARTICLE 12.
- D. In connection with Engineer's authority as to Applications for Payment, see ARTICLE 14.

9.07 Determinations for Unit Price Work

- A. Engineer will have authority to determine the actual quantities and classifications of items of Unit Price Work performed by Contractor, and the written decisions of Engineer on such matters will be final, binding on Owner and Contractor and not subject to appeal (except as modified by Engineer to reflect changed factual conditions).

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

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

9.09 Limitations on Engineer's Authority and Responsibilities

- A. Neither Engineer's authority or responsibility under this ARTICLE 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees,

bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

- E. The limitations upon authority and responsibility set forth in this paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

## **ARTICLE 10 CHANGES IN THE WORK; CLAIMS**

### **10.01 Authorized Changes in the Work**

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
1. Owner may, in anticipation of possibly ordering an addition, deletion or revision to the Work, request Contractor to prepare a proposal of cost and times to perform Owner's contemplated changes in the Work. Contractor's written proposal shall be transmitted to the Engineer promptly, but not later than 14 days after Contractor's receipt of Owner's written request and shall remain a firm offer for a period not less than 60 days after receipt by Engineer.
  2. Contractor is not authorized to proceed on an Owner contemplated change in the Work prior to Contractor's receipt of a Change Order (or Work Change Directive) incorporating such change into the Work.
  3. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a claim for an adjustment in Contract Price or Contract Time.
  4. The Owner shall not be liable to the Contractor for any costs associated with the preparation of proposal associated with Owner's contemplated changes in the Work.
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in paragraph 10.05.

### **10.02 Unauthorized Changes in the Work**

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the

Contract Documents as amended, modified, or supplemented as provided in paragraph 3.04, except in the case of an emergency as provided in paragraph 6.16 or in the case of uncovering Work as provided in paragraph 13.04.B.

#### 10.03 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
  - 1. Changes in the Work which are: (i) ordered by Owner pursuant to paragraph 10.01.A, (ii) required because of acceptance of defective Work under paragraph 13.08.A or Owner's correction of defective Work under paragraph 13.09, or (iii) agreed to by the parties;
  - 2. Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
  - 3. Changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in paragraph 6.18.A.
- B. In signing a Change Order, the Owner and Contractor acknowledge and agree that:
  - 1. The stipulated compensation (Contract Price or Contract Time, or both) set forth in the Change Order includes payment for (i) the Cost of the Work covered by the Change Order, (ii) Contractor's fee for overhead and profit, (iii) interruption of Progress Schedules, (iv) delay and impact, including cumulative impact, on other work under the Contract Documents, and (v) extended home office and jobsite overhead;
  - 2. The Change Order constitutes full mutual accord and satisfaction for the change to the Work;
  - 3. No reservation of rights to pursue subsequent claims on the Change Order will be made by either party; and
  - 4. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

#### 10.04 Notification to Surety

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

#### 10.05 Claims and Disputes

- A. Engineer's Decision Required: All Claims, except those waived pursuant to paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. Notice: Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 10 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 20 days (and monthly thereafter for continuing events) after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. Engineer's Action: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
  - 1. Deny the Claim in whole or in part,
  - 2. Approve the Claim, or
  - 3. Notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under paragraph 10.05.C or denial pursuant to paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in ARTICLE 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this paragraph 10.05.

- G. Contractor, Subcontractors, Suppliers and others on the Project, or their surety, shall maintain no direct action against the Engineer or Designer, its officers, employees, affiliated corporations, and Subcontractors, for any claim arising out of, in connection with, or resulting from the Engineering services performed. Only the Owner will be the beneficiary of any undertaking with the Engineer.

## **ARTICLE 11 COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### **11.01 Cost of the Work**

- A. Costs Included: The term Cost of the Work means the sum of all costs, except those excluded in paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in paragraph 11.01.B.
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
  2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
  3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver

such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
    - 1) Full rental cost for rented, leased, and/or owned equipment shall not exceed the rates listed in the Rental Rate Blue Book published Equipment Watch, a unit of Primedia, Inc., as adjusted to the regional area of the Project. The most recent published edition in effect at the commencement of the actual equipment use shall be used.
    - 2) Rates shall apply to equipment in good working condition. Equipment not in good condition, or larger than required, may be rejected by Engineer or accepted at reduced rates.
    - 3) Equipment in Use: Actual equipment use time documented by the Engineer shall be the basis that the equipment was on and used at the Project site. In addition to the leasing rate above, equipment operational costs shall be paid at the estimated operating cost, payment category (and the table below), and associated rate set forth in the Blue Book if not already included in the lease rate.

The hours of operation shall be based upon actual equipment usage to the nearest quarter hour, as recorded by the Engineer.

- 4) Equipment when idle (Standby): Idle or standby equipment is equipment on-site or in transit to and from the Work site and necessary to perform the Work under the modification but not in actual use. Idle equipment time, as documented by the Engineer, shall be paid at the leasing rate determined in paragraph 11.01.A.5.c, excluding operational costs.
- 5) Where a breakdown occurs on any piece of equipment, payment shall cease for that equipment and any other equipment idled by the breakdown. If any part of the Work is shut down by the Owner, standby time will be paid during non-operating hours if diversion of equipment to other Work is not practicable. Engineer reserves the right to cease standby time payment when an extended shutdown is anticipated.

Actual Usage	Blue Book Payment Category
Less than 8 hours	Hourly Rate
8 or more hours but less than 7 days	Daily Rate
7 or more days but less than 30 days	Weekly Rate
30 days or more	Monthly Rate

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to any of the Work that has been completed and accepted by the Owner, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by Owner in accordance with paragraph 5.06.D.), provided they have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee. If, however, any such loss or damage to the Work that has been accepted by Owner requires reconstruction and Contractor is placed in charge thereof, Contractor shall be paid for services, a fee proportionate to that stated in paragraph 12.01.C.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.



- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.
  - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.
- B. Costs Excluded: The term Cost of the Work shall not include any of the following items:
  - 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.01.A.1 or specifically covered by paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
  - 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
  - 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
  - 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
  - 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraphs 11.01.A and 11.01.B.
- C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in paragraph 12.01.C.
- D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

#### 11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. Cash Allowances:
  - 1. Contractor agrees that:
    - a. The cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
    - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. Contingency Allowance:
  - 1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

#### 11.03 Unit Price Work

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

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

## **ARTICLE 12 CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIME**

### **12.01 Change of Contract Price**

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraph 11.03); or
  2. Where the Work involved is not covered by unit prices contained in the Contract Documents:
    - a. By a lump sum value fixed by the Owner, which may include an allowance for overhead and profit (not necessarily in accordance with paragraph 12.01.C.2); or
    - b. By new unit price items fixed by the Owner (not necessarily derived in accordance with paragraph 11.01); or
  3. Where the Work involved is not covered by unit prices contained in the Contract Documents and when this method is selected by the Owner, on the basis of the Cost of the Work (determined as provided in paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in paragraph 12.01.C).
- C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:
1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
  - a. For costs incurred under paragraphs 11.01A.1 and 11.01A.2, the Contractor's fee shall be 15 percent;
  - b. For costs incurred under paragraph 11.01A.3, the Contractor's fee shall be 5 percent based on subcontractor's actual Cost of the Work;
  - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under paragraphs 11.01A.1 and 11.01A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of 5 percent of the amount paid to the next lower tier Subcontractor; except the maximum total allowable cost to Owner shall be the Cost of the Work plus a maximum collective aggregate fee for Contractor and all tiered Subcontractors of 26.8 percent;
  - d. No fee shall be payable on the basis of costs itemized under paragraphs 11.01A.4, 11.01A.5, and 11.01.B;
  - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to 5 percent of such net decrease; and
  - f. When both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

#### 12.02 Change of Contract Time

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this ARTICLE 12.
- C. All time limits stated in the Contract Documents are of the essence of the Agreement. Contractor shall proceed with the Work at a rate of progress which will insure completion within the Contract Time. It is expressly understood and agreed by and between Contractor and the Owner, that the Contract Time for 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. If Contractor shall fail to perform the Work required within the Contract Time, or

extended Contract Time if authorized by Change order, then Contractor shall pay to the Owner the full amount of liquidated damages specified in the Contract Documents for each calendar day that Contractor shall be in default after the time stipulated in the Contract Documents.

#### 12.03 Delays

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times may be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by ARTICLE 7, fires, floods, epidemics, abnormal weather conditions, freight embargo, acts of war (declared or not declared), or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by ARTICLE 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor may be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor may be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this paragraph 12.03.C.
- D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

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

13.01 Notice of Defects

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

13.02 Access to Work

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

13.03 Tests and Inspections

- A. Contractor is responsible for the initial and subsequent inspections of Contractor's Work to ensure that the Work conforms to the requirements of the Contract Documents. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests. Contractor shall establish an inspection program and a testing plan acceptable to the Engineer and shall maintain complete inspection and testing records available to Engineer.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all non-contractor inspections, tests, or approvals required by the Contract Documents except:
  - 1. For inspections, tests, or approvals covered by paragraphs 13.03.C and 13.03.D;
  - 2. That costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.04.B shall be paid as provided in said paragraph 13.04.C; and
  - 3. As otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals; pay all costs in connection therewith; and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.
- F. Uncovering Work as provided in paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

#### 13.04 Uncovering Work

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

13.05 Owner May Stop the Work

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.
- B. If Owner stops Work under paragraph 13.05.A, Contractor shall be entitled to no extension of Contract Time or increase in Contract Price.

13.06 Correction or Removal of Defective Work

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

13.07 Correction Period

- A. If within 1 year after the date of Final Payment (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. Repair such defective land or areas; or
  - 2. Correct such defective Work; or
  - 3. If the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and



4. Satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.
- F. Repetitive malfunction of an equipment or product item shall be cause for replacement and extension of the correction period to a date one year following acceptable replacement. "Repetitive Malfunction" shall be defined as the third failure of an equipment or product following original acceptance.
- G. Ten months after Substantial Completion Contractor's Project Manager and Superintendent shall attend and actively participate in an onsite half-day Lessons Learned workshop to be led or conducted by the Engineer.

#### 13.08 Acceptance of Defective Work

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness)

and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

#### 13.09 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time as defined by the Engineer after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after 7 days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this paragraph 13.09.

## **ARTICLE 14 PAYMENTS TO CONTRACTOR AND COMPLETION**

### **14.01 Schedule of Values**

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

### **14.02 Progress Payments**

- A. Applications for Payments:
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
  2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
  3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- B. Review of Applications:
1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
  - a. The Work has progressed to the point indicated;
  - b. The quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.07, and to any other qualifications stated in the recommendation); and
  - c. The conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
  - a. Inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
  - b. That there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Engineer's review of Contractor's Work for neither the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. To supervise, direct, or control the Work, or
  - b. For the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. For Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. To make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
  - e. To determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in paragraph 14.02.B.2. Engineer may also refuse to recommend

any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. The Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. The Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in paragraph 15.02.A.

C. Payment Becomes Due:

1. Owner and Contractor agree that all partial payments and final payments shall be subject to the Georgia Prompt Pay Act, as originally enacted and amended, and as set forth in O.C.G.A. Section 13-11-1 through 13-11-11, except as provided below to the extent authorized by law:
  - a. Interest Rate: For purposes of computing interest on late payments, the rate of interest shall be one-half percent per month or a pro-rata fraction thereof on the unpaid balance as may be due.
  - b. Payment Periods:
    - 1) When Contractor has performed in accordance with the provisions of these Contract Documents, the Owner shall pay Contractor within 45 days of receipt by the Owner or the Owner's representative of any properly completed Application for Payment, based upon work completed or service provided pursuant to the terms of these Contract Documents.
    - 2) When a subcontractor has performed in accordance with the provisions of its subcontract and the subcontract conditions precedent to payment have been satisfied, Contractor shall pay to that subcontractor and each subcontractor shall pay to its subcontractor, within 10 days of receipt by Contractor or subcontractor of each periodic or final payment, the full amount received for such subcontractors work and materials based on work completed or service provided under the subcontract, less retainage expressed as a percentage, but such retainage shall not exceed that retainage being held by the Owner, provided that the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete its work as Contractor in its reasonable discretion may require, including but not limited to a payment and performance bond.

- c. Interest on Late Payment: Except otherwise provided in these Contract Documents and/or in O.C.G.A. Section 13-11-5, if a periodic or final payment to Contractor is delayed by more than the time allotted in paragraph b of this Prompt Payment Clause or if a periodic or final payment to a subcontractor is delayed more than 10 days after receipt of periodic or final payment by Contractor or Subcontractor, the Owner, Contractor, or Subcontractor, as the case may be, shall pay interest to its Contractor or Subcontractor beginning on the day following the due dates as provided in paragraph b of this Prompt Payment Clause at the rate of interest as provided herein. Interest shall be computed per month or a pro-rata fraction thereof on the unpaid balance. There shall be no compounded interest. No interest is due unless the person or entity being charged interest received "Notice" as provided in paragraph d of this Prompt Payment Clause. Acceptance or progress payments or final payment shall release all claims for interest on said payments.
  - d. Notice of Late Payment and Request of Interest: Any person or entity asserting entitlement to interest on any periodic or final payment pursuant to the provisions of this Prompt Payment Clause shall provide "notice" to the person or entity being charged interest of the charging party's claim to interest on late payment. "Notice" shall be in writing, served by U.S. Certified Mail - Return Receipt Requested at the time the properly completed Application for Payment is received by the Owner or Owner's representative, and shall set forth the following:
    - 1) A short and concise statement that interest is due pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause;
    - 2) The principal amount of the periodic or final payment which is allegedly due to the charging party; and
    - 3) The first day and date upon which the charging party alleges that said interest will begin to accrue, pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause.
    - 4) These "Notice" provisions are of the essence; therefore, failure to comply with any requirement as set for the in the Prompt Payment Clause precludes the right to interest on any alleged late payment to which said "Notice" would otherwise apply.
2. Integration with the Georgia Prompt Pay Act: Unless otherwise provided in these Contract Documents, the parties hereto agree that these provisions of this Prompt Payment Clause supersede and control all provisions of the Georgia Prompt Pay Act (O.C.G.A. Section 13-11-1 through 13-11-11 (1994)), as originally enacted and as amended, and that any dispute arising between the parties hereto as to whether or not the provisions of this contract or the Georgia Prompt Pay Act control will be resolved in favor of these Contract Documents and its terms.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. Claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
  - c. There are other items entitling Owner to a set-off against the amount recommended; or
  - d. Items entitling Owner to retain set-offs from the amount recommended, including but not limited to:
    - 1) Owner compensation to Engineer and/or Designer at an estimated average rate of \$120.00 per each extra personnel hour for labor plus expenses because of the following Contractor-caused events:
      - (a) Delays necessitating a time extension for the performance of Engineer's services;
      - (b) Witnessing retesting of corrected or replaced defective Work;
      - (c) Return visits to manufacturing facilities to witness factory testing or retesting;
      - (d) Submittal reviews in excess of three reviews by Engineer for substantially the same Submittal;
      - (e) Evaluation of proposed substitutes and in making changes to Contract Documents occasioned thereby;
      - (f) Hours worked by Contractor, in excess of normal work hours as defined by paragraph 6.02 of the General Conditions, necessitating Engineer or Designer to work overtime;
      - (g) Return visits to the Project for Designers for Commissioning Activities not performed on the initial visit;
      - (h) Fines levied against the Owner for Contractor's performance of NPDES Erosion and Sedimentation Control Measures or other permit violations; and
      - (i) The repair, rebuilding, or restoration of property improvements or facilities by the Owner as outlined in paragraph 6.13;
    - 2) Liability for liquidated damages incurred by Contractor as set forth in the Agreement.
  - e. Owner has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.02.B.5.a through 14.02B.5.c or paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.
3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by paragraph 14.02.C.1.

#### 14.03 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.
- B. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all materials and supplies used by Contractor in the Work, free from all liens, claims, or encumbrances.
- C. Contractor shall indemnify and save Owner harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to either Contractor or Contractor's Surety. In paying any unpaid bills of Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.



#### 14.04 Substantial Completion

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion. Specific items of Work that must be completed prior to the Engineer's issuance of a certificate of Substantial Completion include, but are not limited to, the following:
1. Correction of all deficient Work items listed by all state, local, and other regulatory agencies or departments.
  2. All Submittals must be received and approved by the Engineer, including, but not necessarily limited to, the following:
    - a. Record documents;
    - b. Factory test reports, where required;
    - c. Equipment and structure test reports;
    - d. Manufacturer's Certificate of Proper Installation;
    - e. Operating and maintenance information, instructions, manuals, documents, drawings, diagrams, and records; and
    - f. Spare parts lists.
  3. All additional warranty or insurance coverage requirements have been provided.
  4. All manufacturer/vendor-provided operator training is complete and documented.
  5. Other items of Work specified elsewhere in the Project Manual as being prerequisite for Substantial Completion.
- B. Promptly after Contractor's notification; Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

#### 14.05 Partial Use

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.
  - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
  - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
  - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
  - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of paragraph 5.06 regarding property insurance.

#### 14.06 Final Inspection

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

#### 14.07 Final Payment

- A. Application for Payment:
  - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments. Under no circumstances will Contractor's application for final payment be accepted by the Engineer until all Work required by the Contract Documents has been completed.
  - 2. The final Application for Payment shall be accompanied (except as previously delivered) by:
    - a. All documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by paragraph 5.04.B.7;
    - b. Consent of the surety, if any, to final payment;
    - c. A list of all Claims against Owner that Contractor believes are unsettled; and
    - d. Complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
  - 3. In lieu of the releases or waivers of Liens specified in paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance:

1. If on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation – all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will indicate in writing Engineer's recommendation of payment and present the Application to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of paragraph 14.09. Otherwise, Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, Owner shall in accordance with the applicable State or local General Law, pay Contractor the amount recommended by Engineer.

C. Payment Becomes Due:

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

14.08 Final Completion Delayed

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

#### 14.09 Waiver of Claims

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

### ARTICLE 15 SUSPENSION OF WORK AND TERMINATION

#### 15.01 Owner May Suspend Work

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

#### 15.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under paragraph 2.07 as adjusted from time to time pursuant to paragraph 6.04);
  2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
  3. Contractor's disregard of the authority of Engineer;
  4. Contractor's violation in any substantial way of any provisions of the Contract Documents;
  5. If Contractor abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified;
  6. Contractor is adjudged bankrupt or insolvent;
  7. Contractor makes a general assignment for the benefit of creditors;

8. A trustee or receiver is appointed for Contractor or for any of Contractor's property;
  9. Contractor files a petition to take advantage of any debtor's relief act, or to reorganize under the bankruptcy or applicable laws;
  10. Contractor repeatedly fails to supply sufficient skilled workmen, materials or equipment;
  11. Contractor fails to make satisfactory progress toward timely completion of the Work;
  12. Contractor repeatedly fails to make prompt payments to Subcontractors or Material Suppliers for labor, materials or equipment.
- B. If one or more of the events identified in paragraph 15.02.A occur, Owner may, after giving Contractor (and Surety) 7 days written notice of its intent to terminate the services of Contractor, unless Contractor otherwise cures the deficiency in accordance with paragraph 15.02.D.
1. Exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
  2. Incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
  3. Complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within 7 days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

- F. If and to the extent that Contractor has provided a performance bond under the provisions of paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of paragraphs 15.02.B, and 15.02.C.
- G. Any termination by Owner pursuant to this paragraph 15.02 may result in the disqualification of Contractor for bidding on future contracts of Owner.

#### 15.03 Owner May Terminate for Convenience

- A. Upon 7 days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
  - 1. Completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
  - 2. Direct expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
  - 3. All reasonable costs including 10 percent overhead and profit for Work thereafter performed as specified in such notice; reasonable administrative costs of settling and paying such claims arising out of termination of work under purchase orders or subcontracts; and
  - 4. Reasonable expenses directly attributable to termination.
- B. Contractor shall submit within 30 calendar days after receipt of notice of termination a written statement setting forth its proposal for an adjustment to the Contract Price to include only the incurred costs described in this clause. Owner shall review, analyze, and verify such proposal and negotiate an equitable amount and the Contract may be modified accordingly.
- C. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

#### 15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 45 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in paragraph 15.04.

- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph 15.04 are not intended to preclude Contractor from making a Claim under paragraph 10.05 for an adjustment in Contract Price or Contract Times nor otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

## **ARTICLE 16 DISPUTE RESOLUTION**

### **16.01 Methods and Procedures**

- A. Dispute resolution methods and procedures, if any, shall be as set forth in these General Conditions. If no method and procedure has been set forth, and subject to the provisions of paragraphs 9.09 and 10.05, Owner and Contractor may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute. Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings, unless otherwise agreed by Contractor and Owner in writing.

## **ARTICLE 17 MISCELLANEOUS**

### **17.01 Giving Notice**

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

### **17.02 Computation of Times**

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



17.03 Cumulative Remedies

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

17.04 Survival of Obligations

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

17.05 Controlling Law

- A. This Contract, and any dispute arising from the subject matter of this Contract, is to be controlled by the laws of the State of Georgia. The Superior Court of Athens-Clarke County, Georgia, or if federal jurisdiction is applicable, the United States District Court for the Middle District of Georgia, Athens Division, shall be the proper venue for any litigated disputes arising from this Contract or its subject matter.

17.06 Headings

- A. Articles and paragraph headings are inserted for convenience only and do not constitute parts of these general conditions.

17.07 Addresses

- A. Both the address given in the Bid Form upon which this Agreement is founded, and Contractor's office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered. The delivering at the above named place, or depositing in a postpaid wrapper directed to the first-named place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed by Contractor, and delivered to and acknowledged by the owner and Engineer. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon Contractor personally.

17.08 Forms and Record

- A. The form of all Submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Engineer.
- B. Contractor shall maintain throughout the term of the Contract, and retain for not less than four years after completion thereof, complete and accurate records of all Contractor's costs which relate to the work performed, including the extra work, under the terms of the Contract.
- C. The Owner, or its authorized representative, shall have the right at any reasonable time to examine and audit the original records.
- D. Records to be maintained and retained by Contractor shall include, but not be limited to:
  - 1. Payroll records accounting for total time distribution of Contractor's employees working full or part time on the Work;
  - 2. Cancelled payroll checks or signed receipts for payroll payments in cash;
  - 3. Invoices for purchases, receiving and issuing documents, and all other unit inventory records for Contractor's stores, stock, or capital items;
  - 4. Paid invoices and cancelled checks for materials purchase, subcontractors, and any other third parties' charges;
  - 5. Original estimate and change order estimate files and detailed worksheets;
  - 6. All project-related correspondence; and
  - 7. Subcontractor and supplier change order files (including detailed documentation covering negotiated settlements).
- E. Owner shall also have the right to audit: any other supporting evidence necessary to substantiate charges related to this agreement (both direct and indirect costs, including overhead allocations as they may apply to costs associated with this agreement); and any records necessary to permit evaluation and verification of Contractor compliance with contract requirements and compliance with provisions for pricing change orders, payments, or claims submitted by Contractor or any payees thereof. Contractor shall also be required to include the right to audit provision in the contracts (including those of a lump-sum nature) of all subcontractors, insurance agents, or any other business entity providing goods and services.

17.09 Assignment

- A. Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the Owner. In case Contractor assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to

Contractor shall be subject to prior liens of all persons, firms, and corporations for services rendered or materials supplied for the performance of the Work called for under this Contract.

17.10 Authority of the Engineer and Designer

- A. The Engineer will act as the Owner's representative during the construction period. The Engineer will decide questions which may arise as to quality and acceptability of products furnished and Work performed. The Engineer will interpret the intent of the Contract Documents in a fair and unbiased manner. The Engineer will make visits to the site and determine if the Work is proceeding in accordance with the Contract Documents. The Engineer will judge as to the accuracy of quantities submitted by Contractor in partial payment estimates and the acceptability of the Work which these quantities represent. The decisions of the Engineer will be final and conclusive.
- B. The Engineer shall call for the services of the Designer in the following activities:
  - 1. Performing technical reviews of shop drawings, product data and samples, after the Engineer has reviewed and deem them acceptable for a detailed review;
  - 2. Interpreting the intent of the Contract Documents, when in the opinion of the Engineer, the intent is not apparent;
  - 3. Reviewing proposed change orders, when such changes may affect the intent of the original design;
  - 4. Responding to Contractor's Requests For Information, when in the opinion of the Engineer, the Engineer does not have sufficient knowledge to respond to the request;
  - 5. Reviewing changes to the Project, which have first been reviewed and recommended by the Engineer for acceptance, as to their effect on the intent of the original design;
  - 6. Performing a final pre-startup inspection;
  - 7. Observing the final testing and startup of the Project;
  - 8. Determining that the Project is ready for final acceptance;
  - 9. Performing technical reviews of operation and maintenance manuals, after the Engineer has reviewed and deem them acceptable for a detailed review; and
  - 10. Attending Progress Meetings, periodic site visits, input on quality and acceptability of products furnished and Work performed.
- C. Designer will be authorized to observe all Work done and all products furnished, including preparation, fabrication, and manufacture of the products to be used, but the Designer will not be authorized to alter or waive any requirements of the Contract Documents. The Designer may reject products or suspend the Work until any question at issue can be referred to and decided by the Engineer.

- D. The Engineer shall provide the Designer with the following:
  - 1. Minutes of all meetings between the Engineer and Contractor;
  - 2. An updated Schedule of Submittals, as prepared by Contractor; and
  - 3. A copy of all the Engineer's responses to Requests for Information.
- E. All communication between the Designer and Contractor shall go through the Engineer. There shall be no duties or responsibilities between Contractor and Designer.
- F. Owner shall decide all conflicts between the Engineer and Designer when the conflicts are based on opinion or interpretation of the Contract Documents.

**END OF SECTION**

**SECTION 00828**  
**INSURANCE**

1.01 General:

- A. The following general requirements apply to any and all Work under this Contract. All Contractors and Subcontractors of any tier must comply. The Owner reserves the right to adjust or waive any or all requirements based on receipt of additional information pertinent to this Contract.
- B. Evidence of Insurance Required Before Work Begins: No Contractor or Subcontractor shall commence any work of any kind under this Contract until all insurance requirements contained in this Contract shall have been complied with as outlined below, and until evidence of such compliance satisfactory to the Owner as to form and content has been filed with the Owner. The Accord Certificate of Insurance or a pre-approved substitute is the required form in all cases where reference is made to a Certificate of Insurance or an approved substitute.
- C. Minimum Financial Security Requirements:
  - 1. Any and all companies providing insurance required by this Contract must meet certain minimum financial security requirements set forth below. These requirements conform to the ratings published by A.M. Best & Co. in the current Best's Key Rating Guide - Property-Casualty. The ratings for each company must be indicated on the Accord Certificate of Insurance Form. For all Contracts, regardless of size, companies providing insurance must have:
    - a. Current Best's Rating not less than A, and
    - b. Current Best's Financial Size Category not less than Class VII, and
    - c. Current authorization to conduct and transact insurance contracts by the Insurance Commissioner, State of Georgia.
  - 2. If the issuing company does not meet these minimum requirements, or for any other reason shall be or become unsatisfactory to the Owner, written notification shall be mailed by the Owner to the Contractor who shall promptly obtain a new policy issued by an insurer acceptable to the Owner, and shall submit evidence of the same to the Owner as required herein.
  - 3. Upon failure of the Contractor to furnish, deliver, and maintain such insurance as herein provided, this Contract, at the election of the Owner, may be declared forthwith suspended, discontinued, or

terminated. Failure of the Contractor to take out and/or maintain any required insurance shall not relieve the Contractor from any liability under the Contract, nor shall these requirements be construed to conflict with the obligation of the Contractor concerning indemnification.

- D. Insurance Required for Duration of Contract: Any and all Insurance required by this Contract shall be maintained during the entire length of this Contract, including any extensions thereto, and until all Work has been completed to the satisfaction of the Owner. The Owner shall have the right to inquire into the adequacy of the insurance coverages set forth in this Contract and to negotiate such adjustments as reasonably appear necessary.
- E. The Contractor shall submit to the Owner, along with the Insurance Certificate(s), a copy of the Insurer's cancellation notice for any and all Insurance policies required by the Contract.
- F. Additional Insureds: The Owner, Engineer, and Designer shall be covered as Additional Insured under any and all Insurance required by this Contract, and such insurance shall be primary with respect to the Additional Named Insured. Confirmation of this shall appear on the Accord Certificate of Insurance, and on any and all applicable insurance policies. However, this requirement does not apply to Workers' Compensation or Professional Liability Insurance. Copies of endorsements showing that the Owner and each additional insured identified herein have been added to the policies as an additional insured shall be attached to each of the certificates. Include the following parties or entities as additional insured:
  - 1. The Unified Government of Athens-Clarke County, 301 College Avenue, Athens, Georgia 30601.
  - 2. CH2M HILL Engineers, Inc., 6600 Peachtree Dunwoody Road, 400 Embassy Row, Suite 600, Atlanta, GA 30328.
  - 3. Design Professional as named in the Contract Agreement.
- G. Mandatory Subcontractor Compliance: Contractor shall incorporate a copy of these insurance requirements in each and every contract with each and every Subcontractor of any tier, and shall require each and every Subcontractor of any tier to comply with all such requirements. Contractor agrees that if for any reason Subcontractor fails to procure and maintain insurance as required, all such required insurance shall be procured and maintained by Contractor at Contractor's expense.

H. Authorization and Licensing of Agent:

1. Each and every agent acting as Authorized Representative on behalf of a Company affording coverage under this Contract shall warrant, when signing the Accord Certificate of Insurance, that specific authorization has been granted by the companies for the agent to bind coverage as required and to execute the Accord Certificate of Insurance as evidence of such coverage; that the coverage required by the Owner may be broader than the original policies; and that these requirements have been conveyed to the Companies, which acknowledge and assent to these terms and conditions.
2. In addition, each and every agent shall warrant when signing the Accord Certificate of Insurance that the agent is licensed to do business in the State of Georgia and that the company or companies are currently in good standing in the State of Georgia.

1.02 Certificates of Insurance:

- A. Contractor shall deliver to Owner, at the time of execution of the Contract Agreement, with copies to each additional insured, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Copies of endorsements showing that the Owner and each additional insured identified herein have been added to the policies as an additional insured shall be attached to each of the certificates.
- C. Insurance certificate must specifically show coverage applies for contractual liability for Contractor's indemnity obligations under Paragraphs 6.07, 6.11 and 6.20 of the General Conditions.
- D. In addition to the requirement for the policy limits specified below, the applicable insurance certificate must show that the entire aggregate policy limits for general liability coverage will apply specifically for the Project.
- E. Each insurance certificate for all coverages other than Workers' Compensation Insurance must show that a waiver of rights of recovery against any of the insured or the additional insured is in effect.
- F. Certificate for Contractor's liability insurance must show coverage of claims for damages because of bodily injury, sickness or death of any person or property damage resulting from the ownership, maintenance, or use of mobile equipment.

- G. Each insurance certificate must show coverage is underwritten with an insurance carrier who is rated no less than the Minimum Financial Security Requirements provided above.
- H. Certificate for Workers' Compensation Insurance must show that coverage includes executive officers and Contractor's leased employees, temporary staff, and part-time employees.
- I. Owner may waive specific insurance coverages set forth in Paragraph 5.04 of the General Conditions where Contractor provides equivalent insurance coverage by way of a different combination of policies.

1.03 Coverages and Limits:

- A. The Contractor shall provide all coverages listed below.
- B. Workers' Compensation and Employer's Liability Insurance: The Contractor shall procure and maintain Workers' Compensation and Employer's Liability Insurance in the following limits, such insurance to cover each and every employee who is or may be engaged in work under the Contract:

Workers' Compensation	Statutory
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Employer's Liability

Bodily Injury by Accident/Disease	\$1,000,000 each accident
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Bodily Injury by Accident/Disease	\$1,000,000 each employee
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Bodily Injury by Accident/Disease	\$1,000,000 policy limit
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- C. Comprehensive General Liability Insurance: The Contractor shall procure and shall maintain, during the life of the Contract Agreement, such Comprehensive General Liability and Broad Form Property Damage Insurance as shall protect Contractor and any Subcontractor performing work covered by this Contract from claims for damages for bodily injury, including accidental death, as well as from claims for property damages, which may arise from operations under the Contract Agreement, whether such operations are by the Contractor or by any Subcontractor or by anyone directly or indirectly employed by either Contractor or Subcontractor. The amount of insurance shall not be less than the following:

General Aggregate for each annual period	\$2,000,000.00
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Products Comp/Ops Aggregate for each annual period	\$2,000,000.00
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Personal and Advertising Injury	\$1,000,000.00
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Each Occurrence \$1,000,000.00

Fire Damage (Any one fire) \$50,000.00

Medical Expenses (Any one person) \$10,000.00

The insurance shall include coverage of the following hazards:

Underground

Explosion/Collapse

**Note: For the purpose of insurance coverage, each detonation of blasting is a single occurrence.**

Contractor may provide General Liability, Automobile Liability, and Employer's Liability with lower limits provided that the umbrella/excess liability insurance limits are increased such that the total of the basic limits and umbrella/excess limits remains the same or higher.

- D. Owner's Protective Liability: The Contractor shall procure and maintain, during the life of the Contract Agreement, Owner's Protective Liability Insurance with the same limits as the Comprehensive General Liability coverage.
- E. Excess Liability: Contractor shall procure and maintain Umbrella/Excess Liability insurance providing protection for at least the hazards insured under the primary liability policies with the following limits:

General Aggregate \$2,000,000.00

Each Occurrence \$1,000,000.00

- F. Automobile Liability: The Contractor shall procure and maintain during the life of the Contract Agreement, Comprehensive Automobile Liability Insurance. The insurance shall include coverage for owned, non-owned and hired vehicles. Amounts shall not be less than the following:

Comprehensive Single Limits (CSL) \$1,000,000.00

- G. Pollution Liability: Contractor shall obtain Pollution Liability insurance covering third party bodily injury and property damage. The amount of insurance shall not be less than the following:

General Aggregate \$5,000,000.00

Each Occurrence \$5,000,000.00

- H.I. Materials and Equipment Floater: The Contractor shall procure and maintain, during the life of the Contract Agreement, Materials and Equipment Floater Insurance to protect the interests of the Owner, the Contractor, and Subcontractors against loss by vandalism, malicious mischief, and all hazards included in a standard All Risk Endorsement. The amount of the insurance shall at all times equal or exceed the full amount of the Contract. The policies shall be in the names of the Owner and the Contractor.
- J. Property Insurance: The Contractor shall obtain "All Risk" Property Insurance for the Contractor's tools, personal property, or equipment (including rail or conveyor systems, ventilation systems, office trailers, and other equipment that will not become part of the final completed work and is not covered in another insurance policy required for this Project) whether owned, rented, or leased.
- K. Deductibles and Self-Insured Retention: Any deductibles or self-insured retentions will be borne by the Contractor. All 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, its officers, officials, and employees; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses. The costs of implementation of such option will be addressed by a change order.
- L. The Contractor is responsible for losses within the deductible limits.

**END OF SECTION**

**SECTION 00850**  
**SPECIAL CONDITIONS**

1. These Special Conditions amend or supplement the General Conditions, Specifications, and Contract Documents.
2. Owner has applied for the following permits related to the Project:
  - 2.1. Athens-Clarke County Land Disturbance Permit to include soil erosion, sediment and pollution plan.
  - 2.2. Athens-Clarke County Right of Way Encroachment for all non-GDOT highways.
  - 2.3. GA DOT Utility Encroachment Permits.
  - 2.4. Utility Crossing Permits.

**END OF SECTION**

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**SECTION 01010**  
**SUMMARY OF WORK**

**PART 1 GENERAL**

**1.01 DESCRIPTION**

- A. The Work to be performed under this Contract shall consist of furnishing all labor, materials, tools, equipment, and incidentals, and performing all Work required to construct complete in place and ready to operate:
  - 1. Cured-in-Place-Pipe Lining of sanitary sewer pipelines ranging in diameter from 8-inch to 36-inch gravity mains and 4-inch to 6-inch sewer services.
  - 2. Pipe bursting of sanitary sewer pipelines ranging in diameter from 6-inch to 24-inch gravity mains, and reconnection of existing sewer services.
  - 3. Lining manholes, including chimney seals.
  - 4. Related site work, protection and appurtenances.
- B. All Work described above shall be performed as specified.

**1.02 PROJECT LOCATION**

- A. All of the Project is located in the Athens-Clarke County, Georgia sanitary sewer service area.
- B. The Work will occur in urban, residential and commercial areas throughout the County, including public roadways and landscaped areas within sewer easements.

**1.03 QUANTITIES**

- A. The Owner reserves the right to alter the quantities of work to be performed or to extend or shorten the improvements at any time when and as found necessary, and the Contractor shall perform the work as altered, increased, or decreased. Payment for such increased or decreased quantity will be made in accordance with Section 00100, Instructions to Bidders. No allowance will be made for any change in anticipated profits, nor shall such changes be considered as waiving or invalidating any conditions or provisions of the Contract and Bond.

1.04 PARTIAL OWNER OCCUPANCY

- A. The existing facilities to which these improvements are being made will continue operation during the period of construction.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01011**  
**UNIQUE REQUIREMENTS**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The scope of this section is to convey to the Contractor unique and unusual stipulations and requirements which have been established for this Project. Some of the stipulations and 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 the Project which are not otherwise conveyed to the Contractor. The provisions of this section shall supersede the provisions of the Division 1 through 49 Specifications but shall not supersede the Bidding Requirements, Contract Forms or conditions of the Contract.

**1.02      PERSONNEL**

- A. Contractor shall provide fulltime onsite supervision of their work, including the Work of Subcontractors.
- B. The Supervisor must visit the project site daily checking on their personnel and subcontractors, meeting with the field crew leaders as well as checking on the status and progress of the project.
- C. A field crew leader must be with their crew when their crew is working. Each field crew leader can only have one crew. Each crew must have its own field crew leader.
- D. The Supervisor may also serve as a field crew leader and designate qualified personnel as a field crew leader in his absence.
- E. Identification of personnel
  - 1. All personnel on the work site need to wear identification badges clearly showing the person's name and photograph, and company name and logo.
  - 2. Vehicles used on the work site must be clearly marked with the company name and logo. In addition, vehicles must have a magnetic sign identifying the project, provided by the Owner and Engineer.
  - 3. The Contactor shall return the magnetic signs at the end of the Project to the Engineer.
  - 4. The Owner will provide a letter authorizing the Contractor to perform the Work for this Project. The Contractor must have this letter with them while on the work site.

1.03 REMOVAL OF DEBRIS FROM SANITARY SEWERS

- A. Daily removal of all sanitary debris, work debris and trash resulting from any Work activities identified within the Contract Documents. Disposal locations for any sanitary debris and/or hazardous materials shall be approved prior to disposal. Disposal of sanitary debris and/or hazardous materials shall be disposed only at approved locations. Manifests of hauling and disposal of such material shall be submitted to the Engineer by the Contractor.

1.04 RESPONSIBILITY FOR OVERFLOWS/SPILLS AND DAMAGE TO PROPERTY AND UTILITIES

- A. It shall be the responsibility of the Contractor to schedule and perform the Work in a manner not causing or contributing to incidences of sanitary sewer overflows (SSOs).
- B. In the event the Contractor's activities cause or contribute to SSOs, the Contractor shall immediately take appropriate action to contain and/or stop the overflow; cleanup the spillage, and disinfect the area affected by the SSO. Simultaneously, the Contractor shall notify the Owner's Dispatch Center, the Owner, and the Engineer to provide information concerning location, cause, volume of the SSO, and assessment whether the spill entered a stream or storm drain.
- C. The Contractor shall indemnify and hold harmless the Owner and the Owner's Representatives (including the Engineer) for any fines or third-party claims for personal or property damage arising out of an SSO that is fully or partially the responsibility of the Contractor, including the legal, engineering, and administrative expenses of the Owner and Owner's Representatives (including the Engineer) in defending such fines and claims.
- D. Any damage to public or private property due to the Work performed by the Contractor is the sole responsibility of the Contractor. Any damage to municipal or private utilities caused by the Contractor's equipment or operation shall be repaired in a manner approved by the Owner or Engineer at the Contractor's expense. Any damage caused by the Contractor to utilities or property belonging to other entities shall be repaired by the Contractor to the satisfaction of the utility/property owner at the Contractor's sole expense. Any equipment stuck or left in the sewer line/lateral shall be retrieved by the Contractor within 24 hours at the sole expense of the Contractor with notification to the Owner and Engineer. Any damage to the Contractor's equipment is the Contractor's sole responsibility. If the equipment is stuck or left in the sewer line/lateral causes a SSO, then the Contractor is liable for the SSO and all associated damages.
- E. The Owner (and the Engineer) reserves the right to make any repairs or retrieve any equipment and charge the Contractor accordingly.



1.05 BURIED MANHOLES

- A. A manhole where the manhole cover is not visible at ground surface. Buried manholes usually require removing the material covering the manhole and raising the manhole frame and cover.
- B. All buried manholes shall be reported to the Owner following the discovery of their location by the Contractor.
- C. The Contractor shall utilize maps, surveys, sounding instruments, or information from local residents to determine approximate locations of buried manholes.
- D. The Contractor shall take all necessary measures to prevent damage to the existing manhole frame and cover during location.
- E. Manholes in unpaved areas with less than 12 inches of cover may be temporarily exposed utilizing hand tools with approval of Owner in order to expedite the Work.
- F. The Contractor shall take all necessary measures to prevent debris from entering the manhole if exposed.

1.06 WATER FOR CLEANING AND TESTING

- A. Water as required for the Work identified in the Contract may be furnished by the Owner if readily available connections are present and only as approved by the Owner.
- B. There shall be installed in each and every connection to the Owner's potable water supply, a backflow preventer and calibrated metering device provided by the Owner.
- C. Hydrants shall only be operated by the Owner.
- D. The Owner will waive all fees associated with use of water.
- E. Contractor shall be responsible for any loss or damage of the hydrant meter at the end of the Project.
- F. The Owner will provide one hydrant meter for each Project.
- G. The Contractor may request the general location of the hydrant meter and request relocation by the Owner once per week.

1.07 NOTIFICATIONS

A. Public:

1. Contractor shall provide door hangers to all properties (residential, commercial and institutional) affected by inspection activities.
  - a. Door hanger shall inform occupants of purpose of the Work, what might possibly occur, and telephone numbers to call in case of questions or problems.
  - b. Distribute door hangers at least 2 working days prior to inspection activities in the area.
  - c. Prior to distribution, date stamp door hangers.
2. On daily basis, document distribution of door hangers. Documentation, at a minimum, shall include:
  - a. Maps showing areas notified.
  - b. Date distributed.
  - c. Name of person distributing door hangers.
3. Provide door hanger distribution information to the Owner on a daily basis.
4. Schedule work to be completed within the 1-week window established by distribution of door hangers. If the Work is unable to be completed in notified area before end of the 1-week window, renotify area prior to continuing Work.

B. Owner:

1. A minimum of 1 week prior to the anticipated commencement of inspections or testing in any one area and 24 hours in advance of actual start.
2. When obstruction, restricting flow in pipeline, is discovered.
3. If depth of flow in pipeline exceeds 25 percent of pipe diameter.
4. If conditions for inspections or testing are found to be unsafe or impractical.
5. Sewer system configuration in field is different than shown on maps; include diagram clearly indicating location of structure in relation to immediately adjacent structures.
6. If a disgruntled person engages the Contractor concerning the Work.

C. Special Requirements for Sewer Smoke Testing:

1. Emergency Response Agency (Fire and Police)
  - a. The Contractor shall identify a contact person at the appropriate precinct and notify daily as to area, start time, and ending time of the smoke test(s).

- b. 24 hours prior to test the Contractor shall notify the Fire, Dispatch and Police Departments closest to the test site.
  - c. The Fire Department must know the exact locations where the tests will be performed and during what specific time frames, and the date/time that door hangers were dispatched to property owners/occupiers.
- 2. Institution and Public Facilities
  - a. 2 hours prior to the test the Contractor shall make personal contact with a responsible person at schools, hospitals, nursing homes and all other institution/public facilities in the immediate area of the smoke test(s).

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01016  
OCCUPANCY**

**PART 1      GENERAL**

**1.01      PARTIAL OCCUPANCY BY OWNER**

- A. Whenever, in the opinion of the Engineer, any section or portion of the Work or any structure is in suitable condition, it may be put into use upon the written order of the Engineer and such usage will not be held in any way as an acceptance of said Work or structure, or any part thereof, or as a waiver of any of the provisions of these Specifications and the Contract. Pending final completion and acceptance of the Work, all necessary repairs and replacements, due to defective materials or workmanship or operations of the Contractor, for any section of the Work so put into use shall be performed by the Contractor at Contractor's own expense.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01025**  
**MEASUREMENT AND PAYMENT**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. Section 00300, Bid Form lists each item of the Project for which payment will be made. No payment will be made for any items other than those listed in the Bid.
- B. Required items of work and incidentals necessary for the satisfactory completion of the work which are not specifically listed in the Bid, and which are not specified in this section to be measured or to be included in one of the items listed in the Bid, shall be considered as incidental to the work. All costs thereof, including Contractor's overhead costs and profit, shall be considered as included in the lump sum or unit prices bid for the various items. The Contractor shall prepare the Bid accordingly.
- C. Work includes furnishing all plant, labor, equipment, tools, and materials not furnished by the Owner, and performing all operations required to complete the work satisfactorily, in place, as specified and as indicated on the Drawings.
- D. All estimated quantities stipulated in Section 00300 Bid Form or other Contract Documents are approximate and are to be used only:
  - 1. As a basis for estimating the probable cost of the Work.
  - 2. For the purpose of comparing the bids submitted for the Work.
- E. The basis of payment for work and materials will be the actual amount of work done and materials furnished. Payment for assessment and assessment-related activities or any other items of work for payment will be made on a linear foot, vertical foot, square foot, square yard, cubic yard, tons, or each based on the Contractor's measurement, contingent on verification by the Owner or Owner's Representative. Contractor agrees he will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished.
- F. When submitting pay requests for periodic payment, the following documentation should be submitted at a minimum:
  - 1. Contractor Payment Checklist.
  - 2. Application for Payment Form.

3. Payments Summary Sheet.
  4. Narrative of Work Performed.
  5. Updated Schedule for Assigned Work Activities
  6. Photo Documentation of Construction Activities Illustrating Pre and Post Conditions
- G. Additional instructions and/or requirements may be provided by the Owner or Engineer at the project Pre-Construction meeting.

1.02 DESCRIPTIONS

- A. Measurement of an item of work will be by the unit indicated in the Bid.
- B. Final payment quantities shall be determined from the record drawings. The record drawing lengths, dimensions, quantities, and the like shall be determined by a survey after the completion of all required work. Said survey shall conform to Section 01720, Record Documents. The precision of final payment quantities shall match the precision shown for that item in the Bid.
- C. Payment will include all necessary and incidental related work not specified to be included in any other item of work listed in the Bid.
- D. Unless otherwise stated in individual sections of the Specifications or in the Bid, no separate payment will be made for any item of work, materials, parts, equipment, supplies, or related items required to perform and complete the work. The costs for all such items required shall be included in the price bid for the item of which it is a part.
- E. Payment will be made by extending unit prices multiplied by quantities provided and then summing the extended prices to reflect actual work. Such price and payment shall constitute full compensation to the Contractor for furnishing all plant, labor, equipment, tools, and materials not furnished by the Owner and for performing all operations required to provide to the Owner the entire Project, complete in place, as specified and as indicated on the Drawings.
- F. "Products" shall mean materials or equipment permanently incorporated into the work.



1.03 MOBILIZATION

A. Bonds and Insurance:

1. To be paid for each separate Work Order Notice to Proceed.
2. Contractor shall provide a performance bond and payment bond in the amount of one-hundred percent (100%) of the stated contract price of each and every Work Order.
3. Performance and payment bonds shall be required before Owner issues a Work Order Notice to Proceed.

B. Initial Mobilization & Demobilization:

1. To be paid once per annual Contract extension for initial “out-of-town” mobilization and for demobilization upon Final Completion of all Work Orders for the Contract period.
2. Mobilization consists of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, materials, and incidentals to the entire project necessary for the Work. Mobilization cost will be paid upon successful mobilization of all personnel, equipment, supplies, and incidentals. Upon successful mobilization for the Contract period, 70 percent of the lump sum bid amount for Mobilization/Demobilization will be paid upon submittal of appropriate application for payment. Mobilization cost is applicable for General Contractor and all its Sub-Contractors.
3. Demobilization cost will be paid upon successful demobilization of all personnel, equipment, supplies, materials and incidentals used in the performance of the Work and shall be paid at Final Completion of all Work Orders for the Contract period. The amount paid for demobilization will be the remaining 30 percent of the lump sum bid amount for Mobilization/Demobilization. Demobilization cost is applicable for General Contractor and all its Sub-Contractors.

C. Word Order Mobilization & Demobilization

1. To be paid once for each separate Work Order Notice to Proceed.
2. Mobilization will not be paid for Warranty Work, Corrective Measures and/or Punchlist Items.

D. GPS Locate Manhole & Cleanouts: Measurement for payment will be per each (EA). Payment will constitute full compensation to locate, take coordinates, and provide attribute information for each located manhole. Attribute information will include top of manhole elevation, top of ground elevation, all invert in/out elevation, invert in/out pipe diameter, material type, and manhole diameter. No separate payment shall be made for discovery of buried or missing manholes.

1.04 CURED IN PLACE PIPE (CIPP), GRAVITY MAIN

- A. Costs shall include lining, installing, curing, cutting out to connections, required testing (excluding laboratory testing), and end sealing. Includes service lateral reinstatement using a minimum 24 inches CIPP lateral seal (“top hat”). See Section 02920, Cured-in Place Pipe Lining.

1.05 CURED IN PLACE PIPE (CIPP), SERVICE LATERAL

- A. CIPP for service lateral pipe up to the edge of the right-of-way or utility easement. Costs shall include lining, installing, curing, cutting out to connections, required testing (excluding laboratory testing), and end sealing. See Section 02920, Cured-in Place Pipe Lining.

1.06 MANHOLE REHABILITATION LINING

- A. Unit prices bid for this item shall be per each vertical foot of manhole rehabilitated based on manhole diameter. The unit price bid shall also include vacuum testing, and internal plugging of inactive connections. If replacement of manhole frames and covers with watertight frames and covers and installation of lid plugs are required, they will be listed as separate pay items in this section. See Section 02910, Manhole Rehabilitation.

1.07 MANHOLE ADJUSTMENT

- A. Remove and Re-set Existing Manhole Frame and Cover: Measurement for payment will be per each (EA). Includes horizontally adjusting frame to allow for clear opening and subsequent realignment or reinstalling of existing frame and cover.
- B. Replace Manhole Frame and Cover: Measurement for payment will be per each (EA). Unit price items include removal of existing frame and cover, and turn over to Owner, removal and offsite disposal of mortar and other debris; new manhole frame and cover grouted in place and adjusted.

1.08 PIPE BURSTING, FULL LENGTH REPLACEMENT

- A. Payment for Pipe Bursting will be made based on the measured quantity at the unit price bid in the Bid Form. Unit price shall include operation of equipment, replacement pipe sizes per Unit Price Schedule, excavation as necessary to carry out pipe bursting operations, pipe testing, and connection to manholes and cut outs for service laterals. See Section 02940, Pipe Bursting and Section 02225, Trench Excavation and Backfill.

1.09 NEW SEWER SERVICES

- A. Payment for Service Connections shall include making the sewer service connections as shown on the Drawings and as described in the Specifications, including cleanouts, rubber boots for connecting to manholes, and all other appurtenances required to complete the sewer service connections.
- B. Measurement for payment shall be made per sewer service connection installed.
- C. All costs associated with clean-up and testing of sewer service connections shall be included in the unit price bid for Service Connections.
- D. No additional payment will be made for maintaining flow while placing the new sewer service connection in service.

1.10 SEWER PIPELINE INSPECTION: PRE/POST-CCTV, LIGHT CLEANING, AND EVALUATION OF GRAVITY SEWER LINES

- A. General:
  - 1. Costs shall include, but are not limited to, labor, equipment, transportation, setup, removal, tools, public notification, data management, assessment, and all other related procedures and materials necessary to complete the Work.
  - 2. No additional payment will be made for data management including hardware, inspection media, and coordination meetings.
  - 3. There will be no separate payment made for data delivery.
  - 4. Payment shall not be made for where field forms, database entries, or digital files are incomplete, where recorded data are inconsistent or illegible, or where photographs are not present.
  - 5. As applicable, payment shall not be made until digital data files and reports are delivered and show complete and accurate information.
- B. Closed Circuit Television (CCTV) Inspection, Sewer, Internal Pipe Inspection up to 36-Inch Diameter: Measurement for payment will be per linear foot (LF) from center of manhole to center of manhole. Payment will constitute full compensation to perform a CCTV sewer pipe inspection on sanitary sewer mains as specified. Defect coding, header data, and coding of sewer main and service lateral locations are required. There will be no separate payment made for light cleaning. Payment shall only be made for the footage of sewer assessment between the manholes.

- C. Heavy Cleaning: Measurement for payment will be per linear foot (LF), measured along the centerline of the pipe, from end to inside face of structure to the end or inside face of structure, whichever is applicable. Payment will constitute full compensation for Owner-authorized Sewer Cleaning completed and approved per Section 02750, Sewer Cleaning. No payment will be made for any unauthorized heavy cleaning. There will be no separate payment made for documentation required to support the need for heavy cleaning. There will be no separate payment made for documentation required to verify completion of heavy cleaning. No separate payment will be made for mobilization/demobilization that might be required to perform the heavy cleaning and to continue CCTV inspection.

1.11 TEMPORARY FLOW CONTROL

- A. Bypass Pump Mobilization/Demobilization: This item shall consist of the mobilization and demobilization of the contractor's forces and equipment necessary for each setup of bypass pumping operations. Payment for mobilization and demobilization will be made at the proposal unit price for the item and will constitute full compensation for all labor, equipment, tools, and other items necessary and incidental to the completion of the Work. This item does not include separate payment for the setup of plugging/blocking.
- B. Bypass Pumping on up to 15-inch Diameter Pipe: Measurement for payment will be per day the size and flow classification category of bypass pumping and temporary flow control.
- C. Bypass Pumping on 15-inch to 24-inch Diameter Pipe: Measurement for payment will be per day the size and flow classification category of bypass pumping and temporary flow control.
- D. Bypass Pumping on larger than 24-inch Diameter Pipe: Measurement for payment will be per day the size and flow classification category of bypass pumping and temporary flow control.

1.12 POINT REPAIR (SEWER MAINS AND ACCESSORIES)

- A. General: Point Repair is a linear foot unit price pay item. Unit price item includes excavation, pipe removal, disposal, pipe bedding, pipe installation, and compacted backfill.
- B. Laying and Jointing Pipe and Accessories:
  - 1. Pipes
    - a. Payment for Gravity Sewer and Force Main shall be made for the quantity provided.

- b. Measurement for payment shall be made along the centerline of the pipe, through valves, fittings and manholes.
  - c. Depth of cut shall be measured from pipe invert to ground level at pipe centerline.
  - d. No payment shall be made for sections of pipe which are not installed.
  - e. All costs associated with providing restrained joints on the force main and gravity sewer, as specified and as shown on the Drawings, shall be measured and paid separately from regular sewer mains and shall include sewer mains in which Field-Lock gaskets are used or pipe is specified on the Drawings to be TR-Flex or equivalent.
2. Fittings:
- a. The unit price for Ductile Iron Fittings shall include all costs for furnishing materials, labor, and equipment required to install all bends and plugs located on the 8-inch gravity sewer that are labeled on the Drawings. No payment shall be made for fittings provided due to the Contractor's convenience, negligence, sequence of construction, layout problems, or repairs, except for those shown on the Drawings or specified.
  - b. Payment for Ductile Iron Fittings shall be made based on the measured weight of fittings provided at the unit price in the Bid. The unit price bid for Ductile Iron Fittings shall include the costs of the fittings and joint accessories. Weight of fittings for payment shall be AWWA C153 standard weight for 350 PSI fittings with mechanical joint ends and shall not include the weight of bolts, glands, or cement lining.
3. No additional payment shall be made for replacement of defective materials.
4. Special Linings and Coatings: Polyethylene Encasement:
- a. Polyethylene Encasement shall be made as a separate item based on the measured quantity of pipe lined with polyethylene encasement.
  - b. The unit prices shall include all costs associated with furnishing materials, labor and equipment required to apply double-wrap polyethylene film on the pipe exterior, as specified and as shown on the Drawings.
  - c. All costs associated with installing polyethylene encasement on any fittings located along polyethylene encasement pipe segments shall also be included in the unit price bid for Polyethylene Encasement.
  - d. All additional costs associated with installing the force main and gravity sewer shall be included in the unit price bid for Force Main, Gravity Sewer, or Sewer Casing, as appropriate.

5. Special Linings and Coatings: Protecto 401 Lining:
  - a. Protecto 401 shall be made as a separate item based on the measured quantity of pipe lined with Protecto 401.
  - b. The unit price bid shall include all costs associated with furnishing materials, labor and equipment required to apply Protecto 401 ceramic epoxy on the pipe interior, as specified and shown on the Drawings, instead of the standard double thickness cement lining specified.
  - c. All costs associated with applying Protecto 401 ceramic epoxy on the interior of any fittings located along lined pipe segments shall also be included in the unit price bid for Protecto 401.
  - d. All additional costs associated with installing the force main shall be included in the unit price bid for Force Main, Gravity Sewer, or Sewer Casing, as appropriate.
6. No additional payment will be made for maintaining flow while placing the new sewer in service.
7. No separate payment shall be made for removing existing pipe from trench and disposing of it in accordance with Section 01710, Cleaning.
8. No separate payment shall be made for detection tape.
9. No payment will be made for cutting and beveling pipe.
  - a. The unit price shall include all costs associated with furnishing materials, labor and equipment required to apply epoxy waterproofing on the interior of precast concrete manholes, as specified and shown on the Drawings.
- C. Anti-Seep Collars: Payment for Anti-Seep Collars shall be at the unit price bid.
- D. All costs related to the implementation of the easement stipulations, permits, and special commitments made by the Owner shall be included in the unit price bid for the item to which it pertains.
- E. Clean-up and Testing: Any other cost for labor, materials, and equipment required for Clean-up and Testing shall be included in the unit price bid for Force Main or Gravity Sewer.

1.13 REMOVING AND REPLACING PAVEMENT

- A. Payment for Pavement Removal and Replacement will be made as a separate item based on the measured quantity of pavement replaced at the unit price bid in the Bid Form for either "Open Cut Asphalt," "Open Cut Concrete," "Open Cut GAB" pavement repair, or pavement overlay as appropriate. The unit price bid shall include all costs associated with removing and replacing pavement, including providing select backfill if necessary. The unit price bid for pavement overlay shall include all costs associated with placing the pavement overlay and milling pavement for the butt joint.
- B. Payment shall be made only for that length for which the pipeline is constructed underneath the pavement as shown on the Drawings or for that area for which pavement overlay is required as shown on the Drawings or as directed by the Engineer.
- C. No additional payment will be made for removing and replacing damaged adjacent pavement.
- D. Costs for removal and replacement of sidewalks and curb and gutter shall be included in the unit price bid for the item to which it pertains.
- E. No separate payment shall be made for pavement removal and replacement associated with abandonment of existing water mains or installation of water services.

1.14 TRENCH EXCAVATION AND BACKFILL

- A. 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.
- B. Sheeting, Bracing, and Shoring: No separate payment will be made for providing any sheeting, bracing, and shoring.
- C. Trench Excavation:
  - 1. No separate payment will be made for Trench Excavation.
  - 2. Owner may require 'over-excavation' to ensure proper bedding.
  - 3. All costs shall be included in the unit price bid for the item to which it pertains at the appropriate depth.
- D. Dewatering Excavations: All costs of equipment, labor, and materials required for dewatering shall be included in the price bid for the item to which it pertains.

E. Trench Foundation and Stabilization:

1. No payment for Trench Stabilization shall be authorized until after the trench has been dewatered. If the pipe is installed in an inadequately prepared trench bottom, the Engineer shall notify the Contractor in writing of the deficiency and will not authorize payment for that portion of that length of pipe which was improperly installed.
2. Payment for Trench Stabilization shall be made on the basis of the amount authorized and the unit price bid for Trench Stabilization. Payment shall include all costs for the removal and disposal of the unsuitable material and replacement with crushed stone. No additional payment will be made for material required for specified bedding.

F. Bedding and Haunching:

1. No separate payment will be made for material used to provide specified bedding. The cost of all bedding materials shall be included in the unit price bid for the item to which it relates, except for trench stabilization.
2. Payment for the additional costs of providing Type 4 bedding shown on the Drawings, specified, or ordered by the Engineer shall be made at the unit price bid for Trench Stabilization.
3. The cost for providing Type 1 bedding for Restrained Joint Pipe shall be included in the unit price bid for Restrained Joint Pipe.
4. No additional payment will be made for improved bedding required to compensate for over excavation of the trench.

G. Initial Backfill:

1. No separate payment shall be made for initial backfill.
2. No separate payment shall be made for drying out the initial backfill material in order to meet the compaction requirements.
3. No separate payment shall be made for addition of moisture to the initial backfill materials in order to meet the compaction requirements.
4. No separate payment shall be made for providing select material if the initial material cannot meet the compaction requirements.
5. No separate payment shall be made for disposal of backfill materials, as needed.

H. Final Backfilling:

1. No additional payment will be made for additional material when excavated materials are used.



2. No separate payment shall be made for drying out the final backfill material in order to meet the compaction requirements.
3. No separate payment shall be made for addition of moisture to the final backfill materials in order to meet the compaction requirements.
4. No additional payment will be made for providing select material if the initial material cannot meet the compaction requirements.
5. No separate payment shall be made for disposal of backfill materials, as needed.

- I. Additional Material: No separate payment will be made for additional earth or fill materials imported to the Project site.

1.15 EROSION, SEDIMENT AND POLLUTION CONTROL

A. General:

1. No separate payment shall be made for temporary and/or permanent erosion and sedimentation controls, except as noted below. All other temporary and/or permanent erosion and sedimentation control costs shall be included in the unit price bid for the item to which it pertains.
2. No payment will be made for any portion of the Project for which temporary erosion and sedimentation controls are not properly maintained.
3. Quantities for payment shall be based upon actual quantity constructed and authorized by the Engineer.
4. Payment will constitute full compensation for all costs associated with pay item, including installation, maintenance, repair, and removal.
5. All items to be installed and maintained per the Manual for Erosion and Sediment Control of Georgia, latest edition.

B. Payment Schedule:

1. For the following items, Contractor shall be paid 85 percent of Extended Bid Unit Price at installation and 15 percent of Extended Bid Unit Price at removal, upon submittal of required documentation to the Engineer. The Engineer shall inspect prior to both payments.
  - a. Co – Construction Exit.
  - b. Sd1 – Sediment Barrier (Silt Fence).
  - c. Sd2 – Inlet Sediment Trap.
  - d. Sr – Temporary Stream Crossing.
  - e. Tr – Tree Protection Fence.
2. For all remaining items within “EROSION, SEDIMENTATION AND POLLUTION CONTROL” section of the Bid Form, Contractor shall be paid 100 percent of Extended Bid Unit Price at installation/construction.

- C. Hay Bale Check Dams (Cd-Hb): All costs for hay bale check dams, including hay, silt fence, stakes, necessary earthwork, periodic maintenance and repair, and removal of sediment and hay bales following establishment of permanent erosion control measures, shall be included in the unit price bid.
- D. Stone Check Dams (Cd-S): All costs for stone check dams, including stone, necessary earthwork, periodic maintenance and repair, and removal of sediment and stone following establishment of permanent erosion control measures, shall be included in the unit price bid.
- E. Construction Exits (Co): All costs for construction exits, including installation, maintenance, repair, and removal, shall be included in the unit price bid.
- F. Grassing (DS2 and DS3):
  - 1. The unit price bid for Grassing shall be for one-time cleanup of the pipeline route and grassing, whether permanent, temporary, or both, regardless of width of disturbed area. Any other costs for labor, materials, and equipment for cleanup and grassing of the disturbed area shall be included in the unit price bid for the item to which it pertains.
  - 2. No additional payment will be made for those lengths of pipeline where the Contractor must reseed due to inadequate watering and maintenance; loss of seeds caused by site erosion (wind and rain), inadequate germination of the seeds, inadequate coverage/density, or providing permanent species at the appropriate season after temporary grassing has been performed.
  - 3. Grass seeding shall match in kind the existing adjacent grass of previously landscaped areas.
  - 4. No additional payment will be made for providing a temporary species of grass where the seasonal limitations do not allow for the proper germination of a permanent species of grass. Any additional cost anticipated for sowing a temporary species shall be included in the price bid for the item to which it pertains.
  - 5. Measurement for payment for grassing shall be along the centerline of the pipeline, through fittings and valves. The length of pipe constructed under pavement, through casings and free bores, and the length of pipe associated with services, shall not be included in quantities for payment for grassing.
  - 6. No payment will be made for any length of the pipeline where the cleanup and grassing operation is not completed within 1,000 feet of the pipe laying operation.

- G. Sodding (DS4): Sodding, where ordered by the Engineer, shall be provided at the unit price bid for Sodding. Payment will constitute full compensation for fine grading, fertilizing, and sodding previously landscaped areas. Disturbed areas shall be sodded only when directed to do so by the Owner.
- H. Rip-rap (Rp): The cost of all rip-rap, including filter fabric, shown on the Drawings, specified, or directed by the Engineer, shall be included in the unit price bid.
- I. Sediment Barrier (Silt Fence) (Sd1): All costs for silt fence, for all types, including installation, maintenance, repair, and removal, shall be included in the unit price bid.
- J. Inlet Sediment Trap (Sd2): All costs for sediment traps, including installation, maintenance, repair, and removal, shall be included in the unit price bid.
- K. Temporary Stream Crossings (Sr): All costs for temporary stream crossing, including stone, filter fabric, temporary pipe, temporary bridge, necessary earthwork, periodic maintenance and repair, and removal of stone, filter fabric, pipe and/or bridge shall be included in the unit price bid.
- L. Slope Stabilization (Matting) (Ss): All costs for Matting Blankets, including installation, maintenance, repair, replacement, and removal, shall be included in the appropriate unit price bid.
- M. Tree Protection Fence (Tr): All costs for orange-protection fence including installation, maintenance, repair, and removal, shall be included in the unit price bid.
- N. Clearing and Grubbing: The cost of moving and reestablishing landscape features, including labor and materials, shall be included in the unit price bid for the item to which it pertains.

#### 1.16 CASH ALLOWANCES

##### A. General:

- 1. The Contractor shall include in the Bid Total all allowances stated in the Contract Documents. These allowances shall cover the net cost of the services provided by a firm selected by the Owner. The Contractor's handling costs, labor, overhead, profit, and other expenses contemplated for the original allowance shall be included in the items to which they pertain and not in allowances.

2. No payment will be made for nonproductive time on the part of testing personnel due to the Contractor's failure to properly coordinate testing activities with the work schedule or the Contractor's problems with maintaining equipment in good working condition. The Contractor shall make all necessary excavations and shall supply any samples of materials necessary for conducting compaction and density tests.
  3. No payment shall be provided for services which fail to verify required results.
  4. Blasting Permit: Allowance provided in bid form shall be for service visit charges by the Athens-Clarke County Fire Marshall to the site. The Contractor shall provide copies of reports to the Engineer to verify payment requests.
- B. Should the net cost be more or less than the specified amount of the allowance, the Contract will be adjusted accordingly by change order. The amount of change order will not recognize any changes in handling costs at the site, labor, overhead, profit, and other expenses caused by the adjustment to the allowance.
- C. Documentation:
1. Submit copies of the invoices for work proposed under the respective allowance during the payment period with each periodic payment request from the firm providing the services.
  2. Submit results of services provided which verify required results.
- D. Schedule of Cash Allowances:
1. Laboratory Testing:
    - a. Allow the amount provided in the Bid for CIPP laboratory testing by an independent testing laboratory. Item includes all materials, labor and costs required for the collection and laboratory testing of CIPP samples. One sample from each CIPP liner installation, or as other specified by the Owner shall be sent to an independent laboratory and tested for modulus of elasticity and flexural strength.
  2. Traffic Control: Plan, Permitting, and Implementation
    - a. Maintenance of traffic and associated traffic control measures required for the work shall be included in the unit price for the item to which it pertains.

1.17 CONTINGENCIES

- A. This work shall be added to the overall Work only by Change Order or Work Change Directive, as defined in Section 00700, General Conditions. The cost amounts of additional work shall be determined as specified in the General Conditions. This work is not shown or specified in the Drawings and Specifications bid by the Contractor and is not covered by another line item in the Bid, and may be required only in the event the Engineer or Owner establishes the need for additional work.
- B. Should the net cost be more or less than the specified amount of the allowance, the Contract will be adjusted accordingly by change order. The amount of change order will not recognize any changes in handling costs at the site, labor, overhead, profit, and other expenses caused by the adjustment to the allowance.
- C. Documentation:
  - 1. Submit copies of the invoices for work proposed under the respective allowance during the payment period with each periodic payment request from the firm providing the services.
  - 2. Submit results of services provided which verify required results.
- D. Schedule of Contingency Allowances:
  - 1. Engineer-Directed Work: This allowance may be used, as authorized and directed by the Engineer, to pay the cost of additional work resulting from unforeseen Site conditions or any other items of work.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01055**  
**CONSTRUCTION STAKING**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. Construction staking shall include all of the surveying work required to lay out the Work and control the location of the finished Project. The Contractor shall have full responsibility for constructing the Project to the correct horizontal and vertical alignment, as shown on the Drawings, as specified, or as ordered by the Engineer. The Contractor shall assume all costs associated with rectifying work constructed in the wrong location.
- B. From the information shown on the Drawings and the information to be provided as indicated under Project Conditions below, the Contractor shall:
  - 1. Be responsible for setting reference points and/or offsets, establishment of baselines, and all other layout, staking, and all other surveying required for the construction of the Project.
  - 2. Safeguard all reference points, stakes, grade marks, horizontal and vertical control points, and shall bear the cost of re-establishing same if disturbed.
  - 3. Stake out the permanent and temporary easements or the limits of construction to ensure that the Work is not deviating from the indicated limits.
  - 4. Be responsible for all damage done to reference points, baselines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, baselines, center lines, and temporary bench marks as a result of the operations.
- C. Baselines shall be defined as the line to which the location of the Work is referenced (i.e., edge of pavement, road center line, property line, right-of-way or survey line).
- D. Record Drawing surveys shall be performed in accordance with Section 01720, Record Documents of these Specifications.

**1.02      PROJECT CONDITIONS**

- A. The Drawings provide the location and/or coordinates of principal components of the Project. The alignment of some components of the Project may be indicated in the Specifications. The Engineer may order changes to the location of some of the components of the Project or provide clarification to questions regarding the correct alignment.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**



**SECTION 01056**  
**GPS DATA COLLECTION**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The purpose of this Work is to establish the position of points in the sanitary sewer collection system using the Global Positioning System (GPS); establish the minimum quality of data; and, specify how the data will be delivered. The GPS position will be established for newly identified sanitary sewer system assets and corrected in the event of existing incorrectly mapped assets. GPS position will also be gathered for locations as required in all other sections of these Specifications for assessment activities.

**1.02      SUBMITTALS**

- A. The Contractor shall provide the Engineer GPS data collection information at the frequency indicated in the Specification for the associated activity, such as, but not limited to, manhole assessment, smoke testing, and dye testing.

**1.03      QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Supervisor of the field crews shall have the proper training in this function and have a minimum of 3 years of experience in performing GPS data collection including safe working practices, familiarity with the inspection procedures and standards utilized, confined space safety procedures, the types of equipment being used, product/materials being used, etc.
  - 2. Field crew leaders responsible for GPS data collection shall have a minimum of 2 years of experience in this field.
  - 3. Staff responsible for data review and data QA/QC shall have a minimum of 1 year of experience in this field.
  - 4. The Contractor shall not employ any procedure or utilize any equipment the Contractor's personnel do not have the above stated minimum experience.
  - 5. No crew members shall enter confined spaces without the necessary certified training and permit.
  - 6. The Contractor shall provide a detailed account of satisfactory experience during the last 3 years. Those references shall include contact, agency, telephone number and address.

7. The Contractor shall provide the Engineer with written documentation that the supervisor, field crew leader and all crew members have received the proper training and where required the requisite experience and certifications.
8. The Contractor shall take appropriate action to ensure all employees are polite to the public in all aspects of the Work performed.

#### 1.04 REFERENCE COORDINATE SYSTEM

- A. The horizontal (X&Y) position of points will be referenced to the Georgia State Plane West NAD-83 coordinate system.

#### 1.05 CALIBRATION

- A. Calibration shall be carried out in accordance with the GPS equipment manufacturer's instructions. Additional calibrations may be required during the course of the working day for large fluctuations of temperature and/or humidity, also in accordance with the manufacturer's instructions and tolerances.

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

### **PART 3 EXECUTION**

#### 3.01 GENERAL

- A. The Contractor shall furnish all labor, tools, materials, software and equipment necessary for capturing the position of all points specified.

#### 3.02 PREPARATION

- A. Mission Planning: Contractor shall plan the collection of GPS data, using the appropriate software, to optimize the accuracy and speed of data collection while minimizing the impact and interference on traffic and other activities.

#### 3.03 DATA COLLECTION

- A. GPS location of points shall be collected with the following level of accuracy:
  1. Horizontal position of all points with an accuracy of plus or minus 1 foot. This applies to all points that are in the Right-of-Way and all points outside the Right-of-Way.
  2. When GPS capture cannot be achieved due to canopy or building interferences, the position may be obtained by other methods tied to the stated reference system at the mapping grade accuracy listed above.

3.04 DELIVERABLES

- A. Coordinate data will be provided in an ESRI geodatabase as described in these Specifications or as directed by the Engineer.

**END OF SECTION**

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**SECTION 01060**  
**REGULATORY REQUIREMENTS**

**PART 1      GENERAL**

**1.01      SCOPE**

- A.    Permits: The Contractor shall, without additional expense to the Owner, be responsible for obtaining all necessary licenses and permits, including building permits, except those identified in the Special Conditions.
- B.    The Contractor shall take proper safety and health precautions to protect the Work, the workers, the public, and the property of others.
- C.    The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the Work.
- D.    The Contractor is hereby notified that a road may be under the jurisdiction of the Georgia Department of Transportation and the Athens-Clarke County Traffic Engineering Department, necessitating permits and notification of both entities.
- E.    If required, Owner shall be responsible for obtaining Georgia Department of Transportation and Athens-Clarke County right-of-way utility and encroachment permits. Contractor shall comply with all requirements of said permits.
- F.    If required, Contractor shall file the Notice of Intent required under the National Pollutant Discharge Elimination System (NPDES) General Permit GAR100002.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01091**  
**CODES AND STANDARDS**

**PART 1 GENERAL**

**1.01 DESCRIPTION**

- A. Whenever reference is made to conforming to the standards of any technical society, organization, body, code, or standard, it shall be construed to mean the latest standard, code, specification, or tentative specification adopted and published at the time of advertisement for Bids. This shall include the furnishing of materials, testing of materials, fabrication, and installation practices. In those cases where the Contractor's quality standards establish more stringent quality requirements, the more stringent requirement shall prevail. Such standards are made a part hereof to the extent which is indicated or intended.
- B. The inclusion of an organization under one category does not preclude that organization's standards from applying to another category.
- C. In addition, all work shall comply with the applicable requirements of local codes, utilities and other authorities having jurisdiction.
- D. All material and equipment, for which an Underwriters Laboratories (UL) Standard, an American Gas Association (AGA) or National Sanitation Foundation (NSF) approval, or an ASME requirement is established, shall be so approved and labeled or stamped. The label or stamp shall be conspicuous and not covered, painted, or otherwise obscured from visual inspection.
- E. The standards which apply to this Project are not necessarily restricted to those organizations which are listed in Article 1.02 of this section.

**1.02 STANDARD ORGANIZATIONS**

**A. Piping and Valves:**

ACPA	American Concrete Pipe Association
ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
AWWA	American Water Works Association
CISPI	Cast Iron Soil Pipe Institute
DIPRA	Ductile Iron Pipe Research Association
FCI	Fluid Controls Institute
MSS	Manufacturers Standardization Society

NCPI	National Clay Pipe Institute
NSF	National Sanitation Foundation
PPI	Plastic Pipe Institute Uni-Bell PVC Pipe Association

B. Materials:

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials

C. Painting and Surface Preparation:

NACE	National Association of Corrosion Engineers
SSPC	Steel Structures Painting Council

D. Steel and Concrete:

ACI	American Concrete Institute
AISC	American Institute of Steel Construction, Inc.
AISI	American Iron and Steel Institute
CRSI	Concrete Reinforcing Steel Institute
NRMA	National Ready-Mix Association
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute

E. Welding:

ASME	American Society of Mechanical Engineers
AWS	American Welding Society

F. Government and Technical Organizations:

AIA	American Institute of Architects
APHA	American Public Health Association
APWA	American Public Works Association
ASA	American Standards Association
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASQC	American Society of Quality Control
ASSE	American Society of Sanitary Engineers
CFR	Code of Federal Regulations
CSI	Construction Specifications Institute
EDA	Economic Development Administration
EPA	Environmental Protection Agency
FCC	Federal Communications Commission



FmHA	Farmers Home Administration
FS	Federal Specifications
IAI	International Association of Identification
ISEA	Industrial Safety Equipment Association
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
NBFU	National Board of Fire Underwriters
NFPA	National Fluid Power Association
NBS	National Bureau of Standards
NISO	National Information Standards Organization
OSHA	Occupational Safety and Health Administration
SI	Salt Institute
SPI	The Society of the Plastics Industry, Inc.
USDC	United States Department of Commerce
WEF	Water Environment Federation

G. General Building Construction:

AHA	American Hardboard Association
AHAM	Association of Home Appliance Manufacturers
AITC	American Institute of Timber Construction
APA	American Parquet Association, Inc.
APA	American Plywood Association
BHMA	Builders Hardware Manufacturers Association
BIFMA	Business and Institutional Furniture Manufacturers Association
DHI	Door and Hardware Institute
FM	Factory Mutual Fire Insurance Company
HPMA	Hardwood Plywood Manufacturers Association
HTI	Hand Tools Institute
IME	Institute of Makers of Explosives
ISANTA	International Staple, Nail and Tool Association
ISDSI	Insulated Steel Door Systems Institute
IWS	Insect Screening Weavers Association
MBMA	Metal Building Manufacturers Association
NAAMM	National Association of Architectural Metal Manufacturers
NAGDM	National Association of Garage Door Manufacturers
NCCLS	National Committee for Clinical Laboratory Standards
NFPA	National Fire Protection Association
NFSA	National Fertilizer Solutions Association
NKCA	National Kitchen Cabinet Association
NWMA	National Woodwork Manufacturers Association
NWWDA	National Wood Window and Door Association
RMA	Rubber Manufacturers Association
SBC	SBCC Standard Building Code
SDI	Steel Door Institute

SIA	Scaffold Industry Association
SMA	Screen Manufacturers Association
SPRI	Single-Ply Roofing Institute
TCA	Tile Council of America
UBC	Uniform Building Code

H. Roadways:

AREA	American Railway Engineering Association
DOT	Georgia Department of Transportation
SSRBC	Standard Specifications, Construction of Transportation Systems, Georgia Department of Transportation
DOT&PW	Athens-Clarke County Department of Transportation and Public Works

I. Plumbing:

AGA	American Gas Association
NSF	National Sanitation Foundation
PDI	Plumbing Drainage Institute
SPC	SBCC Standard Plumbing Code

1.03 SYMBOLS

- A. Symbols and material legends shall be as scheduled on the Contract Drawings.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01200**  
**PROJECT MEETINGS**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. Work under this section includes all scheduling and administration of pre-construction and progress meetings as herein specified and necessary for the proper and complete performance of this Work.
- B. Scheduling and Administration by Engineer:
  - 1. Prepare agenda.
  - 2. Make physical arrangements for the meetings.
  - 3. Preside at meetings.
  - 4. Record minutes and include significant proceedings and decisions.
  - 5. Distribute copies of the minutes to participants.

**1.02      PRECONSTRUCTION CONFERENCE**

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

8. Procedures for maintaining record documents.
9. Use of premises, including office and storage areas and Owner's requirements.
10. Major equipment deliveries and priorities.
11. Safety and first aid procedures.
12. Security procedures.
13. Housekeeping procedures.
14. Work hours.

1.03 PROJECT COORDINATION MEETINGS

- A. Schedule regular monthly meetings as directed by the Engineer.
- B. Hold called meetings as the progress of the Work dictates.
- C. The meetings shall be held at the location indicated by the Engineer.
- D. Representatives of the following parties are to attend the meetings:
  1. Engineer.
  2. Contractor and superintendent.
  3. Major subcontractors as pertinent to the agenda.
  4. Owner's representative as appropriate.
  5. Representatives of governmental or other regulatory agencies as appropriate.
- E. The minimum agenda for progress meetings shall consist of the following:
  1. Review and approve minutes of previous meetings.
  2. Review work progress since last meeting.
  3. Note field observations, problems, and decisions.
  4. Identify problems which impede planned progress.
  5. Review offsite fabrication problems.
  6. Review Contractor's corrective measures and procedures to regain planned schedule.
  7. Review Contractor's revision to the construction schedule as outlined in the Supplementary Conditions.
  8. Review submittal schedule; expedite as required to maintain schedule.
  9. Maintain quality and work standards.
  10. Review changes proposed by Owner for their effect on the construction schedule and completion date.
  11. Complete other current business.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01310**  
**CONSTRUCTION SCHEDULES**

**PART 1      GENERAL**

**1.01      SCOPE**

- A.    The Work under this section includes preparing, furnishing, distributing, and periodic updating of the construction schedules as specified herein.
- B.    The purpose of the schedule is to demonstrate that the Contractor can complete the overall Project within the Contract Time and meet all required interim milestones.

**1.02      SUBMITTALS**

- A.    Overall Project Schedule:
  - 1.    Submit the Overall Project Schedule (OPS) within 10 days after date of the Notice to Proceed.
  - 2.    The Engineer will review the schedule and return it within 10 days after receipt.
  - 3.    If required, resubmit within 10 days after receipt of a returned copy.
- B.    Near Term Schedule:
  - 1.    Submit the first Near Term Schedule (NTS) within 10 days of the Notice to Proceed.
  - 2.    The Engineer will review the schedule and return it within 10 days after receipt.
- C.    Submit an update of the OPS and NTS with each progress payment request.
- D.    Submit the number of copies required by the Contractor, plus four copies to be retained by the Engineer.

**1.03      APPROVAL**

- A.    Approval of the Contractor's detailed construction program and revisions thereto shall in no way relieve the Contractor of any of Contractor's duties and obligations under the Contract. Approval is limited to the format of the schedule and does not in any way indicate approval of, or concurrence with, the Contractor's means, methods, and ability to carry out the Work.

1.04 OVERALL PROJECT SCHEDULE

- A. The Contractor shall submit to the Owner for approval a detailed OPS of the Contractor's proposed operations for the duration of the Project. The OPS shall be in the form of a Gantt/bar chart.
- B. Gantt/Bar Chart Schedule:
  - 1. Each activity with a duration of 5 days or more shall be identified by a separate bar. Activities with a duration of more than 20 days shall be subdivided into separate activities.
  - 2. The schedule shall include activities for shop drawing preparation and review, fabrication, delivery, and installation of major or critical path materials and equipment items.
  - 3. The schedule shall show the proposed start and completion dates for each activity. A separate listing of activity start and stop dates and working day requirements shall be provided unless the information is shown in text form on the Gantt/bar chart.
  - 4. The schedule shall identify the Notice to Proceed date, the Contract Completion date, major milestone dates, and a critical path.
  - 5. The schedule shall be printed on a maximum 11-inch by 17-inch size paper. If the OPS needs to be shown on multiple sheets, a simplified, one page, summary bar chart showing the entire Project shall be provided.
  - 6. The schedule shall have a horizontal time scale based on calendar days and shall identify the Monday of each week.
  - 7. The schedule shall show the precedence relationship for each activity.

1.05 NEAR TERM SCHEDULE

- A. The Contractor shall develop and refine a detailed NTS showing the day-to-day activities with committed completion dates which must be performed during the upcoming 30-day period. The detailed NTS shall represent the Contractor's best approach to the Work which must be accomplished to maintain progress consistent with the OPS.
- B. The NTS shall be in the form of Gantt/bar chart and shall include a written narrative description of all activities to be performed and describe corrective action to be taken for items that are behind schedule.

1.06 UPDATING

- A. Show all changes occurring since previous submission of the updated schedule.
- B. Indicate progress of each activity and show actual completion dates.



C. The Contractor shall be prepared to provide a narrative report at the Project Coordination Meetings. The report shall include the following:

1. A description of the overall Project status and comparison to the OPS.
2. Identify activities which are behind schedule and describe corrective action to be taken.
3. A description of changes or revisions to the Project and their effect on the OPS.
4. A description of the NTS of the activities to be completed during the next 30 days. The report shall include a description of all activities requiring participation by the Engineer and/or Owner.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01320**  
**CONSTRUCTION PHOTOGRAPHS AND VIDEOS**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The Contractor shall furnish all equipment, labor, and materials required to provide the Owner with digital construction photographs and audio/video recordings of the Project.
- B. Photographs and audio/video recordings shall become the property of the Owner. None of the photographs or audio/video recordings shall be published without express written permission of the Owner.

**1.02      PRE- AND POST-CONSTRUCTION PHOTOGRAPHS**

- A. Prior to the beginning of any work, the Contractor shall take project photographs of the work area to record existing conditions.
- B. Following completion of the work, additional photographs shall be made showing the same areas and features as in the pre-construction photographs.
- C. All conditions which might later be subject to disagreement shall be shown in sufficient detail to provide a basis for decisions.

**1.03      PROGRESS PHOTOGRAPHS**

- A. The photographs shall include the date and time marking of the photograph. All photographs shall be labeled electronically to indicate date and description of work shown.
- B. A minimum of two photographs of each connection or stub out shall be submitted. The view selection shall be as agreed to with the Engineer.

**1.04      PRE- AND POST-CONSTRUCTION AUDIO/VIDEO RECORDINGS**

- A. Prior to the beginning of any work, the Contractor shall make audio/video recordings of the work area to record existing conditions. Paint stationing on edge of pavement and record on video to enable the viewer to understand the video locations along the route.
- B. Following completion of the work, another recording shall be made showing the same areas and features as in the pre-construction recording.

- C. All conditions which might later be subject to a disagreement shall be shown in sufficient detail to provide a basis for decisions.
- D. The recordings shall include the date and time markings on the video. All videos shall be provided with an audio narration, stating a description of what is shown, approximate station of the area shown, and street address and property owner where appropriate.
- E. Audio/video recordings shall be made in electronic format. The quality and content shall be subject to the approval of the Engineer.
- F. The audio/video submittal shall be provided with a typed label containing the following information: Project title, date of recording, project station/locations shown on the recording.

**1.05 SUBMITTALS**

- A. Photographs shall be provided on compact discs (CDs) or USB drive. File format shall be .JPEG.
- B. Pre-construction photographs shall be submitted to the Engineer within 15 calendar days after the date of the Notice to Proceed. Post-construction photographs shall be submitted prior to final acceptance of the Project.
- C. Progress photographs shall be submitted with each payment request. Each pay request must have accompanying photographs of all work accomplished during the period for which payment is being requested. If the photographs are not included with the pay request, the pay request shall not be processed, but shall be returned to the Contractor.
- D. Audio/Video Recordings:
  - 1. The pre-construction recording shall be submitted prior to the first partial payment request.
  - 2. The post-construction recording shall be submitted with the final payment request.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01340**  
**SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The Work under this section includes submittal to the Engineer of Shop Drawings, product data, and samples required by the various sections of these Specifications.
- B. Submittal Contents: The submittal contents required are specified in each section.
- C. Definitions: Submittals are categorized as follows:
  - 1. Submittals:
    - a. Action Submittal: Written and graphic information submitted by Contractor that requires Engineer's approval.
    - b. Deferred Submittal: Information, in accordance with 2009 IBC Section 107.3.4.2 submitted by Contractor for portions of design that are to be submitted to permitting agency for approval prior to installation of that portion of the Work, along with Engineer's review documentation that submittal has been found to be in general conformance with Project's design.
    - c. Informational Submittal: Information submitted by Contractor that requires Engineer's review and determination that submitted information is in accordance with the Conditions of the Contract.
  - 2. Shop Drawings:
    - a. Shop Drawings shall include technical data, drawings, diagrams, procedure and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements, and similar information as applicable to the specific item for which the Shop Drawing is prepared.
    - b. Provide newly prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name of preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail Shop Drawings. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow Shop Drawing copies without appropriate final "Action" markings by the Engineer to be used in connection with the Work.

- c. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet and detail, Specification section, schedule, or room numbers shown on the Contract Drawings.
  - d. Minimum assembly drawings sheet size shall be 24 by 36 inches.
  - e. Minimum detail sheet size shall be 8-1/2 by 11 inches.
  - f. Minimum Scale:
    - 1) Assembly Drawings Sheet, Scale: 1 inch = 30 feet.
    - 2) Detail Sheet, Scale: 1/4 inch = 1 foot.
3. Product Data:
- a. Product data includes standard printed information on materials, products and systems, not specially prepared for this Project, other than the designation of selections from among available choices printed therein.
  - b. Collect required data into one submittal for each unit of work or system, and mark each copy to show which choices and options are applicable to the Project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements.
4. Samples:
- a. Samples include both fabricated and un-fabricated physical examples of materials, products, and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or, where indicated, for more detailed testing and analysis.
  - b. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples, not less than three units, where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the Engineer's selection is required. Prepare samples to match the Engineer's sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture, and "kind" by the Engineer. Engineer will not "test" samples except as otherwise indicated, for other requirements, which are the exclusive responsibility of the Contractor.

5. Miscellaneous submittals related directly to the Work (non-administrative) include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, Record Drawings, field measurement data, operating and maintenance materials, overrun stock, security/protection/safety keys and similar information, devices and materials applicable to the Work but not processed as Shop Drawings, product data, or samples.

## 1.02 SPECIFIC CATEGORY REQUIREMENTS

- A. General: Except as otherwise indicated in the individual work sections, comply with general requirements specified herein for each indicated category of submittal.

1. Submittals shall contain:
  - a. The date of submittal and the dates of any previous submittals.
  - b. The Project title.
  - c. Numerical submittal numbers, starting with the Section that the submittal references (such as 02910 for Manhole Rehabilitation), followed by a submittal number (0.01, .02, and so on) and version (02910.XX.01, .02, and so on).
  - d. The Names of:
    - 1) Contractor.
    - 2) Supplier.
    - 3) Manufacturer.
  - e. Identification of the product, with the Specification section number, permanent equipment tag numbers, and applicable Drawing No.
  - f. Field dimensions, clearly identified as such.
  - g. Relation to adjacent or critical features of the Work or materials.
  - h. Applicable standards, such as ASTM International (ASTM) or Federal Specification numbers.
  - i. Notification to the Engineer in writing, at time of submissions, of any deviations on the submittals from requirements of the Contract Documents.
  - j. Identification of revisions on resubmittals.
  - k. An 8-inch by 3-inch blank space for Contractor and Engineer stamps.

- l. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents.
- m. Submittal sheets or Drawings showing more than the particular item under consideration, shall have all but the pertinent description of the item for which review is requested crossed out.

### 1.03 PROCEDURES

A. Direct submittals to Engineer at the following, unless specified otherwise.

1. CH2M  
Attn: Craig Hensley  
E-mail: craig.hensley@ch2m.com

B. Electronic Submittals: Submittals shall, unless specifically accepted, be made in electronic format.

1. Each submittal shall be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
2. Electronic files that contain more than 10 pages in PDF format shall contain internal bookmarking from an index page to major sections of the Document.
3. PDF files shall be set to open "Bookmarks and Page" view.
4. Add general information to each PDF file, including title, subject, author, and keywords.
5. PDF files shall be set up to print legibly at 8.5-inch by 11-inch, 11-inch by 17-inch, or 22-inch by 34-inch. No other paper sizes will be accepted.
6. Submit new electronic files for each resubmittal.
7. Include a copy of the Transmittal of Contractor's Submittal form, located at end of section, with each electronic file.
8. Engineer will reject submittal that is not electronically submitted, unless specifically accepted.
9. Provide Engineer with authorization to reproduce and distribute each file as many times as necessary for Project documentation.
10. Detailed procedures for handling electronic submittals will be discussed at the preconstruction conference.



C. Transmittal of Submittal:

1. Contractor shall:
  - a. Review each submittal and check for compliance with Contract Documents.
  - b. Stamp each submittal with uniform approval stamp before submitting to Engineer.
    - 1) Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
    - 2) Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
2. Complete, sign, and transmit with each submittal package, Transmittal of Contractor's Submittal form. Use either the form attached at end of this section or in a format approved by Engineer.
3. Identify each submittal with the following:
  - a. Numbering and Tracking System:
    - 1) Sequentially number each submittal.
    - 2) Resubmission of submittal shall have original number with sequential alphabetic suffix.
  - b. Specification section and paragraph to which submittal applies.
  - c. Project title and Engineer's project number.
  - d. Date of transmittal.
  - e. Names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.
4. Identify and describe each deviation or variation from Contract Documents.

D. Format:

1. Do not base Shop Drawings on reproductions of Contract Documents.
2. Package submittal information by individual Specification section. Do not combine different specification sections together in submittal package, unless otherwise directed in Specification.
3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.
4. Index with labeled tab dividers in orderly manner.

E. Timeliness: Schedule and submit in accordance with Schedule of Submittals, and requirements of individual Specification sections.

F. Processing Time:

1. Time for review shall commence on Engineer's receipt of submittal.
2. Engineer will act upon Contractor's submittal and transmit response to Contractor not later than 30 days after receipt, unless otherwise specified.
3. Resubmittals will be subject to same review time.
4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of work caused by rejection and subsequent resubmittals.

G. Resubmittals: Clearly identify each correction or change made.

H. Incomplete Submittals:

1. Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
2. When any of the following are missing, submittal will be deemed incomplete:
  - a. Contractor's review stamp, completed and signed
  - b. Transmittal of Contractor's Submittal, completed and signed.

I. Submittals not required by Contract Documents:

1. Will not be reviewed and will be returned stamped "Not Subject to Review."
2. Engineer will keep one copy and return submittal to Contractor.

1.04 ACTION SUBMITTALS

A. Prepare and submit Action Submittals required by individual Specification sections.

B. Shop Drawings:

1. Identify and Indicate:
  - a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.
  - b. Equipment and Component Title: Identical to title shown on Drawings.
  - c. Critical field dimensions and relationships to other critical features of work; Note dimensions established by field measurement
  - d. Project-specific information drawn accurately to scale

2. Manufacturer's standard schematic drawings and diagrams as follows:
  - a. Modify to delete information that is not applicable to the Work.
  - b. Supplement standard information to provide information specifically applicable to the Work.
3. Product Data: Provide as specified in individual specifications.
4. Foreign Manufacturers: When proposed, include names and addresses of at least two companies that maintain technical service representatives close to Project.

C. Samples:

1. Copies: Two, unless otherwise specified in individual Specifications.
2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
  - a. Manufacturer name.
  - b. Model number.
  - c. Material.
  - d. Sample source.
3. Manufacturer's Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.
4. Full-size Samples:
  - a. Size as indicated in individual Specification section.
  - b. Prepared from same materials to be used for the Work.
  - c. Cured and finished in manner specified.
  - d. Physically identical with product proposed for use.

D. Action Submittal Dispositions: Engineer will review, comment, stamp, and distribute as noted:

1. Approved:
  - a. Contractor may incorporate product(s) or implement Work covered by submittal.
  - b. Distribution: Electronic.
2. Approved as Noted:
  - a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
  - b. Distribution: Electronic.
3. Partial Approval, Resubmit as Noted:
  - a. Make corrections or obtain missing portions, and resubmit.
  - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
  - c. Distribution: Electronic.

4. Revise and Resubmit:
  - a. Contractor may not incorporate product(s) or implement Work covered by submittal.
  - b. Distribution: Electronic.

#### 1.05 INFORMATIONAL SUBMITTALS

##### A. General:

1. Refer to individual Specification sections for specific submittal requirements.
2. Engineer will review each submittal. If submittal meets conditions of the Contract, Engineer will forward copy to appropriate parties. If Engineer determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Engineer will retain one copy and return remaining copy with review comments to Contractor, and require that submittal be corrected and resubmitted.

##### B. Certificates:

1. General:
  - a. Provide notarized statement that includes signature of entity responsible for preparing certification.
  - b. Certificate must be signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Welding: In accordance with individual Specification sections
3. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual Specification section.
4. Material Test: Certificate must be prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual Specification sections.
6. Manufacturer's Certificate of Proper Installation: In accordance with Section 01433, Manufacturers' Field Services.

##### C. Construction Photographs and Videos in accordance with Section 01320, Construction Photographs and Videos, and as may otherwise be required in Contract Documents.

##### D. Closeout Submittals: In accordance with Section 01780, Contract Closeout.

- E. Contractor-design Data (related to temporary construction):
  - 1. Written and graphic information.
  - 2. List of assumptions.
  - 3. List of performance and design criteria.
  - 4. Summary of loads or load diagram, if applicable.
  - 5. Calculations.
  - 6. List of applicable codes and regulations.
  - 7. Name and version of software.
  - 8. Information requested in individual Specification section.
- F. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification section.
- G. Schedules:
  - 1. Schedule of Submittals:
    - a. Show for each, at a minimum, the following:
      - 1) Specification section number.
      - 2) Identification by numbering and tracking system as specified under Paragraph 1.03C Transmittal of Submittal.
      - 3) Estimated date of submission to Engineer, including reviewing and processing time.
    - b. On a monthly basis, submit updated Schedule of Submittals to Engineer if changes have occurred or resubmittals are required.
  - 2. Progress Schedules: In accordance with Section 01310, Construction Schedules.
- H. Special Guarantee: Supplier's written guarantee as required in individual specification sections.
- I. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, consultant, installer, and other professionals.
- J. Submittals Required by Laws, Regulations, and Governing Agencies:
  - 1. Promptly submit notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
  - 2. Transmit to Engineer for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.

K. Test, Evaluation, and Inspection Reports:

1. General: Shall contain signature of person responsible for test or report.
2. Factory:
  - a. Identification of product and specification section, type of inspection or test with referenced standard or code.
  - b. Date of test, Project title and number, and name and signature of authorized person.
  - c. Test results
  - d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
  - e. Provide interpretation of test results, when requested by Engineer.
  - f. Other items as identified in individual Specification sections.
3. Field:
  - a. As a minimum, include the following:
    - 1) Project title and number.
    - 2) Date and time.
    - 3) Record of temperature and weather conditions.
    - 4) Identification of product and specification section.
    - 5) Type and location of test, Sample, or inspection, including referenced standard or code.
    - 6) Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
    - 7) If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
    - 8) Provide interpretation of test results, when requested by Engineer.
    - 9) Other items as identified in individual specification sections.

1.06 ROUTING OF SUBMITTALS

A. Submittals and routine correspondence shall be routed as follows:

1. Supplier to Contractor (through representative if applicable).
2. Contractor to Engineer.
3. Engineer to Contractor and Owner.
4. Contractor to Supplier.

**PART 2      PRODUCTS**

**2.01      MANUFACTURER'S LITERATURE**

- A.    Where content of submitted literature from manufacturers includes data not pertinent to this submittal, clearly indicate which portion of the contents is being submitted for the Engineer's review.
- B.    Submit the number of copies which are required to be returned (not to exceed three) plus three copies which will be retained by the Engineer.

**2.02      SAMPLES**

- A.    Samples shall illustrate materials, equipment, or workmanship and established standards by which completed work is judged.
- B.    Unless otherwise specifically directed by the Engineer, all samples shall be of the precise article proposed to be furnished.
- C.    Submit all samples in the quantity which is required to be returned plus one sample which will be retained by the Engineer.

**2.03      COLORS**

- A.    Wherever a choice of color or pattern is available in a specified product, submit accurate color charts and pattern charts to the Engineer for review and selection, including when the precise color and pattern is specifically described in the Contract Documents.
- B.    Unless all available colors and patterns have identical costs and identical wearing capabilities, and are identically suited to the installation, completely describe the relative costs and capabilities of each.

**PART 3      EXECUTION**

**3.01      CONTRACTOR'S COORDINATION OF SUBMITTALS**

- A.    Prior to submittal for the Engineer's review, the Contractor shall use all means necessary to fully coordinate all material, including the following procedures:
  - 1.    Determine and verify all field dimensions and conditions, catalog numbers, and similar data.
  - 2.    Coordinate as required with all trades and all public agencies involved.

3. Submit a written statement of review and compliance with the requirements of all applicable Technical Specifications as well as the requirements of this section.
  4. Clearly indicate in a letter or memorandum on the manufacturer's or fabricator's letterhead, all deviations from the Contract Documents.
- B. Each and every copy of the Shop Drawings and data shall bear the Contractor's stamp showing that they have been so checked. Shop Drawings submittal to the Engineer without the Contractor's stamp will be returned to the Contractor for conformance with this requirement.
- C. The Owner may backcharge the Contractor for costs associated with having to review a particular Shop Drawing, product data, or sample more than two times to receive a "No Exceptions Taken" mark.
- D. Grouping of Submittals:
1. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items.
  2. No review will be given to partial submittals of Shop Drawings for items which interconnect and/or are interdependent. It is the Contractor's responsibility to assemble the Shop Drawings for all such interconnecting and/or interdependent items, check them, and then make one submittal to the Engineer along with Contractor's comments as to compliance, non-compliance or features requiring special attention.
- E. Schedule of Submittals: Within 30 days of Contract award and prior to any Shop Drawing submittal, the Contractor shall submit a schedule showing the estimated date of submittal and the desired approval date for each Shop Drawing anticipated. A reasonable period shall be scheduled for review and comments. Time lost due to unacceptable submittals shall be the Contractor's responsibility and sometime allowance for resubmittal shall be provided. The schedule shall provide for submittal of items which relate to one another to be submitted concurrently.

### 3.02 TIMING OF SUBMITTALS

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



3.03 REVIEWED SHOP DRAWINGS

A. Engineer Review:

1. Allow a minimum of 30 days for the Engineer's initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals. The Engineer will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination. Allow a minimum of 2 weeks for reprocessing each submittal. Advise the Engineer on each submittal as to whether processing time is critical to progress of the Work, and therefore the Work would be expedited if processing time could be shortened.
2. Acceptable submittals will be marked "No Exceptions Taken." A minimum of three copies will be retained by the Engineer for the Engineer's and the Owner's use and the remaining copies will be returned to the Contractor.
3. Submittals requiring minor corrections before the product is acceptable will be marked "Make Corrections Noted." The Contractor may order, fabricate, and ship the items included in the submittals, provided the indicated corrections are made. Drawings must be resubmitted for review and marked "No Exceptions Taken" prior to installation or use of products.
4. Submittals marked "Amend and Resubmit" must be revised to reflect required changes and the initial review procedure must be repeated.
5. The "Rejected - See Remarks" notation is used to indicate products which are not acceptable. Upon return of a submittal so marked, the Contractor shall repeat the initial review procedure using acceptable products.
6. Only two copies of items marked "Amend and Resubmit" and "Rejected - See Remarks" will be reviewed and marked. One copy will be retained by the Engineer and the other copy with all remaining unmarked copies will be returned to the Contractor for resubmittal.

B. No work or products shall be installed without a Drawing or submittal bearing the "No Exceptions Taken" notation. The Contractor shall maintain at the job site a complete set of Shop Drawings bearing the Engineer's stamp.

C. Substitutions: If the Contractor obtains the Engineer's approval for the use of products other than those which are listed first in the Contract Documents, the Contractor shall, at the Contractor's own expense and using methods approved by the Engineer, make any changes to structures, piping, and electrical work that may be necessary to accommodate these products.

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


### 3.04 RESUBMISSION REQUIREMENTS

- A. Shop Drawings:
1. Revise initial Drawings as required and resubmit as specified for initial submittal, with the resubmittal number shown.
  2. Indicate on Drawings all changes which have been made other than those requested by the Engineer.
- B. Project Data and Samples: Resubmit new data and samples as specified for initial submittal, with the resubmittal number shown.

### 3.05 SUPPLEMENTS

- A. The supplement listed below, following "END OF SECTION," is part of this Specification.
1. Transmittal of Contractor's Submittal Form.

**END OF SECTION**

 <p><b>Public Utilities</b> water, wastewater, conservation.</p>	<p><b>TRANSMITTAL OF CONTRACTOR'S SUBMITTAL</b> (ATTACH TO EACH SUBMITTAL)</p>			<p>DATE: _____</p>
<p><b>TO:</b> _____ _____ _____ _____ _____</p> <p><b>FROM:</b> _____ Contractor _____ _____ _____</p>	<p>Submittal No.: _____</p> <p><input type="checkbox"/> New Submittal      <input type="checkbox"/> Resubmittal</p> <p>Project: _____</p> <p>Project No.: _____</p> <p>Specification Section No.: _____ <b>(Cover only one section with each transmittal)</b></p> <p>Schedule Date of Submittal: _____ _____</p>			
<p><b>SUBMITTAL TYPE:</b></p>	<p><input type="checkbox"/> Shop Drawing</p> <p><input type="checkbox"/> Deferred</p>	<p><input type="checkbox"/> Sample</p>	<p><input type="checkbox"/> Informational</p>	

**The following items are hereby submitted:**

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: \_\_\_\_\_  
Contractor (Authorized Signature)

PW\DEN003\698892  
MARCH 25, 2019

SUBMITTALS, SHOP DRAWINGS,  
PRODUCT DATA AND SAMPLES  
01340 SUPPLEMENT- 1

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**SECTION 01410**  
**TESTING LABORATORY SERVICES**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. This section includes testing that the Owner may require, beyond that testing required of the manufacturer, to determine whether materials provided for the Project meet the requirements of these Specifications.
- B. This work also includes all testing required by the Owner to verify that work performed by the Contractor is in accordance with the requirements of these Specifications (such as concrete strength and slump testing, soil compaction, and the like).
- C. This Work does not include materials testing required in various sections of these Specifications to be performed by the manufacturer (for example, testing of pipe).
- D. The testing laboratory or laboratories will be selected by the Owner. The testing laboratory or laboratories will work for the Owner.

**1.02      PAYMENT FOR TESTING SERVICES**

- A. The cost of testing services required by the Contract to be provided by the Contractor shall be paid for by the Owner through the Cash Allowance (concrete testing, soil compaction, and asphalt testing).
- B. The cost of additional testing services not specifically required in the Specifications, but requested by the Owner or Engineer, shall be paid for by the Owner through the Cash Allowance.
- C. The cost of material testing described in various sections of these Specifications or as required in referenced standards to be provided by a material manufacturer shall be included in the price bid for that item and shall not be paid for by the Owner.
- D. The cost of retesting any item that fails to meet the requirements of these Specifications shall be paid for by the Contractor. Retesting shall be performed by the testing laboratory working for the Owner.

**1.03      LABORATORY DUTIES**

- A. Cooperate with the Owner, Engineer, and Contractor.

- B. Provide qualified personnel promptly on notice.
- C. Perform specified inspections, sampling, and testing of materials.
  - 1. Comply with specified standards, ASTM International (ASTM), other recognized authorities, and as specified.
  - 2. Ascertain compliance with requirements of the Contract Documents.
- D. Promptly notify the Engineer and Contractor of irregularity or deficiency of work observed during performance of services.
- E. Promptly submit three copies (two copies to the Engineer and one copy to the Contractor) of report of inspections and tests (in addition to those additional copies required by the Contractor), with the following information included:
  - 1. Date issued,
  - 2. Project title and number,
  - 3. Testing laboratory name and address,
  - 4. Name and signature of inspector,
  - 5. Date of inspection or sampling,
  - 6. Record of temperature and weather,
  - 7. Date of test,
  - 8. Identification of product and Specification section,
  - 9. Location of Project,
  - 10. Type of inspection or test,
  - 11. Results of test, and
  - 12. Observations regarding compliance with the Contract Documents.
- F. Perform additional services as required.
- G. The laboratory is not authorized to release, revoke, alter, or enlarge on requirements of the Contract Documents, or approve or accept any portion of the Work.

#### 1.04 CONTRACTOR RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to Work and/or manufacturer's requirements.
- B. Provide to the laboratory representative samples of the materials to be tested, in required quantities.
- C. Furnish copies of mill test reports to Engineer.

- D. Furnish required labor and facilities to:
  - 1. Provide access to Work to be tested;
  - 2. Obtain and handle samples at the site;
  - 3. Facilitate inspections and tests;
  - 4. Build or furnish a holding box for concrete cylinders or other samples as required by the laboratory.
- E. Notify the laboratory sufficiently in advance of operation to allow for the assignment of personnel and schedules of tests.
- F. Laboratory Tests: Where such inspection and testing are to be conducted by an independent laboratory or agency, the sample(s) shall be selected by such laboratory or agency, or the Engineer, and shipped to the laboratory by the Contractor at Contractor's expense.
- G. Copies of all correspondence between the Contractor and testing laboratories or agencies shall be provided to the Engineer.

1.05 QUALITY ASSURANCE

- A. Testing shall be in accordance with all pertinent codes and regulations and with procedures and requirements of ASTM.

1.06 PRODUCT HANDLING

- A. Promptly process and distribute all required copies of test reports and related instructions to ensure that all necessary retesting or replacement of materials with the least possible delay in the progress of the Work.

1.07 FURNISHING MATERIALS

- A. The Contractor shall be responsible for furnishing all materials necessary for testing.

1.08 CONTRACTOR'S CONVENIENCE TESTING

- A. Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

1.09 TAKING SPECIMENS

- A. Unless otherwise provided in the Contract Documents, all specimens and samples for tests will be taken by the testing laboratory or the Engineer.

1.10 TRANSPORTING SAMPLES

- A. The Contractor shall be responsible for transporting all samples, except those taken by testing laboratory personnel, to the testing laboratory.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**



**SECTION 01433**  
**MANUFACTURER'S FIELD SERVICES**

**PART 1 GENERAL**

1.01 DEFINITIONS

- A. Person-Day: One person for 8 hours within regular Contractor working hours.

1.02 QUALIFICATION OF MANUFACTURER'S REPRESENTATIVE

- A. Authorized representative of the manufacturer, factory trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystem, or system, with full authority by the equipment manufacturer to issue the certifications required of the manufacturer. Additional qualifications may be specified in the individual Specification section.
- B. Representative subject to acceptance by Engineer. No substitute representatives will be allowed unless prior written approval by such has been given.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

3.01 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

- A. Furnish manufacturer's services, when required by an individual Specification section, to meet the requirements of this section.
- B. Where time is necessary in excess of that stated in the Specifications for manufacturer's services, or when a minimum time is not specified, time required to perform specified services shall be considered incidental.
- C. Schedule manufacturer's services to avoid conflict with other onsite testing or other manufacturers' onsite services.
- D. Determine, before scheduling services, that conditions necessary to allow successful testing have been met.
- E. Only those days of service approved by Engineer will be credited to fulfill specified minimum services.

- F. When specified in individual Specification sections, manufacturer's onsite services shall include:
1. Assistance during product (system, subsystem, or component) installation to include observation, guidance, instruction of Contractor's assembly, erection, installation or application procedures.
  2. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by manufacturer and necessary to furnish Manufacturer's Certificate of Proper Installation.
  3. Providing, on a daily basis, copies of manufacturer's representatives field notes and data to Engineer.
  4. Revisiting the Site as required to correct problems and until installation and operation are acceptable to Engineer.
  5. Resolution of assembly or installation problems attributable to or associated with respective manufacturer's products and systems.
  6. Assistance during functional and performance testing, and facility startup and evaluation.
  7. Training of Owner's personnel in the operation and maintenance of respective product as required.

3.02 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

- A. When so specified, a Manufacturer's Certificate of Compliance, a copy which is attached to this section, shall be completed in full, signed by entity supplying the product, material, or service, and submitted prior to shipment of product or material or execution of the services.
- B. Such form shall certify that proposed product, material, or service complies with that specified. Attach supporting reference data, affidavits, and certifications as appropriate.

3.03 MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

- A. When so specified, a Manufacturer's Certificate of Proper Installation form, a copy of which is attached to this section, shall be completed and signed by equipment manufacturer's representative.
- B. Such form shall certify signing party is a duly authorized representative of manufacturer, is empowered by manufacturer to inspect, approve, and operate their equipment and is authorized to make recommendations required to ensure equipment is complete and operational.

3.04 SUPPLEMENTS

- A. The supplement listed below, following “End of Section”, is part of this specification.
1. Form: Manufacturer’s Certification of Compliance.
  2. Form: Manufacturer’s Certificate of Proper Installation.

**END OF SECTION**

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**MANUFACTURER'S CERTIFICATE OF COMPLIANCE**

OWNER: \_\_\_\_\_

PRODUCT, MATERIAL, OR SERVICE  
SUBMITTED: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

PROJECT NO: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

I hereby certify that the above-referenced product, material, or service called for by the Contract for the named Project will be furnished in accordance with all applicable requirements. I further certify that the product, material, or service are of the quality specified and conform in all respects with the Contract requirements, and are in the quantity shown.

Date of Execution: \_\_\_\_\_, 20\_\_

Manufacturer: \_\_\_\_\_

Manufacturer's Authorized Representative (*print*): \_\_\_\_\_

(Authorized Signature)

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**MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION**

OWNER \_\_\_\_\_ EQPT SERIAL NO: \_\_\_\_\_  
EQPT TAG NO: \_\_\_\_\_ EQPT/SYSTEM: \_\_\_\_\_  
PROJECT NO: \_\_\_\_\_ SPEC. SECTION: \_\_\_\_\_

I hereby certify that the above-referenced equipment/system has been:

(Check Applicable)

- ☐ Installed in accordance with Manufacturer's recommendations.
- ☐ Inspected, checked, and adjusted.
- ☐ Serviced with proper initial lubricants.
- ☐ Electrical and mechanical connections meet quality and safety standards.
- ☐ All applicable safety equipment has been properly installed.
- ☐ Functional tests.
- ☐ System has been performance tested, and meets or exceeds specified performance requirements. (When complete system of one manufacturer)

Note: Attach any performance test documentation from manufacturer.

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate their equipment and (iii) authorized to make recommendations required to ensure equipment furnished by the manufacturer is complete and operational, except as may be otherwise indicated herein. I further certify that all information contained herein is true and accurate.

Date: \_\_\_\_\_, 20\_\_

Manufacturer: \_\_\_\_\_

By Manufacturer's Authorized Representative: \_\_\_\_\_  
(Authorized Signature)

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**SECTION 01510  
TEMPORARY FACILITIES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. Temporary facilities required for this Work include but are not necessarily limited to:
  - 1. Temporary utilities such as water and electricity,
  - 2. First aid facilities,
  - 3. Sanitary facilities,
  - 4. Potable water, and
  - 5. Temporary enclosures and construction facilities.

**1.02 GENERAL**

- A. First aid facilities, sanitary facilities, and potable water shall be available on the Project site on the first day that any activities are conducted onsite. The other facilities shall be provided as the schedule of the Project warrants.
- B. Maintenance: The Contractor shall use all means necessary to maintain temporary facilities in proper and safe condition throughout progress of the Work. In the event of loss or damage, immediately make all repairs and replacements necessary, at no additional cost to the Owner.
- C. Removal: The Contractor shall remove all such temporary facilities and controls as rapidly as progress of the Work will permits.

**1.03 UTILITIES**

- A. Temporary Utilities:
  - 1. General:
    - a. The Contractor shall provide and pay all costs for electricity and other utilities required for the performance of the Work.
    - b. The Contractor shall pay all costs for temporary utilities until Project completion.
    - c. Costs for temporary utilities shall include all power, water, and the like necessary for testing equipment as required by the Contract Documents.

2. Temporary Water:
  - a. The Contractor shall provide all necessary temporary piping, and upon completion of the Work, will remove all such temporary piping.
  - b. Owner shall provide and remove water meters.
3. Temporary Electricity:
  - a. The Contractor shall provide all necessary wiring for the Contractor's use.
  - b. Contractor shall furnish, locate, and install area distribution boxes such that the individual trades may use, their own construction type extension cords to obtain adequate power, and artificial lighting at all points where required by inspectors and for safety.

#### 1.04 FIRST AID FACILITIES

- A. The Contractor shall provide a suitable first aid station, equipped with all facilities and medical supplies necessary to administer emergency first aid treatment. The Contractor shall have standing arrangements for the removal and hospital treatment of any injured person. All first aid facilities and emergency ambulance service shall be made available by the Contractor to the Owner and the Engineer's personnel.

#### 1.05 SANITARY FACILITIES

- A. Prior to starting the Work, the Contractor shall furnish, for use of Contractor's personnel on the job, all necessary toilet facilities which shall be secluded from public observation. These facilities shall be either chemical toilets or shall be connected to the Owner's sanitary sewer system. All facilities, regardless of type, shall be kept in a clean and sanitary condition and shall comply with the requirements and regulations of the area in which the Work is performed. Adequacy of these facilities will be subject to the Engineer's review and maintenance of same must be satisfactory to the Engineer at all times.

#### 1.06 POTABLE WATER

- A. The Contractor shall be responsible for furnishing a supply of potable drinking water for employees, subcontractors, inspectors, engineers, and the Owner who are associated with the Work.

#### 1.07 ENCLOSURES AND CONSTRUCTION FACILITIES

- A. The Contractor shall furnish, install, and maintain, for the duration of construction, all required scaffolds, tarpaulins, canopies, steps, bridges, platforms, and other temporary construction necessary for proper completion of the Work in compliance with all pertinent safety and other regulations.

1.08 PARKING FACILITIES

- A. Parking facilities for the Contractor's and Contractor's subcontractors' personnel shall be the Contractor's responsibility. The storage and work facilities provided by the Owner will not be used for parking by the Contractor's or Subcontractor's personnel.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01540  
JOB SITE SECURITY**

**PART 1      GENERAL**

**1.01      BARRICADES, LIGHTS, AND SIGNALS**

- A.    The Contractor shall furnish and erect such barricades, fences, lights, and danger signals, and shall provide such other precautionary measures for the protection of persons or property and of the Work as necessary. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise, the Contractor shall furnish and maintain at least one light at each barricade, and sufficient numbers of barricades shall be erected to keep vehicles from being driven on or into any Work under construction.
- B.    The Contractor will be held responsible for all damage to the Work due to failure of barricades, signs, and lights. Whenever evidence is found of such damage, the Contractor shall immediately remove the damaged portion and replace it at the Contractor's cost and expense. The Contractor's responsibility for the maintenance of barricades, signs, and lights shall not cease until the Project has been accepted by the Owner.

**PART 2      PRODUCTS (NOT USED)**

**PART 3      EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01562  
DUST CONTROL**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. Blowing dust caused by construction operations will be limited by applying water or employing other appropriate means or methods to maintain dust control, subject to the approval of the Owner. At a minimum, this may require the use of a water wagon twice per day to suppress dusty conditions.

**1.02 PROTECTION OF ADJACENT PROPERTY**

- A. The Bidders shall visit the site and note the buildings, landscaping, roads, parking areas, and other facilities near the Work site that may be damaged by their operations. The Contractor shall make adequate provision to fully protect the surrounding area, and will be held fully responsible for all damages resulting from Contractor's operations.
- B. The Contractor shall protect all existing facilities (indoors or outdoors) from damage by dust, fumes, spray, or spills (indoors or outdoors). The Contractor shall protect motors, bearings, electrical gear, instrumentation, and building or other surfaces from dirt, dust, welding fumes, paint spray, spills, or droppings causing wear, corrosion, malfunction, failure, or defacement by enclosure, sprinkling, or other dust palliatives, masking and covering, exhausting, or containment.

**1.03 NUISANCE DUST CONTROL**

- A. The Contractor shall comply with Georgia Environmental Protection Division Air Pollution Standards for nuisance dust control.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01572**  
**TEMPORARY SEWER FLOW CONTROL**

**PART 1 GENERAL**

**1.01 REFERENCES**

- A. The following is a list of standards which may be referenced in this section:
1. ASTM International (ASTM):
    - a. D3350, Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.
    - b. F2164, Standard Practice for Field Leak Testing of Polyethylene (PE) and Crosslinked Polyethylene (PEX) Pressure Piping Systems Using Hydrostatic Pressure.
  2. American Water Works Association (AWWA):
    - a. C110/A21.20, ANSI Standard for Ductile-Iron and Gray-Iron Fittings, 3 in. - 48 in. (76 mm - 1219 mm), for Water.
    - b. C111/A21.11, ANSI Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
    - c. C151/A21.51, ANSI Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
    - d. C600, Installation of Ductile-Iron Mains and Their Appurtenances.

**1.02 DEFINITIONS**

- A. Flow Control: Procedure and method to reduce or eliminate flow in a downstream facility to a level adequate for proper inspection and rehabilitation.
- B. Temporary Bypass Pumping: Flow control method that uses a temporary bypass pumping system.

**1.03 PERFORMANCE REQUIREMENTS**

- A. It is essential to operation of existing sewerage system that there be no interruption in flow of sewage throughout duration of Project.
- B. Provide, maintain, and operate temporary facilities such as dams, plugs, pumping equipment conduits, and necessary power to intercept sewage flow before it reaches point where it would interfere with the Work.
- C. Maintain sewer flow around Work area in a manner that will not cause surcharging of sewers, damage to sewers, and that will protect public and private property from damage.

- D. Protect water resources, wetlands, and other natural resources.
- E. Provide necessary power and back-up power systems via generators. All generators and fuel storage systems shall be required to have containment systems and detailed environmental and safety protocols for leakage and/or spill prevention.

#### 1.04 SUBMITTALS

##### A. Informational Submittals:

- 1. Flow Control Plan: Submit at least 2 weeks prior to controlling flows. Include, as a minimum, the following:
  - a. Peak Amount of Flow to be controlled:
    - 1) Peak Dry Weather, gpm.
    - 2) Peak Wet Weather, gpm.
  - b. Detailed procedures for handling peak estimated flow.
  - c. Schedule.
  - d. Drawing of plug and/or bypass pump and pipeline locations.
  - e. Listing of equipment.
    - 1) Bypass pump sizes, capacities, number of each size to be onsite, and power requirements including standby equipment.
    - 2) Bypass pipeline sizes and material types.
  - f. Generator and backup generator performance specifications.
  - g. Containment mitigation and prevention plan.
  - h. Sewer user notification plan.
  - i. Operation plan.
  - j. Emergency procedures.

#### 1.05 SEQUENCING AND SCHEDULING

- A. Temporary Bypass Pumping provided by the Contractor will be required for sewer replacement. The sequencing or schedule for bypass installation and operation will be discussed and agreed to during the Preconstruction Conference.

## **PART 2 PRODUCTS**

#### 2.01 FLOW CONTROL SYSTEM

- A. General: Provide adequate capacity and size to handle existing flows plus additional flows that may occur during periods of rainstorm. Provide bypass flow capacity of at least 125 percent of wet-weather peak flow estimate.

B. Plugs:

1. Provide with taps for connection of pressure gauges and air hoses, and flow-through capability.
2. Pipe Diameters 24 inches and Smaller: Use mechanical plugs with rubber gaskets or pneumatic plugs with rubber boots.
3. Pipe Diameters Larger than 24 inches:
  - a. Use inflatable bag stoppers made in two or more pieces.
  - b. Manufacturer: Lansas, Cherne Industries or equivalent approved by Engineer.

C. Discharge Piping:

1. Leak free.
2. Pressure rating at least 1.5 times the operating pressure.
3. PE Pressure Piping:
  - a. In accordance with ASTM D3350.
  - b. SDR of 32.5, maximum.
  - c. Joints: Butt-fusion welded.
4. Ductile Iron:
  - a. AWWA C151/A21.51, Centrifugally cast, Grade 60-42-10 iron.
  - b. Joints: Rubber gasketed push-on in accordance with AWWA C111/21.11.
  - c. Fittings: In accordance with AWWA C110/A21.20.
5. May reuse for subsequent flow bypass pumping system placements. Owner or Engineer, at their sole discretion, shall have right to reject sections deemed unserviceable.

D. Bypass Pumps:

1. Fully automatic, self-priming units that do not require use of foot valves or vacuum pumps in priming system.
2. Open impeller design with ability to pump minimum 3-inch diameter solids.
3. Able to run dry for long periods of time to accommodate cyclical nature of flows.
4. Engine: Equipped to minimize noise. Noise levels shall not exceed 86 dBA at a distance of 50 feet from the source.
5. Standby Pump:
  - a. Peak dry weather, small pump. One to be available onsite.
  - b. Peak wet weather, large pump. One to be made available for delivery, installation and operation within 8 hours for any reason as required by Owner.

E. Air/Vacuum Release Valves.

F. Automated Monitoring Systems.

**PART 3 EXECUTION**

**3.01 GENERAL**

- A. Notify Engineer and Owner at least 48 hours prior to implementing flow control system.
- B. During the entire time bypass pumping is engaged, the Contractor shall be required to man, operate, and maintain 24 hours per day, 7 days per week, including holidays, as required, to control flow and prevent spillage and/or leakage.
- C. Take all necessary precautions to ensure no private or public properties are subjected to a sewage backup or spill. Contractor shall be solely responsible for all cleanup, damages, and resultant fines in the event of a backup or spill.
- D. After the Work is completed, return flow to normal and remove temporary equipment.

**3.02 BLOCKING FLOW**

- A. Flow control may consist of blocking flow with mechanical or pneumatic plugs if only a small amount of flow needs to be controlled and adequate storage is available.
- B. Use primary and secondary plugs for each flow control location.
- C. When blocking flow is no longer needed for performance and acceptance of the Work, removed plugs in a manner that permits sewage flow to slowly return to normal without surcharging or causing other major disturbances downstream.
- D. Remove temporary plugs at end of each working day and restore normal flow. If downstream work is not or cannot be completed during the workday provide, operate, and maintain bypass pumping system.
- E. Use bypass pumping if the Work cannot be scheduled at a time when flow is low or completed during low flow period.
- F. Existing slide gates and stop log assemblies may be used to block flow and isolate the screen distribution channel.

**3.03 BYPASS PUMPING**

- A. When blocking flow in upstream sewers is not appropriate, use flow bypass pumping for reducing flow below the maximum depth or for completely bypassing flow.

- B. Design, furnish, install, and maintain all power, primary and standby pumps, appurtenances, tanks and trucks, and bypass piping required to maintain existing flows and services.
- C. Site Verification:
  - 1. Locate existing utilities in area of bypass pipelines.
  - 2. Bypass Pipeline Location:
    - a. Minimize disturbance of existing utilities.
    - b. Confine bypass discharge pipeline within public rights-of-way or temporary construction area and permanent easement.
    - c. When bypass pipeline crosses local streets and private driveways, place bypass pipeline in trench and cover with temporary pavement.
    - d. Installation of bypass pipelines is prohibited in salt marsh/wetland areas.
- D. Flow bypass shall be done in such a manner that will not damage private or public property, or create a nuisance or public menace. Pumped sewage shall be in an enclosed pipe that is adequately protected from traffic, and shall be redirected into sanitary sewer system. Dumping or free flow of sewage on private or public property, gutters, streets, sidewalks, or into storm sewers is prohibited.

### 3.04 FIELD QUALITY CONTROL

- A. Hydrostatic Pressure Test for Pump Bypass System:
  - 1. General:
    - a. Prior to operation, test each section of discharge piping with maximum pressure equal to 1.5 times the maximum operating pressure of system as measured at the lowest point.
    - b. Notify Engineer and Owner 48 hours prior to testing.
    - c. Furnish testing equipment and perform tests in a manner satisfactory to the Engineer. Testing equipment shall provide observable and accurate measurements of initial service leak and allowable make-up water volume under specified conditions.
    - d. Using water as a test medium, pipe shall successfully pass a hydrostatic test prior to acceptance.
    - e. Supply of temporary water shall be in accordance with Section 01510, Temporary Facilities.
    - f. Dispose of water used in testing in accordance with federal, state, and local requirements.

2. Test Preparation:
  - a. Provide temporary backing, bulkheads, flanges, and plugs as necessary, to ensure all piping, valves and appurtenances will be pressure tested.
  - b. Install temporary thrust blocking or other restraint as necessary to prevent movement of pipe and protect adjacent piping or equipment.
  - c. Make necessary taps in piping prior to testing.
  - d. Remove or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
  - e. Before applying test pressure, air shall be completely expelled from the pipeline and all appurtenances when filled with water.
  - f. Fill pipeline slowly with water. Maximum filling velocity shall not exceed 0.25 feet per second, calculated based on full area of the pipe.
  - g. Provide a suitable pump with an accurate water meter to pump the line to the specific test pressure.
3. Test Procedure for Ductile Iron Piping
  - a. All sections of ductile iron discharge piping subject to internal pressure shall be pressure tested in accordance with AWWA C600, except as stated otherwise in these Specifications.
    - 1) Test Pressure: Test the pipeline at the test pressure for at least 2 hours. Maintain the test pressure within 5 psi of the specified test pressure for the test duration. Should the pressure drop more than 5 psi at any time during the test period, the pressure shall be restored to the specified test pressure.
    - 2) Test Results
      - a) No test section shall be accepted if the leakage exceeds the limits determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

*Where:*

$L$  = allowable leakage, in gallons per hour  
 $S$  = length of pipe tested, in feet  
 $D$  = nominal diameter of the pipe, in inches  
 $P$  = average test pressure during the leakage test, in pounds per square inch (gauge)

- b) Leakage shall be defined as the sum of the quantity of water that must be pumped into the test section, to maintain pressure within 5 psi of the specified test pressure for the test duration plus water required to return the line to test pressure at the end of the test. Leakage shall be the total cumulative amount measured on a water meter.
  - c) If the test section contains lengths of various pipe diameters, the allowable leakage shall be the sum of the computed leakage for each diameter.
  - d) The leakage test shall be repeated until the test section is accepted.
  - e) All visible leaks shall be repaired regardless of leakage test results.
- 4. Test Procedure for Polyethylene (PE)
  - a. All sections of PE discharge piping subject to internal pressure shall be pressure tested in accordance with ASTM F2164, except as stated otherwise in these Specifications.
    - 1) Initial Expansion Phase: Add water as required to maintain test pressure for 4 hours.
    - 2) Test Phase: Reduced pressure by 10 psi and start pressure test.
    - 3) Test is successful if pressure stays within 5 percent of initial value for 1 hour.
  - b. If test is not completed because of leakage, equipment failure, or other reasons, depressurize test section and allow it to relax for at least 8 hours before retesting.
  - c. If there is leakage, repair defective pipe section and repeat hydrostatic test.
- 5. Test Completion:
  - a. After a pipeline section has been accepted by the Engineer or Owner, relieve test pressure.
  - b. Provide test report including, pipe size, length, location, allowable leakage, test pressures, date and time.

### 3.05 CLEANING

- A. Before bypass pumping system is broken down, and moved to next section or removed at the completion of the Work, discharge sewage remaining in bypass discharge pipeline and pumping equipment to working sewer.
- B. Disturbed Areas: Upon completion of bypass pumping operation, clean disturbed areas, restoring to condition, including pavement restoration, at least equal to that which existed prior to start of the Work.

### END OF SECTION

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**SECTION 01610**  
**TRANSPORTATION AND HANDLING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. The Contractor shall provide transportation of all equipment, materials, and products furnished under these Contract Documents to the Work site. In addition, the Contractor shall provide preparation for shipment, loading, unloading, handling and preparation for installation, and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the Work.
- B. All equipment, materials, and products damaged during transportation or handling shall be repaired or replaced by the Contractor at no additional cost to the Owner prior to being incorporated into the Work.

**1.02 TRANSPORTATION**

- A. All equipment shall be suitably boxed, crated, or otherwise protected during transportation.
- B. Where equipment will be installed using existing cranes or hoisting equipment, the Contractor shall ensure that the weights of the assembled sections do not exceed the capacity of the cranes or hoisting equipment.
- C. Small items and appurtenances such as gauges, valves, switches, instruments, and probes which could be damaged during shipment shall be removed from the equipment prior to shipment, and packaged and shipped separately. All openings shall be plugged or sealed to prevent the entrance of water or dirt.

**1.03 HANDLING**

- A. All equipment, materials, and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation.
- B. Lifting and handling drawings and instructions furnished by the manufacturer or supplier shall be strictly followed. Eyebolts or lifting lugs furnished on the equipment shall be used in handling the equipment. Shafts and operating mechanisms shall not be used as lifting points. Spreader bars or lifting beams shall be used when the distance between lifting points exceeds that permitted by standard industry practice.

- C. Under no circumstances shall equipment or products such as pipe, structural steel, castings, reinforcement, lumber, piles, poles, and the like be thrown or rolled off of trucks onto the ground.
- D. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.

1.04 OWNER-FURNISHED EQUIPMENT

- A. Owner-furnished equipment shall mean any Owner equipment purchased and required by these Specifications to be installed by the Contractor.
- B. The Owner shall be responsible for transportation to the site of all Owner-furnished equipment.
- C. The Contractor shall offload and store all Owner-furnished equipment per this section of these Specifications.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01611**  
**STORAGE AND PROTECTION**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The Work under this section includes, but is not necessarily limited to, the furnishing of all labor, tools, and materials necessary to properly store and protect all materials, equipment, products, and the like, as necessary for the proper and complete performance of the Work.
- B. The Contractor shall be responsible for selecting and securing any storage site or sites necessary for the construction of this Project.

**1.02      STORAGE AND PROTECTION**

- A. Storage:
  - 1. Maintain ample way for foot traffic at all times, except as otherwise approved by the Engineer.
  - 2. All property damaged by reason of storing of material shall be properly replaced at no additional cost to the Owner.
  - 3. Packaged materials shall be delivered in original unopened containers and so stored until ready for use.
  - 4. All materials shall meet the requirements of these Specifications at the time that they are used in the Work.
  - 5. Store products in accordance with manufacturer's instructions.
- B. Protection:
  - 1. Use all means necessary to protect the materials, equipment, and products of every section before, during and after installation and to protect the installed work and materials of all other trades.
  - 2. All materials shall be delivered, stored, and handled to prevent the inclusion of foreign materials and damage by water, breakage, vandalism, or other causes.
  - 3. Substantially constructed weathertight storage sheds, with raised floors, shall be provided and maintained as may be required to adequately protect those materials and products stored on the Site that may require protection from damage by the elements.
- C. Replacements: In the event of damage, immediately make all repairs and replacements necessary for the approval of the Engineer and at no additional cost to the Owner.

- D. Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending between supports. Items such as pipe, structural steel, and sheet construction products shall be stored with one end elevated to facilitate drainage.
- E. Unless otherwise permitted in writing by the Engineer, building products and materials such as cement, grout, plaster, gypsum board, particleboard, resilient flooring, acoustical tile, paneling, finish lumber, insulation, wiring, and the like shall be stored indoors in a dry location. Building products such as rough lumber, plywood, concrete block, and structural tile may be stored outdoors under a properly secured waterproof covering.
- F. Tarps and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarps and covers shall be arranged to prevent ponding of water.

1.03 EXTENDED STORAGE

- A. If certain items of major equipment such as air compressors, pumps, and mechanical aerators have to be stored for an extended period, the Contractor shall provide satisfactory long-term storage facilities that are acceptable to the Engineer. The Contractor shall provide all special packaging, protective coverings, protective coatings, power, nitrogen purge, desiccants, lubricants and exercising necessary or recommended by the manufacturer to properly maintain and protect the equipment during the period of extended storage.

1.04 OWNER-FURNISHED EQUIPMENT

- A. The Contractor shall provide storage and protection for all Owner-furnished equipment and materials, including extended storage as specified above.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01630**  
**SUBSTITUTION AND OPTIONS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section outlines the restrictions and requirements for substitutions, product and manufacturer options, and construction method options.

**1.02 DEFINITIONS**

- A. For the purposes of these Contract Documents, a "substitute item" shall be defined as one of the following:
  - 1. A product or manufacturer offered as a replacement for a specified product or manufacturer; or
  - 2. A product or manufacturer offered in addition to a specified product or manufacturer.
- B. For the purposes of these Contract Documents, a "substitute construction method" shall be defined as one of the following:
  - 1. A means, method, technique, sequence, or procedure of construction offered as a replacement for a specified means, method, technique, sequence, or procedure of construction; or
  - 2. A means, method, technique, sequence, or procedure of construction offered in addition to a specified means, method, technique, sequence, or procedure of construction.

**1.03 GENERAL**

- A. An item or construction method offered where no specific product, manufacturer, means, method, technique, sequence, or procedure of construction is specified or shown on the Drawings shall not be considered a substitute and shall be at the option of the Contractor, subject to the provisions in the Contract Documents for that item or construction method.
- B. For products specified only by a referenced standard, the Contractor may select any product by any manufacturer, which meets the requirements of the Specifications, unless indicated otherwise in the Contract Documents.
- C. If the manufacturer is named on the Drawings or in the Specifications as an acceptable manufacturer, products of that manufacturer meeting all requirements of the Specifications and Drawings are acceptable.

- D. Whenever the Engineer's design is based on a specific product of a particular manufacturer, that manufacturer will be shown on the Drawings and/or listed first in the list of approved manufacturers in the Specifications. Any Bidder intending to furnish products of manufacturers other than the first-listed manufacturer, or furnish substitute items, shall:
1. Verify that the item being furnished will fit in the space allowed, perform the same functions, and have the same capabilities as the item specified;
  2. Include in its Bid the cost of all accessory items which may be required by the other listed substitute product;
  3. Include the cost of any architectural, structural, mechanical, piping, electrical; or other modifications required; and
  4. Include the cost of required additional work by the Engineer, if any, to accommodate the item.
- E. Whenever a product specification includes minimum experience requirements which the manufacturer selected by the Contractor cannot meet, the manufacturer shall furnish the Owner with a cash deposit, or bond acceptable to the Owner in an amount equal to the cost of the product; said bond shall remain in effect until the experience requirement has been met.

#### 1.04 APPROVALS

- A. Approval of the Engineer for a substitution by an acceptable manufacturer is dependent on determination that the product offered:
1. Is essentially equal in function, performance, quality of manufacture, ease of maintenance, reliability, service life, and other criteria to the product on which the design is based; and
  2. Will require no major modifications to structures, electrical systems, control systems, or piping systems.

#### 1.05 SUBSTITUTIONS AND OPTIONS

- A. After Notice to Proceed:
1. Substitute items will be considered only if the term "equal to" precedes the names of acceptable manufacturers in the Specification.
  2. Where items are specified by referenced standard or specified as indicated in paragraph 1.03A, such items shall be submitted to the Engineer for review.
  3. The Contractor shall submit Shop Drawings on the substitute item for the Engineer's review in accordance with the Section 01340, Submittals, Shop Drawings, Product Data and Samples.

B. Prior to Opening of Bids:

1. No consideration or approvals will be made for products specified by a referenced standard, or specified as indicated in paragraph 1.03A. Such consideration may occur only after the Notice to Proceed.
2. No consideration or approvals will be made for products being offered where the term "equal to" precedes the name of an approved product. Such substitution consideration may occur only after the Notice to Proceed.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01710  
CLEANING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section covers the general cleaning which the Contractor shall be required to perform both during construction and before final acceptance of the Project unless otherwise shown on the Drawings or specified elsewhere in these Specifications.

**1.02 QUALITY ASSURANCE**

- A. Daily, and more often if necessary, the Contractor shall conduct inspections verifying that cleanliness requirements are being met.
- B. In addition to the standards described in this section, the Contractor shall comply with all pertinent requirements of governmental agencies having jurisdiction.

**1.03 HAZARD CONTROL**

- A. The Contractor shall store volatile wastes in covered metal containers and remove such wastes from the premises daily.
- B. The Contractor shall prevent accumulation of wastes which create hazardous conditions.
- C. Burning or burying rubbish and waste materials on the site shall not be allowed.
- D. Disposal of volatile wastes into sanitary or storm sewers shall not be allowed.

**1.04 DISPOSAL OF SURPLUS MATERIALS**

- A. Unless otherwise shown on the Drawings, specified, or directed, the Contractor shall, off the Site, legally dispose of all surplus excavated materials and materials and equipment from demolition, and shall provide Contractor's own suitable, offsite spoil area, or use a site designated by the Owner.
- B. The Owner shall have the opportunity to inspect any removed equipment or materials prior to disposal by the Contractor. If said equipment or materials are determined by the Owner to be salvageable, the Contractor shall transport said equipment or material to a building or area designated by the Owner.

1.05 EXCESS MATERIALS

- A. The Owner has no obligation, implied or written, to purchase any excess materials provided to the Project by the Contractor. All excess materials are the property of the Contractor unless the Owners purchases such materials through a change order.

**PART 2 PRODUCTS**

2.01 CLEANING MATERIALS AND EQUIPMENT

- A. The Contractor shall provide all required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

- A. The Contractor shall use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material or as approved by the Engineer.

**PART 3 EXECUTION**

3.01 PROGRESS CLEANING

- A. General:
  - 1. The Contractor shall retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic and providing the required protection of materials.
  - 2. The Contractor shall not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
  - 3. The Contractor shall, on at least a weekly basis and more often if necessary, completely remove all scrap, debris, and waste material from the site.
  - 4. The Contractor shall provide adequate storage for all items awaiting removal from the site, observing all requirements for fire protection and protection of the environment.
- B. Site:
  - 1. The Contractor shall, on at least a daily basis and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. The Contractor shall remove all such items to the place designated for their storage.

2. The Contractor shall, on a weekly basis and more often if necessary, inspect all arrangements of materials stored on the site; restack or otherwise service all arrangements to meet the requirements of paragraph 3.01.
3. The Contractor shall at all times maintain the site in a neat and orderly condition which meets the approval of the Engineer.

### 3.02 FINAL CLEANING

- A. Definitions: Except as otherwise specifically provided, "clean" for the purpose of this section shall be interpreted as meaning the level of cleanliness generally provided by commercial building maintenance subcontractors using commercial quality building maintenance equipment and materials.
- B. General: Prior to completion of the Work, the Contractor shall remove from the site all tools, surplus materials, equipment, scrap, debris, and waste. The Contractor shall conduct final progress cleaning as described in paragraph 3.01.
- C. Site: Unless otherwise specifically directed by the Engineer, the Contractor shall hose down all paved areas on site and all public sidewalks directly adjacent to the site; and shall rake clean other surfaces of the grounds. The Contractor shall completely remove all resultant debris.
- D. Restoration of Landscape Damage: Any landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to original condition at the Contractor's expense. The Engineer will decide what method of restoration shall be used.
- E. Post-Construction Cleanup or Obliteration: The Contractor shall obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction, as directed by the Engineer.
- F. Timing: The Contractor shall schedule final cleaning as approved by the Engineer to enable the Owner to accept a completely clean Project.

### 3.03 CLEANING DURING OWNER'S OCCUPANCY

- A. Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning of the occupied spaces shall be as determined by the Engineer in accordance with the Supplementary Conditions of the Contract Documents.

### END OF SECTION

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**SECTION 01720  
RECORD DOCUMENTS**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. The Work under this section includes, but is not necessarily limited to, the compiling, maintaining, recording, and submitting of Project Record Documents as herein specified.
- B. Record Documents include but are not limited to:
  - 1. Drawings,
  - 2. Specifications,
  - 3. Change orders and other modifications to the Contract,
  - 4. Engineer field orders or written instructions, including Requests for Information (RFI) and Clarification Memorandums,
  - 5. Reviewed Shop Drawings, product data, and samples, and
  - 6. Test records.
- C. The Contractor shall maintain on the Project site throughout the Contract Time an up-to-date set of Record Drawings.

**1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES**

- A. Storage:
  - 1. The Contractor shall store documents and samples in the Contractor's field office, apart from documents used for construction.
  - 2. The Contractor shall provide files and racks for storage of documents.
  - 3. The Contractor shall provide locked cabinet or secure storage space for storage of samples.
- B. The Contractor shall file documents and samples in accordance with these Specifications.
- C. Maintenance:
  - 1. The Contractor shall maintain documents in a clean, dry, legible condition and in good order.
  - 2. The Contractor shall not use Record Documents for construction purposes.
  - 3. The Contractor shall maintain at the site for the Owner one copy of all Record Documents.

- D. The Contractor shall make documents and samples available at all times for inspection by the Engineer.
- E. Failure to maintain the Record Documents in a satisfactory manner may be cause for withholding of a certificate for payment.

#### 1.03 QUALITY ASSURANCE

- A. Unless noted otherwise, Record Drawings shall provide dimensions, distances, and coordinates to the nearest 0.1 foot.
- B. Unless noted otherwise, Record Drawings shall provide elevations to the nearest 0.01 foot for all pertinent items constructed by the Contractor.
- C. The Contractor shall employ a currently registered surveyor to prepare the Record Drawings from a post-construction, field run survey. The Record Drawings shall provide elevations to the nearest 0.01 foot for all manhole inverts, manhole frames, and other pertinent items constructed by the Contractor. The Record Drawings shall provide dimensions, distances, and coordinates to the nearest 0.01 foot and horizontal angles to the nearest 10 seconds.

#### 1.04 RECORDING

- A. The Contractor shall label each document "PROJECT RECORD" followed by the date of preparation in neat, large printed letters.
- B. Recording:
  - 1. The Contractor shall record information concurrently with construction progress.
  - 2. The Contractor shall not conceal any work until required information is recorded.

#### 1.05 RECORD DRAWINGS

- A. Record Drawings shall be reproducible, and shall have a title block indicating that the drawings are Record Drawings, the name of the company preparing the Record Drawings, and the date the Record Drawings were prepared. The Contractor will be provided paper sepias of the Drawings, or it may elect to provide reproducible drawings via another method. Reproducible shall be defined as being translucent so as to allow a blueline print to be produced.
- B. All Record Drawing information shall be provided in State Plane Coordinate System.

C. Legibly mark Drawings to record actual construction, including:

1. All Construction:
  - a. Changes of dimension and detail;
  - b. Changes made by Requests for Information (RFI), field order, clarification memorandums, or by change order; and
  - c. Details not on original Drawings.
2. Site Improvements, including underground utilities:
  - a. Horizontal and vertical locations of all exposed and underground utilities and appurtenances, both new facilities constructed and those utilities encountered, referenced to permanent surface improvements;
  - b. Locations of and dimensions of roadways and parking areas, providing dimensions to back of curb when present;
  - c. The locations shall be referenced to at least two easily identifiable, permanent landmarks (such as power poles, valve markers, and the like) or benchmarks;
  - d. For each fire hydrant, include the manufacturer, year, barrel diameter, and nozzle diameters; and
  - e. The horizontal angle and distance between manhole covers.

D. Record Drawing Deliverables:

1. The Contractor shall provide an electronic copy of Record Drawings in AutoCAD 2000 (.dwg) or later format.
2. Electronic file shall be in the following coordinate systems:
  - a. Geodetic Reference System of 1980 (GRS 80) ellipsoid
  - b. North American Datum of 1983 (NAD 83) State Plane Georgia West FIPS 1002 Feet,
  - c. North American Vertical Datum of 1988 (NAVD 88).
3. Format shall include the following features:
  - a. Water Main: polyline/continuous.
  - b. Water System Appurtenances: single point.
  - c. Sewer Main: polyline/continuous.
  - d. Sewer Manholes and Appurtenances: single point.
4. Drawing layers shall be:
  - a. FH fire hydrant.
  - b. WV water valve.
  - c. FDC fire department connection.
  - d. WL waterline.
  - e. Vault.
  - f. Meter.
  - g. Fittings tees, crosses, taps.
  - h. SSMH sanitary sewer manhole.
  - i. SSL sanitary sewer line.

- E. The Owner will review all Record Drawings for acceptability.

1.06 SPECIFICATIONS

- A. Legibly mark each section to record:

- 1. Manufacturer, trade name, catalog number, and supplier of each product, and item of equipment actually installed; and
- 2. Changes made by Requests for Information (RFI), field order, clarification memorandums, or by change order.

1.07 SUBMITTAL

- A. At contract closeout, the Contractor shall deliver Record Documents to the Engineer for the Owner.
- B. The Contractor shall accompany the submittal with a transmittal letter, in duplicate, containing:
  - 1. Date,
  - 2. Project title and number,
  - 3. Contractor's name and address,
  - 4. Title and number of each Record Document, and
  - 5. Signature of Contractor or Contractor's authorized representative.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**



**SECTION 01740**  
**WARRANTIES AND BONDS**

**PART 1      GENERAL**

**1.01      PROJECT MAINTENANCE AND WARRANTY**

- A.    The Contractor shall maintain and keep in good repair the Work covered by these Drawings and Specifications until acceptance by the Owner.
- B.    The Contractor shall warrant for a period of 1 year from the date of Owner's written acceptance of certain segments of the Work and/or Owner's written final acceptance of the Project, as defined in the Contract Documents, that the completed Work is free from all defects due to faulty products or workmanship, and the Contractor shall promptly make such corrections as may be necessary by reason of such defects. The Owner will give notice of observed defects with reasonable promptness. If the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect throughout the warranty period.
- C.    The Contractor shall not be obligated to make replacements which become necessary because of ordinary wear and tear, or as a result of improper operation or maintenance, or as a result of improper work or damage by another Contractor or the Owner, or to perform any work which is normally performed by a maintenance crew during operation.
- D.    The Contractor shall, at Contractor's own expense, furnish all labor, materials, tools, and equipment required and shall make such repairs and removals and shall perform such work or reconstruction as may be made necessary by any structural or functional defect or failure resulting from neglect, faulty workmanship, or faulty materials, in any part of the Work performed by the Contractor. Such repair shall also include refilling of trenches, excavations, or embankments which show settlement or erosion after backfilling or placement.
- E.    Except as noted on the Drawings or as specified, all structures such as embankments and fences shall be returned to their original condition prior to the completion of the Contract. Any and all damage resulting from the Contractor's operations to any facility not designated for removal, shall be promptly repaired by the Contractor at no cost to the Owner.

- F. The Contractor shall be responsible for all road and entrance reconstruction and repairs and maintenance of same for a period of 1 year from the date of final acceptance. If repairs and maintenance are not made immediately and it becomes necessary for the owner of the road to make such repairs, the Contractor shall reimburse the owner of the road for the cost of such repairs.
- G. If the Contractor fails to proceed to remedy the defects upon notification within 15 days of the date of such notice, the Owner reserves the right to cause the required materials to be procured and the work to be done, as described in the Drawings and Specifications, and to hold the Contractor and the sureties on Contractor's bond liable for the cost and expense thereof.
- H. Notice to Contractor for repairs and reconstruction will be made in the form of a registered letter addressed to the Contractor at Contractor's home office.
- I. Neither the foregoing paragraphs nor any provision in the Contract Documents, nor any special guarantee time limit implies any limitation of the Contractor's liability under the laws of the State of Georgia.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 SUPPLEMENTS**

- A. The supplement listed below, following "END OF SECTION," is part of this Specification
  - 1. Certification of Warranty Commencement.

**END OF SECTION**

**CERTIFICATION OF WARRANTY COMMENCEMENT**

Owner: Unified Government of Athens-Clarke County, Georgia  
Project: \_\_\_\_\_  
Contractor: \_\_\_\_\_  
Bid No. : \_\_\_\_\_  
\_\_\_\_\_

This document certifies the Contractor's acceptance of the commencement and ending dates for the one-year warranty period and/or the terms of any special guarantees, as defined in the Contract Documents for the Project. The warranty shall apply to the entire Project from the date of Owner's written final acceptance of the Project, and/or to certain segments of the Work from the date of Owner's written acceptance of those certain segments, and/or to any special guarantees as defined in the Contract Documents for the Project, as indicated below.

*Check all boxes below that are applicable and enter appropriate information and dates:*

☐ **Owner's Written Final Acceptance of the Project**

Date of Owner's Written Final Acceptance of the Project (Warranty Start Date)	Warranty End Date

☐ **Owner's Written Acceptance of Certain Segments of the Work, as follows:**

Description of Segments of the Work (Equipment and Materials Included)	Date of Owner's Written Acceptance of Certain Segments of the Work (Warranty Start Date)	Warranty End Date

☐ **Applicable Special Guarantees:**

Description of Special Guarantees	Date of Owner's Written Acceptance of Items Covered by Special Guarantee	Special Guarantee Period	Warranty End Date

<b>Contractor Certification</b>	
Warranty (ies) acknowledged and certified to comply with the Contract Documents. Certification shall be signed by the same signatory as the Contract Agreement.	
Contractor:	
By:	Date:
<i>(name signed)</i>	
<i>(name printed or typed)</i>	
Title:	

<b>Engineer Acknowledgement</b>	
Engineer:	
By:	Date:
<i>(name signed)</i>	
<i>(name printed or typed)</i>	

<b>Owner Acknowledgement</b>	
Owner acknowledges receipt of Warranty (ies) associated with the Work	
Owner: Unified Government of Athens-Clarke County, Georgia	
By:	Date:
<i>(name signed)</i>	
<i>(name printed or typed)</i>	

**SECTION 01780**  
**CONTRACT CLOSEOUT**

**PART 1      GENERAL**

**1.01      SUBMITTALS**

A.    Contract Closeout Submittals: Submit prior to application for final payment.

1.    Section 00700, General Conditions, Part 14.04:
  - a.    Factory test reports.
  - b.    Equipment and structure test reports.
  - c.    Operating and maintenance information, instructions, manuals, documents, drawings, diagrams, and records.
  - d.    Spare parts list.
2.    Section 00700, General Conditions, Part 14.07:
  - a.    Consent of Surety to Final Payment,
  - b.    Releases or Waivers of Liens and Claims against the Owner by the Contractor, and
  - c.    Release from Agreements, if applicable.
3.    Section 01320, Construction Photographs and Videos:
  - a.    Post-construction photographs and videos
4.    Section 01720, Record Documents:
  - a.    Drawings.
  - b.    Specifications.
  - c.    Contract Modifications (including Change Orders).
  - d.    Engineer Field Orders.
  - e.    Requests for Information and Clarification Memorandum.
  - f.    Reviewed Shop Drawings, product data and samples.
  - g.    Test Records.
5.    Section 01433, Manufacturer's Services:
  - a.    Manufacturer's Certificate of Compliance.
  - b.    Manufacturer's Certificate of Proper Installation.
6.    Section 01740, Warranties and Bonds:
  - a.    Warranty Documentation.

**1.02      RELEASES FROM AGREEMENTS**

- A.    The Contractor shall furnish the Owner written releases from property owners or public agencies where side agreements or special easements have been made, or where Contractor's operations have not been kept within the Owner's construction easement.

B. If the Contractor is unable to secure written releases:

1. The Contractor shall inform the Owner of the reasons.
2. The Owner or its representatives will examine the site, and the Owner will direct the Contractor to complete Work that may be necessary to satisfy terms of the side agreement or special easement.
3. If the Contractor refuses to perform this Work, the Owner reserves the right to have it done by separate contract and deduct the cost of same from the Contract Price, or require the Contractor to furnish a satisfactory Bond in a sum to cover legal claims for damages.
4. When the Owner is satisfied that Work has been completed in accordance with the Contract Documents and terms of side agreement or special easement, the Owner reserves the right to waive the requirement for written release if:
  - a. The Contractor's failure to obtain such statement is due to the grantor's refusal to sign, and this refusal is not based upon any legitimate claims that the Contractor has failed to fulfill the terms of the side agreement or special easement, or
  - b. The Contractor is unable to contact or has had undue hardship in contacting the grantor.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 02110  
CLEARING AND GRUBBING**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. Clearing and grubbing includes, but is not limited to, removing from the Project site, trees, stumps, roots, brush, structures, abandoned utilities, trash, debris, and all other materials found on or near the surface of the ground in the construction area and understood by generally accepted engineering practice not to be suitable for construction of the type contemplated. Precautionary measures that prevent damage to existing features to remain are part of the Work.
- B. Clearing and grubbing is to take place only upon the Owner's easement, whether permanent or temporary, unless the Contractor is directed to do so in writing by the Owner.
- C. Clearing and grubbing operations shall be coordinated with temporary and permanent erosion and sedimentation control procedures.

**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 construction operations by the Contractor.
- B. Open burning will not be allowed.

**1.03      JOB CONDITIONS**

- A. Location of the Work: The area to be cleared and grubbed is shown schematically on the Drawings or specified below. It includes all areas designated for construction.
- B. The Contractor shall comply with conditions of special agreements and easements negotiated by the Owner with private property owners and public agencies.

**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 and root rakes.

**PART 3      EXECUTION**

3.01      SCHEDULING OF CLEARING

- A.    The Contractor shall clear at each construction site only that length of the right-of-way, permanent, or construction easement which would be the equivalent of 1 month's pipe laying.
- B.    The Engineer may permit clearing for additional lengths of the pipeline provided that temporary erosion and sedimentation controls are in place and a satisfactory stand of temporary grass is established. Should a satisfactory stand of grass not be possible, no additional clearing shall be permitted beyond that specified above.
- C.    A satisfactory stand of grass shall have no bare spots larger than 1 square yard. Bare spots shall be scattered and the bare area shall not comprise more than 1 percent of any given area.

3.02      CLEARING AND GRUBBING

- A.    The Contractor shall clear and grub the permanent easement or 5 feet on each side of the pipeline, whichever is greater, before excavating. The Contractor shall remove all trees, growth, debris, stumps, and other objectionable matter. The Contractor shall clear the construction easement or road right-of-way only if necessary.
- B.    Materials to be cleared, grubbed, and removed from the Project site include, but are not limited to, all trees, stumps, roots, brush, trash, organic matter, paving, miscellaneous structures, houses, debris, and abandoned utilities.
- 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 2 feet below the limits of excavation for structures, trenches and roadways or 2 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, and subdivision and other signs within the right-of-way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features. Existing structures shall be relocated such that they are off the easement.
- F. Surface rocks and boulders shall be grubbed from the soil and removed from the site if not suitable as rip-rap.
- G. Where tree limbs interfere with utility wires, or where the trees to be felled are near 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 Engineer's opinion, is significantly damaged shall be replaced with new fence material.
- J. The Contractor shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, and the like within the limits of the construction area but not directly within excavation and/or fill limits. The Contractor shall be held liable for any damage the Contractor's operations have inflicted on such property.
- K. The Contractor shall be responsible for all damages to existing improvements resulting from the Contractor's operations.

### 3.03 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 be left on the Project site, shoved onto abutting private properties, or buried on the Project site.

### END OF SECTION

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**SECTION 02125**  
**EROSION, SEDIMENTATION AND POLLUTION CONTROL**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The Work specified in this section consists of providing, maintaining, and removing temporary erosion and sedimentation controls.
- B. If required for Project, the Contractor shall comply with all requirements of the erosion and sediment control permit or land disturbance activity permit (whichever is applicable) as well as the requirements of the Georgia Erosion & Sediment Control Act of 1975 and latest amended (the Act), Erosion & Sediment Control Manual of Practice (edition in effect on January 1<sup>st</sup> of the year in which this Agreement is executed), section 402 of the Federal Clean Water Act of 1987, and applicable Local Issuing Authority ordinances, rules, regulations, and laws.
- C. The Contractor shall provide a Notice of Intent (NOI) to the Georgia Environmental Protection Division (GAEPD) in accordance with the provision of the National Pollutant Discharge Elimination System (NPDES) General Permit No. GAR100002 (Infrastructure Construction Project) (NPDES Permit). A copy of the general permit shall be provided to the Owner at the preconstruction meeting. The Contractor shall comply with the requirements of this permit and the requirements as stated on the Drawings and herein throughout the entire Project. The Contractor will monitor for compliance in accordance with this permit.
- D. The Contractor shall establish an individual as the individual in charge of erosion and sedimentation control on a 24-hour basis. His name and phone number shall be provided to the Owner at the preconstruction meeting. The Contractor shall ensure this individual is trained in erosion and sediment control, Level 1A, to oversee Contractor responsibilities and has a valid certification number issued by the Georgia Soil and Water Conservation Commission. This certificate number shall be provided to the Owner at the preconstruction meeting.
- E. Temporary erosion controls include, but are not limited to, grassing, mulching, watering, and reseeding onsite surfaces and spoil and borrow area surfaces, and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the Act of 1975, Section 402 of the Federal Clean Water Act, and applicable codes, ordinances, rules, regulations, and laws of local and municipal authorities having jurisdiction.

- F. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, filter stone, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Federal Clean Water Act of 1987, as amended.
- G. Land disturbance activity shall not commence until the Land Disturbance Permit has been issued, which authorizes land disturbance activities.
- H. Basic Principles:
  - 1. Conduct the earthwork and excavation activities in such a manner to fit the topography, soil type, and condition.
  - 2. Minimize the disturbed area and the duration of exposure to erosion elements.
  - 3. Stabilize disturbed areas immediately. Do not allow any undisturbed area to remain unstabilized for 14 days or more.
  - 4. Safely convey runoff from the site to an outlet such that erosion will not be increased offsite.
  - 5. Retain sediment onsite that was generated onsite.
  - 6. No construction activities shall occur within a dedicated stream buffer, unless otherwise approved by the Unified Government of Athens-Clarke County and the GAEPD.
  - 7. All erosion and sedimentation control measures shall be designed for a minimum 25-year storm event.
  - 8. Construct erosion and sedimentation control devices prior to or concurrent with land disturbing activities.
  - 9. Minimize encroachment upon watercourses.
- I. Temporary Erosion and Sedimentation Control: In general, temporary erosion and sedimentation control procedures shall be directed toward:
  - 1. Preventing soil erosion at the source.
  - 2. Preventing silt and sediment from entering any waterway if soil erosion cannot be prevented.
  - 3. Preventing silt and sediment from migrating downstream in the event it cannot be prevented from entering the waterway.
- J. Permanent Erosion Control: Permanent erosion control measures shall be implemented to prevent sedimentation of the waterways and to prevent erosion of the Project site.

## 1.02 QUALITY ASSURANCE

- A. General: The Contractor shall perform all work under this section in accordance with all pertinent rules and regulations including, but not necessarily limited to, those stated herein and these Specifications.

- B. Conflicts: Where provisions of pertinent rules and regulations conflict with these Specifications, the more stringent provisions shall govern.
- C. The Contractor shall provide to the Unified Government of Athens-Clarke County, prior to initiating land disturbance activities, the name and 24-hour phone number of the individual responsible for inspection, installation, and maintenance of erosion and sedimentation control devices on a 24-hour every-day basis.

#### 1.03 QUALITY STANDARDS

- A. Part III, Special Condition, Management Practices, Permit Violations and Other Limitations of the General Permit, allows for the discharge of waterline flushing provided flows are not contaminated with process materials or pollutants. Chlorine shall be removed prior to discharging water from waterline.
- B. Fluids used for horizontal directional drilling shall not be discharged without treatment to reduce the turbidity to less 25 nephelometric turbidity units (NTU).
- C. Erosion control features installed shall be effectively maintained to control erosion within the limits of the Project and to control the discharge of stormwater from disturbed areas such that turbidity of the stream shall not exceed 25 NTU higher than the turbidity level of the stream immediately up stream of construction. Turbidity testing will be done by the Engineer. Any erosion control devices damaged by the Contractor or any subcontractors either by neglect, by construction methods, or for any other reasons including acts of nature, shall be immediately repaired by the Contractor at no additional cost to the Owner.

#### 1.04 DUST CONTROL

- A. Dust from any of the Contractor's activities shall be controlled to keep dust pollution to a minimum. The Contractor shall comply with GAEPD Air Pollution Standards for Nuisance Dust Control. The Contractor may be directed to wet areas where dust may be or is a problem to achieve the desired results.

### **PART 2 PRODUCTS**

#### 2.01 TEMPORARY EROSION AND SEDIMENTATION CONTROL MATERIALS

- A. Silt Fence: Silt fence shall meet the requirements of Section 171-Temporary Silt fence shall conform to the requirements of the latest version of the Department of Transportation (GDOT), State of Georgia, Standard Specification.
- B. Hay bales shall be clean, seed-free cereal hay type.

- C. Stone Check Dams: Stone shall conform to the requirements of Section 805.01 of the GDOT Standard Specification, latest edition, for Stone Dumped Rip Rap, except that the stone shall be 8 inches or less at the greatest dimension.

## 2.02 RIP RAP

- A. The Contractor shall 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. Rip rap shall have less than 66 percent wear when tested in accordance with American Association of State Highway and Transportation Officials (AASHTO) T-96. Unless shown or specified otherwise, stone rip rap shall be Type 1 rip rap.
- B. Type 1 Rip Rap: The largest pieces shall have a maximum volume of 2 cubic feet. At least 35 percent of the mass shall consist pieces that weigh 125 pounds or more. The remainder shall be well graded down to the finest sizes. Rock fines shall comprise a maximum of 10 percent of the total mass. Rock fines are defined as material passing a No. 4 sieve. Rip rap size shall conform to GDOT Section 805.01 Stone Dumped Rip Rap, Type 1.
- C. Type 3 Rip Rap: The largest pieces shall have a maximum approximate volume of 1 cubic foot. At least 35 percent of the mass shall consist of pieces which weigh 15 pounds or more. The remainder shall be well graded down to the finest sizes. Rock fines shall comprise a maximum of 10 percent of the total mass. Rock fines are defined as material passing a No. 4 sieve. Rip rap size shall conform to GDOT Section 805.01 Stone Dumped Rip Rap, Type 3.
- D. 200 Pound Rip Rap: Minimum weight of individual stones shall be 200 pounds.

## 2.03 STONE

- A. Crushed stone shall meet the requirements of the GDOT Specification 800.01, Group I (limestone, marble or dolomite) or Group II (quartzite, granite or gneiss). Stone size shall be between No. 57 and No. 4, inclusive.

## 2.04 FILTER FABRIC (GEOTEXTILE FABRIC)

- A. Filter fabric for use under rip rap shall be a monofilament, polypropylene woven fabric or a non-woven fabric meeting the Specifications as established by Task Force 25 for the Federal Highway Administration. The filter fabric shall have an equivalent opening size (EOS) of 70.

2.05 CONCRETE

- A. Concrete shall have a compressive strength of not less than 3,000 pounds per square inch (psi), with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5 inches. Ready-mixed concrete shall be mixed and transported in accordance with ASTM International (ASTM) C94. Reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

2.06 SLOPE STABILIZATION

- A. Matting and blankets shall meet the requirements of Section 713 and Section 716 of the GDOT Standard Specifications, latest edition. The Contractor shall use products listed on the GDOT QPL-49 for matting and GDOT QPL-62 for blankets.

2.07 GRASSING

- A. Grassing materials shall meet the requirements of the following sections of the GDOT Standard Specifications, latest edition:

Material	Section
Topsoil	893.01
Seed and Sod	890
Fertilizer	891.01
Agricultural Lime	882.02
Mulch	893.02
Inoculants	893.04

- B. Seed species shall be provided as shown on the approved Erosion Control Plan.
- C. Mulch Binder: Mulch on slopes exceeding 3 (horizontal) to 1 (vertical) shall be held in place by the use of a mulch binder, as approved by the Unified Government of Athens-Clarke County. The mulch binder shall be non-toxic to plant and animal life and shall be approved by the Unified Government of Athens-Clarke County.
- D. Water: Water shall be free of excess and harmful chemicals, organisms, and substances, which may be harmful to plant growth or obnoxious to traffic. Salt or brackish water shall not be used. Water shall be furnished by the Contractor.

### **PART 3      EXECUTION**

#### **3.01      GENERAL**

- A.    Standards: The Contractor shall provide all materials and promptly take all actions necessary to achieve effective erosion and sedimentation control in accordance with the Georgia Erosion and Sedimentation 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.
- B.    Implementation: The Contractor shall have the responsibility to actively take all steps necessary to control soil erosion and sedimentation.
- C.    Erosion and sedimentation controls shall be constructed in accordance with the Manual for Erosion and Sedimentation Control in Georgia, latest edition, these Specifications, and Standard Detail Drawings.

#### **3.02      TEMPORARY EROSION AND SEDIMENTATION CONTROL**

- A.    Temporary erosion and sedimentation control procedures should be initially directed toward preventing silt and sediment from entering waterways. The preferred method is to provide an undisturbed natural buffer, extending a minimal 25 feet from the top of the bank, to filter the runoff. Should this buffer prove infeasible due to construction activities being too close to the waterway, or if the amount of sediment overwhelms the buffer, the Contractor shall place silt fences to filter the runoff and, if necessary, place permanent rip rap to stabilize the creek banks.
- B.    Silt dams, silt fences, traps, barriers, check dams, appurtenances, and other temporary measures and devices shall be installed as indicated on the approved plans, and working Drawings, shall be maintained until no longer needed, and shall then be removed. Deteriorated hay bales and dislodged filter stone shall be replaced with new materials.
- C.    Where permanent grassing is not appropriate, and where the Contractor's temporary erosion and sedimentation control practices are inadequate, the Engineer may direct the Contractor to provide temporary vegetative cover with fast-growing seedings.
- D.    All erosion and sedimentation control devices, including check dams, shall be inspected by the Contractor at least weekly and after each rainfall occurrence, and cleaned out and repaired by the Contractor as necessary.
- E.    Temporary erosion and sedimentation control devices shall be installed and maintained from the initial land disturbance activity until the satisfactory completion and establishment of permanent erosion control measures. At that time, temporary devices shall be removed.



3.03 PERMANENT EROSION CONTROL

- A. Permanent erosion control shall include:
1. Restoring the work site to its original contours, unless shown otherwise on the Drawings or directed by the Engineer.
  2. Permanent vegetative cover shall be performed in accordance with paragraph 3.04 of this section.
  3. Permanent stabilization of steep slopes and creeks shall be performed in accordance with paragraph 3.05 of this section.
- B. Permanent erosion control measures shall be implemented as soon as practicable after the completion of pipe installation or land disturbance for each segment of the Project or up to 1,000 linear feet of pipe trench, whichever is smaller. In no event shall implementation be postponed when no further construction activities will impact that portion or segment of the Project. Partial payment requests may be withheld for those portions of the Project not complying with this requirement.

3.04 GRASSING

- A. General:
1. Grassing shall be performed as shown on the approved Erosion Control Plan, and in accordance with the GDOT Standard Specification Section 700.
  2. All references to grassing, unless noted otherwise, shall relate to establishing permanent vegetative cover as specified herein for seeding, fertilizing, mulching, and the like.
  3. When final grade has been established, all bare soil, unless otherwise required by the Contract Documents, shall be seeded, fertilized, and mulched in an effort to restore to a protected condition. Critical areas shall be sodded as approved or directed by the Engineer.
  4. Specified permanent grassing shall be performed at the first appropriate season following establishment of final grading in each section of the site.
- B. The Contractor shall replant grass removed or damaged in residential areas using the same variety of grass and at the first appropriate season. Where sod is removed or damaged, replant such areas using sod of the same species of grass at the first appropriate season. Outside of residential or landscaped areas, grass the entire area disturbed by the work on completion of work in any area. In all areas, promptly establish successful stands of grass.

- C. Grassing activities shall comply with the Manual for Erosion and Sediment Control in Georgia, specifically for the selection of species, with the exception that kudzu shall not be permitted, planting dates and application rates for seeding, fertilizer, and mulching. Where permanent vegetative cover (grassing) cannot be immediately established (due to season or other circumstances) the Contractor shall provide temporary vegetative cover. The Contractor must return to the site (at the appropriate season) to install permanent vegetation in areas that have received temporary vegetative cover.
- D. Grassed areas will be considered acceptable when a viable stand of grass covers at least 98 percent of the total area with no bare spots exceeding 1 square foot, and the ground surface is fully stabilized against erosion.

### 3.05 RIP RAP

- A. Unless shown otherwise on the Drawings, rip rap shall be placed where ordered by the Engineer, at all points where banks of streams or drainage ditches are disturbed by excavation, or at all points where natural vegetation is removed from banks of the streams or drainage ditches. The Contractor shall carefully compact backfill and place rip rap to prevent subsequent settlement and erosion. This requirement applies equally to construction alongside a stream or drainage ditch, as well as stream or drainage ditch crossings.
- B. When trenching across a creek, the Contractor shall place rip rap a distance of 10 feet upstream and 10 feet downstream from the top of the trench excavation. Place rip rap across creek bottom, across creek banks, and extend rip rap placement 5 feet beyond the top of each creek bank.
- C. Preparation of Foundations: The ground surface upon which the rip rap is to be placed shall be brought in reasonably close conformity to the correct lines and grades before placement is commenced. Where filling of depressions is required, the new material shall be compacted with hand or mechanical tampers. Unless at creek banks or otherwise shown or specified, rip rap shall begin in a toe ditch constructed in original ground around the toe of the fill or the cut slope. The toe ditch shall be 2 feet deep in original ground, and the side next to the fill or cut shall have that same slope. After the rip rap is placed, the toe ditch shall be backfilled and the excess dirt spread neatly within the construction easement.

- D. Placement of Filter Fabric: The surface to receive fabric shall be prepared to a relatively smooth condition free from obstructions, depressions, and debris. The fabric shall be placed with the long dimension running up the slope and shall be placed to provide a minimum number of overlaps. The strips shall be placed to provide a minimum width of 1 foot of overlap for each joint. The filter fabric shall be anchored in place with securing pins of the type recommended by the fabric manufacturer. Pins shall be placed on or within 3 inches of the centerline of the overlap. The fabric shall be placed so that the upstream strip overlaps the downstream strip. The fabric shall be placed loosely so as to give and therefore avoid stretching and tearing during placement of the stones. The stones shall be dropped no more than 3 feet during construction. The fabric shall be protected at all times during construction from clogging due to clay, silts, chemicals, or other contaminants. Any contaminated fabric or any fabric damaged during its installation or during placement of rip rap shall be removed and replaced with uncontaminated and undamaged fabric at no expense to the Owner.
- E. Placement of Rip Rap:
1. Rip rap shall be placed on a 6-inch layer of soil, crushed stone, or sand overlaying the filter fabric. This 6-inch layer shall be placed to maximize the contact between the soil beneath the filter fabric and the filter fabric. Rip rap shall be placed with its top elevation conforming with the finished grade or the natural slope of the stream bank and stream bottom.
  2. Stone rip rap shall be dumped into place to form a uniform surface and to the thickness specified on the Drawings. The thickness tolerance for the course shall be minus 6 inches and plus 12 inches. If the Drawings or the Bid do not specify a thickness, the course shall be placed to a thickness of not less than 18 inches.

### 3.06 EROSION CONTROL MATTING

- A. The erosion control matting shall be placed after areas have been seeded. Matting shall be installed in accordance with the manufacturer's recommendations. Matting shall be held in place by 6-inch-long wire staples or wooden pegs. Staples or pegs shall be provided at all overlaps and ends, as well as throughout the mat, based on slope length and grade and soil type. On slopes 2.5H:1V or steeper, the top of the matting shall be placed in an anchor trench a minimum of 6 inches deep.

### END OF SECTION

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**SECTION 02225**  
**TRENCH EXCAVATION AND BACKFILL**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The Work under this section consists of furnishing all labor, equipment, and materials and performing all operations in connection with the trench excavation and backfill required to install the pipelines shown on the Drawings and as specified.
- B. Excavation shall include the removal of any trees, stumps, brush, debris, or other obstacles remaining after the clearing and grubbing operations which may obstruct the work, and the excavation and removal of all earth, rock or other materials to the extent necessary to install the pipe and appurtenances in conformance with the lines and grades shown on the Drawings and as specified.
- C. Backfill shall include the refilling and compaction of the fill in the trenches and excavations up to the surrounding ground surface or road grade at crossing.
- D. The trench is divided into five specific areas:
  - 1. Foundation: The area beneath the bedding, sometimes also referred to as trench stabilization;
  - 2. Bedding: The area above the trench bottom (or foundation) and below the bottom of the barrel of the pipe;
  - 3. Haunching: The area above the bottom of the barrel of the pipe up to a specified height above the bottom of the barrel of the pipe;
  - 4. Initial Backfill: The area above the haunching material and below a plane 12 inches above the top of the barrel of the pipe; and
  - 5. Final Backfill: The area above a plane 12 inches above the top of the barrel of the pipe.
- E. The choice of method, means, techniques, and equipment rests with the Contractor. The Contractor shall select the method and equipment for trench excavation and backfill depending upon the type of material to be excavated and backfilled, the depth of excavation, the amount of space available for operation of equipment, storage of excavated material, proximity of man-made improvements to be protected, available easement or right-of-way, and prevailing practice in the area.

1.02 QUALITY ASSURANCE

- A. Density: All references to “maximum dry density” shall mean the maximum dry density defined by ASTM International (ASTM) D698, except that for cohesionless, free draining soils “maximum dry density” shall mean the maximum index density as determined by ASTM D4253. Determination of the density of foundation, bedding, haunching, or backfill materials in place shall meet the requirements of ASTM D1556, ASTM D2922, or ASTM D2937.
- B. Sources and Evaluation Testing: Testing of materials to certify conformance with the Specifications shall be performed by an independent testing laboratory.

1.03 SAFETY

- A. The Contractor shall perform all trench excavation and backfilling activities in accordance with the Occupational Safety and Health Act of 1970 (Public Law 91-596), as amended. The Contractor shall pay particular attention to the Safety and Health Regulations, Part 1926, Subpart P, “Excavation, Trenching & Shoring” as described in Occupational Safety and Health Administration (OSHA) publication 2226.

**PART 2 PRODUCTS**

2.01 TRENCH FOUNDATION MATERIALS

- A. Crushed stone shall be used for trench foundation (trench stabilization) and shall meet the requirements of the Georgia Department of Transportation Specification 800.01, Group I (limestone, marble or dolomite) or Group II (quartzite, granite or gneiss). Stone size shall be between No. 57 and No. 4, inclusive.

2.02 BEDDING AND HAUNCHING MATERIALS

- A. Unless specified otherwise, bedding and haunching materials shall be earth material as specified below.
- B. Crushed stone used for bedding and haunching shall meet the requirements of the Georgia Department of Transportation Specification 800.01, Group I (limestone, marble or dolomite) or Group II (quartzite, granite or gneiss). Stone size shall be between No. 57 and No. 4, inclusive.

2.03 INITIAL BACKFILL

- A. Initial backfill material shall be earth materials or crushed stone as specified for bedding and haunching materials.

- B. Earth materials used for initial backfill shall be suitable materials selected from materials excavated from the trench. Suitable materials shall be clean and free of rock larger than 2 inches at its largest dimension, organics, cinders, stumps, limbs, frozen earth or mud, man-made wastes; and other unsuitable materials. Should the material excavated from the trench be saturated, the saturated material may be used as earth material, provided it is allowed to dry properly and is capable of meeting the specified compaction requirements. When necessary, initial backfill materials shall be moistened to facilitate compaction by tamping. If materials excavated from the trench are not suitable for use as initial backfill material, provide select material conforming to the requirements of this section.

2.04 FINAL BACKFILL

- A. Final backfill material shall be general excavated earth materials, shall not contain rock larger than 2 inches at its greatest diameter, cinders, stumps, limbs, man-made wastes, and other unsuitable materials. If materials excavated from the trench are not suitable for use as final backfill material, provide select material conforming to the requirements of this section.

2.05 SELECT BACKFILL

- A. Select backfill shall be materials which meet the requirements as specified for bedding, haunching, initial backfill, or final backfill materials, including compaction requirements.

2.06 CONCRETE

- A. Concrete for bedding, haunching, initial backfill, or encasement shall have a compressive strength of not less than 3,000 pounds per square inch (psi), with not less than 5.5 bags of cement per cubic yard and a slump between 3 and 5 inches. Ready-mixed concrete shall be mixed and transported in accordance with ASTM C94. Reinforcing steel shall conform to the requirements of ASTM A615, Grade 60.

2.07 FLOWABLE FILL

- A. Flowable fill, where required for trench backfill, shall meet the requirements of Georgia Department of Transportation Standard Specifications, Section 600 for Excavatable or Non-Excavatable type.

2.08 GRANULAR MATERIAL

- A. Granular material, where required for trench backfill, shall be sand, river sand, crushed stone or aggregate, pond screenings, crusher run, recycled concrete, or other angular material. Granular material shall meet gradation requirements for Size No. 57 or finer.

## **PART 3      EXECUTION**

### **3.01      TRENCH EXCAVATION**

- A.    Topsoil and grass shall be stripped a minimum of 6 inches over the trench excavation site and stockpiled separately for replacement over the finished grading areas.
- B.    Trenches shall be excavated to the lines and grades shown on the Drawings or specified with the centerlines of the trenches on the centerlines of the pipes and to the dimensions which provide the proper support and protection of the pipe and other structures and accessories.
- C.    Trench Width for Pipelines:
  - 1.    The sides of all trenches shall be vertical, as much as possible, to a minimum of 1 foot above the top of the pipe. Unless otherwise indicated on the Drawings, the maximum trench width shall be equal to the sum of the outside diameter of the pipe plus 2 feet. The minimum trench width shall be that which allows the proper consolidation of the haunching and initial backfill material.
  - 2.    Excavate the top portion of the trench to any width within the construction easement or right-of-way which will not cause unnecessary damage to adjoining structures, roadways, pavement, utilities, trees, or private property. Where necessary to accomplish this, provide sheeting and shoring.
  - 3.    Where rock is encountered in trenches, excavate to remove boulders and stones to provide a minimum of 6 inches clearance between the rock and any part of the pipe or manhole. The maximum allowable width of rock excavation for payment shall be based on a trench width equal to the outside diameter of the pipe barrel plus 18 inches, but the total allowable rock excavation width for payment will not be less than 36 inches.
  - 4.    Wherever the prescribed maximum trench width is exceeded, the Contractor shall use the next higher class or type of bedding and haunching as shown on the Drawings for the full trench width as actually cut. The excessive trench width may be due to unstable trench walls, inadequate or improperly placed bracing and sheeting which caused sloughing, accidental over-excavation, intentional over-excavation necessitated by the size of the Contractor's tamping and compaction equipment, intentional over-excavation due to the size of the Contractor's excavation equipment, or other reasons beyond the control of the Engineer or the Owner.



D. Depth:

1. The trenches shall be excavated to the required depth or elevation which allow for the placement of the pipe and bedding to the dimensions shown on the Drawings.
2. Where rock is encountered in trenches for pipelines, excavate to the minimum depth which will provide clearance below the pipe barrel of 8 inches for pipe 21 inches in diameter and smaller and 12 inches for larger pipe and appurtenances. Remove boulders and stones to provide a minimum of 6 inches clearance between the rock and any part of the pipe or appurtenance.

E. Excavated Materials:

1. Excavated materials shall be placed adjacent to the work to be used for backfilling as required. Top soil shall be carefully separated and lastly placed in its original location.
2. Excavated material shall be placed sufficiently back from the edge of the excavation to prevent caving of the trench wall, to permit safe access along the trench, and not cause any drainage problems. Excavated material shall be placed so as not to damage existing landscape features or man-made improvements.

3.02 SHEETING, BRACING AND SHORING

A. Sheeting, bracing, and shoring shall be performed in the following instances:

1. Where sloping of the trench walls does not adequately protect persons within the trench from slides or cave-ins.
2. In caving ground.
3. In wet, saturated, flowing or otherwise unstable materials. The sides of all trenches and excavations shall be adequately sheeted, braced, and shored.
4. Where necessary to prevent damage to adjoining buildings, structures, roadways, pavement, utilities, trees, or private properties which are required to remain.
5. Where necessary to maintain the top of the trench within the available construction easement or right-of-way.

B. In all cases, excavation protection shall strictly conform to the requirements of the Occupational Safety and Health Act of 1970, as amended.

C. Timber: Timber for shoring, sheeting, or bracing shall be sound, free of large or loose knots, and in good, serviceable condition. Size and spacing shall be in accordance with OSHA regulations.

- D. Steel Sheet piling and Sheet Piling: Steel sheet piling shall be the continuous interlock type. The weight, depth, and section modulus of the sheet piling shall be sufficient to restrain the loads of earth pressure and surcharge from existing foundations and live loads. Procedure for installation and bracing shall be so scheduled and coordinated with the removal of the earth that the ground under existing structures shall be protected against lateral movement at all times. The Contractor shall provide closure and sealing between sheet piling and existing facilities.
- E. Trench Shield: A trench shield or box may be used to support the trench walls. The use of a trench shield does not necessarily preclude the additional use of bracing and sheeting. When trench shields are used, care must be taken to avoid disturbing the alignment and grade of the pipe or disrupting the haunching of the pipe as the shield is moved. When the bottom of the trench shield extends below the top of the pipe, the trench shield shall be raised in 6-inch increments with specified backfilling occurring simultaneously. At no time shall the trench shield be “dragged” with the bottom of the shield extending below the top of the pipe.
- F. Remove bracing and sheeting in units when backfill reaches the point necessary to protect the pipe and adjacent property. Leave sheeting in place when in the opinion of the Engineer it cannot be safely removed or is within 3 feet of an existing structure, utility, or pipeline. Cut off any sheeting left in place at least 2 feet below the surface.
- G. Sheet piling within 3 feet of an existing structure or pipeline shall remain in place, unless otherwise directed by the Engineer.

### 3.03 TRENCH ROCK EXCAVATION

- A. Definition of Trench Rock: Any material which cannot be excavated with conventional excavating equipment, and is removed by drilling and blasting, and occupies an original volume of at least 1 cubic yard.
- B. Blasting: Exhaust other practical means of excavating prior to using blasting as a means of excavation. Provide licensed, experienced workmen to perform blasting. Conduct blasting operations in accordance with all existing ordinances and regulations. Protect all buildings and structures from the effects of the blast. Repair any resulting damage. If the Contractor repeatedly uses excessive blasting charges or blasts in an unsafe or improper manner, the Engineer may direct the Contractor to employ an independent blasting consultant to supervise the preparation for each blast and approve the quantity of each charge.
- C. Removal of Rock: Dispose of rock offsite that is surplus or not suitable for use as rip rap or backfill.

- D. The Contractor shall notify the Engineer prior to any blasting. Additionally, the Contractor shall notify the Engineer and local fire department before any charge is set. The Contractor is responsible for obtaining all required permits (including permit from local fire department) and paying all fees associated with each blast.
- E. Following review by the Engineer regarding the proximity of permanent buildings and structures to the blasting site, the Engineer may direct the Contractor to employ an independent, qualified specialty sub-contractor, approved by the Engineer, to monitor the blasting by use of a seismograph, identify the areas where light charges must be used, conduct pre-blast and post-blast inspections of structures, including photographs or videos, and maintain a detailed written log.

### 3.04 DEWATERING EXCAVATIONS

- A. Dewater excavation continuously to maintain a water level 2 feet below the bottom of the trench.
- B. Control drainage in the vicinity of excavation so the ground surface is properly pitched to prevent water running into the excavation.
- C. There shall be sufficient pumping equipment, in good working order, available at all times, to remove any water that accumulates in excavations. Where the utility crosses natural drainage channels, the work shall be conducted in such a manner that unnecessary damage or delays in the prosecution of the work will be prevented. Provision shall be made for the satisfactory disposal of surface water to prevent damage to public or private property.
- D. In all cases, accumulated water in the trench shall be removed before placing bedding or haunching, laying pipe, placing concrete, or backfilling.
- E. Where dewatering is performed by pumping the water from a sump, crushed stone shall be used as the medium for conducting the water to the sump. Sump depth shall be at least 2 feet below the bottom of the trench. Pumping equipment shall be of sufficient quantity and/or capacity to maintain the water level in the sump 2 feet below the bottom of the trench. Pumps shall be a type such that intermittent flows can be discharged. A standby pump shall be required in the event the operating pump or pumps clog or otherwise stop operation.
- F. Dewater by use of a well point system when pumping from sumps does not lower the water level 2 feet below the trench bottom. Where soil conditions dictate, the Contractor shall construct well points cased in sand wicks. The casing, 6 to 10 inches in diameter, shall be jetted into the ground, followed by the installation of the well point, filling casing with sand and withdrawing the casing.

3.05 TRENCH FOUNDATION AND STABILIZATION

- A. The bottom of the trench shall provide a foundation to support the pipe and its specified bedding. The trench bottom shall be graded to support the pipe and bedding uniformly throughout its length and width.
- B. If, after dewatering as specified above, the trench bottom is spongy, or if the trench bottom does not provide firm, stable footing and the material at the bottom of the trench will still not adequately support the pipe, the trench will be determined to be unsuitable and the Engineer shall then order trench stabilization by directing the Contractor to over-excavate the trench bottom and fill with crushed stone.
- C. Where the replacement of unsuitable material with crushed stone does not provide an adequate trench foundation, the trench bottom shall be excavated to a depth of at least 2 feet below the specified trench bottom. Place filter fabric in the bottom of the trench and support the fabric along the trench walls until the trench stabilization, bedding, haunching, and pipe have been placed at the proper grade. The ends of the filter fabric shall be overlapped above the pipe.
- D. Where trench stabilization is provided, the trench stabilization material shall be compacted to at least 90 percent of the maximum dry density, unless shown or specified otherwise.

3.06 BEDDING AND HAUNCHING

- A. Prior to placement of bedding material, the trench bottom shall be free of any water, loose rocks, boulders, or large dirt clods.
- B. Bedding material shall be placed to provide uniform support along the bottom of the pipe and to place and maintain the pipe at the proper elevation. The initial layer of bedding placed to receive the pipe shall be brought to the grade and dimensions indicated on the Drawings. All bedding shall extend the full width of the trench bottom. The pipe shall be placed and brought to grade by tamping the bedding material or by removal of the excess amount of the bedding material under the pipe. Adjustment to grade line shall be made by scraping away or filling with bedding material. Wedging or blocking up of pipe shall not be permitted. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade shall not be permitted. Each pipe section shall have a uniform bearing on the bedding for the length of the pipe, except immediately at the joint.
- C. At each joint, excavate bell holes of ample depth and width to permit the joint to be assembled properly and to relieve the pipe bell of any load.

- D. After the pipe section is properly placed, add the haunching material to the specified depth. The haunching material shall be shovel sliced, tamped, vigorously chinked, or otherwise consolidated to provide uniform support for the pipe barrel and to fill completely the voids under the pipe, including the bell hole. Prior to placement of the haunching material, the bedding shall be clean and free of any water, loose rocks, boulders, or dirt clods.
- E. Water Mains:
  - 1. Unless otherwise shown on the Drawings or specified, the Contractor shall use earth materials for bedding and haunching. Type 2, 3, 4, and 5 bedding shall be as detailed on the Drawings.
  - 2. Unless specified or shown otherwise, bedding shall meet the requirements for Type 1 pipe bedding. Unless specified or shown otherwise for restrained joint pipe and fittings, bedding shall meet the requirements for Type 4 pipe bedding.
  - 3. Type 4 or Type 5 pipe bedding called for on the Drawings, specified, or ordered by the Engineer shall meet requirements for Type 4 or Type 5 pipe bedding, using crushed stone bedding and haunching material.
- F. Appurtenances: The Contractor shall excavate to a minimum of 12 inches below the planned elevation of the base of the manhole, vault, or other type of appurtenance. Place and compact crushed stone bedding material to the required grade before constructing the appurtenance.
- G. Excessive Width and Depth:
  - 1. Water Mains: If the trench is excavated to excess width, provide the next higher type or class of pipe bedding, but a minimum of Type 4, as detailed on the Drawings.
  - 2. If the trench is excavated to excessive depth, provide crushed stone to place the bedding at the proper elevation or grade.
- H. Compaction: Bedding and haunching materials under pipe, manholes, and accessories shall be compacted to a minimum of 90 percent of the maximum dry density, unless shown or specified otherwise.

### 3.07 INITIAL BACKFILL

- A. Initial backfill shall be placed to anchor the pipe, protect the pipe from damage by subsequent backfill, and ensure the uniform distribution of the loads over the top of the pipe.
- B. The Contractor shall place initial backfill material carefully around the pipe in uniform layers to a depth of at least 12 inches above the pipe barrel. Layer depths shall be a maximum of 6 inches for pipe 18 inches in diameter and smaller and a maximum of 12 inches for pipe larger than 18 inches in diameter.

- C. Backfill on both sides of the pipe simultaneously to prevent side pressures.
- D. Compact each layer thoroughly with suitable hand tools or tamping equipment.
- E. Initial backfill shall be compacted to a minimum 95 percent of the maximum dry density, unless shown or specified otherwise.
- F. If materials excavated from the trench are not suitable for use as backfill materials, provide select backfill material conforming to the requirements of this Section for initial backfill.

### 3.08 CONCRETE ENCASEMENT FOR PIPELINES

- A. Where concrete encasement is shown on the Drawings for pipelines, the Contractor shall excavate the trench to provide a minimum of 12 inches clearance from the barrel of the pipe. Lay the pipe to line and grade on solid concrete blocks or solid bricks. In lieu of bedding, haunching, and initial backfill, place concrete to the full width of the trench and to a height of not less than 12 inches above the pipe bell. Do not backfill the trench for a period of at least 24 hours after concrete is placed.

### 3.09 FINAL BACKFILL

- A. Backfill carefully to restore the ground surface to its original condition.
- B. The top 6 inches shall be topsoil obtained as specified in paragraph 3.01A of this section.
- C. Excavated material which is unsuitable for backfilling, and excess material, shall be disposed of in a manner approved by the Engineer. Surplus soil may be neatly distributed and spread over the site, if approved by the Engineer, except that surplus soil shall not be distributed and spread over the site in areas under U.S. Army Corps of Engineers (USACE) jurisdiction. If such spreading is allowed, the site shall be left in a clean and sightly condition and shall not affect pre-construction drainage patterns. Surplus rock from the trenching operations shall be removed from the site.
- D. If materials excavated from the trench are not suitable for use as backfill materials, provide select backfill material conforming to the requirements of this section.
- E. After initial backfill material has been placed and compacted, the Contractor shall backfill with final backfill material. Place backfill material in uniform layers, compacting each layer thoroughly as follows:
  - 1. In 6-inch layers, if using light power tamping equipment, such as a “jumping jack”

2. In 12-inch layers, if using heavy tamping equipment, such as hammer with tamping feet
  3. In 24-inch layers, if using a hydra-hammer
- F. Settlement: If the trench settles, re-fill, compact and grade the surface to conform to the adjacent surfaces.
- G. Final backfill shall be compacted to a minimum 95 percent of the maximum dry density, unless specified otherwise.

3.10 ADDITIONAL MATERIAL

- A. Where final grades above the pre-construction grades are required to maintain minimum cover, additional fill material will be as shown on the Drawings. Use excess material excavated from the trench, if the material is suitable. If excess excavated materials are not suitable, or if the quantity available is not sufficient, provide additional suitable fill material.

3.11 BACKFILL WITHIN RIGHTS-OF-WAY

- A. Compact backfill underlying pavement and sidewalks, and backfill under dirt and gravel roads to 100 percent of maximum dry density, within plus or minus 3 percent of optimum moisture content.
- B. Backfill within the Georgia Department of Transportation rights-of-way shall meet the requirements stipulated in the "Utility Accommodation Policy and Standards," published by the Georgia Department of Transportation.

3.12 FLOWABLE FILL

- A. Where flowable fill is required, The Contractor shall excavate the trench to provide a minimum of 4 inches clearance on both sides of the pipe barrel. Lay the pipe to line and grade on solid concrete blocks or bricks. In lieu of bedding, haunching, and initial backfill, place flowable fill to the full width and depth of the trench.
- B. Flowable fill shall be protected from freezing for a period of 36 hours after placement. Minimum temperature of flowable fill at point of delivery shall be 50 degrees F.
- C. The Contractor shall provide steel plates over flowable fill in road locations.

3.13 COMPACTED GRANULAR MATERIAL

- A. Where compacted granular material is required as initial and final backfill material, it shall be placed after bedding and haunching material specified elsewhere has been placed. Compacted granular material shall be compacted to a minimum 95 percent of the maximum dry density.

3.14 TESTING AND INSPECTION

- A. The soils testing laboratory is responsible for the following:
  - 1. Compaction tests in accordance with paragraph 1.02 of this section.
  - 2. Field density tests for each 2 feet of lift, every 200 feet within road rights-of-way, or more frequently if ordered by the Engineer. The Owner shall direct where density tests will be performed along the Project route.
  - 3. Inspecting and testing stripped site, subgrades and proposed fill materials.
- B. The Contractor's duties relative to testing include:
  - 1. Notifying laboratory of conditions requiring testing.
  - 2. Coordinating with laboratory for field testing.
  - 3. Paying costs for additional testing performed beyond the scope of that required, and for re-testing where initial tests reveal non-conformance with specified requirements.
  - 4. Providing excavation as necessary for laboratory personnel to conduct tests.
- C. Inspection:
  - 1. Earthwork operations, acceptability of excavated materials for bedding or backfill, and placing and compaction of bedding and backfill are subject to inspection by the Engineer.
  - 2. Foundations and shallow spread footing foundations are required to be inspected by a geotechnical engineer, who shall verify suitable bearing and construction.
- D. Comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction.

**END OF SECTION**



**SECTION 02575**  
**REMOVING AND REPLACING PAVEMENT**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. The work to be performed under this section shall consist of removing and replacing existing pavement, sidewalks, and curbs in paved areas where such have been removed for construction of utilities and appurtenances. The Work shall also include pavement resurfacing.
- B. Existing pavement, sidewalks, and curbs shall be replaced to the current Owner standards or to match existing, whichever is more stringent.

**1.02      SUBMITTALS**

- A. If required by the Owner or Engineer, the Contractor shall provide certificates stating that materials supplied comply with Specifications. Certificates shall be signed by the asphalt producer and the Contractor.

**1.03      CONDITIONS**

- A. Weather Limitations:
  - 1. Apply bituminous tack coat only when the ambient temperature in the shade has been at least 50 degrees F for 12 hours immediately prior to application.
  - 2. Do not conduct paving operations when the surface is wet or contains excess of moisture which would prevent uniform distribution and required penetration.
  - 3. Construct asphaltic courses only when atmospheric temperature in the shade is above 40 degrees F, when the underlying base is dry, and when weather is not rainy.
  - 4. Place the base course when air temperature is above 35 degrees F and rising.
- B. Grade Control: Establish and maintain the required lines and grades for each course during construction operations.

## **PART 2      PRODUCTS**

### **2.01      MATERIALS AND CONSTRUCTION**

- A.    Graded Aggregate Base Course: The graded aggregate base course shall be of uniform quality throughout and shall meet the requirements of Section 815.01 of the Georgia Department of Transportation Standard Specifications.
- B.    Black Base: The black base course shall be of uniform quality throughout and shall conform to the requirements of Section 828 of the Georgia Department of Transportation Standard Specifications.
- C.    Bituminous Tack Coat: The bituminous tack coat shall conform to the requirements of Section 400 of the Georgia Department of Transportation Standard Specifications.
- D.    Surface Course: The surface course for all asphaltic concrete pavement shall conform to the requirements of Section 400, 12.5 mm Superpave, of the Georgia Department of Transportation Standard Specifications unless other types are noted on the Drawings or required by the Owner.
- E.    Concrete: Provide concrete and reinforcing for concrete pavement or base courses in accordance with the requirements of the Georgia Department of Transportation Standard Specifications, Section 430. Concrete shall be of the strength classifications shown on the Drawings.
- F.    Special Surfaces: Where driveways or roadways constructed of specialty type surfaces (such as brick or stone) are disturbed or damaged, these driveways and roadways shall be restored using similar, if not original, materials. Where dictated by the nature of these surfaces, a specialty contractor shall be used to restore the surfaces to their previous or better condition. Special surfaces shall be removed and replaced to the limits to which they were disturbed.

### **2.02      TYPES OF PAVEMENTS**

- A.    General: All existing pavement removed, destroyed, or damaged by construction shall be replaced with the same type and thickness of pavement as that existing prior to construction, unless otherwise directed by the Engineer. Materials, equipment, and construction methods used for paving work shall conform to the Georgia Department of Transportation Specifications applicable to the particular type required for replacement, repair or new pavements.

- B. Aggregate Base: Aggregate base shall be constructed in accordance with the requirements of Section 310 of the Georgia Department of Transportation Standard Specifications. The maximum thickness to be laid in a single course shall be 6 inches compacted. If the design thickness of the base is more than 6 inches, the base shall be constructed in two or more courses of approximately equal thickness. After the material placed has been shaped to line, grade, and cross section, it shall be rolled until the course has been uniformly compacted to at least 100 percent of the maximum dry density when Group 2 aggregate is used, or to at least 98 percent of maximum dry density when Group 1 aggregate is used.
- C. Concrete Pavement: Concrete pavement or base courses shall be replaced with concrete. The surface finish of the replaced concrete pavement shall conform to that of the existing pavement. The surface of the replaced concrete base course shall be left rough. The slab depth shall be equivalent to the existing concrete pavement or base course, but in no case less than 6 inches thick. Transverse and longitudinal joints removed from concrete pavement shall be replaced at the same locations and to the same types and dimensions as those removed. Concrete pavements or concrete base courses shall be reinforced.
- D. Asphaltic Concrete Base, Bituminous Tack Coat, and Surface Course: Asphaltic concrete base, tack coat, and surface course construction shall conform to Georgia Department of Transportation Standard Specifications, Section 400. The pavement mixture shall not be spread until the designated surface has been previously cleaned and prepared, is intact, firm, properly cured, and dry, and the tack coat has been applied. Apply and compact the base in maximum layer thickness by asphalt spreader equipment of design and operation approved by the Engineer. After compaction, the black base shall be smooth and true to established profiles and sections. Apply and compact the surface course in a manner approved by the Engineer. Immediately correct any high, low, or defective areas by cutting out the course, replacing with fresh hot mix, and immediately compacting to conform and thoroughly bond to the surrounding area.
- E. Surface Treatment Pavement: Bituminous penetration surface treatment pavement shall be replaced with a minimum thickness of 1 inch conforming to Section 424, Georgia Department of Transportation Standard Specifications.
- F. Gravel Surfaces: Existing gravel road, drive, and parking area replacement shall meet the requirements of graded aggregate base course. This surfacing may be authorized by the Engineer as a temporary surface for paved streets until replacement of hard-surfaced pavement is authorized.

- G. Temporary Measures: During the time period between pavement removal and complete replacement of permanent pavement, maintain highways, streets, and roadways by the use of steel running plates anchored to prevent movement. The backfill above the pipe shall be compacted, as specified in Section 02225, Trench, Excavation and Backfill, of these Specifications, up to the existing pavement surface to provide support for the steel running plates. All pavement shall be replaced within 7 calendar days of its removal.

### **PART 3 EXECUTION**

#### **3.01 LOCATIONS FOR PAVEMENT REPLACEMENT**

- A. Type II Pavement Replacement (see Detail No. G-1) shall be used for asphalt pavement replacement.
- B. “Graded aggregate” pavement repair shall be used only to replace existing gravel or crushed stone surfaces. Thickness of replacement stone shall be a minimum of 4 inches, regardless of the thickness of existing stone.

#### **3.02 REMOVING PAVEMENT**

- A. General: Remove existing pavement as necessary for installing pipeline and appurtenances.
- B. Marking: Before removing any pavement, mark the pavement neatly paralleling pipelines and existing street lines. Space the marks the width of the trench.
- C. Breaking: Break asphalt pavement and concrete pavement along the marks by cutting through with a rotary saw.
- D. Machine Pulling: Do not pull pavement with machines until the pavement is completely broken and separated from pavement to remain.
- E. Damage to Adjacent Pavement: Do not disturb or damage the adjacent pavement. If the adjacent pavement is disturbed or damaged, remove and replace the damaged pavement.
- F. Sidewalk: Remove and replace any sidewalks disturbed by construction for their full width and to the nearest undisturbed joint.
- G. Curbs: Tunnel under or remove and replace any curb disturbed by construction to the nearest undisturbed joint.

3.03 REPLACING PAVEMENT

- A. Preparation of Subgrade: Upon completion of backfilling and compaction of the backfill, arrange to have the compaction tested by an independent testing laboratory approved by the Engineer. After compaction testing has been satisfactorily completed, replace all pavements, sidewalks, and curbs removed.
1. The existing street pavement or surface shall be removed along the lines of the work for the allowable width specified for the trench or structure. After the installation of the sewerage or water works facilities and after the backfill has been compacted suitably, the additional width of pavement to be removed, as shown on the Drawings, shall be done immediately prior to replacing the pavement.
  2. Trench backfill shall be compacted for the full depth of the trench as specified in Section 02225, Trench, Excavation and Backfill, of these Specifications.
  3. Temporary trench backfill along streets and driveways shall include 6 inches of crushed stone or cherty clay as a temporary surfacing of the trenches. This temporary surface shall be maintained carefully at grade and dust-free by the Contractor until the backfill of the trench has thoroughly compacted in the opinion of the Engineer and permission is granted to replace the street pavement.
  4. When temporary crushed stone or chert surface is considered by the Engineer to be sufficient surface for gravel pavement, the surface shall be graded smooth and to an elevation that will make the final permanent surfacing level with the adjacent surfacing that was undisturbed.
- B. Pavement Replacement:
1. Prior to replacing pavement, make a final cut in asphalt and concrete pavement 12 inches back from the edge of the damaged pavement with a saw. Pavement cuts shall be parallel or perpendicular to the road centerline as much as practical. On parallel installations, the final cut shall be long and straight and consistent.
  2. Replace all street and roadway pavement as shown on the Drawings. Replace driveways, sidewalks, and curbs with the same material, to nearest existing undisturbed construction joint and to the same dimensions as those existing.
  3. If the temporary crushed stone or chert surface is to be replaced, the top 6 inches shall be removed and the crushed stone surfacing for unpaved streets or the base for the bituminous surface shall be placed.
  4. Following this preparation, the chert or crushed stone base shall be primed with a suitable bituminous material and surfaced with the proper type of bituminous surface treatment.

5. Where the paved surface is to be replaced with asphaltic concrete pavement, concrete pavement, or a concrete base and a surface course, the temporary chert or crushed stone surface and any necessary backfill material, additional existing paving, and new excavation shall be removed to the depth and width shown on the Drawings. All edges of the existing pavement shall be cut to a straight, vertical edge. Care shall be used to get a smooth joint between the old and new pavement and to produce an even surface on the completed street. Concrete base slabs and crushed stone bases, if required, shall be placed and allowed to cure for 3 days before bituminous concrete surface courses are applied. Expansion joints, where applicable, shall be replaced in a manner equal to the original joint.
6. Where driveways or roadways, constructed of specialty type surfaces (such as brick or stone) are disturbed or damaged, these driveways and roadways shall be restored using similar materials. Where dictated by the nature of these surfaces, a specialty contractor shall be used to restore the surfaces to their previous or better condition. Special surfaces shall be removed and replaced to the limits to which they were disturbed.

C. Pavement Resurfacing:

1. Certain areas to be resurfaced are specified or noted on the Drawings. Where pavement to be resurfaced has been damaged with potholes, the Contractor shall remove all existing loose pavement material and fill the hole with black base, as specified, to the level of the existing pavement. After all pipeline installations are complete and existing pavement has been removed and replaced along the trench route, apply the tack coat and surface course as specified.
2. Resurfacing limits shall be perpendicular to the road centerline. The limits of resurfacing shall be 10 feet beyond the edge of the pavement replacement on the main road being resurfaced, and to the point of tangency of the pavement on the side streets. The limits of resurfacing in a cul-de-sac shall be the entire area of the cul-de-sac. For situations where the limit of resurfacing will be within a side street and parallel to the road centerline, the limit of resurfacing will extend to the edge of pavement beyond that centerline.
3. Pavement resurfacing shall be performed by a contractor certified by the Georgia Department of Transportation.
4. Pavement resurfacing shall be a minimum of 1-1/4 inches of asphaltic concrete conforming to Georgia Department of Transportation Standard Specifications, Section 400, 12.5 mm Superpave.
5. Mill existing asphalt pavement at the location of the limit of resurfacing to create a 1-1/4-inch butt joint for the pavement overlay. Milling must be 5 feet in width and taper from the top of existing pavement to a depth of 1-1/4 inch to create the butt joint for the pavement overlay.

- D. Pavement Striping: Pavement striping removed or paved over shall be replaced with the same type, dimension, and material as original unless directed otherwise by the Engineer.

3.04 SIDEWALK AND CURB REPLACEMENT

A. Construction:

1. All concrete sidewalks and curbs shall be replaced with concrete.
2. Preformed joints shall be 1/2-inch thick, conforming to the latest edition of American Association of State Highway Transportation Officials (AASHTO) M 59 for sidewalks and AASHTO M 123 for curbs.
3. Forms for sidewalks shall be of wood or metal, shall be straight and free from warp, and shall be of sufficient strength when in place to hold the concrete true to line and grade without springing or distorting.
4. Forms for curbs shall be metal and of an approved section. They shall be straight and free from distortions, showing no vertical variation greater than 1/8 inch in 10 feet and no lateral variation greater than 1/4 inch in 10 feet from the true plain surface on the vertical face of the form. Forms shall be of the full depth of the structure and constructed to permit the inside forms to be securely fastened to the outside forms.
5. Securely hold forms in place true to the lines and grades indicated on the Drawings.
6. Wood forms may be used on sharp turns and for special sections, as approved by the Engineer. Where wooden forms are used, they shall be free from warp and shall be the nominal depth of the structure.
7. All mortar and dirt shall be removed from forms and all forms shall be thoroughly oiled or wetted before any concrete is deposited.

- B. When a section is removed, the existing sidewalk or curb shall be cut to a neat line, perpendicular to both the centerline and the surface of the concrete slab. Existing concrete shall be cut along the nearest existing construction joints; if such joints do not exist, the cut shall be made 5 feet back.

- C. Existing concrete sidewalks and curbs that have been cut and removed for construction purposes shall be replaced with the same width and surface as the portion removed. Sidewalks shall have a minimum uniform thickness of 4 inches. The new work shall be neatly jointed to the existing concrete so that the surface of the new work shall form an even, unbroken plane with the existing surfaces.

- D. The subgrade shall be formed by excavating to a depth equal to the thickness of the concrete, plus 2 inches. Subgrade shall be of such width as to permit the proper installation and bracing of the forms. Subgrades shall be compacted by hand tamping or rolling. Soft, yielding, or unstable material shall be removed and backfilled with satisfactory material. Place 2 inches of porous crushed stone under all sidewalks and curbs and compact thoroughly, then finish to a smooth, unyielding surface at proper line, grade, and cross section.
- E. Joint for Curbs:
1. Joints shall be constructed to match existing and as specified. Construct joints true to line with their faces perpendicular to the surface of the structure and within 1/4 inch of their designated position.
  2. Thoroughly spade and compact the concrete at the faces of all joints filling all voids.
  3. Install expansion joint materials at the point of curve at all street returns. Install expansion joint material behind the curb at the abutment to sidewalks and adjacent structures.
  4. Place contraction joints every 10 feet along the length of the curbs and gutters. Form contraction joints using steel templates or division plates which conform to the cross section of the structure. Leave the templates in place until the concrete has set sufficiently to hold its shape, but remove them while the forms are still in place. Contraction joint templates or plates shall not extend below the top of the steel reinforcement or they shall be notched to permit the reinforcement to be continuous through the joint. Contraction joints shall be a minimum of 1-1/2 inches deep.
- F. Expansion joints shall be required to replace any removed expansion joints or in new construction wherever shown on the Drawings. Expansion joints shall be true and even, shall present a satisfactory appearance, and shall extend to within 1/2 inch of the top of finished concrete surface.
- G. Finishing:
1. Strike off the surface with a template and finish the surface with a wood float using heavy pressure, after which contraction joints shall be made and the surface finished with a wood float or steel trowel.
  2. Finish the face of the curbs at the top and bottom with an approved finishing tool of the radius to match existing.
  3. Finish edges with an approved finishing tool having a 1/4-inch radius.
  4. Provide a final broom finish by lightly combing with a stiff broom after troweling is complete.
  5. The finished surface shall not vary more than 1/8 inch in 10 feet from the established grade.



H. Driveway and Sidewalk Ramp Openings:

1. Provide driveway openings of the widths and at the locations indicated on the Drawings and as directed by the Engineer.
  2. Provide sidewalk ramp openings to match existing in conformance with the applicable regulations and as directed by the Engineer.
- I. Concrete shall be suitably protected from freezing and excessive heat. It shall be kept covered with burlap or other suitable material and kept wet until cured. Provide necessary barricades to protect the work. All damage caused by people, vehicles, animals, rain, the Contractor's operations, and the like shall be repaired by the Contractor at no additional expense to the Owner.

3.05 MAINTENANCE

- A. The Contractor shall maintain the surfaces of roadways built and pavements replaced until the acceptance of the Project. Maintenance shall include replacement, scraping, reshaping, wetting, and rerolling as necessary to prevent raveling of the road material, to preserve reasonably smooth surfaces, and to repair damaged or unsatisfactory surfaces to the satisfaction of the Engineer. Maintenance shall include sprinkling as may be necessary to abate dust from the gravel surfaces.

3.06 SUPERVISION AND APPROVAL

- A. Pavement restoration shall meet the requirements of the regulatory agency responsible for the pavement. The Contractor shall obtain agency approval of pavement restorations before requesting final payment.
- B. Obtain the Engineer's approval of restoration of pavement, such as private roads and drives, that are not the responsibility of a regulatory agency.
- C. Complete pavement restoration as soon as possible after backfilling.
- D. Failure of Pavement: Should any pavement restoration or repairs fail or settle during the life of the Contract, including the bonded period, promptly restore or repair defects.

3.07 CLEANING

- A. The Contractor shall remove all surplus excavation materials and debris from the street surfaces and rights-of-way and shall restore street, roadway, or sidewalk surfacing to its original condition.

**END OF SECTION**

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**SECTION 02730  
SEWERS AND ACCESSORIES**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section describes products to be incorporated into sewers and accessories, and requirements for the installation and use of these items. Furnish all products and perform all labor necessary to fulfill the requirements of these Specifications.
- B. The Contractor shall supply all products and perform all Work in accordance with applicable ASTM International (ASTM), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

**1.02 QUALIFICATIONS**

- A. All products and materials provided or installed on any project must be pre-approved and included in the approved manufacturer's list for wastewater system construction (see Appendix A, Approved Manufacturers List for Wastewater Construction).

**1.03 SUBMITTALS**

- A. If required by the Owner, complete product data and engineering data, including Shop Drawings, shall be submitted to the Owner for review.

**1.04 TRANSPORTATION AND HANDLING**

- A. Unloading: Furnish equipment and facilities for unloading, handling, distributing, and storing pipe, fittings, valves, and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification. Pipe handling on skids shall not be rolled or skidded against the pipe on the ground.
- B. Handling: Handle pipe, fittings, valves, and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front loader. Do not use material damaged in handling. Slings, hooks, or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior coatings or internal lining of the pipe. Do not use chains in handling pipe, fittings, and appurtenances.
- C. Lined pipe shall be handled and transported to prevent damage to linings.

1.05 STORAGE AND PROTECTION

- A. Store all pipe which cannot be distributed along the route. Make arrangements for the use of suitable storage areas.
- B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings, and other appurtenances shall be kept free from dirt or foreign matter at all times.
- C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Pipe in tiers shall be alternated ( bell, plain end; bell, plain end). At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipes in adjacent tiers.
- D. Store joint gaskets in a cool location, out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.
- E. Mechanical joint bolts shall be handled and stored in such a manner that will ensure proper use with respect to types and sizes.

1.06 QUALITY ASSURANCE

- A. Product manufacturers shall provide the Owner with written certification that all products furnished comply with all applicable provisions of these Specifications.

**PART 2 PRODUCTS**

2.01 DUCTILE IRON PIPE

- A. Ductile iron pipe shall be used where shown on the Drawings. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet, with a bituminous outside coating. Sizes will be as shown on the Drawings.
- B. Ductile iron pipe shall be manufactured in accordance with American Water Works Association (AWWA) C151. All pipe shall have a minimum pressure rating as indicated in the following table, and corresponding minimum wall thickness, unless otherwise specified or shown on the Drawings. Special Thickness Class 52 shall be an acceptable alternative for any pipe size.

Pipe Sizes (inches)	Pressure Class (psi)	Special Thickness Class
4 - 12	350	52

Pipe Sizes (inches)	Pressure Class (psi)	Special Thickness Class
14 - 18	350	52
20	300	52
24-54	250	52

- C. Ductile iron pipe shall be used for any section (manhole to manhole) which has less than 4 feet of cover or more than 15 feet of cover.
- D. Fittings and Accessories: Fittings shall be ductile iron and shall conform to AWWA C110/ANSI A21.10 or AWWA C153/ANSI A21.53 with a minimum rated working pressure of 250 pounds per square inch (psi), and shall be furnished with a bituminous outside coating.
- E. Joints for Ductile Iron Pipe and Fittings:
1. General:
    - a. Joints for ductile iron pipe and fittings shall be mechanical joint, flanged joint, ball joint, restrained joint, or push-on joint as shown on the Drawings or specified herein.
    - b. Unless otherwise shown on the Drawings, specified, or directed, all ductile iron pipe laid underground shall be joined using push-on type joints.
    - c. In all cases, gaskets shall be made of material that will not be damaged by the fluid being transported nor by the environment in which the pipe is installed.
    - d. Provide the necessary bolts for connections. All bolts and nuts shall be threaded in accordance with ANSI B1.1, Coarse Thread Series, Class 2A external and 2B internal fit.
  2. Mechanical Joints:
    - a. Joints shall conform to AWWA C111/ANSI A21.11.
    - b. Bolts and nuts shall be tee head bolts and nuts of high-strength low-alloy steel in accordance with ASTM A242 to the dimensions shown in AWWA C111/ANSI A21.11.
    - c. Gaskets shall be in accordance with AWWA C111/ANSI A21.11 and shall be constructed of plain rubber.
    - d. Mechanical joint glands shall be ductile iron.
    - e. Mechanical joint accessory parts and glands shall be made in the United States of America.
  3. Push-On Joints: Push-on joints and gaskets shall conform to AWWA C111/ANSI A21.11. Details of the joint design shall be in accordance with the manufacturer's standard practice such as American Cast Iron Pipe Company (ACIPCO) "Fastite" or U.S. Pipe "Tyton" joints.

- 4. Restrained Joints:
  - a. Restrained joints shall be ACIPCO "FLEX-RING" or "FAST-GRIP," or U.S. pipe "TR-FLEX" or "FIELD LOK."
  - b. Bolts and nuts shall be in accordance with the manufacturer's recommendations.
  - c. Gaskets shall be in accordance with the manufacturer's recommendations.
- F. Cement Linings: Pipe and fittings shall be cement-lined, double thickness, in accordance with AWWA C104/ANSI/AWWA C104/A21.4. Seal coat is not required.
- G. Polyethylene Encasement: Where shown on the Drawings or Specified, ductile iron pipe shall be encased with polyethylene film. Polyethylene film shall be in accordance with AWWA C105.

## 2.02 PVC PIPE

- A. Pipe and Fittings: PVC gravity sewer pipe (4 to 15 inches in diameter) shall be integral bell and spigot joint type. The pipe shall be manufactured in accordance with ASTM 3034. The pipe shall have a minimum wall thickness which provides a SDR 26 and a minimum pipe stiffness of 115 psi. The PVC compound shall be produced in accordance with ASTM D1784. PVC pipe shall be supplied in lengths not longer than 13 feet.
- B. Joints: Joints for pipe and fittings shall be of the bell and spigot gasketed type in accordance with ASTM F477.
- C. Acceptance: Acceptance will be on the basis of the Owner's inspection and the manufacturer's written certification that the pipe was manufactured and tested in accordance with the applicable standards.

## 2.03 CASING (STEEL PIPE)

- A. The casing pipe shall be made from steel plate having a minimum yield strength of 35,000 per square inch (psi). The steel plate shall also meet the chemical requirements of ASTM A36.
  - 1. The thicknesses of casing shown in paragraph B. below are minimum thicknesses. Actual thicknesses shall be determined by the casing installer, based on its evaluation of the required forces to be exerted on the casing when jacking. Any buckling of the casing due to jacking forces shall be repaired at no additional cost to the Owner. Pipe wall thickness for aerial spans exceeding 20 feet shall be designed by the Engineer.

2. The diameters of casing shown in paragraph B. below and shown on the Drawings are minimum. Larger casings, with the Engineer's approval, may be provided at no additional cost to the Owner, for whatever reasons the Contractor may decide, whether casing size availability, line and grade tolerances, soil conditions, or other reasons.

B. Casing Sizes:

<b>Aerial Spans</b>		
<b>Carrier Pipe Size, inches</b>	<b>Casing Pipe Size, inches</b>	<b>Casing Pipe Wall Thickness, inches</b>
6	12	0.250
8	16	0.250
10	16	0.250
12	18	0.250
14	20	0.250
16	24	0.250
18	24	0.250
20	30	0.312
24	36	0.375
30	42	0.500
36	48	0.500
42	54	0.500
48	60	0.500
54	66	0.500

C. Coatings: Casing shall be furnished with a bituminous exterior coating.

1. Exposed installations:
  - a. Two coats, factory applied.
  - b. Total dry film thickness: 10 mils, minimum.
  - c. Color: Standard Black High Gloss.
2. Buried installations:
  - a. One coat, factory applied.
  - b. Total dry film thickness: 1 mil, minimum.

2.04 CASING SPACERS

- A. Casing spacers shall meet one of the following requirements:
1. Type I casing spacers shall be flanged, bolt-on style with a two-section stainless steel shell lined with a polyvinyl chloride (PVC) liner, minimum 0.09-inch-thick also having a hardness of 85-90 durometer. Runners shall be attached to stainless steel risers which shall be properly welded to the shell. The height of the runners and risers shall be manufactured such that the pipe does not float within the casing.
  2. Type II casing spacers shall be a two-section, flanged, bolt-on style constructed of heat-fused PVC coated steel, minimum 14-gauge band and 10-gauge risers, with 2-inch wide glass reinforced polyester insulating skids, heavy duty PVC inner liner, minimum 0.09-inch thick having a hardness of 85-90 durometer, and all stainless steel or cadmium plated hardware.

2.05 MANHOLES AND PRECAST CONCRETE PRODUCTS

- A. Provide manholes and other precast concrete products in accordance with the following paragraphs.
- B. Precast Concrete Sections:
1. Precast concrete sections shall meet the requirements of ASTM C478 or ASTM C913. The minimum compressive strength of the concrete in precast sections shall be 4,000 psi.
  2. The minimum wall thickness shall be one-twelfth of the inside diameter of the base, riser, or the largest cone diameter. Additionally, the wall thickness shall be sufficient for the proper installation of the rubber boots.
  3. Transition slabs, which convert bases larger than 4 feet in diameter to 4-foot diameter risers, shall be designed by the manhole manufacturer to carry the live and dead loads exerted on the slab.
  4. Seal joints between precast sections by means of rubber O-ring gaskets or flexible butyl rubber sealant. Butyl rubber sealants shall meet the requirements of American Association of State Highway and Transportation Officials (AASHTO) M-198. Sealant shall be pre-formed type with a minimum nominal diameter of 1 inch.



- C. Brick and Mortar: Brick shall be whole and hardburned, conforming to ASTM C32 Grade MS. Mortar shall be made of one part Portland cement and two parts clean sharp sand. Cement shall be Type 1 and shall conform to ASTM C150. Sand shall meet ASTM C144.
- D. Iron Castings:
1. Cast iron manhole frames and covers shall meet the requirements of ASTM A48 for Class 30 gray iron and all applicable local standards. No casting will be accepted which weighs less than 95 percent of the design weight. Shop Drawings must indicate the design weight and provide sufficient dimensions to permit checking:
    - a. Tensile strength of the cast iron shall be a minimum of 30,000 psi.
    - b. Covers and frames shall be "Heavy Duty" type, rated for a minimum of H-20 loading.
  2. All casting shall be tough, close grained, smooth, and free from blowholes, blisters, shrinkage, stains, cracks, cold shots, and other imperfections.
    - a. Castings judged to be defective by the Owner's Representative will be rejected, and shall be replaced by the Contractor at no additional cost to the Owner.
    - b. Casting tolerances shall be plus or minus 1/16 inch, with an additional 1/16 inch per foot of dimension.
    - c. Covers shall not rock or chatter when in-place in frames.
  3. Manhole frames and covers shall be as shown on the Standard Detail Drawings. Manhole covers shall be of either Standard Type or Bolt-Down Type, as indicated on the Plans or as otherwise specified. If not otherwise indicated, manhole covers shall be Standard Type.
  4. All frames and covers shall have machined horizontal bearing surfaces.
  5. Manhole covers shall be cast with 2 non-penetrating type pick-holes, located as indicated in the Detail Drawings.
    - a. Pick-holes shall conform to the dimensions indicated in the Detail Drawings.
    - b. Manhole covers shall not have vent holes.
  6. The seating surfaces of frames and covers shall be machined flat to ensure contact between the cover and frame along the full perimeter.
  7. Gaskets shall be provided and installed on all manhole frames.
    - a. Secured to the seating surface of the frame with non-degrading glue by the manufacturer.
    - b. Be flat, 1/8-inch thick, black neoprene, with a tensile strength of 2,000 psi.

8. For manhole covers indicated as Bolt-Down Type, frames shall be cast and machined to accept 4 cover bolts, on the pattern shown in the Detail Drawings.
    - a. Covers shall be cast with 4 holes, 3/4-inch diameter, for the bolts on the pattern shown in the Detail Drawings.
    - b. Bolts shall be stainless steel hex-head cap screws, and shall be provided with all bolt-down type covers.
    - c. Bolts shall include stainless steel washers and rubber sealing gaskets.
  9. Manhole frames and covers shall always be replaced together for a suitable fit. Do not replace the manhole cover only.
- E. Rubber Boots: Provide preformed rubber boots and fasteners equal to those listed in Appendix A, Approved Manufacturers List for Wastewater Construction.
- F. Steps: Manhole steps of polypropylene molded around a steel rod equal to those listed in Appendix A, Approved Manufacturers List for Wastewater Construction. Manhole steps shall meet the requirements of ASTM C478 for design, materials of construction, dimensions, testing, and acceptance.
- G. Sand-Cement Grout:
1. Miscellaneous small items of equipment shall be grouted in place using a sand-cement grout consisting of one part Portland cement, two parts fine aggregate, and a maximum of 4.5 gallons of water per sack (cubic foot) of cement. Portland cement shall be Type III conforming to ASTM C150. Fine aggregate shall be natural siliceous sand, consisting of hard, clean, sharp, dense, durable, and uncoated particles.
  2. Fine aggregate shall be free from organic material and injurious amounts of deleterious substances and shall be graded as follows:

Sieve Size No.	Percent (by weight) Passing
4	100
8	95 – 100
16	60 – 100
30	35 – 70
50	15 – 35
100	2 – 15

3. Except as modified herein, fine aggregate shall conform to the requirements of ASTM C144.
  4. Fine aggregate to be used with epoxy binders shall be dried prior to use to remove any free moisture.
- H. Non-Shrink Grout: Non-shrink grout shall show zero shrinkage from the placement volume or initial expansion volume as determined by ASTM C827, and shall have an initial set time at 70 degrees F of not less than 45 minutes as determined by ASTM C191. When tested in accordance with ASTM C109, non-shrink grout shall have a 1-day compressive strength of not less than 2,000 psi, and a 28-day compressive strength of not less than 9,000 psi at a flow of not less than 100 percent determined in accordance with U.S. Army Corps of Engineers (USACE) Specification CRD-C-621. The grout shall contain no corrosive ions, calcium chloride, oxidizing catalysts, gas-forming agents, harmful aluminums, or corrosive chemicals and shall be resistant to oil, water, and sewage. The grout shall be premixed and shall require only the addition of water prior to placement. The grout shall be delivered to the job site in unopened plastic-lined bags and shall have the manufacturer's mixing instructions printed on the back of each bag.

#### 2.06 MANHOLE UTILITY MARKER

- A. Each manhole outside paved areas shall be marked with a white 4" PVC pipe.
1. Pipe shall have a minimum wall thickness equivalent to Schedule 40 in accordance with ASTM D1785.
  2. Pipe shall be buried at a depth equal to one-third of the overall pipe length and not less than 2 feet.
  3. Top of the marker shall be 4 feet above the manhole rim.
  4. Marker shall be painted bright green on the top 12".

#### 2.07 DETECTION TAPE

- A. Detection tape shall be composed of a solid aluminum foil encased in a protective plastic jacket. Tapes shall be color coded in accordance with American Public Works Association (APWA) color codes with the following legends: Sanitary sewerage systems, —safety green, "Caution: Sewer Line Buried Below." Colors may be solid or striped. Tape shall be permanently printed with no surface printing allowed. Tape width shall be a minimum of 3 inches, and shall be buried at a depth from 1 to 2 feet deep. Detection tape shall be installed over all sewer mains and service laterals.

## **PART 3      EXECUTION**

### **3.01      EXISTING UTILITIES AND OBSTRUCTIONS**

- A. The Drawings shall indicate utilities or obstructions that are known to exist according to the best information available. The Contractor shall call the Utilities Protection Center (UPC) (811) as required by Georgia law (Official Code of Georgia Annotated [O.C.G.A.] Sections 25-9-1 through 25-9-13) and all utilities, agencies, or departments that own and/or operate utilities in the vicinity of the construction work site, at least 72 hours (3 business days) prior to construction, to verify the location of the existing utilities.
- B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.
  - 1. Provide the required notice to the utility owners and allow them to locate their facilities according to Georgia law. Field utility locations are valid for only 10 days after original notice. The Contractor shall ensure, at the time of any excavation, that a valid utility location exists at the point of excavation.
  - 2. Expose the facility to verify its true location and grade for a distance of at least 200 feet in advance of pipeline construction to verify its true location and grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.
  - 3. Avoid utility damage and interruption by protecting it with means or methods recommended by the utility owner.
  - 4. Maintain a log identifying when phone calls were made, who was called, area for which utility relocation was requested, and work order number issued, if any.
- C. Conflict with Existing Utilities:
  - 1. Horizontal Conflict: Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed sewer main does not permit safe installation of the sewer by the use of sheeting, shoring, tying-back, supporting, or temporarily suspending service of the parallel or crossing facility. The Contractor may change the proposed alignment of sewer to avoid horizontal conflicts if the new alignment remains within the available right-of-way or easement and complies with regulatory agency requirements after a written request to and subsequent approval by the Owner. If, in the opinion of the Owner, the sewer's proposed location cannot be adjusted, thus requiring the relocation of an existing utility, the Owner will direct the Contractor to have the utility relocated.

2. Vertical Conflict: Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed sewer does not permit the crossing without immediate or potential future damage to the utility, main, service, or the sewer. The Contractor may change the proposed grade of the sewer to avoid vertical conflicts if the changed grade provides minimum required capacity, maintains adequate cover, and complies with regulatory agency requirements, after written request to and subsequent approval by the Owner. If, in the opinion of the Owner, the sewer's proposed location cannot be adjusted, thus requiring the relocation of an existing utility, the Owner will direct the Contractor to have the utility relocated.
3. Any delay or extra cost due to encountering underground utilities or obstructions, regardless of whether shown on the Drawings or found in locations different from those shown on the Drawings, or scheduling or coordination of relocation of utilities or services, shall not constitute a claim for additional payment or increase in contract time. No payment for utility relocation will be made for the temporary support of utilities being crossed or in danger of being disturbed by the Contractor's activities. No payment for utility relocation will be made for the improvement of the Contractor's pipe laying productivity. Payment for relocation of utilities shall be made only if the utility is in direct conflict, either in plan or elevation, with the proposed sewer alignment. Before relocation work is started, written approval from the Owner is required.

D. Water and Sewer Separation:

1. Sewers should maintain a minimum 10-foot edge-to-edge separation from water mains. Where the sewer crosses a water main, an 18-inch vertical separation shall be maintained where possible. Where possible, a full length of sewer pipe shall be centered on the water main. Any deviation shall be requested in writing to the Owner.
2. Where the sewer crosses over a water main, the water main shall be encased in concrete to the first joint in each direction.
3. No water main shall be permitted to pass through or come in contact with any part of a manhole.

3.02 CONSTRUCTION ALONG HIGHWAYS, STREETS, AND ROADWAYS

- A. Install pipelines and appurtenances along highways, streets, and roadways in accordance with the applicable regulations of, and permits issued by, the Department of Transportation and the Unified Government of Athens-Clarke County with reference to construction operations, safety, traffic control, road maintenance, and repair.

B. Traffic Control:

1. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, and other traffic control devices; provide qualified flagmen where necessary to direct traffic; and take all necessary precautions for the protection of the work and the safety of the public. Flagmen shall be certified by a Georgia Department of Transportation approved training program.
2. Construction traffic control devices and their installation shall be in accordance with the current *Manual On Uniform Traffic Control Devices for Streets and Highways*.
3. Placement and removal of construction traffic control devices shall be coordinated with the Georgia Department of Transportation and the Unified Government of Athens-Clarke County a minimum of 48 hours in advance of the activity.
4. Placement of construction traffic control devices shall be scheduled ahead of associated construction activities. Construction in street right-of-way shall be conducted to minimize the length of time traffic is disrupted. Construction traffic control devices shall be removed immediately following their useful purpose. Traffic control devices used intermittently, such as "Flagmen Ahead," shall be removed and replaced when needed.
5. Existing traffic control devices within the construction work zone shall be protected from damage. Traffic control devices requiring temporary relocation shall be located as near as possible to their original vertical and horizontal locations. Original locations shall be measured from reference points and recorded in a log prior to relocation. Temporary locations shall provide the same visibility to affected traffic as the original location. Relocated traffic control devices shall be reinstalled in their original locations as soon as practical following construction.
6. Construction traffic control devices shall be maintained in good repair and shall be clean and visible to affected traffic for daytime and nighttime operation. Traffic control devices affected by the construction work zone shall be inspected daily.
7. Construction warning signs shall be black legend on an orange background. Regulatory signs shall be black legend on a white background. Construction sign panels shall meet the minimum reflective requirements of the Georgia Department of Transportation and the Unified Government of Athens-Clarke County. Sign panels shall be of durable materials capable of maintaining their color, reflective character, and legibility during the period of construction.

8. Channelization devices shall be positioned preceding an obstruction at a taper length as required by the current *Manual On Uniform Traffic Control Devices for Streets and Highways*, as appropriate for the speed limit at that location. Channelization devices shall be patrolled to ensure that they are maintained in the proper position throughout their period of use.
  9. Lane closure must be approved by the Unified Government of Athens-Clarke County Transportation and Public Works Department. Requests for such closures must be submitted at least 48 hours before closures are needed.
- C. Construction Operations:
1. Perform all work along highways, streets, and roadways to minimize interference with traffic.
  2. Stripping: Where the pipeline is laid along road right-of-way, strip and stockpile all sod, topsoil, and other material suitable for right-of-way restoration.
  3. Trenching, Laying, and Backfilling: Do not open the trench any further ahead of pipe laying operations than is necessary. Backfill and remove excess material immediately behind laying operations. Complete excavation and backfill for any portion of the trench in the same day.
  4. Shaping: Reshape damaged slopes, side ditches, and ditch lines immediately after completing backfilling operations. Replace topsoil, sod, and any other materials removed from shoulders.
  5. Construction operations shall be limited to 400 feet along areas, including cleanup and utility exploration.
- D. Excavated Materials: Do not place excavated material along highways, streets, and roadways in a manner which obstructs traffic. Sweep all scattered excavated material off the pavement in a timely manner.
- E. Drainage Structures: Keep all side ditches, culverts, cross drains, and other drainage structures clear of excavated material. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.
- F. Landscaping Features: Landscaping features shall include but are not necessarily limited to, fences, property corners, cultivated trees and shrubbery, manmade improvements, and subdivision and other signs within the right-of-way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.

- G. Maintaining Highways, Streets, Roadways, and Driveways:
1. Maintain streets, highways, roadways, and driveways in a suitable condition for movement of traffic until completion and final acceptance of the work.
  2. During the time period between pavement removal and completing permanent pavement replacement, maintain highways, streets, and roadways by the use of steel running plates. The edges of running plates shall have asphalt placed around their periphery to minimize vehicular impact. The backfill above the pipe shall be compacted, as specified elsewhere up to the existing pavement surface to provide support for the steel running plates. Steel running plates shall be designed to support H-20 traffic loadings.
  3. Furnish a road grader or front-end loader for maintaining highways, streets, and roadways. Make the grader or front-end loader available at all times.
  4. Immediately repair all driveways that are cut or damaged. Maintain them in a suitable condition for use until completion and final acceptance of the work.

### 3.03 PIPE DISTRIBUTION

- A. Pipe shall be distributed and placed in such a manner that will not interfere with traffic.
- B. No pipe shall be strung further along the route than 1,000 feet beyond the area in which the Contractor is actually working without written permission from the Owner. The Owner reserves the right to reduce this distance to a maximum distance of 200 feet in residential and commercial areas based on the effects of the distribution on adjacent property owners.
- C. No street or roadway may be closed for unloading of pipe without first obtaining permission from the proper authorities. The Contractor shall furnish and maintain proper warning signs and obstruction lights for the protection of traffic along highways, streets, and roadways upon which pipe is distributed.
- D. No distributed pipe shall be placed inside drainage ditches.
- E. Distributed pipe shall be placed as far as possible from the roadway pavement, but no closer than 5 feet from the roadway pavement, as measured edge-to-edge.



3.04 LOCATION AND GRADE

- A. The Drawings shall show the alignment and grade of the gravity sewer and the position of manholes and other appurtenances. The slope shown on the gravity sewer profile and/or called for in the Specifications shall be the slope of the invert of the pipe.
- B. After the Contractor locates and marks the manhole centerlines or baselines of the gravity sewer, the Contractor shall perform clearing and grubbing.
- C. Where the depth of cover of the gravity sewer is less than 4 feet or more than 15 feet, the sewer shall be constructed with ductile iron pipe from manhole to manhole.
- D. Minimum drop across manholes is 0.2 foot unless site conditions dictate otherwise.
- E. The following table identifies the minimum and maximum grades acceptable for all sanitary sewer lines.

Pipe Diameter (Inches)	Minimum Grade (%)	Maximum Grade (%)
8	0.5	15.0
10	0.4	10.0
12	0.3	10.0
15/16	0.25	8.0
18	0.22	6.0
20	0.20	5.0
24	0.15	4.0

3.05 LAYING AND JOINTING PIPE AND ACCESSORIES

- A. Lay all pipe and fittings to accurately conform to the lines and grades established by the Owner.
- B. Use the same pipe material from manhole to manhole. Transitioning from one pipe material to another between manholes shall not be allowed.
- C. Pipe Installation:
  - 1. Proper implements, tools, and facilities shall be provided for the safe performance of the Work. All pipe and fittings shall be lowered carefully into the trench by means of slings, ropes, or other suitable tools or equipment in such a manner as to prevent damage to sewer materials and protective coatings and linings. Under no circumstances shall sewer materials be dropped or dumped into the trench.

2. All pipe, fittings, and other appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective materials shall be marked and held for inspection by the Owner, who may prescribe corrective repairs or reject the materials.
3. All lumps, blisters, and excess coating shall be removed from the socket and plain ends of each pipe, and the outside of the plain end and the inside of the bell shall be wiped clean and dry and free from dirt, sand, grit, or any foreign materials before the pipe is laid. No pipe that contains dirt shall be laid.
4. Foreign material shall be prevented from entering the pipe while it is being placed in the trench. No debris, tools, clothing, or other materials shall be placed in the pipe at any time.
5. As each length of pipe is placed in the trench, the joint shall be assembled and the pipe brought to correct line and grade. The pipe shall be secured in place with approved backfill material.
6. Work shall progress from the low point of any sewer, and proceed up gradient. Lay pipe with the bells facing in the upstream direction in which work is progressing.
7. Applying pressure to the top of the pipe, such as with a backhoe bucket, to lower the pipe to the proper elevation or grade shall not be permitted.
8. Polyethylene Encasement: Installation shall be in accordance with AWWA C105 and the manufacturer's instructions. All ends shall be securely closed with tape and all damaged areas shall be completely repaired to the satisfaction of the Owner.

D. Alignment and Gradient:

1. Lay pipe straight in alignment and gradient.
2. Maintain a transit, level, laser, and accessories on the job to lay out angles.
3. The Contractor shall check the invert elevation at each manhole and the gravity sewer invert elevation at least three times daily (start, mid-day and end of day). Elevations shall be checked more frequently if more than 100 feet of pipe is installed in a day or if the gravity sewer is being constructed at minimum slope.
4. The Contractor shall check the horizontal alignment of the gravity sewer on the same schedule as invert elevations checks.

- E. Expediting of Work: Excavate, lay the pipe, and backfill as closely together as possible. Do not leave unjointed pipe in the trench overnight. Backfill and compact the trench as soon as possible after laying and jointing is completed. Cover the exposed end of the installed pipe each day at the close of work and at all other times when work is not in progress. If necessary to backfill over the end of an uncompleted pipe or accessory, close the end with a suitable plug (either push-on, mechanical joint, restrained joint), or as approved by the Owner.

- F. Joint Assembly: Push-on, mechanical, flange, and restrained type joints shall be assembled in accordance with the manufacturer's recommendations.
- G. Cutting Pipe:
  - 1. Cut ductile iron pipe using an abrasive wheel saw.
  - 2. Cut PVC pipe using a suitable saw.
  - 3. Remove all burrs and smooth the end before jointing.
  - 4. The Contractor shall cut the pipe and bevel the end, as necessary, to provide the correct length of pipe necessary for installing the fittings, valves, accessories, and closure pieces in the correct location. Only push-on or mechanical joint pipe shall be cut.
- H. House Connections: Install tees in locations designated by the Owner for future connection of service lines. Plug the branch of the tee. Record the location of fittings installed on the Record Drawings.
- I. Provide detection tape for all PVC sewers. Detection tape (3 inches) shall be buried 1 to 2 feet deep. In no case shall detection tape be buried greater than 2 feet deep from the finish grade surface.

### 3.06 MANHOLE AND PRECAST CONCRETE PRODUCT CONSTRUCTION

- A. Construct manholes as shown on the Standard Detail Drawings.
- B. Precast Concrete: Handle sections carefully to prevent cracking or chipping. Provide uniform bedding of the bottom section to prevent uneven loading. Install gaskets and joint sealants in accordance with manufacturer's recommendations to produce a watertight structure.
- C. Brick: Bed the bottom and sides of every brick in mortar. Apply a smooth coat of mortar, 3/4-inch thick, on the inside and outside.
- D. Inverts: Form channels as shown on the Drawings (rounded, and troweled smooth). Maintain consistent grade through the invert. Use sand-cement grout. Precast concrete inverts may be used at the option of the contractor.
- E. Top Elevations: Build manholes outside of paved areas to 18 inches above finished grade unless otherwise shown on the Drawings or directed by the Owner. Build manholes in paved areas to existing grades. Unless special easement stipulations require otherwise, build manholes within the 100-year flood plane to 3 feet above finished grade with bolt-down frame and cover.

- F. Drop Connections: Manholes requiring drop connections are shown on the Drawings. Construct drop connections in accordance with the details shown on the Drawings. Drop connections (outside drops) are required at locations where the invert in elevation is greater than 2.0 feet above the invert out elevation.
- G. Frames and Covers: For frames and covers in roadways, the frame shall not be cast into the cone section. For manholes outside of the roadway, the frame may be cast into the cone section.
- H. Seal all manhole joints and lift holes, both inside and out, with grout. Between precast sections, this is in addition to joint sealant.
- I. Invert Elevations: The invert elevations shown on the Drawings shall be for the invert at the centerline of the precast concrete manhole. Prior to setting the laser or other vertical alignment control system for the sewer upstream of the manhole, the Contractor shall verify the elevation of the sewer installed at the manhole.
- J. Manholes shall be constructed such that their walls are plumb.
- K. Floor doors shall be integrally cast into the top slab, and shall be cast into the concrete in accordance with the manufacturer's recommendations.
- L. Sewer connections 6 inches and larger to main sewers shall be made to an existing or new manhole. Connections to existing pipe stub-outs or tee or wye connections shall not be allowed.

### 3.07 MANHOLE FRAME AND COVER INSTALLATION

- A. Contractor Shall:
  - 1. Prepare the manhole top cone for frame installation per manhole and manhole cover manufacturer recommendations.
  - 2. Prepare and install manhole frames and covers per manufacturer recommendations.
  - 3. Check the installation and condition of gaskets and replace all missing or damaged gaskets.
  - 4. Install new frames and covers to the required elevations shown on the Plans or to the existing grade as directed by the Owner's Representative.
  - 5. Check the manhole covers for fit in the frame.
    - a. If a manhole cover is either excessively loose or tight in the frame, or rocks, wobbles, or otherwise moves in its frame, the frame and cover shall be removed and replaced by the Contractor at no additional cost to the Owner.
- B. Install and tighten all Bolt-Down Type covers.

3.08 STREAM CROSSINGS

- A. All sewer pipes crossing streams, above or below grade, shall be enclosed in steel casing pipe and carrier pipe shall be ductile iron pipe with restrained joints.
- B. Aerial spans shall avoid or minimize obstruction of stream flow during normal highwater events.
- C. Installation of casing pipe:
  - 1. Where permitted or directed by the Owner, casing pipe shall be installed directly in an open cut ditch for subsequent installation of carrier pipe after backfill. Ditch preparation, backfill, and compaction shall be as required for direct-bury ductile iron pipe.
  - 2. Lengths of casing pipe, as long as practical, shall be used except as restricted otherwise. Joints between casing pipe sections shall be butt joints with complete joint penetration, single groove welds, for the entire joint circumference, in accordance with American Welding Society (AWS) recommended procedures. Prior to welding the joints, the Contractor shall ensure that both ends of the casing sections being welded are square. Welded joints shall be coated and lined with coal tar enamel in accordance with AWWA C203.
  - 3. Casing pipe shall extend a minimum of 10 feet into the soil at each end.
- D. Installation of carrier pipe:
  - 1. After construction of the casing is complete, and has been accepted by the Engineer, install the carrier pipe in accordance with the Drawings and Specifications.
  - 2. Check the alignment and grade of the casing and prepare a plan to set the carrier pipe at proper alignment, grade, and elevation, without any sags or high spots.
  - 3. The carrier pipe shall be supported within the casing by use of casing spacers sized to limit radial movement to a maximum of 1 inch. Provide a minimum of one casing spacer per nominal length of pipe. Casing spacers shall be attached to the pipe at maximum 9- to 10-foot intervals.
  - 4. Close the ends of the casing with 4-inch brick and mortar walls.

3.09 CONCRETE PIERS

- A. Construct piers as shown on the Drawings and in accordance with the following requirements.
- B. The maximum spacing between piers shall be 30 feet for aerial crossings.

C. Bearing:

1. Earth: Where excavation reveals undisturbed earth subsurface, construct piers with spread footing foundations as shown on the Drawings.
2. Rock: Where excavation reveals level or benched rock having a minimum safe bearing value of 20,000 pounds per square foot (psf), construct piers with foundations bearing directly on rock. Drill a minimum of four holes into the rock under each pier and grout dowels into place to anchor the pier to the rock. Hole and dowel sizes are shown in the following table.

<b>Carrier Pipe Size</b>	<b>Grout Hole Diameter</b>	<b>Grout Hole Depth</b>	<b>Reinforcing Bar Dowel</b>
8 - 24	2.5"	8.0'	5
27 - 36	4.0"	8.0'	6
42 - 48	4.0"	8.0'	6
54	4.0"	8.0'	6

3. Grout holes from the bottom up using a grout pump. Take extreme care to ensure that the entire hole is filled with grout prior to inserting the dowel.
4. Helical type pier foundations may be required by the Unified Government of Athens-Clarke County as an option on a case-by-case basis.

D. Installation:

1. Employ experienced formwork carpenters to construct forms. Build formwork sufficiently strong to resist movement and distortion during pouring and to protect the pier from caving in or lateral movement.
2. Before placing concrete, dewater the bottom of the hole and clean out all mud, loose earth, and extraneous matter.
3. Pour concrete as soon as possible after the forms have been approved. Do not leave the excavation open for prolonged periods of time. Protect the excavation from surface water. Do not allow water to accumulate in the excavation or in surrounding areas.
4. Take all necessary precautions to protect the work and personnel on the site. Cover open holes when work is not in progress. Examine all surrounding excavations and embankments for possible hazards.

E. Inspection: A consulting soil and foundation engineer shall perform the following:

1. Inspect the bearing material and evaluate its suitability.

2. Inspect pneumatically drilled grout holes where applicable.
  3. Check dimensions of forms and verify that they are plumb to ensure conformity with Drawings and Specifications.
  4. Evaluate material penetrated by excavation with regard to lateral stability and uplift resistance.
  5. Recommend remedial measures should insufficient lateral stability or uplift resistance exist.
- F. Construct aerial piers as shown on the Drawings and in accordance with the Engineer's design. Each pier must be individually designed by the Engineer of record. When the typical pier detail is used, the Engineer of record must certify the design and disclose calculations showing the pier will stand up to the different forces acting upon it.

### 3.10 CONCRETE COLLARS

- A. Construct collars as shown on the Drawings.

### 3.11 INSPECTION AND TESTING

- A. Sewers and appurtenances shall be inspected and tested for:
1. Cleanliness,
  2. Alignment,
  3. Watertightness.
  4. Deflection.
- B. Cleanliness: Sewers and manholes shall be televised by the Contractor. Sewers and manholes shall be free of all debris and obstructions. Sediment in bottom of sewer shall not exceed 0.25 inch in depth. Flush sewers and manholes where sediment exceeds this limit.
- C. Alignment: Sewers shall be inspected for vertical and horizontal alignment by means of direct visual observation or by the use of mirrors, with sunlight or other light source. Sewers shall be straight in alignment, including no sags in the vertical alignment. Correct any misalignments discovered during inspection.
- D. Watertightness: All sewers constructed shall be watertight to the maximum extent feasible. Infiltration and exfiltration tests shall both be performed on all new sewers constructed as indicated below, except for those new sewers constructed which have active services tied into it as the pipe is being installed. In such cases the watertightness of the sewers shall be based on a visual inspection. All visible or audible leaks, including those found via television inspection, shall be repaired.

- E. Infiltration Tests (Only possible when groundwater is two feet above top of pipe and is only allowable on a case-by-case basis with approval from the Utilities Engineer):
1. Install suitable weirs in manholes selected by the Owner to determine the leakage of groundwater into the sewer. The maximum length of line for each infiltration test shall be 1,000 feet.
  2. Temporarily plug the sewer at the upper end of the section being tested. Install weir for a minimum of four hours before measuring flow. If leakage in any section of the sewer line exceeds 25 gallons per day (gpd)/inch diameter/mile, locate and repair leaks. Repair methods must be approved by the Owner. After repairs are completed, re-test for leakage.
  3. Furnish, install, and remove the necessary weirs, plugs, and bulkheads required to perform the leakage tests.
  4. Weirs shall be V-notch type equal to Pollard Water, Inc.
- F. Exfiltration Tests - Low-Pressure Air Test:
1. All sewers 8 through 24 inches shall be subjected to a low-pressure air test in accordance with ASTM F1417 and these Specifications. Prior to air testing, the section of sewer between manholes shall be thoroughly cleaned and wetted. Immediately after cleaning or while the pipe is water soaked, the sewer shall be tested with low-pressure air. At the Contractor's option, sewers may be tested in lengths between manholes or in short sections (25 feet or less) using inflatable balls pulled through the line from manhole to manhole. Air shall be slowly supplied to the plugged sewer section until internal air pressure reaches approximately 4.0 psi. After this pressure is reached and the pressure is allowed to stabilize (approximately 2 to 5 minutes), the pressure may be reduced to 3.5 psi before starting the test. If a 1.0 psi drop does not occur within the test time, then the line has passed the test. If the pressure drops more than 1.0 psi during the test time, the line is presumed to have failed the test, and the Contractor will be required to locate the failure, make necessary repairs, and retest the line. Minimum test time for various pipe sizes and types are as shown in the following table.

<b>Nominal Pipe Size, inches</b>	<b>Time (Min/100 feet) DIP, PVC</b>
6	5.7
8	7.6
10	9.4



<b>Nominal Pipe Size, inches</b>	<b>Time (Min/100 feet) DIP, PVC</b>
12	11.3
15	14.2
18	17.0
20	19.8
24	22.8

2. Required test equipment, including inflatable balls, braces, air hose, air source, timer, rotameter as applicable, cut-off valves, pressure reducing valve, 0-15 psi pressure gauge, 0-5 psi pressure gauge with gradations in 0.1 psi and accuracy of plus or minus 2 percent, shall be provided by the Contractor. Testing equipment shall be equal to Cherne Air-Loc Testing Systems.
3. The Owner shall witness and the Contractor shall keep records of all tests made. Copies of such records will be given to the Owner. Such records shall show date, line number and stations, upstream manhole and downstream manhole, operator, and such other pertinent information as required by the Owner.
4. The Contractor is cautioned to observe proper safety precautions in performance of the air testing. It is imperative that plugs are properly secured and that care is exercised in their removal. Every precaution shall be taken to avoid the possibility of over-pressurizing the sewer line.

G. Deflection Test: All PVC and PVC Truss Pipe and gravity sewers

1. Test PVC and PVC Truss Pipe gravity sewer for excessive deflection by passing a mandrel through the pipe. Deflection of the pipe shall not exceed 5 percent.
2. The mandrel shall have an odd number of legs, or vanes, with a quantity of such equal to or greater than nine. The legs of the mandrel shall be permanently attached to the mandrel. A mandrel with variable sizes shall not be allowed. The mandrel shall be constructed of steel, aluminum, or other material approved by the Owner, and shall have sufficient rigidity so the legs of the mandrel will not deform when pulling through a pipe. The mandrel dimensions shall be checked by the Owner before use by the Contractor. The following table shows minimum mandrel diameters for different pipe sizes.

<b>Nominal Pipe Size, inches</b>	<b>Minimum Mandrel Diameter, inches</b>
8	7.41

<b>Nominal Pipe Size, inches</b>	<b>Minimum Mandrel Diameter, inches</b>
10	9.31
12	11.21
15	14.06

\* equal to 95% of base inside diameter as specified.

3. General Procedure:
  - a. Flush the sewer to remove any mud or trash.
  - b. During the final flushing of the sewer, attach a floating block or ball to the end of the mandrel pull rope and float the rope through the sewer.
  - c. After the rope is threaded through the sewer, connect the pull rope to the mandrel and place the mandrel in the entrance of the sewer segment.
  - d. Connect a second rope to the back of the mandrel in order to enable the mandrel to be retrieved if excessive deflection is encountered.
  - e. Remove all the slack in the pull rope by gently pulling the rope at the far manhole. After the slack has been removed, place a tape marker on the pull rope close to the pipe opening where the mandrel will exit to provide a means of measuring the travel distance of the mandrel so that any deflected area can be located.
  - f. Pull mandrel through the sewer.
  - g. This test shall be performed without any mechanical pulling device.
  - h. An increasing resistance to pull is an indication of excessive deflection. If this occurs, measure the distance from beginning marker on rope to manhole. Locate section and replace bedding or pipe if visual examination reveals damage. Re-test as required until satisfactory results are achieved.
4. If the mandrel can travel from one manhole to the next manhole, the sewer segment shall be considered as passing the deflection test.
5. This test shall be performed once no sooner than 30 days after installation.

H. Manhole Watertightness:

1. Manholes shall be tested for watertightness in accordance with ASTM C1244 and these Specifications. Prior to testing manholes for watertightness, all lift holes shall be plugged with a non-shrink grout, all joints between precast sections shall be properly sealed, and all pipe openings shall be temporarily plugged and properly braced.

2. Vacuum Tests: The manhole, after proper preparation as noted above, shall be vacuum tested prior to or after backfilling. The test head shall be placed at the inside of the top of the cone section and the compression head inflated to 40 psi to produce a seal between the vacuum base and the manhole structure. Connect the vacuum pump to the outlet port with the valve open. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches. The manhole shall pass if the time is greater than that specified in the table below. If the manhole fails the initial test, necessary repairs shall be made with non-shrink grout while the vacuum is still being drawn. Retesting shall proceed until a satisfactory test is obtained. Vacuum testing equipment shall be equal to that manufactured by P.A. Glazier, Inc.

<b>Minimum Test Times (Seconds) for Various Manhole Diameters and Depths</b>		
<b>Depth, feet</b>	<b>Manhole Diameter, feet</b>	
	<b>4</b>	<b>5</b>
8	20	26
10	25	33
12	30	39
14	35	46
18	40	52
18	45	59
20	50	65
22	55	72
24	59	78
26	64	85
28	69	91
30	74	98

I. Video Inspection:

1. The Contractor is required to record digital footage of the existing sewer before the start of construction and record video footage of new sewer upon the completion of all grading, paving, compaction, and testing. The Owner inspector shall be present during digital recording. The Contractor shall give the Owner 48-hour (minimum) notice before starting digital recording. All video footage of existing and new sewer shall be submitted to the Owner for review and approval prior to acceptance of the work.
2. Immediately before digital recording, dye tablets dissolved in water shall be introduced into the sewer. One tablet per gallon of water shall be used for the dye mixture. One gallon of dye mixture per 100 linear feet of sewer shall be introduced. Use tablets that will produce a fluorescent green- yellow color in water.
3. The video footage shall be on a USB Drive. The digital camera used for this purpose shall be operative in 100 percent moisture conditions. Lighting for the camera shall be sufficient to yield a clear picture of the entire periphery of the pipe. The camera, television monitor, and other components of the video system shall be capable of producing a five hundred-line resolution picture. The camera's rate of travel shall not exceed 20 feet per minute. At each service, the camera shall come to a complete stop and the service shall be panned. The footage meter count shall be clearly visible. Logs shall include date, line size, length, manhole numbers, project number, direction of camera travel, direction of flow, and any observed defects or comments. For each service, the log should include the distance from manhole, its location (for example 9:00 or 2:00 o'clock), street address or parcel, and distance from mainline to cleanout. Videos between manhole segments shall be continuous; no breaks or "blink-outs" in the video shall be observed. Above-ground features adjacent to each segment's beginning manhole shall be videoed.
4. All video inspection contractors must be pre-approved (see Appendix B, Approved Contractors List for CCTV Inspection).

3.12 PROTECTION AND RESTORATION OF WORK AREA

- A. General: Return all items and all areas disturbed, directly or indirectly by work under these Specifications, to their original condition or better as quickly as possible after work is started.
1. The Contractor shall plan, coordinate, and prosecute the work such that disruption to personal property and business is held to a practical minimum.

2. All restoration work, including grading, dressing, grassing, and pavement replacement shall be maintained within 2,000 feet of the pipe laying operation.
  3. Prepare photographic documentation of sensitive areas along the project route/site to document conditions existing prior to project construction.
  4. All construction areas abutting lawns and yards of residential or commercial property shall be restored promptly. Backfilling of underground facilities, ditches, and disturbed areas shall be accomplished on a daily basis as work is completed. Finishing, dressing, and grassing shall be accomplished immediately thereafter, as a continuous operation within each area being constructed and with emphasis placed on completing each individual yard or business frontage. Care shall be taken to provide positive drainage to avoid ponding or concentration of runoff.
  5. Handwork, including raking and smoothing, shall be required to ensure that roots, sticks, rocks, and other debris are removed to provide a neat and pleasing appearance.
  6. The Unified Government of Athens-Clarke County or the Georgia Department of Transportation will be authorized to stop all work by the Contractor on its right-of-way when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.
- B. Man-Made Improvements: Protect, or remove and replace with the Owner's approval, all fences, walkways, mail boxes, pipe lines, drain culverts, power and telephone lines and cables, property pins, and other improvements that may be encountered in the work.
- C. Cultivated Growth: Do not disturb cultivated trees or shrubbery unless approved by the Owner. Any such trees or shrubbery which must be removed shall be heeled in and replanted under the direction of an experienced nurseryman.
- D. Cutting of Trees: Do not cut trees for the performance of the work except as absolutely necessary. Protect trees that remain in the vicinity of the work from damage from equipment. Do not store spoil from excavation against the trunks. Remove excavated material stored over the root system of trees within 30 days to allow proper natural watering of the root system. Repair any damaged tree over 3 inches in diameter, not to be removed, under the direction of an experienced nurseryman. All trees and brush that require removal shall be promptly and completely removed from the work area and disposed of by the Contractor. No stumps, wood piles, or trash piles will be permitted on the work site.

- E. Planting of new trees for restoration within the permanent easement shall not be allowed. Construction of permanent roadbeds, berms, drainage structures, or other structures shall not be allowed within the permanent sewer easement.
- F. Disposal of Rubbish: Dispose of all materials cleared and grubbed during the construction of the project in accordance with the applicable codes and rules of the Unified Government of Athens-Clarke County and state and federal regulatory agencies.
- G. Swamps and Other Wetlands:
  - 1. The Contractor shall not construct permanent roadbeds, berms, drainage structures, or any other structures, which alter the original topographic features within the easement.
  - 2. All temporary construction or alterations to the original topography will incorporate measures to prevent erosion into the surrounding swamp or wetland. All areas within the easement shall be returned to their original topographic condition as soon as possible after work is completed in the area. All materials of construction and other non-native materials shall be disposed of by the Contractor.
  - 3. The Contractor shall provide temporary culverts or other drainage structures, as necessary, to permit the free migration of water between portions of a swamp, wetland, or stream, which may be temporarily divided by construction.
  - 4. The Contractor shall not spread, discharge, or dump any fuel oil, gasoline, pesticide, or any other pollutant to adjacent swamps or wetlands.
- H. Bypassing or spilling wastewater onto the ground, into the trench, or into adjacent waters is prohibited.
- I. Dust Control: The Contractor shall use all means necessary to control dust on and near the work, and on and near all offsite borrow areas when dust is caused by the operations during performance of the work or if resulting from the condition in which the subcontractor leaves the site. The Contractor shall thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of work on the site.
- J. Contractor shall be responsible for overall project site safety and the safety of employees on the project site and shall be responsible for complying with all applicable safety standards. The Unified Government of Athens-Clarke County will not be responsible for safety related to the Contractor's activities.

**END OF SECTION**

**SECTION 02735**  
**SEWER SERVICE CONNECTIONS**

**PART 1 GENERAL**

1.01 SCOPE

- A. The Work covered by this section shall consist of furnishing and installing service connections in the sewers, of the size and type shown on the Drawings and specified herein.

**PART 2 PRODUCTS**

2.01 MATERIALS

- A. Service connections shall be made from the side of sewer lines 12-inch diameter or less using minimum 4-inch diameter pipe as shown on the Drawings. For connecting to sewers larger than 12-inch diameter, the service line shall connect directly to a manhole. Service lines 6-inch diameter or larger connecting to any size sewer shall connect directly to a manhole.
- B. Service pipe material shall be Standard Diameter Ratio (SDR) 26 polyvinyl chloride (PVC) when connecting to PVC or PVC truss pipe sewer. Service pipe material shall be ductile iron pipe when connecting to ductile iron sewer. A tee/wye (sweep tee) is required when connecting to SDR 26 PVC sewer.
- C. The service connection shall extend from the sewer line to a minimum of 2 feet past the edge of the permanent easement or right-of-way, be plugged, and marked with a vertical piece of SDR-26 PVC exposed a minimum of 4 feet above finish grade.
- D. If the service connection ends in rock, the Contractor shall excavate the rock an additional 10 feet beyond the plugged end.
- E. Service connections on existing sewer lines shall be by means of a tapping saddle on ductile iron pipe, and a manufactured saddle on PVC truss pipe sewers. Connection of service lines or risers to new sewer lines shall be by means of standard tees, or as indicated on the Drawings.
- F. Grease traps shall be connected to the sewer main by means of a 6-inch diameter service line with a "dog house" style manhole at the point of connection. A 4-inch diameter service line is acceptable only in cases where the service line is existing.

**PART 3      EXECUTION**

3.01      INSTALLATION

- A.      Laying of service connection lines shall be in accordance with Section 02730, Sewers and Accessories, of these Specifications.

**END OF SECTION**



**SECTION 02750  
SEWER CLEANING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section includes Specifications for sewer line cleaning to remove foreign materials and debris from the mains and restore the pipe to a minimum of 95 percent of the through flow channel and cross section, for clear viewing of the interior surfaces of the lines during television inspection, or as required for other specified rehabilitation or purpose.

**1.02 REFERENCES**

- A. Manual for Uniform Traffic Control Devices (MUTCD) standards.

**1.03 SUBMITTALS**

- A. Submittals are to be in color PDF format for printed documents as well as other required formats when applicable for digital transfers.
- B. Example database and report deliverable proposed for this Project.
- C. Submit one example record database of cleaning in digital format of previous work.
  - 1. Records will be reviewed by Engineer to determine if quality of submitted example is acceptable, and documented according to industry standards and the Engineer's requirements.
  - 2. Modify equipment and/or cleaning procedures to achieve report material of acceptable quality.
  - 3. Do not commence Work prior to approval of quality by the Engineer. Upon acceptance, record database shall serve as standard for remaining Work.
- D. Catalog and manufacturer's data sheets for camera equipment.
- E. References: Contact names and telephone numbers.
- F. List of staff, equipment and/or inspection technology to be used on this Project.
- G. Supervisor and field crew leader's qualifications including certification of required experience.

- H. Supervisor and field crew leader's contact information including name and mobile telephone numbers.
- I. Confined space entry certification that staff to be used on this Project have been properly trained should confined space entry be required.
- J. Contractor's Safety Plan.
- K. Training and inspection plan a minimum of 7 days prior to the first inspection.
- L. Schedule: 14-day look ahead; weekly.
- M. Traffic control plan.
- N. Quality control plan.
- O. Debris disposal plan.
- P. Record database of cleaning.
- Q. Landfill waste manifests and scale tickets.
- R. Cleaning log; weekly.

1.04 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Supervisor of the field crews shall have the proper training in this function and have a minimum of 3 years of experience in performing acoustic testing including safe working practices, familiarity with the inspection procedures and standards utilized, confined space safety procedures, the types of equipment being used, and products/materials being used.
  - 2. Field crew leaders responsible for sewer cleaning shall have a minimum of 2 years of experience in this field.
  - 3. Contractor shall provide, at all times, a competent field supervisor in charge of sewer cleaning on the site and who accompanies the field staff at all times. The field crew supervisor shall be responsible for the safety of the Contractor's workers and site installation conditions.
  - 4. The Contractor shall not employ any procedure or utilize any equipment the Contractor's personnel do not have the above stated minimum experience.
  - 5. No crew members shall enter confined spaces without the necessary certified training.

6. The Contractor shall provide a detailed account of satisfactory experience during the last 3 years. Those references shall include contact, agency, telephone number and address.
7. The Contractor shall provide the Engineer with written documentation (certification) that the supervisor, field crew leader and all crew members have received the proper training and the requisite experience and certifications.
8. The Contractor shall take appropriate action to ensure all employees are polite to the public in all aspects of the Work performed.

#### 1.05 REGULATORY AND SAFETY REQUIREMENTS

- A. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the General Conditions, Contractor's safety requirements shall conform to ANSI A10.6.
- B. Any landfill disposal of materials removed from the project site shall be done in state-permitted landfills appropriate for the material being disposed.

### **PART 2 PRODUCTS**

#### 2.01 GENERAL

- A. The Contractor shall provide all supervision, labor, material, supplies, equipment, transportation, traffic control, etc., necessary to satisfactorily clean the sewer main(s).
- B. Hydraulically Propelled Equipment: The equipment used shall be of a movable dam type and be constructed so a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the main being cleaned and shall provide a flexible scraper around the outer periphery to insure removal of grease. If sewer cleaning balls or other equipment, which cannot be collapsed, are used, special precautions to prevent flooding of the sewers and public or private property shall be taken.
- C. High-Velocity Jet (Hydrocleaning) Equipment: All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size mains designated to be cleaned. Specialized nozzles capable of concentrating pressurized water either to the crown or lower quadrant of the pipe to be cleaned shall be available on site. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel.

- D. Mechanically Powered Equipment: Bucket machines shall be in pairs with sufficient power to perform the Work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the main shall not be allowed. A power rodding machine shall be either a sectional or continuous rod type capable of holding a minimum of 500 feet of rod. The rod shall be specifically heat-treated steel. To insure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.
- E. Large Diameter Cleaning: For cleaning large diameter sewer, storm or combination pipes, consideration should be given to a combination hydraulic high volume water and solids separation system. The flow from the sewer shall provide water for the pump operation so no potable water is necessary and treatment costs are not a factor. Water volume of up to 250 GPM at 2,000 psi plus shall move solids to the downstream manhole in high flow conditions. The separation system shall dewater solids to 95 percent (passing a paint filter test) and transfer them to a dump truck for transport to an approved landfill. Sewer water shall be filtered to a point where it can be used in the pump for continuous cleaning. No by-passing of sewer flows shall be necessary. The unit shall be capable of 24 hour operation and the unit shall not leave the manhole until a section is fully cleaned.
- F. The flow of sewage in the sewer mains shall be utilized to provide the necessary pressures for hydraulic cleaning devices whenever possible. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily. The Contractor's truck/trailer must be permitted by the Owner as having the proper backflow prevention devices. The approval of the Owner shall be obtained before Owner's water is used. Hydrants shall only be operated under the supervision of the Owner. Contractor shall be responsible for obtaining a hydrant meter from the Owner for this water use as directed by the Engineer. Contractor shall be responsible for all costs associated with hydrant meter(s).
- G. The Contractor shall be responsible for providing all other necessary hoses and tools for obtaining the water.

## **PART 3      EXECUTION**

### **3.01      GENERAL**

- A.    Cleaning Precautions: During cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (requiring water pressure to provide their cleaning force) or tools retarding the flow in the sewer main are used, precautions, including the direction of the cleaning operation, shall be taken to insure the water pressure created does not damage or cause flooding of public or private property being served by the pipe.
- B.    Cleaning: The designated manhole sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. Selection of the equipment used shall be based on the conditions of pipes at the time the Work commences. The equipment and methods selected shall be satisfactory to the Owner. The equipment shall be capable of cleaning a minimum of 1,200-foot linear feet and of removing dirt, grease, rocks, sand, and other materials and obstructions from the pipes and manholes. If cleaning an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. Extreme care shall be taken when cleaning in a reverse setup so as not to cause flooding of service lines located along the sewer. If, again, successful cleaning cannot be performed or the equipment fails to traverse the entire manhole section, it will be assumed a major blockage exists and the cleaning effort shall be repeated with other types of equipment. All pipes shall be cleaned to the satisfaction of the Owner.
- C.    The term "clean", as used herein, shall mean the complete removal of all garbage, dirt, gravel, rocks, roots, grease, settled sludge and all other solid or semi-solid materials from the pipes and manholes.
  - 1.    Light Cleaning is defined as cleaning a pipe with an average depth of foreign material and debris equal to no more than 25 percent of the diameter of the main over the length of the manhole-to-manhole section. Rocks removed should be smaller than 3 inch in diameter. Additionally, the Contractor may encounter segments or groups of segments that have recently been cleaned through ongoing operations and maintenance. If the Contractor encounters a segment that he believes does not warrant Light Cleaning then the Contractor shall confirm the condition and submit justification not to perform Light Cleaning on the sewer segments for approval by the Engineer.

2. Heavy Cleaning is defined as cleaning a pipe with an average depth of foreign material and debris equal to more than 25 percent of the diameter of the main over the length of the manhole-to-manhole section. Rocks removed should be larger than 3 inch in diameter.
  3. If Heavy Cleaning is encountered either at the start of the assessment or in progress of the assessment, the Contractor shall notify the Engineer of the condition and immediately submit supporting CCTV data or other photographic images of the condition. The Engineer will review the submitted information to confirm the condition and will advise the Contractor of further action. Heavy Cleaning, if deemed required by the Engineer, may be assigned to the Contractor. After Heavy Cleaning is performed on the segment length requiring Heavy Cleaning, the Contractor shall continue assessment of the entire sewer length.
  4. As part of both Light and Heavy Cleaning, the Contractor shall scour debris or grease-laden manhole walls with high velocity water gun. No additional cost will be paid for such scour.
- D. Conditions, such as broken mains and major blockages, may prevent cleaning from being accomplished, especially where additional damage would result if cleaning were attempted, or continued. Should such conditions be encountered, the Contractor shall not be required to clean those specific main sections unless the Owner removes the apparent obstruction.
- E. Whenever mains to be cleaned show evidence of being more than one-half filled with solids, bucket machines and/or rodding machines shall be utilized to remove the major portion of the material before hydraulic equipment or high velocity, hydro-cleaning equipment is brought into use for finishing the cleaning work.
1. When bucket machines are used, the bucketing process shall be done in one main section at a time. A bucket of the proper size shall be placed into the downstream manhole and pulled, in intervals, towards the upstream manhole.
  2. The bucket shall be retrieved and emptied at varying intervals depending upon the amount of materials being removed. When a bucket is retrieved and it is completely full or overflowing with materials, then the length of travel into the main shall be reduced to ensure total removal of debris. This process shall be repeated until the bucket has been pulled through the entire main section. Upon completion of the bucketing or rodding operation, hydraulically propelled cleaning equipment or high velocity hydro-cleaning equipment shall be used to complete the cleaning work.

- F. Root Removal: Roots shall be removed from sections designated to be cleaned. Special attention shall be used during the cleaning operation to assure complete removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root saws, chain-slingers, porcupines, and equipment such as high-velocity jet cleaners.
- G. Material Removal: All sludge, dirt, sand, rocks, grease, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. Passing material from manhole section to manhole section, potentially causing main stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.
- H. Disposal of Materials:
1. All solids, semisolids and/or liquids resulting from the cleaning operations shall be removed from the work site and disposed of at a site approved by the Owner and approved to accept wastewater debris and liquids.
  2. All materials shall be removed from the site no less often than at the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as approved by the Owner.
  3. Under no circumstances shall removed debris and/or liquids be dumped onto the ground or streets or into ditches, catch basins or storm drains for any length of time.
  4. Contractor shall be responsible for legally disposing all debris and all disposal costs.
  5. Debris disposal plan shall be approved by the Owner and Engineer in advance of cleaning operations.
- I. Protruding Tap Removal: Service taps extending into the pipe shall be removed by means of hydraulically or mechanically operated equipment. Chain cutters, clamshell cutters, and robotic lateral reinstatement cutters are typical equipment used to remove protruding taps. Taps should be removed so the resulting protrusion is less than 1 inch at the greatest point, or 10 percent of sewer main diameter, whichever is smaller. All debris resulting from protruding tap removal shall be removed immediately from the pipe. Where protruding taps are vitrified clay, grinding wheels may be used on lateral reinstatement cutters to insure a smooth finish. Where protruding taps prevent the passage of equipment through the pipe, notify the Owner immediately for point repair execution. Note: All protruding taps must be verified via television inspection prior to inserting any type of cutting tool into the main.

- J. Grease Removal: Grease shall be removed in designated sections where grease is a known problem and shall be considered part of the cleaning procedures. The Contractor shall provide a list of lines requiring grease removal to the Owner and the Project Manager so they may be added to the Owner's on-going maintenance list. Special attention should be given during the cleaning operations to ensure the complete removal of grease from the top of the pipe. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutter and porcupines, and equipment such as high-velocity jet cleaners, and hot water. Chemical means of grease removal will be allowed upon request by the Contractor; however, it is considered subsidiary to Line Cleaning, and no additional payment will be allowed.

### 3.02 ACCEPTANCE

- A. The Contractor shall CCTV up to 10 percent of the cleaned sewer length that the Engineer selects and observes to confirm the lines are cleaned. Condition assessment is not required for CCTV related to verification and acceptance. If the Engineer is not satisfied with the cleaning based on a review of the inspection's digital videos then an additional 10 percent will be required for review. Segments found to be not cleaned according to these Contract Documents will be required to be re-cleaned at the Contractor's sole expense.
- B. The Engineer will select lines for verification and acceptance utilizing CCTV within a week after the cleaning has been performed and it shall be the Contractor's responsibility to CCTV the sewer(s) segment and provide the CCTV recording to the Engineer along with the respective application for periodic payment.

### 3.03 CLEANING PRECAUTIONS

- A. Bucket machines or rodding machines shall be used very carefully because of their tendency to "hang-up" on or "wedge against" the sewer main and break it. Only experienced and well-trained operators shall operate the machines(s).
- B. Whenever hydraulically propelled cleaning tools, or high velocity, hydro-cleaning equipment or any tools retarding the flow of water in the sewer mains are used, precautions shall be taken to ensure the water pressure created does not cause any damage or flooding to public or private property being served by the main involved.



- C. Any damage to the sewer mains caused by the Contractor's operations shall be repaired in a manner approved by the Owner at the Contractor's expense. The Owner reserves the right to make said repairs itself and charge the Contractor accordingly.
- D. Damage due to flooding of any public or private property being served by any main over-filled by Contractor's cleaning operations shall also be repaired or otherwise paid for by the Contractor.

### 3.04 DOCUMENTATION

- A. The Contractor shall keep records (in a log-type Microsoft Access Database form) of the Work accomplished in the cleaning of the pipes. With each pay request, digital backup documentation is required. The following information shall be required as a minimum:
  - 1. Location (street address) and type of surface cover.
  - 2. Upstream Manhole ID Number to Downstream Manhole ID Number.
  - 3. Pipe ID Number.
  - 4. Date and Time.
  - 5. Length of Pipe.
  - 6. Condition and depth of manholes.
  - 7. Size and type of main.
  - 8. Type and condition of manhole.
  - 9. Type of cleaning performed and various types of equipment used.
  - 10. Meter readings (fire hydrant use).
  - 11. Remarks as to type of materials removed, amount of materials removed, and number of hours spent on each pipe section.
- B. Debris Disposal Plan:
  - 1. Debris disposal plan shall provide for safe conduct of the Work and shall include:
    - a. Detailed description of methods and equipment to be used for each operation;
    - b. The Contractor's planned sequence of operations, including coordination with other work in progress;
    - c. A description of the Contractor's plan for disposal of removed materials, including copies of any hauling, disposal, or related permits, if applicable.

**END OF SECTION**

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**SECTION 02820**  
**SEWER PIPELINE INSPECTION**

**PART 1      GENERAL**

**1.01      SCOPE**

- A. This section describes the guidelines and requirements for closed circuit television (CCTV) inspection of sanitary sewers to identify structural defects, maintenance concerns, and actual and potential sources of inflow and infiltration in mainline sewers, service laterals, and manholes. Contractor shall furnish all labor, materials, equipment, tools, and other incidental services for CCTV inspection.

**1.02      REFERENCES**

- A. The following is a list of standards which may be referenced in this section:
1. National Association of Sewer Service Companies (NASSCO): Pipeline Assessment Certification Program (PACP), latest version.
  2. Occupational Safety and Health Act (OSHA).

**1.03      SUBMITTALS**

- A. Action Submittals:
1. Product data for inspection vehicles, equipment and software.
  2. Acceptance Standard for deliverables; two copies on external hard drives (HD).
    - a. Provide example deliverables to show the quality of work the Contractor proposes for this Project. Quality of deliverables shall be to the Owner's satisfaction and upon acceptance shall serve as the standard for the Work.
    - b. Example media shall demonstrate camera advancement speeds, picture clarity, environment condition, lighting, panning as well as focus on defects, title frame, and screen labels for images, and sample still photographs.
    - c. Examples shall include a minimum of four manhole-to-manhole segments and combinations of sizes with a least one 48-inch diameter or greater and various pipe materials including concrete, ductile iron, and clay.

B. Informational Submittals:

1. References: Contact names and telephone numbers.
2. List of staff and equipment to be used on Project.
3. Crew chief qualifications.
  - a. Include current NASSCO PACP certification.
4. Crew chief contact information: name, mobile telephone number.
5. Certification that staff to be used for the Work is properly trained in confined space entry and hazardous atmospheres.
6. Contractor's safety plan.
  - a. Include confined space entry procedures.
7. Traffic control plan.
8. Schedule: 14-day look-ahead; weekly.
9. Public notification door hanger.
10. CCTV Inspection:
  - a. Initial CCTV inspection within 48 hours after first day's work is completed.
  - b. Subsequent deliverables on routine basis.
  - c. Include the following with each inspection submitted:
    - 1) Inspection media.
    - 2) Inspection database.
    - 3) Inspection reports.
11. Log of cable footage counter calibration checks.
12. Quality assurance plan.

1.04 QUALIFICATIONS

- A. All Contractors must be pre-approved (see Appendix B, Approved Contractors List for CCTV Inspection).
- B. Operation of inspection equipment, coding of inspections, and quality control shall be performed by NASSCO PACP certified personnel.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

3.01 GENERAL

- A. Prestartup Meeting: At least 1 week prior to beginning CCTV inspection work, schedule with Owner to review proposed temporary sewer flow control plan, traffic control plans, cleaning, and inspection methods. Attendance is mandatory for the Contractor's Project Manager and Crew Chief.

- B. Complete CCTV inspection for pipe segments as indicated in the map or pipeline inventory provided by the Owner.
  - 1. Label assets and structures in their inspection records using same identification nomenclature as provided in the Owner's GIS.
  - 2. If pipe or manhole is not shown or listed, identify by downstream structure with letter designation added starting with "A" for each unidentified structure on each pipe segment. Subsequent upstream structures will be identified by adding "B", "C", and so on; include revisions on corrected field map.
- C. Complete applicable Work specified in Section 01572, Temporary Sewer Flow Control, and Section 02750, Sewer Cleaning, prior to starting CCTV inspection.
- D. GPS Coordinates:
  - 1. Record latitude and longitude (decimal degrees) coordinates using a portable global positioning system (GPS) device in field for manholes and other pipeline access locations used during inspection in accordance with Section 01056, GPS Data Collection.
  - 2. Include coordinates associated with each inspection in the database and report.
- E. Contractor's Project Manager and Crew Chief shall attend regular progress meetings as scheduled by Owner.
- F. Look-Ahead Schedule: Prepare and submit at least 2 weeks in advance, identifying areas to be inspected. Schedules shall include structures, street locations, and dates.
- G. Traffic Control: Conform to requirements of Section 02730, Sewers and Accessories, Paragraph 3.02 B.
- H. Confined Space Entry:
  - 1. Contractor shall minimize physical entry into manholes.
  - 2. Manhole entry shall be performed in accordance with Federal, State, Local and any other regulations for confined space entry.
  - 3. Personnel shall be trained in confined space entry and hazardous atmospheres in accordance with current OSHA requirements.

### 3.02 EQUIPMENT

#### A. Inspection Vehicle:

1. Equipped with monitoring equipment specifically compatible with sewer inspection equipment.
2. Equipped with a safety backup alarm and traffic warning flashers.
3. Clearly marked with the inspection company name and phone number.
4. Off road vehicles or equipment shall be approved by the Owner before use by the Contactor.

#### B. Inspection Equipment:

1. Inspection equipment that fails to produce satisfactory inspection quality shall be removed from the Work.
2. Monitoring Studio:
  - a. Equipped with independent power source.
  - b. Equipped with lights.
  - c. Temperature controlled.
  - d. Size: Sufficient to allow seating for a minimum of two people in addition to operating technician.
  - e. Video Monitor:
    - 1) Locate in monitoring studio.
    - 2) Capable of producing high quality color picture.
    - 3) Resolution: No less than 500 lines.
    - 4) Continuous display during survey.
3. Transport Platform:
  - a. Self-propelled, mounted on skid, or mounted on float.
  - b. Sized for each pipe diameter in accordance with manufacturer's recommendations.
  - c. Cables: 750 feet long, minimum.
  - d. Equipped with tag line suitable for pulling camera backwards.
  - e. Equipped with winch, power winch, camera cable, powered rewind, or other devices used to move camera through pipe.
    - 1) When powered and controlled winches are used to pull the camera through pipeline, provide telephones, radios, or other means of communication between the two manholes to ensure communications exist between crewmembers.
  - f. Remote Reading Footage Counter:
    - 1) Accuracy: 0.20 foot over length of section being inspected.
    - 2) Counter display located in the monitoring studio.
    - 3) Marking on cable will not be allowed.
    - 4) Calibration: Perform each day prior to setup.

- g. Secure cable, chains, and other devices used with camera so as not to obstruct camera view or otherwise interfere with proper documentation of sewer conditions.
  - 4. Digital Camera:
    - a. Color CCTV camera.
    - b. Sufficient for 6-inch through 54-inch diameters and in accordance with manufacturer's recommendations.
    - c. Mounted on transport platform.
    - d. Operative in 100 percent humidity conditions without lens fogging.
    - e. Operative in hazardous and corrosive environment and specifically designed for pipeline inspection.
    - f. Camera Lighting:
      - 1) Mounted on and turned in direction of camera head.
      - 2) Light Sensitivity: Greater than 1.5 lux minimum.
      - 3) Minimize reflective glare.
      - 4) Remote variable intensity control.
      - 5) Provide clear, in-focus picture of entire inside periphery of pipe.
      - 6) Ability to achieve proper balance of tint and brightness.
    - g. Resolution:
      - 1) Horizontal Resolution: 640 lines minimum.
      - 2) Vertical Resolution: 480 lines minimum.
      - 3) Meet or exceed monitor resolution.
    - h. Rotation: 360 degrees.
    - i. Pan and Tilt: 270 degrees, with adjustable supports designed for operation in connection with pipe inspection.
    - j. Viewing Angle: 65 degrees, minimum.
    - k. Focus and Iris Controls:
      - 1) Automatic or remote.
      - 2) Adjustment shall allow optimum image quality to be achieved.
    - l. Focal Distance: Adjustable through range from 6 inches to infinity.
    - m. Zoom: Capable of 40:1 (10x optical, 4 times digital).
- C. Inspection Software:
  - 1. Inspection equipment shall utilize software capable of providing complete survey reports, inspection database, and linked media files.
  - 2. Coding system shall be certified by NASSCO in accordance with their Pipeline Assessment and Certification Program (PACP).

### 3.03 INSPECTION

#### A. Video Recording:

1. CCTV inspection is represented by one manhole-to-manhole pipe segment or other access-to-access point; not multiple manhole-to-manhole segments.
2. Prior to beginning CCTV inspection, complete initial screen text step and position camera at center of manhole and with the axis at the centerline of the pipe.
3. Before the camera enters the pipe, inspection shall provide an internal video of the manhole. Video recording shall begin by facing the pipe segment to be inspected and then pan/tilt/zoom as necessary to point the camera lens up towards the manhole opening.
4. Show continuous footage reading on inspection image. Place on screen where it is clearly visible (e.g., if black font, do not place on dark background; if white font, do not place on light background).
5. Viewing shall be in direction of flow, except while camera is being used in a reverse setup. Inspection shall proceed from upstream to downstream, unless prohibited by obstruction.
6. During the inspection, if the camera will not pass through the entire length of the pipe segment due to an obstruction, set up the equipment so that the inspection can be performed from the manhole at the opposite end of the pipeline.
7. If an upstream (reverse) setup is required, establish new inspection run separate from downstream (normal) setup.
8. Keep camera lens clean and clear. If material or debris obscures image or causes reduced visibility, clean or replace lens prior to proceeding with recording operation.
9. Camera lens shall remain above visible water level and may submerge only while passing through clearly identifiable pipeline sags or vertical misalignments. If flow exceeds 25 percent of diameter, such that camera lens becomes obscured, stop inspection until flow subsides. If necessary, reschedule CCTV operation. Surcharging and flooding of camera lens is not an excusable condition if it has been artificially created upstream (for example, placement of flow plugs or freshwater flushing in pipe).
10. Recordings shall clearly show defects and observations, and their severity, in addition to obvious features, such as, laterals and joints.
11. Camera Operation:
  - a. Speed: 30 feet per minute, maximum, during inspection.
  - b. Stop, for a minimum of 5 seconds, at every lateral, or other defect or adversity.



- c. Pan entire diameter or area of pipe at each defect and lateral connection.
  - d. Readjust lens, lighting, and focus in order to ensure clear, distinct, and properly lighted image of defect.
- 12. Loss of color or severe red or green color will be cause for rejection of inspection.
- 13. Recordings (image and audio) shall be without distortion or outside interference.
- 14. Inspection of pipe segments shall be continuous from manhole-to-manhole.
  - a. Video shall clearly show camera starting and ending at manhole, unless defects do not allow it.
  - b. Do not perform partial inspection on one HD and then complete run on another HD.
  - c. If a pipe segment is partially inspected due to an excusable condition (e.g, collapsed pipe), the inspected length of pipe shall be viewed by the Owner for acceptability.
  - d. If a portion of the inspection is unacceptable, the entire pipe segment shall be deemed unacceptable and shall be reinspected.
- 15. Owner may accept physical inspection that does not adhere to minimum standards if adverse conditions are encountered and reinspection is not advised. In such a case, enough data shall be provided to permit accurate assessment.

B. Measurement:

- 1. Record in United States Customary units.
- 2. Obtain pipe diameter by physical measurement in upstream (or downstream) manhole or other access structure.
- 3. Verify pipe material (such as, RCP, VCP, CMP) and surface lengths between manholes.
- 4. Use calipers or measuring rod to determine diameter of inlet and outlet pipe.
- 5. Footage measurements shall begin at center of upstream manhole, unless the Owner approves otherwise.
- 6. Continuous Footage Readings:
  - a. Use to identify location of defects.
  - b. Accuracy: Plus or minus 0.20 feet, minimum tolerance.
  - c. Defect locations are to be called out and recorded to nearest 0.10 feet.
  - d. Pipe segment recording will be unacceptable if continuous footage meter is inaccurate, or identified defects or features leave doubt as to accuracy of locations or total length.

7. Measurement shall be zeroed after each pipe segment inspected.
8. Check accuracy of measurement meters daily by use of walking meter, roll-a-tape, or other suitable device.

### 3.04 DELIVERABLES

A. Upon completion of the CCTV inspection, transfer the inspection data to an external hard drive (HD) of sufficient capacity and that is compatible with the Owner's equipment; include code required for proper playback of the video file.

1. Labeling:
  - a. Provide a printed label on the outside of the HD that indicates the following:
    - 1) Owner: Athens Clarke County Public Utilities Department.
    - 2) Project title.
    - 3) Date of inspection (range).
    - 4) Inspection company.
    - 5) Deliverable number.

B. Media:

1. Video:
  - a. Inspections completed, with a unique filename per inspection.
  - b. Encoded in .MPG format.
  - c. Opening Screen: The following is a list of required on-screen text display fields.
    - 1) Date and Time: (YYYY/MM/DD), (military time hh:mm).
    - 2) Surveyor's Name/Company: John Doe/ABC Company.
    - 3) Project Name: XYZ project.
    - 4) Location: 1 Example Street.
    - 5) Location Code: B – Example Highway.
    - 6) Upstream MH No: ### (Facility\_ID).
    - 7) Upstream MH depth: ##.# (nearest tenth of a foot).
    - 8) Downstream MH No: ### (Facility\_ID).
    - 9) Pipe Segment Ref. ##### (Facility\_ID).
    - 10) Starting Footage: ### (nearest tenth of foot).
    - 11) Inspection Direction: Downstream or upstream.
    - 12) Pipe Material: Example, ductile iron.
    - 13) Pipe Diameter/Height/Width: Diameter: ##/Height: ##/Width: ## (as measured in field).
    - 14) Weather: Example, rain.
    - 15) Precleaning: Example, jetting.

- 16) Additional Information: Additional important information/comments.
  - d. Continuous View: The following is a list of required on-screen text display fields.
    - 1) Inspection date and time.
    - 2) Continuous forward and reverse readout of cameral distance from center of manhole reference (tape counter footage).
    - 3) Pipe segment identification number.
    - 4) Defect/observation code(s) (when encountered).
  2. Audio:
    - a. Embedded in video file.
    - b. Operator shall include description of inspection setup, including related information from log form and unusual conditions.
    - c. Operation changes (for example, remove roots and restart inspection at footage prior to root removal).
    - d. Verbal description and location of each defect.
    - e. Verbal description and location of each service connection.
  3. Still Photographs:
    - a. Provide digital photographs showing inspection image whenever observation or defect is recorded.
    - b. Each with unique filename.
    - c. Encoded in .JPEG format.
    - d. Minimum 1024 by 768 resolution.
    - e. Provide label on front of photograph with structure identification number, footage (if not visible on photograph), and defect code.
- C. Database:
1. Include all inspections; each submittal shall be cumulative. Creating a separate database for each inspection is not acceptable.
  2. Provide database of collected data including:
    - a. Asset information.
    - b. Inspection information, where each inspection includes no more than one manhole-to-manhole segment.
    - c. Defect and observation codes.
    - d. Start and stop footages for continuous defects.
  3. File Type: Microsoft Access (.MDB or .ACCDB).
  4. Database Format: NASSCO PACP data shall be exported into a Standard Exchange Database that is compliant with the Owner's software.
  5. List inspection media names in corresponding asset/inspection/defect information field within the database.

D. Inspection Reports:

1. Provide electronic copy (.PDF) inspection reports including:
  - a. Summary of inspections completed.
  - b. Pipe graphs of each inspection showing asset information and defects/observations.
  - c. Full color photographs.
2. Field Maps:
  - a. Corrected to reflect actual field conditions.
  - b. Illustrate changes in pipe routing that differ from the Owner's GIS.
  - c. Neatly strike out inaccurate information using green markups and clearly show correct information using red markups. Show notes clarifying changes in blue markups.

3.05 QUALITY CONTROL

- A. Review inspection databases, media and reports to resolve inconsistent and conflicting data and to improve accuracy of data prior to submittal.
- B. If minimum level of accuracy is not met after review by the Owner, perform reinspection of pipes that do not meet requirements at no additional cost to the Owner.
- C. Quality control procedures shall be in accordance with method attached as a supplement at the end of this section.

3.06 SUPPLEMENTS

- A. The supplements listed below, following "End of Section," are a part of this specification.
  1. Inspection Summary Sheet (sample).
  2. NASSCO PACP Quality Control Procedure.

**END OF SECTION**

# INSPECTION SUMMARY SHEET

**[SAMPLE]**

[illegible]



## **NASSCO PACP QUALITY CONTROL PROCEDURE**

### **General Method**

CCTV contracting companies shall have a Random Number Quality Control procedure in place that is then audited by client. A random number is one of a series of numbers that have no detectable pattern, so that each and every item in a known population has an equal chance of being selected based upon random number. A minimum of 5 percent of CCTV contractor's data shall be checked using a Random Number Quality Control procedure as basis of selecting inspections for review. Intent is for Client to actually audit CCTV contractor's QC procedure rather than performing their own QC. If there is doubt about results then Client can ask for another differing set of Random Numbers to be created and be applied to CCTV operator in question, thereby generating another different set of inspections to be checked. Create QC history for each CCTV operator and not for each contract.

### **Generating Random Numbers**

A Random Number list, based upon population and selection percentage, is available from many web sites. This site generates a list of random numbers that can be sorted in numerical order and printed. Each CCTV operator shall have a different set of Random Numbers.

### **Selection of Inspections to be Checked**

In the field, CCTV operator inspects each sewer segment and enters PACP information into a computer database. In the office, QC employee/operator counts through inspections, for each separate CCTV operator, in the order in which they were inspected. When inspection coincides with a Random Number a copy of inspection is made from HD/DVD onto CCTV operator's master QC HD/DVD. A copy of corresponding CCTV report is also printed from computer. These are then kept in CCTV operator's QC folder until QC is carried out by qualified QC employee/operator. By using the Random Number sampling system CCTV operator will not be able to "abuse" system. Client can ask for the set of Random Numbers for each CCTV operator at start of Project, or Client can provide a set of Random Numbers to be used for each operator associated with Project.

### **Quality Control of Inspection**

It is expected that accuracy of Header record exceeds 90 percent as most field contents are based upon facts. The simplest method for QC of Header record is as follows:

Each field completed, and those that are not but should have been, is counted, producing a "number of fields checked", say 32 (ignoring unused fields).

Then fields with mistakes are counted, irrelevant of level of the mistake, creating an "error count" say for this example, 2.

Therefore, calculation is:

$(\text{error count} / \text{number of fields checked}) * 100 = \text{percentage error}$   
 $100 - \text{percentage error} = \text{accuracy percentage}$

$(2 / 32) * 100 = 6.25\%$

$100\% - 6.25\% = 93.75\%$  accuracy level

This percentage accuracy level is then entered onto a graph so that ongoing accuracy can easily be seen, again, for each CCTV operator.

### **Detail Information**

It is expected that accuracy of Observation/Defect codes exceed 90 percent.

As with Header records, each field that has been completed in the Detail records is added up, irrelevant of whether it is a Clock At/To, the Continuous Defect field or Distance/Video digits. Each entry is treated as equally important. From this number of entries made in the Detail section, a figure is arrived. A qualified QC employee/operator then looks through the same inspection and checks accuracy of each field and reaches two values, the number of entries that should have been made and an error count. No attempt should be made to create a new inspection from scratch, just check what has already been reported on. If a defect is not recorded then number of fields that support the missed defect is added to Error Count, for instance, if CCTV operator misses an EMJ then error count increases by at least five errors:

Video Digit, Distance, Code, Clock At and To and the percent

The five errors must also be added to number of entries that should have been made as well as any other errors to reach a total number of entries. Therefore at the end each inspection there are two values, the number of entries that should have been made and the error count. Calculation for Quality Control of each inspection is as follows:

$(\text{Error Count} / \text{Number of entries that should have been made}) * 100 = \text{Percentage Error}$

$100 - \text{Percentage Error} = \text{Accuracy Level}$

Assume number of entries made should have been 122 Assume Error Count is 8:

$(8 / 122) * 100 = 6.5\%$

$100\% - 6.5\% = 93.5\%$  Accuracy Level

This percentage Accuracy Level is then entered onto a graph so that ongoing level can be easily seen for each CCTV Operator.



### **Summary**

QC inspection information for each sewer segment checked is entered into QC forms so that an Audit trail can be established. There must be hard copies of each inspection checked with Errors and Omissions clearly marked. Accuracy Level calculations must also be entered into QC logs. Random Number must be entered against each aspect of QC procedure. A continuing Accuracy Level Graph must be kept up to date for each CCTV operator; it is acknowledged that results could be as much as 1 month behind time of inspection.



**SECTION 02830  
SEWER DYE TESTING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. The objective of dye testing is to pinpoint specific points of entry of inflow or infiltration into the sanitary sewer system, such as: direct and indirect connections of storm drains, yard drain inlets and pipes, sinkholes, leaking manholes in unpaved areas and leaking manhole covers and rings. This Work is performed in conjunction with CCTV sewer pipeline inspection to pinpoint defects identified primarily from sewer smoke testing.
- B. Preliminary field data collected by the Contractor shall be provided to the Engineer throughout the course of the field investigations. Priority defects can have an immediate impact on the sewer operations or have public safety concerns and should be brought to the immediate attention of the Owner or Engineer.

**1.02 REFERENCES**

- A. Manual for Uniform Traffic Control Devices (MUTCD) standards.

**1.03 DEFINITIONS**

- A. Public: sewers located within a road right of way or sewer easement.
- B. Private: sewers not located within a road right of way or sewer easement.
- C. Dye testing for service laterals consists of dye tablets being inserted into the service lateral mixed with water to verify connections to the sanitary sewer.
- D. Dye testing by flooding of ground surface consists of top side drenching of the area to verify sources of infiltration.
- E. Dye testing by flooding of stormwater collection system consists of surcharging the connecting storm pipes with dye water to verify any cross connections with the sanitary sewer.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Supervisor of the field crews shall have the proper training in this function and have a minimum of 3 years of experience in performing dye tests including safe working practices, familiarity with the inspection procedures and standards utilized, confined space safety procedures, the types of equipment being used, product/materials being used, proper estimate of flow being contributed by the I/I source, etc.
2. Field crew leaders responsible for dye tests shall have a minimum of 2 years of experience in this field.
3. Staff responsible for data review and data QA/QC shall have a minimum of 1 year of experience in this field.
4. Contractor shall provide, at all times, a competent field supervisor in charge of dye tests on the site and who accompanies the field staff at all times. The field crew supervisor shall be responsible for the safety of the Contractor's workers and site installation conditions.
5. The Contractor shall not employ any procedure or utilize any equipment the Contractor's personnel do not have the above stated minimum experience.
6. No crew members shall enter confined spaces without the necessary certified training and permit.
7. The Contractor shall provide a detailed account of satisfactory experience during the last 3 years. Those references shall include contact, agency, telephone number and address.
8. The Contractor shall provide the Engineer with written documentation that the supervisor, crew leader and all crew members have received the proper training and where required the requisite experience and certifications.
9. The Contractor shall take appropriate action to ensure all employees are polite to the public in all aspects of the Work performed.
10. For CCTV the Contractor must satisfy the experience requirements in accordance with Section 01510, Temporary Facilities.

1.05 SUBMITTALS

- A. Submittals are to be in color PDF format for printed documents as well as other required formats when applicable for digital transfers.
- B. Example database and report deliverable proposed for this Project.

- C. Submit one example inspection media set on external hard drive of previous sewer inspection work that shows operational/maintenance and structural defects in sewers, complete with audio commentary (if applicable) and inspection log(s).
  - 1. Media (videos and inspection logs, scans, etc.) will be reviewed by Engineer to determine if quality of submitted example is acceptable, and documented according to industry standards and the Engineer's requirements.
  - 2. Modify equipment and/or inspection procedures to achieve report material of acceptable quality.
  - 3. Do not commence Work prior to approval of quality by the Engineer. Upon acceptance, media material shall serve as standard for remaining Work.
- D. Manufacturer's data and literature on the dye proposed for use in dye testing, including the MSDS sheet.
- E. Catalog and manufacturer's data sheets for camera equipment.
- F. References: Contact names and telephone numbers.
- G. List of staff, equipment and/or inspection technology to be used on this Project.
- H. Supervisor and field crew leader's qualifications including certification of required experience.
- I. Supervisor and field crew leader's contact information including name and mobile telephone numbers.
- J. Confined space entry certification that staff to be used on this project have been properly trained should confined space entry be required.
- K. Contractor's Safety Plan.
- L. Training and inspection plan a minimum of 7 days prior to the first inspection.
- M. Schedule: 14-day look ahead; weekly.
- N. Traffic control plan.
- O. Quality control plan.

P. Inspection:

1. Initial first day's inspections within 24 hours after first day's work is completed.
2. Inspection logs on routine basis every week.
3. Include the following with each inspection submitted:
  - a. Inspection media.
  - b. Quality controlled inspection database.
  - c. Inspection reports.

**PART 2 PRODUCTS**

2.01 GENERAL

- A. It is the responsibility of the Contractor to comply with OSHA regulations, the Owner's Safety Guidelines, and the Owner's Confined Space Guidelines as applicable. The Contractor must provide all equipment required to comply with the regulations and guidelines.
- B. Contractor shall supply all necessary equipment, tools, personnel, and materials to conduct this Work in an efficient manner. Contractor shall supply a water tank of sufficient size to allow for the testing program as set out in their schedule. Delays in the acquisition of water and filling of their tanks shall be addressed in their schedule. Contractor shall supply a pump sufficient to deliver 30-gpm minimum to the test sites.
- C. If the Contractor requests access to County fire hydrants as their water supply, he shall provide a truck suitably equipped with a backflow preventer. Contractor shall be responsible for obtaining a hydrant meter from the Owner for this water use as directed by the Engineer. Contractor shall be responsible for all costs associated with hydrant meter(s). Contractor shall be responsible for all associated inspection fees.
- D. CCTV services shall be provided by Contractor in accordance with Section 02820, Sewer Pipeline Inspection.

**PART 3 EXECUTION**

3.01 GENERAL

- A. Dye testing shall be conducted at sites recommended, based upon the findings of other assessment methods, and shall be approved in advance by the Engineer.

- B. The Contractor shall propose in writing the methodology to be used for dye testing and submit the proposed methodology to the Engineer for approval prior to commencement of Work.
- C. At a minimum, the Contractor shall apply the dye water and check for dye at 15-minute intervals for up to one hour, noting positive or negative each time checked. At a minimum, two photographs shall be taken: one when dyed water is applied and a second when positive results are noted, or at the 1-hour check if results are negative.
- D. A schedule of the testing shall be provided by the Contractor and shall include the notification of Engineer / occupants impacted by the proposed testing.
- E. Notifications: As required in Section 01011, Unique Requirements.
- F. Water for tests: Contractor to coordinate with Owner on a per Work Order basis for requirements to use the Owner's potable water supply.
- G. For dye tests, a portable pump capable of at minimum 30 GPM shall be used to pump a mix of dye and clean water into the designated 'suspect' defect. "Suspect" downspouts can be dye traced using the pump connected to a hose and the end of the hose being raised and dye pumped to the level of the gutter using a long pole extender.
- H. The Contractor shall provide containers, equipment and personnel as required, to transport water for a dye test from the water source to the test site at no additional cost to the Owner.
- I. For dye flood testing, the Contractor shall provide the Engineer with a map and plan of each targeted dye flood area where the cross connection was suspected. The map shall illustrate which sewer pipes are to be flooded and which sanitary pipes should be inspected during this process. The actual location of the inflow shall be documented via CCTV inspection.
- J. For dye flood testing, the Contractor shall identify the best location to insert plugs in order to use the flood water efficiently and cover multiple storm / sanitary crossing locations when possible. In the case of negative results a redundant plug can be used to "move a flood downstream" by pulling an upstream plug and catching the flood at the next downstream plug location thereby saving time and water.
- K. For dye flood testing, the Contractor shall identify the downstream location and verify positive Dye Flood results once the dye flood is successful.

- L. For dye flood testing, multiple plug and dye flood setups may be required if the slope of the sewer is such that a single plug cannot adequately flood all reaches without overflowing out of an inlet.
- M. The Contractor shall minimize the physical entry of personnel into the sewer facilities. If required, manhole entry shall be in accordance with Federal, and State regulations for confined space entry and any other regulations that may apply. The Contractor shall be solely responsible for the safety of his personnel, subcontractors, County employees, and the public, and shall provide all safety equipment in good working order, as required for manhole entry operations, including but not limited to: harnesses, ventilation equipment, emergency retrieval equipment, atmospheric testing, etc.
- N. The Contractor shall apply for and obtain work permits for work to be performed in State and/or County rights-of-way, unless otherwise indicated in these Specifications. All other insurances, traffic control measures, and other terms of the permit shall be provided by the Contractor.
- O. Any condition deemed to be an unsafe condition shall be immediately corrected by the Contractor and shall be the Contractor's sole responsibility.
- P. Dye testing shall not be conducted when weather conditions inhibit the introduction of dye into the sewer system or where typical system flow cannot be observed. Dye testing shall be suspended if weather conditions make dye testing unsafe or ineffective.
- Q. Dye testing may not be performed during a manhole or line segment surcharge condition. The sewer shall be relieved before testing can be commenced.
- R. All traffic control measures and plans shall conform to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD), Part 6 (Temporary Traffic Control), latest edition, as published by the US DOT / FHWA.
- S. Work Orders/Assignments:
  - 1. The Contractor shall review work orders/assignments (approved by Engineer) with Dye Testing Crew.
  - 2. The Contractor shall ensure that all necessary material and equipment have been gathered.
  - 3. Vehicle operation safety procedures shall be followed at all times.
  - 4. Contractor shall submit notification upon completion of each Work order/assignment.
- T. Follow OSHA Confined Space Entry Procedures after obtaining an entry permit (only if trained and certified and only if entry is required).



- U. Follow OSHA PPE Program.
- V. CCTV work shall be conducted in accordance with Section 01510, Temporary Facilities.
- W. Record the dye testing results and document each defect with photographs per Documentation and Photographic Documentation Procedures.
- X. If a problem is detected on private property, the Owner and Engineer shall be notified of any private property defect within 24 hours.

### 3.02 DOCUMENTATION

- A. Data should be recorded and entered into a dye testing database by the Contractor using Microsoft Access. The CCTV database to be compiled separately – reference Section 02820, Sewer Pipeline Inspection.
- B. The Contractor shall provide a computer, tablet or other suitable device to record the dye test data. Data, where specified, shall be recorded using templates and codes approved by the Engineer.
- C. Two digital copies on two distinct external hard drives shall be submitted at intervals as required by the Engineer. Interim files representing the progress of the Work may be submitted via e-mail at the Engineer's discretion, but e-mail transmitted files shall not be considered sufficient as a final digital copy.
- D. The dye test database shall be cumulative of all inspections conducted to date and should include the following information at a minimum:
  - 1. Description of the test results, including intensity of the dye.
  - 2. Date and time.
  - 3. Basin/Ranking Area (to be provided by Engineer).
  - 4. Location, the nearest street address for testing locations and defect locations.
    - a. For locations where GPS coordinates cannot be obtained provide one of the following:
      - 1) Distance measurement to two stationary objects or
      - 2) Defect location distance from upstream manhole and offset distance from mainline (left to right).
  - 5. Pipe segment length.
  - 6. Pipe diameter.
  - 7. Status of structure tested (private or public).
  - 8. Surface cover.
  - 9. Source type codes and defect codes.
  - 10. Weather conditions.
  - 11. Ground conditions.

12. Testing personnel.
  13. Digital color photographs of the results of each test with precise description of photo content and location.
  14. Schematic layout of the manholes and sewer mains being tested noting the location of sandbags and/or plugs, if necessary.
  15. Percent of area that is paved (run-off).
  16. Run off codes.
  17. Ponding tributary area.
  18. Testing result codes.
- E. Main line defects and service lateral defects shall be carefully scrutinized to ensure that a conservative determination of public vs. private side defects is made.
- F. As a deliverable in this Contract, the Contractor shall provide the Engineer with any observed asset location discrepancies as observed in field during testing activities (reference Section 01056, GPS Data Collection).
- G. Defects identified via CCTV shall be recorded, documented and submitted in accordance with Section 02820, Sewer Pipeline Inspection of these Specifications.

### 3.03 PHOTOGRAPHIC DOCUMENTATION PROCEDURES

- A. The Contractor shall document each dye test by high- resolution digital photograph. Digital photographs shall be provided in jpeg (jpg) format. The resolution of the photographs shall be a minimum of 72 by 72 dpi and minimum dimension of 640 by 480 pixels. The photographs shall be referenced in the database by filename along with the location of the dye test.
- B. Photographs shall be taken in such a way that the dye test is clearly visible in the foreground and a distinct fixed reference is visible in the background. When possible place a placard in the photo referencing the test number. For example, if the dye test is on a private service main in front of a house, the photograph should include a sufficient image of the house so that a person can re-visit the site and place themselves near the defect point, using only the photograph and address. This method of referencing something fixed will support QA/QC to ensure that dye tests, and their associated data, can be confirmed by a person other than the original testing crew.
- C. Digital photographs shall be orientated so that the long side of the photograph is horizontal.

- D. The digital photographs shall incorporate references including the date the photograph was taken. Each picture shall have clearly annotated text using the following naming convention:

[UPSTREAMMANHOLEID#][DOWNSTREAMMANHOLEID#]\_[PHOTOID#].JPG.

#### 3.04 DELIVERABLES

- A. Digital database and photographs of the test results shall be submitted to the Engineer as prescribed in these Specifications.
- B. The Contractor shall submit a Microsoft Access database via external hard drive with the test data.
- C. Photographs shall be provided as digital pictures.
- D. Data Collection Methods: Digital database data must be delivered in the prescribed method outlined within these Specifications.

#### 3.05 QUALITY CONTROL PROCEDURES

- A. Prior to assessment data submission to the Engineer, the Contractor shall perform a Quality Control (QC) check of the inspection documentation using the QC database provided by the Engineer. The queries are developed by the Engineer and provided to help the Contractor locate data gaps and errors prior to submitting the respective assessment access database. The Engineer will provide at minimum two hours of training on use of the QC database tool for the Contractor. The Contractor shall correct any data conflict, missing data, or other questionable entry identified by the QC reports prior to submitting the CCTV inspection data to the Engineer.
- B. The Engineer will periodically request the Contractor to review the QC results with the Engineer.
- C. The Engineer will perform random review checks of the Contractor's submitted data. Should accuracy or qualitative levels of any of the data fall below those deemed acceptable to the Engineer; the data submittal will be refused and returned to the Contractor for correction. The Contractor will be required to correct or re-do inspections until the Engineer is satisfied with the quality of the Work.

**END OF SECTION**

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**SECTION 02840**  
**SEWER SMOKE TESTING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. The objective of smoke testing is to detect indirect and direct extraneous rainfall inflow sources (such as, broken sewer pipe directly under drainage paths, storm sewer cross-connections, or faulty service connections) and direct inflow leaks (such as, roof leaders; stairwell, yard, driveway, patio, and area drains; foundation drains; broken or un-capped clean-outs; defective manholes; and abandoned building sewers). Results from these inspections will be utilized to prioritize performance of additional assessment activities as well as additional sanitary sewer system corrective actions.
- B. Preliminary field data collected by the Contractor shall be provided to the Engineer throughout the course of the field investigations. Priority defects can have an immediate impact on the sewer operations or have public safety concerns and should be brought to the immediate attention of the Owner or Engineer.

**1.02 REFERENCES**

- A. Manual for Uniform Traffic Control Devices (MUTCD) standards.

**1.03 DEFINITIONS**

- A. Public: Sewers located within a road right of way or sewer easement.
- B. Private: Sewers not located within a road right of way or sewer easement.

**1.04 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Supervisor of the field crews shall have the proper training in this function and have a minimum of 3 years of experience in performing smoke testing including safe working practices, familiarity with the inspection procedures and standards utilized, confined space safety procedures, the types of equipment being used, product/materials being used, proper estimate of flow being contributed by the I/I source, etc.
  - 2. Field crew leaders responsible for acoustic sewer inspections shall have a minimum of 2 years of experience in this field.
  - 3. Staff responsible for data review and data QA/QC shall have a minimum of 1 year of experience in this field.

4. Contractor shall provide, at all times, a competent field supervisor in charge of smoke testing on the site and who accompanies the field staff at all times. The field crew supervisor shall be responsible for the safety of the Contractor's workers and site installation conditions.
5. The Contractor shall not employ any procedure or utilize any equipment the Contractor's personnel do not have the above stated minimum experience.
6. No crew members shall enter confined spaces without the necessary certified training and permit.
7. The Contractor shall provide a detailed account of satisfactory experience during the last 3 years. Those references shall include contact, agency, telephone number and address.
8. The Contractor shall provide the Engineer with written documentation that the supervisor, crew leader and all crew members have received the proper training and where required the requisite experience and certifications.
9. The Contractor shall take appropriate action to ensure all employees are polite to the public in all aspects of the Work performed.

#### 1.05 SUBMITTALS

- A. Submittals are to be in color PDF format for printed documents as well as other required formats when applicable for digital transfers.
- B. Example database and report deliverable proposed for this Project.
- C. Submit one example inspection media set on external hard drive of previous sewer inspection work that shows operational/maintenance and structural defects in sewers, complete with audio commentary (if applicable) and inspection log(s).
  1. Media (videos and inspection logs, scans, etc.) will be reviewed by Engineer to determine if quality of submitted example is acceptable, and documented according to industry standards and the Engineer's requirements.
  2. Modify equipment and/or inspection procedures to achieve report material of acceptable quality.
  3. Do not commence Work prior to approval of quality by the Engineer. Upon acceptance, media material shall serve as standard for remaining Work.
- D. Manufacturer's data and literature on the smoke proposed for use in smoke testing, including the MSDS sheet.

- E. Catalog and manufacturer's data sheets for smoke blower and digital camera.
- F. References: Contact names and telephone numbers.
- G. List of staff, equipment and/or inspection technology to be used on this Project.
- H. Supervisor and field crew leader's qualifications including certification of required experience.
- I. Supervisor and field crew leader's contact information including name and mobile telephone numbers.
- J. Confined space entry certification that staff to be used on this project have been properly trained should confined space entry be required.
- K. Contractor's Safety Plan.
- L. Training and inspection plan a minimum of 7 days prior to the first inspection.
- M. Schedule: 14-day look ahead; weekly.
- N. Traffic control plan.
- O. Quality control plan.
- P. Inspection:
  - 1. Initial first day's inspections within 24 hours after first day's work is completed.
  - 2. Inspection logs on routine basis every week.
  - 3. Include the following with each inspection submitted:
    - a. Inspection media.
    - b. Quality controlled inspection database.
    - c. Inspection reports.

1.06 PROVIDED BY OWNER/ENGINEER

- A. An ESRI shapefile or geodatabase of each area of work will be provided by the Engineer from the Owner's existing GIS database. The data will include, where available, streets with names, aerial imagery, sewer manholes with asset IDs and sewer lines with existing GIS information available.

## **PART 2 PRODUCTS**

### **2.01 GENERAL**

- A. High-grade mineral oil shall be used to generate the smoke required for testing. Smoke shall be dense, non-toxic, odorless, non-exploding, and non-staining.
- B. Blowers and, where required, double blowers, shall be used to force smoke into the sewer and shall be portable, custom-mounted to be installed over an open manhole casting. Smoke blowers shall have a minimum capacity of 3,000 cfm (cubic feet per minute) and be type equal to or better than Cherne or Hurco Rip-cord blowers.
- C. It is the responsibility of the Contractor to comply with OSHA regulations. The Contractor must provide all equipment required to comply with the regulations and guidelines.

## **PART 3 EXECUTION**

### **3.01 GENERAL**

- A. Intensified smoke testing techniques shall be employed in all cases. Intensified techniques shall include at least one blower capable of a free air delivery of at least 3,000 cfm and smoke generation for a minimum of nine minutes. Up to two main segments but no more than 800 feet of sewer main may be tested at one time. Main sections shall be adequately isolated by Contractor if necessary by using Contractor provided sandbags. Smoke emanating from vents on building or adjacent manholes will determine the extent of successful smoke testing. Only clearly visible, dense smoke will qualify the sewer main tested for acceptance.
- B. Prior to beginning smoke testing the Contractor shall provide a table that shows the linear feet of sewer main by pipe size that can be tested with the equipment being used by the Contractor.
- C. Smoke testing shall not be conducted on rainy days, on cloudy days following rain, or when saturated soil conditions exist. Rainy days are defined as days where greater than 0.25 inches of rain fall in any consecutive 24-hour period. Additionally, smoke testing will only be conducted when the groundwater level is low enough to provide accurate smoke testing results and when approved by the Engineer. Testing shall be closely monitored on windy days. If smoke coming out of the ground is blown away so quickly as to escape accurate detection and/or photo documentation, testing shall cease until such time that weather conditions permit an accurate record of smoke testing results.



- D. The Contractor shall minimize the physical entry of personnel into the sewer facilities. If required, manhole entry shall be in accordance with Federal, and State regulations for confined space entry and any other regulations that may apply. The Contractor shall provide all safety equipment required for manhole entry operations, including harnesses, ventilation equipment, emergency retrieval equipment, etc.
- E. The Contractor shall apply for and obtain work permits for work to be performed in State and/or County right-of-ways, unless otherwise indicated in these Specifications. All other insurances, traffic control measures, and other terms of the permit shall be provided by the Contractor.
- F. Any condition deemed to be an unsafe condition shall be immediately corrected by the Contractor and shall be the Contractor's sole responsibility.
- G. Excess smoke emitting from the blower can cause a traffic hazard and can obscure the field of view for nearby traffic. Smoke testing may need to be halted until sewer lines can be cleaned or testing can be performed at low flow periods of the day.
- H. Flow Control: It is the intent of this Specification that the smoke testing be accomplished without the need for bypass pumping. The Contractor shall provide temporary flow restriction as required to contain an adequate volume of smoke within the section of sewer being tested, or to limit the extent of sewer subjected to pressurized smoke (Reference Section 01572, Temporary Sewer Flow Control). The Contractor shall notify the Engineer in advance if a line is to be plugged as part of the smoke test. The Contractor shall monitor any resulting surcharged sewer at the manhole upstream of the section of sewer being tested, or at another location as necessary, and prevent overflow conditions from occurring by removing the flow barriers in a timely manner. No payment shall be made for an incomplete smoke test abandoned due to the need to restore flow in the sewer.
- I. Prior to placing any smoke into the manhole, the Contractor shall first evacuate the system with a blower to ensure that any collection of explosive gas and any odor that may be introduced into the homes and businesses have been disperse prior to pressurizing the sewer with smoke.
- J. Notifications: As required in Section 01011, Unique Requirements.
- K. The Contractor shall not commence testing before 8:00 a.m. and shall terminate testing no later than 5:00 p.m. each day unless otherwise required by the Engineer.

- L. If the Contractor wishes to test before 8:00 a.m. in commercial areas, such testing shall be shown on the submitted work schedule and shall be subject to the approval of the Engineer.
- M. Smoke testing shall not be conducted on weekends or holidays without the written approval of the Engineer.
- N. All traffic control measures shall comply with the requirements of the Manual for Uniform Traffic Control Devices (MUTCD), Part 6 – Temporary Traffic Control, Latest Edition as published by US DOT / FHWA.
- O. Work Orders/Assignments:
  - 1. The Contractor shall review work orders/assignments (issued by Engineer) with Smoke Testing Crew.
  - 2. The Contractor shall ensure that all necessary material and equipment have been gathered.
  - 3. Vehicle operation safety procedures shall be followed at all times.
  - 4. Contractor shall submit notification upon completion of each work order/assignment.
- P. Review work orders/assignments with details on area identified for smoke testing. Determine the location of the segments/manholes to be tested.
- Q. Follow OSHA Confined Space Entry Procedures after obtaining an entry permit (only if trained and certified and only if man entry is required).
- R. Follow OSHA PPE Program.
- S. Walk the surrounding area to visually detect sources of smoke emissions. The perimeter of each residence or commercial building shall be inspected for sources of smoke. If inaccessible during testing, inspection shall be noted for rescheduling at a later date. The inspection shall include yard drains, catch basins, etc. that might be connected to the sewer system. The roofs of each building shall be visually inspected for evidence of roof drains connected to sanitary drains.
- T. Each smoke leak shall be documented as a defect, catalogued and marked with a flag and clearly visible paint markers made with non-permanent paint mark on public ground surfaces only. Flags only should be utilized on private property.
- U. Record the smoke testing results and document each defect with photographs per Documentation and Photographic Documentation Procedures in this section.

- V. If a critical problem is detected, the Owner and Engineer shall be notified with 24 hours. (e.g. storm drain connection, missing cleanout cap).
- W. All smoke exit locations shall have GPS (X & Y) data collected per the coordinate system guidance of Section 01056, GPS Data Collection. The coordinates of the observed locations shall be included in the submitted digital Microsoft Access database with the associated inspection.

### 3.02 DOCUMENTATION

- A. Data should be recorded and entered into a smoke testing database by the Contractor using Microsoft Access.
- B. The Contractor shall provide a computer, tablet or other suitable device to record the dye test data. Data, where specified, shall be recorded using templates and codes approved by the Engineer.
- C. Two digital copies on two distinct external hard drives shall be submitted at intervals as required by the Engineer. Interim files representing the progress of the Work may be submitted via e-mail at the Engineer's discretion, but e-mail transmitted files shall not be considered sufficient as a final digital copy.
- D. The smoke test database shall be cumulative of all inspections conducted to date and should include the following information at a minimum:
  - 1. Description of the smoke quality/intensity.
  - 2. Date and time of the test.
  - 3. Basin/Ranking Area (to be provided by Engineer).
  - 4. Segment length.
  - 5. Segment pipe diameter.
  - 6. Location, the nearest street address for testing locations and defect locations.
    - a. For locations where GPS coordinates cannot be obtained provide one of the following:
      - 1) Distance measurement to two stationary objects; or
      - 2) Defect location distance from upstream manhole and offset distance from mainline (left to right).
  - 7. Surface cover.
  - 8. Weather Conditions.
  - 9. Ground Conditions.
  - 10. Testing personnel.
  - 11. Digital color photographs of the results of each test.
  - 12. Status (Public vs. Private).
  - 13. Defect source type codes.

- E. A separate Smoke Test inspection must be submitted for each sewer main segment tested regardless if a defect is found or not.
- F. The information shall be submitted by the Contractor in an Access database format as described in these Specifications. As a deliverable in this Contract, the Contractor shall also provide the Engineer with any observed asset location discrepancies as observed in field during testing activities (Reference Section 01056, GPS Data Collection).
- G. Any defects that need further investigation to pinpoint the location shall be recommended for dye flooding or CCTV inspection.
- H. Main line defects and service lateral defects shall be carefully scrutinized to ensure that a conservative determination of public vs. private side defects is made.

### 3.03 PHOTOGRAPHIC DOCUMENTATION PROCEDURES

- A. The Contractor shall document each smoke leak or series of leaks by high-resolution digital photograph. Digital photographs shall be provided in jpeg (jpg) format. The resolution of the photographs shall be a minimum of 72 by 72 dpi and minimum dimension of 640 by 480 pixels. The photographs shall be referenced in the database by filename.
- B. Photographs shall be taken so the smoke leak is clearly visible in the foreground and a distinct fixed reference is visible in the background. For example, if the smoke leak is on a private service main in front of a house, the photograph should include a sufficient image of the house so a person can re-visit the site and place himself/herself near the smoke leak, using only the photograph and address. This method of referencing something fixed will support QA/QC to ensure that smoke leaks, and their associated data, can be confirmed by a person other than the original testing crew.
- C. Digital photographs shall be orientated so the long side of the photograph is horizontal and that 4-inch by 6-inch printed copies can be incorporated in the hard copy of the smoke testing report.
- D. Multiple digital photographs shall be taken to show the general location of the defect with some other notable object/land mark in the back ground when possible. A close up picture shall be taken to with a detailed view of the defect.

- E. The digital photographs shall incorporate references including the date the photograph was taken. Each picture shall have clearly annotated text that shall follow this naming convention:

[UPSTREAMMANHOLEID#]\_[DOWNSTREAMMANHOLEID#]\_[PHOTOID#].jpg

#### 3.04 DELIVERABLES

- A. Digital database and photographs of the test results shall be submitted to the Engineer as prescribed in these Specifications.
- B. The Contractor shall submit a Microsoft Access database via external hard drive with the test data.
- C. Photographs shall be provided as digital pictures.
- D. Data Collection Methods: Digital Access database data must be delivered in the prescribed method outlined within these Specifications.

#### 3.05 QUALITY CONTROL PROCEDURES

- A. Prior to assessment data submission to the Engineer, the Contractor shall perform a Quality Control (QC) check of the inspection documentation. The Contractor shall correct any data conflict, missing data, or other questionable entry identified by the QC reports prior to submitting the CCTV inspection data to the Engineer.
- B. The Engineer will periodically request the Contractor to review the QC results with the Engineer.
- C. The Engineer will perform random review checks of the Contractor's submitted data. Should accuracy or qualitative levels of any of the data fall below those deemed acceptable to the Engineer; the data submittal will be refused and returned to the Contractor for correction. The Contractor will be required to correct or re-do inspections until the Engineer is satisfied with the quality of the Work.

### END OF SECTION

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**SECTION 02910**  
**MANHOLE REHABILITATION**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section describes the materials and methods for the rehabilitation of existing manholes, including lining, sealing, patching, and height adjustments.
- B. The Contractor shall supply all products and perform all Work in accordance with applicable ASTM International (ASTM), American National Standards Institute (ANSI), National Association of Sewer Service Companies (NASSCO), NACE International (NACE), The Society for Protective Coatings (SSPC) or other recognized standards. Latest revisions of all standards are applicable.

**1.02 QUALIFICATIONS**

- A. All products and materials provided or installed on any project must be pre-approved and included in the approved manufacturer's list for wastewater system construction (see Appendix A, Approved Manufacturers List for Wastewater Construction).

**1.03 SUBMITTALS**

- A. All Submittals shall be received and approved by the Engineer prior to beginning the Work.
- B. The Contractor shall submit the following items to the Engineer for review.
  - 1. Manufacturers' Certificate of Compliance certifying compliance with the applicable specifications and standards. The certifications shall list all materials furnished under this Section and confirm the materials furnished for rehabilitation system selected are compatible with one another.
  - 2. Certified copies of factory test reports required by the applicable standards, the manufacturer, and this Section.
  - 3. Manufacturer's handling, storage, and installation instructions and procedures.
  - 4. Manufacturer's Certification indicating the installer is approved to install specified rehabilitation system.
  - 5. Documentation of successful projects in the specified rehabilitation system and confirmation of required experience.

6. Shop drawings and samples for any material proposed as equal to a specified material. The Contractor shall submit sufficient manufacturer's information to include, but not be limited to, the rehabilitation system, equipment components, material/chemical properties, mixing and proportioning requirements, maximum pot life, film/coating thickness, curing, and environmental requirements for application.
- C. The Contractor shall complete, and provide to the Engineer, a daily written record (daily report) detailing the work carried out and any small items of Work incidental to the Work. The Contractor shall include in his daily record and reference to the following:
1. Delays: Dense traffic, lack of information, sickness, labor or equipment shortage, etc.
  2. Weather: Conditions (e.g., rain, sunny, windy, etc.).
  3. Equipment: On site (e.g., specialty cleaning, by-pass equipment, etc.).
  4. Submittals: To the Engineer.
  5. Personnel: On site by name (e.g., all labor, specialty 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, cave-ins, sink holes, etc.
  9. Visitors: On site.
  10. Disposals: Type and quantity of debris (including liquids).

#### 1.04 REHABILITATION METHODS

- A. All physically deteriorated, leaking or structurally unsound sanitary sewer manholes, and cleanouts shall be rehabilitated per the provisions of this item. Such manholes shall be rehabilitated by one of the following methods:
1. Rehabilitation by use of a liner. (A liner is defined as an applied or inserted product that improves the structural integrity of the manhole).
  2. Rehabilitation by use of a corrosion resistant material. A cementitious liner can be may be applied to the manhole prior to the installation of the corrosion resistant material.
  3. Other rehabilitation work.
- B. The lining system used shall result in a monolithic structure to the shape and contour of the interior of the existing manhole. The lining system shall be completely water tight and free of any joints or openings other than pipe inlets, pipe outlets and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.



1.05 MANHOLE FRAME AND COVER SEALING

A. Frame Sealing includes:

1. Sealing the frame joint area and the chimney above the cone of the manhole with either a manufactured or applied internal or external flexible seal.
2. Design seal to prevent leakage of water into the manhole through these areas throughout a minimum 50-year design life.
3. Installed seal shall remain flexible,
  - a. Allow for repeated vertical movements of the frame due to frost lift, ground movement, or other causes of not less than 2 inches.
  - b. Repeated horizontal movement of the frame due to thermal movement of pavement or other causes of not less than 1/2 inch throughout the design life.

B. Manhole Cover Sealing includes:

1. Either replacing or sealing existing manhole covers.
2. Methods described require at a minimum, the thorough cleaning of the frame rim surface by wire brushing. More aggressive cleaning methods shall be employed if either the existing conditions or the manufacturer dictate. The more stringent shall apply.
3. Detailed installation procedures shall be in accordance with the manufacturer's instructions.

1.06 MANHOLE HEIGHT ADJUSTMENT

- A. Scope includes adjustment to the height of existing manholes, to raise or lower the top, by removing portions of existing manholes and reconstructing the top-end with new products such as pre-cast concrete sections, brick and mortar, and frames and covers.

1.07 SAFETY

- A. All work shall be performed in accordance with OSHA standards and local, State and Federal safety regulations.
- B. No person shall enter a confined space without the documented requisite training, certification, and entry permit.

## **PART 2      PRODUCTS**

### **2.01      MANHOLE REHABILITATION**

#### **A.      Materials:**

1.    The materials used shall be designed, manufactured, and intended for sewer manhole/vault rehabilitation and the specific application for which they are used. The materials shall have a proven history of performance in sewer manhole/vault rehabilitation for a minimum of 10 years nationally, regarding similar age, groundwater levels, and environmental characteristics. The materials shall be delivered to the Work Site in original unopened packages and clearly labeled with the manufacturer's identification and printed instructions. All materials shall be stored and handled per the manufacturer's published recommendations. All materials shall be mixed and applied per the manufacturer's written instructions.
2.    The Contractor shall warrant and save harmless the Owner against all claims for patent infringement and any loss thereof.
3.    Dispose of all wastes in accordance with applicable regulations.
4.    Each coating/lining system shall be designed for application over wet surfaces, but not active running water, without degradation of the final product and/or the bond between the product and the manhole/vault surfaces.

#### **B.      Pressure Grout (for active leaks):**

1.    Pressure grout shall be an acrylamide gel pressure sealant system provided by a single manufacturer. The acrylamide gel pressure sealant system shall consist of a dry powder chemical readily dissolvable in water to form a low viscosity solution stiffening to a gel when mixed with an aqueous persulfate catalyst and a triethanolamine activator.
2.    During injection, chemical sealant shall be able to react in presence of infiltrating water.
3.    The system shall have the following characteristics:
  - a.    A minimum of 10 percent acrylamide base material by weight in the total sealant mix.
  - b.    A higher concentration (percent) of acrylamide base material may be used to increase strength or offset dilution during injection.
  - c.    Capable of withstanding submergence in water without degradation.
  - d.    Prevent passage of water through manhole defect
  - e.    Flexible as opposed to brittle or rigid.
  - f.    In place, able to withstand freeze/thaw and wet/dry cycles without adversely affecting seal.
  - g.    Mixing of component materials shall be compatible with field conditions.

- h. Residual sealing materials shall be easily removable from manhole bench.
- i. Constant viscosity during reaction period.
- j. Additives to increase viscosity, adjust cure time though the range of 10 seconds to 1 hour, density, shrinkage, compressive strength, tensile strength, and pH.
  - 1) Diatomaceous earth can be added to concentration of five percent.
  - 2) Use of other additives following manufacturer's recommendation and Engineer's approval.
- k. Cured product shall be resistant to dehydration, homogeneous, chemically stable, non-biodegradable, firm, flexible gel. Any suggested manufacturer and material identification.
- l. Root control additive, 2,6-Dichlorobenzonitrile, may be added following manufacturer's recommendation and the Engineer's direction.

C. Oil-free Oakum Water Plugs (for non-structural infiltration control):

- 1. Rapid setting oil-free oakum and hydrophilic grout to plug active water leaks prior to other rehabilitation work.
- 2. Oil-free oakum meeting Federal Specification HH-P-117.
- 3. Two-part urethane resin.

D. Hydraulic Cement Mortar (for active leaks):

- 1. A premixed fast-setting product, specifically formulated for leak control, creating a volume-stable waterproof cement plug consisting of hydraulic cement, graded silica aggregates, special plasticizing and accelerating agents. It shall not contain chlorides, gypsum's, plasters, iron particles, aluminum powder or gas-forming agents, or promote the corrosion of steel it may contact. Set time shall be approximately 1 minute. 10-minute compressive strength shall be approximately 500 psi.
  - a. The product shall be designed to rapidly stop flowing leaks in vertical and horizontal, concrete and masonry surfaces.
  - b. The product shall develop high early compressive and tensile strength:

Cure Time	Compressive Strength ASTM C109	Tensile Strength ASTM C496
1 day	3500 psi	-----
7 day	4900 psi	290 psi
28 day	5500 psi	575 psi

2. A silicate-based liquid accelerator field mixed with neat Portland cement. The set time shall be approximately 1 minute.
3. The elastomeric polyurethane resin-soaked method, using dry twisted jute oakum, or resin-rod with polyurethane resin (water activated).

E. Cement Mortar (patching):

1. Applied for patching, repointing, filling, and repairing non-leaking holes, cracks, and spalls in concrete and masonry manholes.
2. A premixed non-shrink cement-based patching material consisting of hydraulic cement, graded silica aggregates, special plasticizing and accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents or promote the corrosion of steel it may come into contact with. Set time (ASTM C191) shall be less than 30 minutes. 1-hour compressive strength (ASTM C109) shall be a minimum of 200 psi and the ultimate compressive strengths (ASTM C882 - Modified) shall be a minimum of 1,700 psi.
3. The product shall display the following properties:

	Strength (psi)		
	1 Day	7 Day	28 Day
Compressive Strength (ASTM C109)	3,875	4,550	6,190
Flexural Strength (ASTM C78)	-----	825	985
Tensile Strength (ASTM C496)	-----	290	575
Shrinkage (ASTM C157, Modified)	0.04 Percent @ 28 Days		

4. Shall be a factory blended, low shrinkage, high strength, polymer modified, microsilica mortar.

F. Cement Mortar (lining):

1. Spray applied or centrifugally cast lightweight structural reinforced cement manhole lining.
2. A premixed non-shrink cement-based patching material consisting of hydraulic cement, graded silica aggregates, special plasticizing and accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents or promote the corrosion of steel it may come into contact with. Set time (ASTM C191) shall be less than 30 minutes. 1-hour compressive strength as required in ASTM C109.

3. The product shall display the following properties:

	Strength (psi)		
	1 Day	7 Day	28 Day
Compressive Strength (ASTM C109)	3,875	4,550	6,190
Flexural Strength (ASTM C78)	-----	825	985
Tensile Strength (ASTM C496)	-----	290	575
Shrinkage (ASTM C157, Modified)	0.04 Percent @ 28 Days		

4. Shall be a factory blended, low shrinkage, high strength, polymer modified, sprayable, microsilica mortar.
5. Shall be suitable for low-pressure spray or trowel application for the repair of vertical and horizontal concrete and masonry structures.

G. Epoxy Coating:

1. Spray applied corrosion protection.
2. Only structures exhibiting damage due to corrosion shall receive the epoxy coating unless otherwise directed by the Owner.
3. The material sprayed onto the surface of the manhole shall be 100 percent solids high build epoxy coating formulated for application within a sanitary sewer environment.
4. The coating thickness shall be a minimum of 125 mils in 1 or 2 multi-pass coats.
5. The coating color shall contrast the existing structure color, typically white or off white.
6. If an adhesion coating is required between the concrete structure and the epoxy coating, the cost of the adhesion coat is included in the cost of the 100 percent solids, high build epoxy coating.
7. Manufacturer's published directions regarding surface preparation shall be followed and is included in the cost of the 100 percent solids, high build epoxy coating. Manufacturer shall approve preparation of surface prior to application.
8. The cured epoxy resin system shall conform to the following minimum structural standards:

	Strengt
Compressive Strength (ASTM D695)	13,000
Flexural Strength (ASTM D790)	13,000
Tensile Strength (ASTM D638)	7,000
Flexural Modulus (ASTM790)	500,000

H. Composite System:

1. Only structures exhibiting damage due to corrosion shall receive a composite system.
2. The coating thickness shall be a minimum of 1/2-inch.
3. If an adhesion coating is required between the concrete structure and the composite system, the cost of the adhesion coat shall be included in the cost of the composite system.

I. Fiberglass Insert Liner:

1. The materials used for lining manholes shall be engineered to support a standard 16,000-pound vertical dynamic wheel load (AASHTO H-20) when used in conjunction with the reinforced precast manhole cone or integral fiberglass cone section.
2. The manhole shall be fitted with a fiberglass liner with no sidewall joints, seams or sections. The fiberglass manhole insert liner shall meet all requirements of ASTM D3753 for glass fiber reinforced polyester manholes.
3. The annular void grout shall be standard 6-bag (Type II) Portland cement mix with 1/4 inch (maximum) coarse aggregate producing a minimum 3,000 psi compressive strength at full cure (28 days).
4. A quick setting, high strength cement grout shall be used for positioning and sealing the fiberglass manhole insert liner prior to annular void grouting.
5. The hydraulic cement, cement mortar, epoxy coating and composite system do not have to be from the same manufacturer, however, the Contractor is responsible for assuring compatibility of the various components. Any suggested manufacturers and material identifications.

2.02 MANHOLE HEIGHT ADJUSTMENT

A. Brick and Mortar: Brick and mortar shall conform to the requirements of Section 02730, Sewers and Accessories.

B. Precast Concrete Section:

1. Riser joints shall be tongue and groove and shall meet the latest revision of ASTM C443 for O-ring gaskets. All riser joints shall be installed to allow no infiltration into the manhole. Care should be exercised during the handling of the precast units to avoid disturbing or damaging the gasket and to attain proper alignment of the joints. Joints and lift holes shall be grouted smooth with cement grout on inside and outside. In precast manhole construction, combination of joint lengths shall be selected to minimize the number of individual segments required to provide the total depth specified. Long joints shall be used in the bottom with shorter segments utilized for the top adjustments.

2. Manhole cones shall be precast concrete. The top elevation of manhole frames shall be adjusted to grade in areas such as streets, alleys, and parking lots or where indicated by the Engineer. A maximum adjustment of 12 inches will be allowed for precast concrete adjusting rings. Adjustments greater than 12 inches must be made by changing precast riser sections. The top of the wall of all manholes shall be leveled off with mortar to form a flat surface upon which the manhole frame is to rest.
- C. Mortar: The Contractor shall prepare mortar only in quantities needed for immediate use. Mortar mixed for more than 30 minutes or greater than the manufacturers limits, whichever is more restrictive, which has set, or which has been re-tempered shall not be used.
- D. Metal Riser Ring: Cast Iron: New cast iron riser rings shall be of domestic origin, conform to the latest edition of AASHTO M306. Contractor shall use cast iron riser rings for reconstruction and/or adjustment of the manhole frame and cover of less than 4 inches.
- E. Frames and Covers: Manhole frames and covers shall conform to the requirements of Section 02730, Sewers and Accessories.

## 2.03 MANHOLE FRAME AND COVER SEALING

- A. Flexible Internal Rubber Sleeve:
  1. Extensions and wedge strips shall be extruded or molded from a high grade rubber compound conforming to the applicable requirements of ASTM C923:
    - a. Minimum of 1500 psi tensile strength,
    - b. Maximum 18 percent compression set,
    - c. Hardness (durometer) of 48 plus or minus 5.
  2. Either double or triple pleated with a minimum unexpanded vertical height of 8 inches and 10 inches respectively.
    - a. Minimum thickness of 3/16 inch.
    - b. Top and bottom section of the flexible rubber sleeve shall contain an integrally formed expansion band recess and multiple sealing fins.
  3. Top section of the extension shall have a minimum thickness of 3/32 inch and shall be shaped to fit into the bottom band recess of the flexible rubber sleeve under the bottom chimney seal band and the remainder of the extension shall have a minimum thickness of 3/16 inch.
    - a. The bottom section of the extension shall contain an integrally formed expansion band recess and multiple sealing fins matching that of the flexible rubber sleeve.

- b. Any splice used to fabricate the flexible rubber sleeve and extension shall be hot vulcanized and have a strength so the sleeve can withstand a 180 degree bend with no visible separation.
- c. The continuous wedge strip used to adapt the flexible rubber sleeve to sloping surfaces shall have the slope differential needed to provide a vertical band recess surface, be shaped to fit into the band recess, and have an integral band restraint.
  - 1) The length of the wedge strip, when its ends are butted together, will cover the entire inside circumference of the band recess needing slope adjustment.
  - 2) Expansion bands, studs, and nuts used to compress the sleeve against the manhole shall be integrally formed from 16-gauge stainless steel conforming to the requirements of ASTM A240, Type 304, with no welded attachments.
  - 3) Minimum width of 1-3/4 inches.
  - 4) Minimum adjustment range of 2-1/2 diameter inches.
  - 5) Positive locking mechanism used to expand the band shall have the capacity to develop the pressures necessary to make a watertight seal.
  - 6) Band shall be permanently held in place with a positive locking mechanism which secures the band in its expanded position after tightening.

B. Flexible Urethane Resin:

- 1. Manhole frame seal shall be used to form a flexible seal to stop inflow/infiltration and provide corrosion protection to the internal wall of a manhole from 3 inches above the bottom of the frame to 3 inches below the top of the cone.
  - a. The finished product shall conform to the minimum requirements listed below:

	Prime Coat		Final Coat	
Hardness	ASTM D2240	85-90	ASTM D2240	75
Elongation	ASTM D412	400%	ASTM D412	800%
Tensile Strength	ASTM D412	3200 psi	ASTM D412	1150 psi
Adhesive Strength	ASTM D903	400 lb I/in	ASTM D903	175 lb I/in
Tear Resistance	ASTM D1004	210 lb I/in	ASTM D1004	155 lb I/in

C. Cover Conversion and Replacement:

- 1. Replace frame and cover as directed by Engineer in writing on a per-manhole basis.
- 2. Reuse the existing cover by making it watertight.
  - a. Accomplish by installing a gasket between the cover and the cover-bearing surface of the frame



- b. Plug the vent and pick holes.
    - c. Make one of the plugs removable to facilitate removal of the cover.
  - 3. Manhole cover gaskets and plugs shall be in accordance with Section 02730, Sewers and Accessories.
- D. Manhole Insert:
- 1. The manhole insert shall be manufactured from stainless steel, Type 304, 16-gauge minimum.
    - a. Insert shall have
      - 1) Factory installed handle that is a minimum of 5-feet long, 3/16-inch plastic coated stainless steel cable retaining tether that passes through a watertight grommet in the bottom of the dish.
      - 2) High-grade stainless steel adjustable locking device located between bottom of the dish and lift loop at the top end of tether.
      - 3) Stainless steel terminal and eye and the handle shall be attached with a No. 6 high-grade stainless steel rivet.
  - 2. Gasket shall be made of a closed-cell neoprene with pressure sensitive adhesive on one side and shall be installed by the manufacturer.
  - 3. Insert shall have a gas relief valve designed to release at a pressure of 0.5 to 1.5 psi.
    - a. Material shall be Nitrile for prevention of corrosion from contact with hydrogen sulfide, diluted sulfuric acid, and other gases associated with wastewater collection systems.

### **PART 3 EXECUTION**

#### **3.01 REHABILITATION OF MANHOLE STRUCTURE**

- A. Contractor to provide the following items, but not limited to, as directed by the Engineer:
  - 1. Pressure grout leaks.
  - 2. Repair leaking crack, joint and/or lift hole with hydraulic cement mortar.
  - 3. Repair non-leaking crack, joint and/or lift hole with non-shrink cement based mortar.
  - 4. Restore the structural integrity by lining the manhole with cement mortar.
  - 5. Provide corrosion barrier by lining the manhole with an epoxy coating.
  - 6. Rebuild bench and trough using TYPE S cement mortar.

7. Provide thickness gauges, wet film gauges and other testing equipment to test the thicknesses, surface profiles and coating continuity as required by this Specification.
8. Perform and pass vacuum test of a manhole.
9. Provide survey grade (plus or minus 0.01-foot) data on a manhole using GPS.
10. Provide survey grade (plus or minus 0.01-foot) data on a manhole using conventional survey methods.
11. Provide bypass pumping to facilitate rehabilitation activities.
12. Provide manhole condition assessment services.
13. Locate and expose buried manholes, adjust frame and cover heights as required.
14. Install internal frame seal and external seal wraps.
15. Remove intruding pipe or obstruction.
16. Remove and replace manhole steps.

B. General Procedures:

1. Cleaning: All concrete and masonry surfaces to be rehabilitated shall be clean. All grease, oil, laitance, coatings, loose bricks, mortar, unsound brick or concrete and other foreign materials shall be completely removed. Initial cleaning shall be done by utilizing a minimum 5,000 psi pressure washer with the proper nozzles; however, additional required cleaning shall be accomplished by other methods including but not limited to wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means, as may be required to properly provide additional cleaning of the surface. All surfaces using these methods shall be thoroughly rinsed, scrubbed, neutralized and tested with test strips to confirm the removal of all cleaning agents and their reactant products.
2. Stopping Infiltration: After surface preparation and prior to the application of mortars and coatings, infiltration shall be stopped either by plugging with a hydraulic cement or chemical grout sealing.
3. Patching: All large holes and/or voids, joints or pipes, all spalled areas, all lifting holes and all holes caused by missing or cracked brick shall be patched and all missing mortar repointed using a non-shrink cement mortar. All cracked or disintegrated material shall be removed from the area to be patched or repointed, exposing a sound sub-base. All cracks not subject to movement shall be cleaned to remove all unsound material so a solid fixed surface is established and patched with non-shrink patching mortar. If any reinforcing is exposed, a corrosion inhibiting product shall be used to coat the steel prior to patching.
4. Manhole Walls: The thicknesses of the patches, coatings, etc. must form a uniform, vertical wall established from the manhole bench to the manhole cone section.

5. Flow Control: The Contractor shall be responsible for wastewater flow control in accordance with Section 01572, Temporary Sewer Flow Control.
6. The Contractor shall remove all foreign material, loose grout, debris and rubble from the existing channel. The Contractor shall rebuild the existing channel, if required, by reshaping or repairing the slope of shelves or benches. Manhole rehabilitation work shall include aligning inflow and outflow ports to prevent the deposition of solids at the transition point. All troughs shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, CCTV camera, etc.
7. Manhole steps: The Contractor shall remove all manhole steps prior to rehabilitation. Steps shall be installed after rehabilitation.
8. Each lining system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures. For manholes greater than 12 feet in depth, the lining shall be capable of withstanding the pressures associated with a groundwater depth equal to the manhole depth. Linings for all other manholes shall be capable of withstanding the pressures associated with groundwater depth of 12 feet. The Contractor shall measure groundwater depth from manhole bench to top of ground surface.

3.02 SPRAY APPLIED LIGHTWEIGHT STRUCTURAL REINFORCED CEMENT

- A. The surface prior to spraying shall be properly prepared and cleaned and be damp without noticeable free water droplets or running water. Materials shall be spray- applied to a minimum uniform thickness to ensure all cracks, crevices, and voids are filled and a smooth surface remains after light troweling. The light troweling is performed to compact the material into voids and to set the bond.
- B. The first application shall have begun to take an initial set (disappearance of surface sheen, lasting from 15 minutes to 1 hour depending upon ambient conditions) before the second application to assure a minimum total finished thickness of 1/2 inch. The final finished thickness may need to be greater than the 1/2 inch recommended by the manufacturer to withstand groundwater pressures. A depth gauge shall be used during application, at various locations, to verify the required thickness. The readings are to be recorded in the Contractor's daily report. The surface then shall be troweled to a smooth finish with care taken to not over trowel in a manner bringing additional water to the surface and weaken it. The Contractor shall follow the manufacturer's recommendations.

- C. The bench covers used to catch debris and rebound shall be removed and the bench and trough sprayed so a gradual slope is produced from the walls to the trough with the thickness at the edge of the trough being no less than 1/2 inch. The wall-bench intersection shall be rounded to a uniform radius the full circumference of the intersection.
- D. No application shall be made to frozen surfaces or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures are in excess of 95 degrees F, precautions shall be taken to keep the mix temperature at time of application below 90 degrees F, using ice if necessary. Contractor shall monitor and maintain the temperatures within the range required by the manufacturer. The Contractor shall provide a hi/lo thermometer and record the readings in the daily report.
- E. The final application shall have a minimum of 4 hours cure time before being subjected to active flow.

### 3.03 CENTRIFUGALLY CAST STRUCTURAL REINFORCED CEMENT

- A. The rotating casting applicator shall be positioned to evenly apply the material and be withdrawn at a rate to assure a final minimum thickness of 1/2-inch. The final finished thickness may need to be greater than 1/2-inch, as recommended by the manufacturer, to withstand groundwater pressures. A depth gauge shall be used during application, at various locations, to verify the required thickness. The readings are to be recorded in the Contractor's daily report. The surface shall be troweled to a smooth finish with care being taken to not over trowel in a manner bringing additional water to the surface and weaken it.
- B. The bench covers used to catch debris and rebound shall be removed and the bench and trough sprayed or hand applied so a gradual slope is produced from the walls to the trough with the thickness at the edge of the trough being no less than 1/2-inch. The wall-bench intersection shall be rounded to a uniform radius the full circumference of the intersection. The surface shall be troweled to a smooth finish with care taken to not over trowel in a manner bringing additional water to the surface and weaken it.
- C. No application shall be made to frozen surfaces or if freezing is expected to occur within the manhole for 24 hours after application. If ambient temperatures exceed 95 degrees F, precautions shall be taken to keep the mix temperature at time of application below 90 degrees F. Contractor shall monitor and maintain the temperatures within the range required by the manufacturer. The contractor shall provide a hi/lo thermometer and record the readings in the daily report.
- D. The final application shall have a minimum of 1 hour cure time before being subjected to active flow.

3.04 EPOXY COATING

- A. The epoxy coating shall be applied onto the interior surfaces of the manhole to produce a smooth coating and yield the required minimum thickness. A depth gauge shall be used during application at various locations to verify the required thickness. The readings are to be recorded in the Contractor's daily report.
- B. The epoxy resin shall be applied at the required recommended thickness. The application shall have a minimum of 3 hours cure time at required temperatures before being subjected to active flow.
- C. Conduct and record wet film thickness tests during application and have Tooke gauge (dry film thickness) tests done after application. High voltage holiday tests shall be required contingent upon millage specified. All tests shall be conducted at the Contractor's expense, by an independent NACE certified technician, and shall be witnessed by the Engineer. Results of tests to be provided to Engineer. Owner reserves the right to verify testing. Results of Owner's test takes precedence.
- D. An epoxy putty or other space-filling adhesive recommended by the epoxy manufacturer shall be used as necessary to repair any slight surface irregularities prior to applying epoxy.
- E. The sloped surface of the manhole bench shall be made non-skid by broadcasting aluminum oxide or sand into the surface prior to gelatin/set.

3.05 MANHOLE REHABILITATION ACCEPTANCE

- A. All manholes rehabilitated using cement mortar lining or epoxy lining, including repairs of active leaks, shall be subject to testing using the vacuum test method in accordance with Section 02730, Sewers and Accessories. The Contractor shall follow the manufacturer's recommendations for proper and safe procedures. Vacuum testing manholes shall be performed after curing of linings. Any visible leakage in the manhole or structure, before, during, or after the test shall be repaired regardless of the test results.
- B. If the manhole fails the vacuum test, the Contractor shall perform additional repairs, at no additional cost to the Owner, and repeat the test procedures until obtaining satisfactory results.
- C. After the manhole rehabilitation work has been completed, the Engineer shall visually inspect the manhole. The finished surface shall be free of blisters, "runs" or "sags" or other indications of uneven lining thickness. The finished surface shall not have any evidence of visible leaks.

### 3.06 MANHOLE HEIGHT ADJUSTMENT

#### A. General:

1. The Contractor shall take all necessary measures to prevent debris from entering the manhole under reconstruction. A temporary (waterproof) cover shall be required during the reconstruction period.
2. The Contractor shall take all necessary measures to prevent damage to the existing manhole frame and cover during the adjustment work.
3. In the event the existing manhole is located in a paved area, the Contractor is required to replace existing manhole frame and cover with a traffic manhole frame and cover. The Contractor is also required to provide a traffic safety plan to the Engineer if the paved area is within the municipal or state Right-of-Way.
4. Riser Rings: The Contractor shall replace existing, deteriorated riser rings with new precast concrete riser rings and/or cast iron riser rings. All manholes designated to receive casting adjustment and/or alignment shall be adjusted to meet existing finished grade unless an alternative elevation is specified. A cementitious mortar shall be placed in between individual precast concrete riser rings, and precast concrete riser ring and cone joints. The mortar shall be struck smooth with the interior surface of the manhole and floated with a sponge float to a surface profile of 8-10 mils. An epoxy system designed for metal-to-metal adhesion shall be used to connect individual cast iron riser rings and the cast iron riser rings to the frame. Prior to backfilling, rubber external seal wraps shall be applied to the cone and manhole section joint, riser rings and frame.
5. Manhole Frame and Cover: Existing frames and covers removed to facilitate manhole rehabilitation, riser reconstruction, and/or grade adjustments shall be salvaged, cleaned and given two coats of an approved bituminous coating by the Contractor for replacement unless determined to be defective by the Engineer. If manhole frame and/or cover are determined to be defective, Contractor shall replace with new frame and/or cover. Replacement frames and/or covers shall be furnished and installed with approval of the Engineer in accordance with Section 02730, Sewers and Accessories. Frames shall be set in full mortar bed. The mortar shall be struck smooth with the interior surface of the manhole and floated with a sponge float to a surface profile of 8-10 mils.

B. Procedures for Manhole Height Adjustment:

1. The Contractor shall utilize maps, surveys, sounding instruments, or information from local residents to determine approximate locations of buried manholes. Manholes shall be exposed utilizing hand techniques or by carefully probing with mechanical equipment. Manhole exposure in paved areas shall be accomplished by making a square cut in the surface with sufficient width to allow for the excavation of the material around the manhole to expose it to a depth necessary for adequate adjustment.
2. Raising Manholes:
  - a. The Contractor shall adjust the top elevation of the manhole frame to grade as directed by the Engineer conforming to the requirements of this section. A maximum adjustment of four courses of brick (approximately 8 inches) will be allowed using brick and mortar. Mortar shall be applied to create a smooth finish on the interior and exterior prior to backfill. Adjustments (including riser rings and brick) greater than 12 inches shall be made by removing the cone section and adding the appropriate precast riser section.
  - b. In green (grass) areas, vertical height adjustments can be made using cast iron adjustment (riser) rings in lieu of brick and mortar. A maximum adjustment of 12 inches will be allowed using riser rings. Adjustments greater than 12 inches shall be made by removing the cone section and adding the appropriate precast riser section. The number of riser rings shall be limited to the minimum number that is required to achieve grade.
    - 1) Joint sealant shall be applied on existing manhole frame and each joint of the riser ring(s) required to achieve grade. If the outdoor temperature is below 70 degrees Fahrenheit, the Contractor must heat the joint sealant before application.
    - 2) The Contractor shall place a concrete (Class B) collar (8 inch at the bottom of the frame to 2-inch at the top of the frame) on the exterior of the manhole frame. The concrete collar placed on the exterior of the manhole frame shall receive a broom finish.
  - c. When a manhole height adjustment is performed in a paved area and the manhole is not to be rehabilitated by any other method, then the Contractor shall install a manhole frame seal in accordance with the requirements of these Specifications.
3. Verify that manholes and inlets are free of visible leaks resulting from reconstruction. Repair leaks in a manner subject to the Owner Representative's approval.

3.07 MANHOLE FRAME AND COVER SEALING

A. General:

1. Manhole frames misaligned from the chimney or cone by 3 inches or more shall be excavated and realigned.
  - a. Existing frames shall be thoroughly cleaned before reinstallation.
2. Loose and protruding mortar and brick interfering with the seal performance shall be removed.
  - a. Clean appropriate areas of the manhole frame, chimney, and/or cone/corbel by wire brushing or by more aggressive means if required by the manufacturer. The most stringent shall apply.
  - b. Sealing surfaces shall be reasonably smooth and circular, clean, and free of any loose material or excessive voids.

B. Flexible Internal Rubber Sleeve:

1. The Contractor shall be properly trained, certified, and licensed in the installation of frame seals by the manufacturer.
  - a. Have a manufacturer's recommended expansion tool and all other equipment/tools necessary to install the frame seals.
2. Field measure the manhole to determine the information required on the manufacturer's "Sizing and Ordering" procedure.
3. Contact surface for the sleeve and/or extensions shall be reasonably clean and smooth, circular and free from excessive voids or defects.
4. Detailed surface preparation, including providing a vertical surface on a cone when none exists, shall be in accordance with the frame seal manufacturer's instructions.
5. The Contractor shall install the flexible rubber sleeve in accordance with the manufacturer's instructions.
6. After any surface preparation is completed and the rubber sleeve has been placed in the proper position, the lower band is positioned in the band recess and expanded as required to provide a water tight seal.
7. Following the expansion of the lower band:
  - a. Perform a QA/QC test to ensure effective sealing by pulling the upper section of the seal or extension inward to create a recess behind the seal where water can be poured.
  - b. Pour the water behind the seal and observe the lower sealing area for any visible leaks.
  - c. Consider the seal effective if no water leaks behind the seal at the lower sealing area.
  - d. Engineer shall witness test.



8. If an extension is used;
  - a. Place the 3/32-inch thick extension flap into or behind the expansion band recess to allow for the compression of both the extension flap and sleeve against the manhole surface by the expansion band.
  - b. Continue by placing the upper band or bands in the recess, ensuring the seal is properly placed on the manhole cone, chimney and frame and expand as required to provide an effective seal.
  - c. Installation procedures shall be in accordance with the manufacturer's recommended instructions.

C. Flexible Urethane Resin:

1. Detailed surface preparation shall be in accordance with the frame seal manufacturer's instructions.
2. The Contractor shall install the flexible rubber sleeve in accordance with the manufacturer's instructions.

D. Installation of Manhole Insert:

1. Use the existing cover in conjunction with a watertight insert installed under the cover that prevents entry of water into the manhole.
  - a. Manhole insert shall be designed to prevent inflow through and around manhole covers and manufactured to fit the manhole frame rim upon which the manhole cover rests.
  - b. Installation shall be in accordance with the insert manufacturer's instructions.
2. The manhole insert shall be fully seated upon the manhole frame rim and the cover replaced to complete the installation.

E. Inspection:

1. Manhole frame seals shall be visually inspected after installation to ensure the seal is properly installed.
  - a. No voids or leakage points shall exist,
  - b. Manhole frame seal shall not detach from the manhole.
  - c. Any seals failing this visual test shall be reworked, as necessary, and retested at the Contractor's own expense.

F. Testing:

1. Any seals not passing this visual inspection may, at the Contractor expense, be tested for leakage using a method approved by the Engineer. Engineer shall witness test.

2. Frame Sealing Test:
  - a. Manufactured frame seals shall be visually inspected to ensure
    - 1) Sleeve is properly positioned,
    - 2) Tight against the manhole surfaces,
    - 3) No voids or leakage points exist under the sleeve,
    - 4) Bands and locking nuts are tight.
  - b. Applied seals shall be visually inspected to ensure they have been applied according to the manufacturer's instructions.
  - c. Manhole frame sealing shall be tested for leakage using a method approved by the Engineer.
    - 1) Failing manholes shall be reworked and retested by the Contractor at no additional compensation.
3. Cover Sealing Test:
  - a. The sealed manhole covers shall be visually inspected to ensure the bearing surface was properly cleaned, products were properly sized, installed according to the manufacturer's instructions.
  - b. Manholes leaking, visually unacceptable, or failing the test shall be reworked and retested.

### 3.08 CLEANUP

- A. After the work has been completed and all testing acceptable, the Contractor shall clean up the work area.
- B. All debris and excess materials not incorporated into the permanent installation shall be disposed of by the Contractor. Debris and liquid type and quantities are to be tracked in the Contractor's daily report. Hauling and disposal costs will be at no additional cost to the Owner.
- C. Return all items and all areas disturbed, directly or indirectly by the Work under this Contract, to their original condition or better immediately after the Work is completed in accordance with Section 02730, Sewers and Accessories.

### **END OF SECTION**

**SECTION 02920**  
**CURED-IN-PLACE PIPE LINING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section describes materials and methods for the rehabilitation of existing gravity sanitary sewer mains (mainline) from manhole to manhole and service lines (laterals) by installation of Cured-In-Place Pipe (CIPP).
- B. The Contractor shall supply all products and perform all Work in accordance with applicable ASTM International (ASTM), American National Standards Institute (ANSI), National Association of Sewer Service Companies (NASSCO) or other recognized standards. Latest revisions of all standards are applicable.

**1.02 QUALIFICATIONS**

- A. All CIPP products on any project must be pre-approved and included in the approved products list for sanitary sewer rehabilitation (see Appendix A: Approved Manufacturers List for Wastewater Construction).

**1.03 SUBMITTALS**

- A. Action Submittals:
  - 1. Manufacturer's technical literature on proposed lining system.
  - 2. Resin:
    - a. Specifications.
    - b. Characteristics.
    - c. Properties.
    - d. Itemize exceptions and deviations to Specification.
  - 3. Annular space sealant.
  - 4. Service connection fittings.
  - 5. Door hanger notice.
- B. Informational Submittals:
  - 1. Liner Thickness Design Calculations:
    - a. Signed and sealed by Professional Engineer in the State of Georgia.
    - b. Manufacturer certification of material to values used in calculations.

2. Qualifications:
  - a. Installer:
    - 1) List of past projects, including references for selected curing method.
    - 2) Manufacturer's written certification of approval.
  - b. Superintendent:
    - 1) List of past projects, including references.
    - 2) Manufacturer's written certification of approval.
3. Testing Laboratory: Qualifications, experience history, and references.
4. Manufacturer's Certificate of Compliance that resin material is appropriate for intended application and in conformance with specification.
5. Certified test reports on physical properties and chemical resistance of proposed resin.
6. Manufacturer's instructions for materials requiring special shipping, storage, or handling.
7. Manufacturer's installation instructions, including but not limited to the following:
  - a. Details concerning curing methods.
  - b. Inversion pressures necessary for proper installation.
  - c. Minimum pressure required to hold tube tight against existing host pipe, and maximum allowable pressure that will not damage tube.
  - d. Type of insertion.
  - e. Defect Repair:
    - 1) Methods of repairing in conjunction with manholes, joints, laterals, and active infiltration.
    - 2) Quality control/quality assurance plan.
    - 3) Repair material test results.
8. "Wet-out" Plan: For each proposed lining section, method for "wet-out" of flexible tube together with specific insertion and curing schedule.
9. Field Report, After Completion of Each Section:
  - a. Process control sheet; include temperature/time log information, tap cut information, and curing cycle. The types of process control sheets required shall include:
    - 1) "Wet-out" Process Control Sheet
      - a) Liner Manufacturer.
      - b) Liner diameter.
      - c) Number of layers.
      - d) Resin Manufacturer.
      - e) Resin amount.
      - f) Resin type.
      - g) Batch number.
      - h) Catalyst and accelerator name/type.
      - i) Hardener name/type.

- j) Filler name/type, if any.
- k) Percent of filler, if any.
- l) Mixing ratios.
- m) Vacuum pressure of impregnation process.
- n) Wet-out start time and date.
- 2) Installation Process Control Sheet
  - a) Liner length.
  - b) Hydrostatic head at point of inversion.
  - c) Hydrostatic head at termination point.
  - d) Time inversion process started.
  - e) Time cutting ends started.
  - f) Time cutting laterals started.
  - g) Number of laterals cut.
- 3) Curing Process Control Sheet
  - a) Required temperatures and time for the different steps of curing process; initial cure, post cure, and cooling as outlined in ASTM F1216.
  - b) Initial cure may be considered completed when exposed portions of flexible tube pipe take a hard set and temperature is adequate, as recommended by Manufacturer.
- b. Pre-CCTV and post-CCTV inspection reports as specified in Section 02820, Sewer Pipeline Inspection.
- c. Manufacturer's Certificate of Proper Installation.
- d. Certified test reports of CIPP samples obtained during installation.
- 10. Material Safety Data Sheets for all resins, and other additives such as accelerants, colorants, and lubricants utilized in the pipe lining process.

#### 1.04 TRANSPORTATION AND HANDLING

- A. Packaging, handling and shipping shall be done in accordance with the Manufacturer's instructions.
- B. No materials or products shall be shipped to the Site of the Work without the authorization of the Engineer.
- C. Resin to be shipped directly to wet-out facility from resin Manufacturer.
- D. No cuts, tears, or abrasions shall occur to liner tube during handling.
- E. Materials shall be accompanied by test reports certifying that the material conforms to the ASTM standards listed herein.
- F. Unloading: Furnish equipment and facilities for unloading, handling, distributing, and storing materials. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification.

1.05 STORAGE AND PROTECTION

- A. Store all material which cannot be distributed along the route. Make arrangements for the use of suitable storage areas.
- B. Stored materials shall be kept safe from damage.
  - 1. Promptly remove damaged products from the Work site at the Contractor's expense.
  - 2. Replace damaged products with undamaged products acceptable to the Manufacturer and Engineer.
  - 3. Dispose of in accordance with current applicable regulations.
- C. Store water or steam cured resin-impregnated tubes in refrigerated truck trailers at a temperature below 45 degrees F to prevent premature curing.

1.06 QUALITY ASSURANCE

- A. Product Manufacturers shall provide the Owner with written certification that all products furnished comply with all applicable provisions of these Specifications.

1.07 SPECIAL GUARANTEE

- A. Material Warranty: A written guarantee of 1-year shall be provided by the Manufacturer against defects and breakdown of material effectiveness of structural repair elements.
- B. Workmanship Warranty: A written guarantee of 1-year minimum shall be provided by Contractor against defects of workmanship.
- C. Warrantee Inspection: A warranty inspection will be conducted in the 11th month following final acceptance of the Work. Inspection will be conducted by Owner or designated representative of Owner. Contractor and liner Manufacturer representative shall participate in inspection.

1.08 SAFETY

- A. All work shall be performed in accordance with OSHA standards and local, State, and Federal safety regulations.
- B. No person shall enter a confined space without the documented requisite training, certification, and entry permit.

C. Steam Curing:

1. Curing with pressurized steam involves safety concerns which include but may not be limited to:
  - a. High temperatures.
  - b. Short burn times.
  - c. Potential blowouts.
2. Prior to using pressurized steam curing, include and submit the Contractor's standard operating and safety procedures.
3. Implement necessary precautions to secure the work area and ensure the safety of workers, inspectors, and other project participants in or around the curing apparatus.

D. Hot Water Curing: Prior to using hot water curing, include and submit the Contractor's standard operating and safety procedures.

**PART 2 PRODUCTS**

2.01 RESIN:

- A. General purpose, unsaturated, polyester, epoxy, isophthalic neopentyl glycol, or thermosetting vinyl ester resin, catalyst system, initiators, or hardeners that provide specified cured physical strengths and properties, and compatible with reconstruction inversion process.
- B. Resistant to municipal wastewater environment; immersion in septic sewage at temperatures up to 75 degrees F.
- C. Curing:
  1. Designed to cure properly within selected curing method.
  2. Initiation Temperature: 180 degrees F, maximum.
  3. Resistant to ultraviolet light (sunlight) prior to installation.
  4. Polyethylene terephthalate (PET) resins, resin filters, resin additives, and resin enhancement agents are prohibited. Only neat (non-enhanced) resins are acceptable. Old resins and reworked resins are prohibited, regardless of whether or not they are mixed with new resin.
  5. Chemical resistance of resin system shall have been tested by resin Manufacturer in accordance with ASTM D543. Exposure to chemical solutions listed below at temperatures of up to 75 degrees F shall be conducted for a minimum period of 1 month and shall result in a loss of not more than 20 percent of initial structural properties.
  6. Minimum Chemical Solution Concentration, ASTM F1216:
    - a. Tap Water, pH 6 to 9: 100 percent.
    - b. Nitric Acid: 5 percent.
    - c. Phosphoric Acid: 10 percent.

- d. Sulfuric Acid: 10 percent.
- e. Gasoline: 100 percent.
- f. Vegetable Oil: 100 percent.
- g. Detergent or Soap: 0.1 percent.
- 7. Produce cured tube resistant to shrinkage, corrosion and oxidation, and resistant to abrasion from solids, grit and sand in wastewater.
- 8. Bond between tube layers shall be strong and uniform.
- 9. Layers, after cure, shall be saturated with resin prior to next layer installation.

D. Catalyst:

- 1. Primary: 1 percent maximum of resin by volume.
- 2. Secondary: 1/2 percent of resin by volume.

E. Flexible Liner Tube:

- 1. Design liner thickness using the following criteria:
  - a. Design Life: 50 years.
  - b. Pipe Diameters: Per Contract Drawings.
  - c. Ovality: 2 percent.
  - d. Host Pipe Condition: Fully deteriorated.
  - e. External Water: Ground surface, if not specified on the contract drawings.
  - f. Tensile Strength: 3,000 psi.
  - g. Flexural Strength: 4,500 psi.
  - h. Short-Term Flexural Modules: 250,000 psi.
  - i. Reduction Factor: 50 percent.
  - j. Long-Term Flexural Modules: 125,000 psi.
  - k. k Enhancement Factor: 7.
  - l. Soil Modules: 1,000 psi.
  - m. Soil Density: 120 pcf.
  - n. Highway Live Load: AASHTO HS20 44.
  - o. Safety Factor: Two minimum.
  - p. Minimum Thickness:
    - 1) Pipe 10 Inches and Smaller: 6 millimeters (0.24 inches).
    - 2) Pipe Larger than 10 Inches: 7.5 millimeters (0.30 inches).
    - 3) If calculations require thicker wall, round to next higher multiple of 0.5 millimeter.
  - q. Poisson's Ratio: 0.3.
  - r. Liner shall be watertight.
- 2. Consist of layers of flexible nonwoven and absorbent polyester felt manufactured under quality controlled conditions set by the Manufacturer and applicable requirements set forth in ASTM F1216 and ASTM F1743.



3. Capable of stretching to fit irregular pipe sections.
4. Fabricated and sized for each section to ensure snug and firm fit inside existing sewer; produce required thickness after resin is cured.
5. Inside layer of tube shall be coated with an impermeable material compatible with resin and felt.
6. Fit length and diameter of manhole with allowance for longitudinal and circumferential stretching or shrinkage.
7. Maximum Stretching Allowance: In accordance with ASTM F1216.
8. Fabricate in lengths, that when installed, liner occupies length of pipeline between launch and reception manholes.
9. Lining shall be correct diameter; after installation there shall be no wrinkles or form permanent fins.
10. Contain no intermediate layers that may delaminate after resin curing. Not capable of separating layers with a probe or knife blade such that layers separate cleanly or probe or knife blade moves freely between layers.
11. Where several layers of felt are required, inner layer shall be stitched to form a tube.
  - a. Each successive layer shall be individually wrapped around previous one and stitched together.
  - b. Outer layer of felt shall have an installation tube pre-bonded to it, or a sheet of this material shall be wrapped around completed felt tube.
  - c. Where a pre-bonded material is used, bond a covering strip over seam to form airtight joint.
12. Fabricated from materials which when cured will be chemically resistant to reagents as defined in ASTM D543.
13. Pre-liner:
  - a. If required by Engineer, apply to tube on what will become interior wall of finished CIPP.
  - b. Polypropylene compatible with resin system and shall not adversely affect adhesive properties of resin used in mainline or lateral liners.
14. Interior Pipe Wall Color: Shall not be a dark or nonreflective nature that could inhibit proper CCTV inspection.

F. Liner End-Seal:

1. Hydrophilic rubber seal to span end of liner and joint with host pipe (mainline).
2. Stainless steel retaining bands on each side of joint.

G. Interface Seal (Service Connection Seal):

1. Compatible with mainline and lateral liners.
2. Designed to be installed via remote device without excavation or installation of cleanout.
3. Structural properties in accordance with ASTM F1216 and as referenced in Article Design Criteria.
4. Meet 50-year design life of CIPP lateral liner.
5. One-piece construction and designed such that when expanded shall tightly fit both T and Y connections at interface between mainline and lateral pipe.
6. Provide watertight connection between service connection and mainline.
7. Brim Type Seals: Provide 3-inch minimum overlap inside mainline.
8. Sectional Type Seals:
  - a. Meet specified conditions.
    - 1) Full-circle, 16-inch long minimum inside sectional CIPP mainline liner.
    - 2) Integrally manufactured to lateral liner providing seamless connection between mainline liner and lateral liner.

H. Lubricant:

1. As recommended by liner Manufacturer.
2. Nontoxic product with no detrimental effects on liner.
3. Not detrimental to wastewater treatment plant operations.

I. Chemical Grout Sealant:

1. Types:
  - a. Acrylic.
  - b. Acrylate.
  - c. Urethane.
2. Design mix in accordance with ASTM F1216.
3. Contains principal chemical sealant constituent, initiator, and catalyst specifically recommended for sealing leaks in sanitary sewer lines.
4. While being injected, able to react/perform in the presence of water (groundwater).
5. Cured material shall withstand submergence in water without degradation.
6. Resultant sealant formation shall prevent passage of water (infiltration) through sewer pipe joints.
7. After curing shall be flexible as opposed to brittle.
8. Compatible with CIPP resin as specified in this section.

**2.02 SOURCE QUALITY CONTROL**

- A. At time of manufacture, each lot of liner shall be inspected and certified to be free of defects.
- B. Each liner system shall be accompanied with documentation indicating time and date of liner manufacturing, felt thickness, number of layers, length of liner, resin type and name, hardener type and name, batch numbers, and mixing ratios.

**PART 3 EXECUTION**

**3.01 OVERFLOWS OR SPILLS**

- A. Schedule and perform the Work in a manner that does not cause or contribute to incidence of overflows or spills of sewage from sewer system.
- B. If Contractor is unable to perform work without flow diversion, bypass pumping as specified in Section 01572, Temporary Sewer Flow Control, shall be used to manage sewer flow.
- C. In the event Contractor's work activities contribute to overflows or spills, take appropriate action to contain and stop overflow, clean up spillage, disinfect area affected by spill and notify Owner as soon as possible.

**3.02 PRIVATE SERVICE LATERAL SHUTDOWN**

- A. Notify Owner and Engineer at least 1 week prior to shut down.
- B. Notify building occupants regarding service lateral disconnection by placing a door hanger approved by Owner and Engineer. Place door hangers between 1 day and 3 days prior to disconnection.
- C. When service lateral will be disconnected from main for more than 4 hours, lateral shall be positively drained or pumped down.
  - 1. Visually monitor status of flow and storage.
  - 2. Pump lateral more frequently where flows exceed storage capacity of lateral or Contractor-provided temporary storage.
- D. If service lateral cannot be positively drained or pumped down or disconnection of service lateral is anticipated to be 24 hours or longer, Contractor shall provide temporary living accommodations for resident at no additional cost to Owner or the resident. Temporary living quarters accommodations shall be approved by Engineer and coordinated through resident and Owner's Customer Support Representative.

- E. Temporarily restore services in uncompleted sections during nonwork hours.
- F. Notify building occupants when Work is complete and uninterrupted service restored.
- G. Maintain uninterrupted commercial sewer services while businesses are open.
- H. No sewage from the services or mainline shall be allowed to be discharged on the ground or in waterways.
- I. Holding pits or tanks are not allowed unless permitted by governing agency.

### 3.03 PRE-INSTALLATION PROCEDURES

- A. Locate and designate all existing manholes and new manhole access points as necessary for the Work.
  - 1. Provide water from hydrants or other sources approved by the Owner for cleaning, installation and other process related work items.
    - a. Comply with all connection and use requirements for water in accordance with Section 01510, Temporary Facilities.
    - b. Use clean water for inversion and curing.
  - 2. Locate and mark all existing utilities in areas where excavation is to be performed prior to beginning any excavation in accordance with Section 02730, Sewer and Accessories.
- B. Before Work commences, required pre-installation submittals shall be approved by Engineer, including traffic management measures, safe pedestrian passage, provision of vehicular access to property, bypass/diversion pumping, and emergency measures.
- C. Notify Engineer prior to beginning pre-installation activities.
- D. Pre-Insertion Cleaning:
  - 1. Clean and prepare host pipe prior to pre-insertion CCTV inspection in accordance with Section 02750, Sewer Cleaning.
  - 2. Debris removed from sewer during cleaning shall be transported in watertight containers and disposed of in accordance with local, State, and Federal Regulations.
- E. Pre-Insertion Chemical Grout Sealing:
  - 1. Mix and handle chemical sealing materials in accordance with Manufacturer's recommendations.

2. Apply sealing grout within pipe by means of remote-controlled equipment.
    - a. Equipment designed to be positioned at specific point to be sealed.
    - b. Equipment shall apply grout under sufficient pressure for grout to pass through opening and fill voids outside pipe as well as opening in pipe wall.
    - c. Sealing method shall not damage pipe or change pipe alignment and original cross-sectional area shall not be permanently reduced or changed.
- F. Pre-Insertion CCTV Inspection:
1. To be performed in accordance with specification Section 02820, Sewer Pipeline Inspection.
  2. Inspect sewer pipe before insertion of resin impregnated tube to ensure pipe is clean and existing pipe conditions are acceptable for lining.
- G. Dye and Smoke Testing: Where sewer line segments may contain abandoned services, Contractor may be directed by Engineer to perform dye and smoke testing to determine if services are live and require reinstatement in accordance with Section 02830, Sewer Dye Testing and Section 02840, Sewer Smoke Testing.
- H. Line Obstructions: If pre-insertion CCTV inspection reveals obstruction in existing pipe that cannot be removed by sewer cleaning equipment, with approval of Engineer, perform point repair using flexible coupling.
- I. Ensure proper sequence of work occurs between mainline and lateral lining activities.
- J. Confirm accurate location and serviceability of existing lateral or service connection (tap). Serviceability shall be confirmed by flowing water, dye testing, or visually with CCTV inspection.
- K. When service connections protrude into existing pipe more than 1/2 inch, as measured from inside pipe wall, remove protruding portion of service connection to within 1/2 inch of inside pipe wall.
- L. Cleanouts, if required:
1. Use existing cleanouts where available.
  2. If lateral identified to be repaired by means of a lateral liner installation and no cleanout exists, obtain written authorization from the Engineer to install a new cleanout.
  3. Cleanouts shall be located on the right of way side of the property line of the private property and right of way.

4. Vegetated Area: Install PVC cleanout and cover.
5. Paved Area: Install cast-iron cleanout as directed by Engineer.
6. May be installed using conventional excavation or by vacuum excavation using saddle type cleanout connection.
7. Contractor may be directed to remove surface features of cleanout following installation of lateral liner as directed by Owner.

M. Lateral Liner Compatibility: Use one of the following methods.

1. Provide hydrophilic o-rings on both sides of sectional liner and at end of lateral liner or at overlap of component systems not installed concurrently.
2. Grind projected overlapping interior surfaces of mainline and lateral to remove existing coatings and apply a detergent solution to remove grease accumulation following initial cleaning. Repeat detergent application if lateral liner is not installed within 24 hours of first application.

### 3.04 INSTALLATION

- A. Verify lengths in field before cutting liner to length.
- B. Do not install liner if ground water temperatures and/or ambient temperatures exceed those specified in the Manufacturer's recommended installation procedures.
- C. Install remotely using air or water for inversion. CIPP shall provide a smooth interior surface, conform to existing pipe, eliminate groundwater infiltration, and provide a flow pathway to outside of service.
- D. Wet-Out:
  1. Lining system shall be vacuum impregnated with resin (wet-out) under controlled conditions.
  2. Designate vacuum-impregnated location prior to CIPP installation.
  3. If requested, allow Engineer to inspect materials and procedures used to vacuum impregnate tube.
  4. Use roller system to uniformly distribute resin throughout tube.
    - a. If Contactor uses an alternative method of resin impregnation, method shall produce the equivalent results of a roller system. An alternative resin impregnation method shall be approved by the Engineer.
  5. Handle resin impregnated tube to retard or prevent settling until it is ready for insertion.

6. Volume:
  - a. Resin shall fill voids in tube material at nominal thickness and diameter; no air spaces or pockets allowed.
  - b. Adjust by adding excess resin to change resin volume because of polymerization and to allow for migration of resin into cracks and joints in original pipe.
7. Complete wet-out Process Control Sheet for every lining completed.

E. Insertion:

1. Install CIPP in accordance with practices outlined in ASTM F1216 for direct inversion installations and ASTM F1743 for pull-in installations.
2. The existing host pipe shall be dewatered for CIPP pull-in installations.
3. Use a lubricant recommended by the Manufacturer to reduce friction between host pipe and lateral liner during inversion or pull-in process. No resin shall be lost by contact with pipe during pull-in process.
4. Insert wet-out tube through existing manhole or approved access point by means of an inversion process or pulled in method and application of hydrostatic head sufficient to extend tube to next designated manhole or termination point.
5. Alternately, tube may be pulled into place and expanded with inflation bladder.
6. Insertion method shall not result in abrasion or scuffing of the tube.
7. Once installation has begun, maintain pressure between minimum and maximum pressures until installation has been completed. Pressure shall be sufficient to hold tube tight against host pipe.
8. Place temperature gauges between tube and host pipe invert position to monitor temperature during cure cycle.
9. CIPP shall be continuous over entire length of mainline from manhole to manhole.
10. Complete installation Process Control Sheet for every lining completed.
11. Inflation Bladder Removal: For pulled-in-place installation techniques where inflation bladder is designed not to bond to CIPP, remove bladder material from CIPP.
12. Trim back cured liner/resin composite pipe left protruding from mainline or service connection using hydraulic-powered robotic cutting device specifically designed for cutting CIPP.

F. Interface Seal:

1. Install from mainline and extend inside lateral past first joint or a minimum of 3 feet and up to 15 feet inside lateral.
2. Additional length of lateral rehabilitation shall be provided from the right of way or edge of easement to the mainline, if requested by the Owner.

3. No cleanout is required for installation of connection seal to lateral liner system.
4. Do not install in presence of active infiltration. To control infiltration at lateral interface seal use materials compatible with both mainline liner and lateral liner.
5. For laterals identified to be rehabilitated on mainlines without CIPP type lining, interface seal shall be a sectional style.

G. Curing:

1. Complete curing process control sheet for every lining completed.
2. Initial cure may be considered completed when exposed portions of flexible tube pipe are rigid and temperature is adequate, as recommended by the Manufacturer.
3. After installation, apply steam or hot water as recommended by the liner Manufacturer.
  - a. Steam:
    - 1) Provide safety system specifically structured for use of steam.
    - 2) Thermoset Resin: Designed to cure properly when using steam.
    - 3) CIPP Tube Thermoplastic Coating:
      - a) Formulated from material designed specifically to withstand high temperature curing process utilizing steam.
      - b) Polypropylene/polyethylene blend or equal.
    - 4) Equipment:
      - a) Heat source shall be capable of delivering steam throughout section and uniformly raising steam temperature above temperature required to affect cure of resin.
      - b) Install temperature gauges in the following areas:
        - (1) Incoming steam supply.
        - (2) Outgoing steam supply.
        - (3) Between impregnated tube and pipe invert at lining termination point.
    - 5) Steam Temperature: 230 degrees F, minimum.
    - 6) Interface Temperature between Liner and Tube: 120 degrees F, minimum.
    - 7) Pressure Required to Keep Tube Inflated: Per Manufacturer's instructions.
    - 8) Time: Per Manufacturer's instructions.
    - 9) Cool Down:
      - a) Send air through steam cured CIPP liner until liner cools down to 120 degrees F interface temperature.



- b) Once 120 degrees F has been reached, water may be introduced to finish cooling line down to 90 degrees F.
  - c) During release of steam, prevent vacuum that could damage newly installed CIPP.
  - d) Hot Water:
  - 10) Equipment:
    - a) Heat source shall be capable of delivering hot water throughout section and uniformly raising water temperature above temperature required to affect cure of resin.
    - b) Install temperature gauges in the following areas:
      - (1) Incoming water supply.
      - (2) Outgoing water supply.
      - (3) Between impregnated tube and pipe invert at lining termination point.
  - 11) Interface Temperature between Liner and Tube: 120 degrees F, minimum.
  - 12) Time: 3 hours, minimum.
  - 13) Cool Down:
    - a) Introduce cool water into CIPP to replace water being drained from small hole made in downstream end.
    - b) Cool liner to temperature below 90 degrees F before relieving hydrostatic head.
    - c) During release of water, prevent vacuum that could damage newly installed CIPP.
4. Complete curing Process Control Sheet for every lining completed.

### 3.05 MANHOLES

- A. CIPP terminating in manhole shall be cut in shape and manner approved by Engineer.
- B. Seal pipe openings with a liner end-seal and fill in annular space with a chemical grout sealant.
  - 1. CIPP connections at manhole opening shall be watertight seal.
  - 2. Install seal per Manufacturer's instructions.
  - 3. Recheck seal repair after 48 hours. If seal does not hold, continue to repair until there are no leaks.
- C. Channels: Cut CIPP liner when installed continuously through a manhole to create an open channel as directed by the Engineer. Do not break or shear CIPP liner.

D. Inverts:

1. Finish manhole inverts to provide smooth transition between connections.
2. Use CIPP liner material, an approved epoxy, or similar material to form smooth transition to eliminate sharp edges of CIPP, within host pipe, and in manholes at concrete bench and channel invert.
3. Invert rehabilitation shall be compatible with manhole rehabilitation activities.

3.06 SERVICE REINSTATEMENTS

A. General:

1. After liner has been cured in place per Manufacturer's instructions, reconnect service connections.
2. Using CCTV, field locate existing and determine number of service connections.
3. Service interruptions shall not exceed 24 hours.
4. Do not reconnect services from abandoned or vacant lots, unless directed by the Owner.
5. Do not reactivate reconnected services until accepted by Engineer. This process shall be completed prior to cutting the mainline liner and before installation of lateral liner.
6. Show distance from nearest downstream manhole to reconnected service on the Record Drawings.

B. Liner Cutting:

1. Cut liner pipe from interior of pipeline using a robotic cutter.
2. Holes cut through liner shall be neat and smooth to prevent blockage at service connections.
3. Cut-in service connections shall be restored to a minimum of 95 percent of the original sewer flow capacity.
4. Recover coupons downstream and remove.

C. Make connections to existing lateral using elastomeric boots, full-encirclement clamps, or by other method approved by Engineer.

D. External Reconnection:

1. Service connections to new 8-inch CIPP shall be reinstated by excavation and reconnecting service with a PVC full saddle tee.
  - a. Remove appropriate amount of mainline pipe to allow saddle to be directly connected to outside wall of CIPP.

- b. Apply epoxy, meeting the Manufacturer's recommendations, to saddle to ensure watertight seal between saddle and CIPP.
  - c. Secure saddle with stainless steel bands.
  - d. After epoxy has set and prior to backfilling, seal open annular space between existing sewer and new liner pipe with nonshrink grout.
2. Service connections to new 10-inch CIPP and larger to be made with a product approved by the Owner.
3. Remove appropriate amount of mainline pipe to allow lateral service connection to be installed.

### 3.07 FIELD QUALITY CONTROL

#### A. General:

1. CIPP installation shall be free from visual defects such as foreign inclusions, dry spots, keel, boat hull, pinholes, wrinkles, and other deformities.
  - a. Defects and deformities may, at discretion of Owner, be cause for rejection of entire liner.
  - b. Correct failed CIPP and defective CIPP from post-installation inspection or test reports for structural values or thickness as determined by Engineer.
  - c. Method of repair, which may require field or workshop demonstration, shall be approved by Engineer prior to commencement of the Work.
  - d. Remove and replace pipe identified with defects or deformities.

#### B. CCTV Inspection:

1. Perform CCTV inspections in accordance with Section 02820, Sewer Pipeline Inspection.
  - a. Liner shall be free from visual defects, damage, and deflection.
  - b. No visible leaks through the liner, at the joints, at the service connections, or at the manholes.
2. CCTV inspections shall be performed:
  - a. Prior to installation of the CIPP but after pre-lining cleaning.
  - b. After installation of CIPP liner and the reconnection of all active service connections.

#### C. Watertightness:

1. Perform Exfiltration Tests (Low-Pressure Air Test) in accordance with Section 02730, Sewers and Accessories.
2. Perform Infiltration Tests in accordance with Section 02730, Sewers and Accessories, as applicable.

D. Properties Testing:

1. Sampling and Measuring of Mainline CIPP:
  - a. Cut two minimum 12-inch long restrained pipe section from cured liner. Samples will be used to satisfy material testing requirements.
  - b. Prepare samples in accordance with restrained sample method referenced in ASTM F1216 or ASTM F2019.
  - c. Take restrained samples from excess cured CIPP at manhole connection where installation was started or terminated.
  - d. Each sample shall be large enough to provide three specimens for tensile testing and five specimens for flexural properties testing.
2. Sampling and Measuring of Lateral CIPP:
  - a. For every 10 laterals lined, test two flat plate samples.
  - b. Time and location will be selected by Engineer.
  - c. Prepare flat plate samples onsite using actual CIPP liner being installed.
  - d. Once liner is applied to clamped mold, place sample in either upstream or downstream manhole to simulate environmental conditions that lateral liner being installed will experience during curing process.
  - e. After curing process has been completed, sample shall be removed, labeled and sent to laboratory facility for physical properties testing.
3. Field Thickness Testing:
  - a. Perform prior to conducting laboratory tests.
  - b. Take wall thickness measurements in accordance with ASTM D2122.
  - c. Make a minimum of four measurements, evenly spaced, on each test specimen.
  - d. Calculate average thickness using measured values.
  - e. Average thickness shall be equal or greater than required design thickness.
  - f. Failure of thickness test shall be grounds for rejection for CIPP liner.
4. Laboratory Testing:
  - a. Send one sample to independent laboratory and test for modulus of elasticity and flexural strength in accordance with ASTM D790.
  - b. Preparation and testing standards shall be performed in accordance with approved submittals.
  - c. Failure of a test may be grounds for rejection of CIPP liner. Test second sample at direction of the Owner.

5. Resin Sampling:
  - a. Wet-out facility resin mixing equipment shall have a valve downstream of the mixing function and immediately upstream of application of mixed resin to tube where resin samples may be drawn.
  - b. Batch mix facilities, if any, shall provide for sampling of mixed batch.
  - c. Submitted “wet-out” schedule cannot be modified without 24-hour notice to Engineer.
  - d. Resin samples shall be drawn at times determined by Engineer.
6. Physical samples removed for testing as requested by Engineer shall be individually labeled and logged to record the following:
  - a. Owner’s Project number and title.
  - b. Sample number.
  - c. Segment number of line as noted on plans.
  - d. Date and time of sample.
  - e. Name of Contractor.
  - f. Location and by whom tested.
  - g. Results of test.
  - h. Street name and address.
  - i. Starting and ending manhole identification number for each length of pipe lined.
  - j. Label as follows:
    - 1) Sample A: Restrain Sample.
    - 2) Sample B: Restrain Sample.

E. CIPP Correction:

1. Correct failed liner or liner deemed unacceptable by the Owner as a result of CCTV inspection, leakage test results, laboratory testing, or thickness test.
2. Remedy for failed laboratory and thickness test shall be as shown in the following table:

Pipe Correction			
Test	Required Value	Test Result	Remedy
Flexural Strength	4,500 psi	4,300 to 4,490 psi	10% unit price reduction
	4,500 psi	4,100 to 4,290 psi	30% unit price reduction
	4,500 psi	Less than 4,100 psi	Pipe replacement
Flexural Modulus	250,000 psi	238,000 to 249,000 psi	10% unit price reduction
	250,000 psi	225,000 to 237,900 psi	30% unit price reduction
	250,000 psi	Less than 225,000 psi	Pipe replacement

Pipe Correction			
Test	Required Value	Test Result	Remedy
Thickness	Minimum or design, whichever is greater	$\geq 90\%$ to 100%	No unit price reduction
	Minimum or design, whichever is greater	$\geq 80\%$ , but less than 90%	15% unit price reduction
	Minimum or design, whichever is greater	$< 80\%$	Pipe replacement

3. Where pipe replacement is required, entire segment length from manhole to manhole shall be removed and replaced at no additional cost to Owner and payment shall be made in full for CIPP.

3.08 CLEANUP

- A. After liner installation has been completed and prior to acceptance by the Owner, clean entire Project area and restore Site to original condition.
- B. Dispose of excess material and debris not incorporated into the permanent installation. Remove materials used during installation from pipe. Contractor will be held responsible for cost of repairs or maintenance resulting from materials accumulating in downstream pump stations.

**END OF SECTION**

**SECTION 02940  
PIPE BURSTING**

**PART 1 GENERAL**

**1.01 SCOPE**

- A. This section describes the materials and methods for replacing existing sanitary sewers using pipe bursting, including the complete installation of the new pipe, and reconnection of existing sewer service connections and manholes.
- B. The Contractor shall supply all products and perform all Work in accordance with applicable ASTM International (ASTM), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

**1.02 QUALIFICATIONS**

- A. All pipe bursting materials on any project must be pre-approved and included in the approved products list for sanitary sewer rehabilitation (see Appendix A: Approved Manufacturers List for Wastewater Construction).

**1.03 SUBMITTALS**

- A. The Contractor shall submit product data and engineering data, including Shop Drawings, to the Engineer for review.
  - 1. A Comprehensive Construction Sequencing Plan. At minimum the plan shall include the following:
    - a. Construction sequencing.
    - b. A proposed schedule identifying critical path items.
    - c. Identification of all proposed access routes complying with NPDES permit, when applicable.
    - d. Detailed installation procedure for the pipe bursting method to be used.
    - e. Detailed procedures for the installation and bedding of the new pipe in the launching and receiving pits.
    - f. Design of pipe bursting equipment.
    - g. Support of backstop.
    - h. Identification of set-up locations for pipe bursting.

- i. Location and dimensions of the pits to be excavated. Identify proposed modifications to existing manholes or replacement of existing manholes, if any manholes are to be used as machine pits or pipe insertion pits.
  - j. Arrangement and position of jacks and pipe guides; complete in assembled position.
  - k. Description of the method to remove and dispose of the host pipe, if required.
  - l. Excavation and backfill.
  - m. Annular space grouting, if required.
  - n. Field quality control testing.
  - o. Contingency plan, including the following:
    - 1) Unforeseen obstructions that stop or delay the operation.
    - 2) Unforeseen deflections that stop or delay the operation.
    - 3) Excessive surface heaving or subsidence.
    - 4) Damage to existing utility installations.
    - 5) Required spot repairs of the existing line.
  - p. Equipment staging area.
  - q. Pipe bursting distances and directions.
  - r. Method used to deactivate and then reactivate service laterals.
  - s. Service outage and reinstatement schedule.
  - t. Site restoration.
  - u. Identification of the pipe fusion area and pipe train staging area.
  - v. Trench safety systems, well pointing, backfill with cement-stabilized sand or bank sand, and other items associated with insertion pits.
2. Cold weather installation plan following the Manufacturer's recommendations. Plan shall include, but not limited to, the following major components:
- a. Pipe storage.
  - b. Pipe handling equipment.
  - c. Proper pipe preparation and joint fusion procedures.
  - d. Pipe installation.
  - e. Minimum allowable temperature.
3. Design Calculations for selected material used including but not limited to:
- a. Pull/push loads.
  - b. Thrust loads.
  - c. Thermal force (showing the change in length due to temperature variation and the proposed pipe burst method to either resist the thermal forces or accommodate the change in length).



4. Product data and applicable specifications for pipe material, including but not limited to:
  - a. Size.
  - b. Dimensionality.
  - c. DR/pressure class per applicable standard.
  - d. Wall thickness.
  - e. Color.
  - f. Recommended minimum bending radius.
  - g. Recommended maximum safe pull force.
  - h. Experience record of pipe Manufacturer.
  - i. Electrofusion fittings.
  - j. Electrofusion flex restraints.
  - k. Electrofusion Saddles.
  - l. Lubrication.
  - m. Joining equipment.
  - n. Pipe joints.
  - o. Gaskets showing cushion packing ring.
5. Fusion joint documentation containing the following information:
  - a. Pipe size and thickness.
  - b. Machine size.
  - c. Fusion technician identification.
  - d. Job identification.
  - e. Fusion joint number.
  - f. Fusion, heating, and drag pressure settings.
  - g. Heat plat temperature.
  - h. Time stamp.
  - i. Heating and cool down time of fusion.
  - j. Ambient temperature.
6. Material Safety Data Sheets (MSDS) for each product used.
7. Instructions for storing pipe to prevent damage from ultraviolet light.
8. Qualification certificates and evidence of qualifications and experience required herein for the:
  - a. Installer.
  - b. Fusion equipment operator.
  - c. Insertion equipment operator.
9. Test Results:
  - a. Certified Factor.
  - b. Field.
  - c. Approved data logger device reports.
10. Pre-installation and post-installation CCTV inspection reports to include media and logs.

- B. The Contractor shall provide to the Engineer the following verifiable information, in writing, prior to the set deadline, or at the indicated frequency, whichever is applicable. The schedule for all other submittals not listed below will be determined by the Engineer:

Type of Submittal	Time/Frequency of Submittal
Experience Record of Contractor/Subcontractor	At Preconstruction Conference
Comprehensive Construction Sequencing Plan	At Commencement of Contract
Listing of Safety Precautions and Traffic Control Measures	At Commencement of Contract
Tracking quantity of Debris from Cleaning to be Disposed at County Approved Location(s)	At Commencement of Contract
Specific Project Schedule with a Project completion date	At Commencement of each specific project
Schedule of Planned Inspections/Cleaning of Sewer Reaches	Post Commencement and Weekly
Daily Logs and Progress Reports	Daily
Confined Space Entry Logs	Daily

#### 1.04 TRIAL TEST AND METHODOLOGY REVIEW

- A. Should Contractor submit using a pipe bursting methodology the Engineer is not familiar with, the Contractor shall comply with the following conditions before a pipe bursting technique becomes accepted as a viable option on a repeat basis:
1. A successful demonstration of a trial length of sewer pipeline requiring pipe bursting, chosen by the Engineer, to include all aspects of the installation and quality control tests, as recommended by the Manufacturer and in compliance with industry standards.
  2. The Contractor shall include and allow for representation by the equipment Manufacturer, if requested and further requirement of the Engineer, subsequent to the trial, to modify the equipment, material and/or installation methodology in order to complete the Work satisfactorily and meet all testing standards at no additional cost to the Owner.
  3. The Engineer shall formally accept the Contractor as having successfully completed the trial stage, should this be the case.

1.05 QUALITY ASSURANCE

- A. The Contractor is solely responsible for quality assurance during the length of the project. The Contractor is responsible for any costs associated with corrective measures required to replace or repair items not meeting the quality standards of these Specifications at no additional cost to the Owner.
- B. Product Manufacturers shall provide the Engineer with written certification indicating products furnished comply with all applicable provisions of these specifications.
- C. If ordered by the Engineer, each pipe Manufacturer shall furnish the services of a competent and certified factory representative to supervise and/or inspect the installation of the pipe. This service shall be furnished at no additional cost to the Owner.

1.06 SAFETY

- A. All work shall be performed in accordance with OSHA standards and local, State and Federal safety regulations.
- B. No person shall enter a confined space without the documented requisite training, certification, and entry permit.

**PART 2 PRODUCTS**

2.01 MATERIALS

- A. Polyethylene (PE) Plastic Pipe:
  - 1. PE pipe shall meet the applicable requirements of ASTM F714, ASTM D1248, and ASTM D3550.
  - 2. All pipes shall be made of virgin material. No rework shall be used, except when obtained from the Manufacturer's own production of the same formulation.
  - 3. The pipe shall be homogeneous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.
  - 4. PE Pipe with the designation of PE 3408 shall have a minimum cell classification of 345464C, D, or E as described in ASTM D3350.
  - 5. PE Pipe with the designation of PE 4710 shall have a minimum cell classification of 44574C, D, or E as described in ASTM D3350.
  - 6. Pipe sizes to be measured in ductile iron pipe (DIP) sizes. The minimum dimension ratio (DR) of the pipe shall be DR 17 unless otherwise noted on the drawings or approved by the Owner and/or their Representative.

7. Color:
  - a. Inside: Inner wall shall be light color interior (soft gray or white).
  - b. Outside: Outer wall black with co-extruded green cover or extruded green stripes designating use for sanitary sewer. Pipe with extruded green stripes shall have a minimum of three equally spaced stripes. Pipe shall have a heat indented print line containing the information required in ASTM D3035. Color print lines are not an acceptable method for designation of sewer mains.
8. Fittings shall be PE butt fusion welded fittings in accordance with ASTM D3261 as modified for the specified material.
9. Joints:
  - a. Pipe jointing shall be by butt fusion welding.
  - b. Electrofusion Couplings may be used for repairs or connecting pipe burst segments in the trench with approval from the Engineer.
  - c. Service Connections using service saddles shall be butt fusion or electrofusion couplings saddle type fitting with DIP outside dimension branch connection:
    - 1) Specifically designed for connection to type of PE being installed.
    - 2) If approved by the Engineer for PE pipe larger than 10 inches in diameter the Contractor may opt to install an Inserta Tee, or approved equal.
10. Stiffeners inserts: Stainless steel stiffener inserts, ASTM 240, shall be used for all fittings and connections to PE pipe. Stiffeners shall be of stainless steel Type 304, wedge-type design.

B. Ductile Iron Pipe (DIP):

1. Minimum 350 pressure rating.
2. Boltless restrained joint design capable of a developing a minimum 20,000 pound allowable dead end thrust pulling force without separation or permanent deformation.
3. Meet all applicable requirements in Section 02730, Sewers and Accessories.

2.02 EQUIPMENT

A. Pipe Bursting Equipment:

1. The pipe bursting system be designed and manufactured to force its way through existing pipe materials by fragmenting the pipe compressing the broken pieces into the surrounding soil as it progresses. The bursting unit shall generate sufficient force to burst and expand the existing pipeline and allow for the insertion of the liner pipe.

2. Joining: Capable of meeting Project conditions and as recommended by the pipe Manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure.
3. Provide equipment of sufficient size and power to accomplish specified pipe replacement. The following systems may be used:
  - a. Static pull.
  - b. Pneumatic pipe bursting.
  - c. Hydraulic expansion.

B. Bursting Lubricants:

1. Bursting lubricants shall be used at the request of the pipe bursting contractor and at the discretion of the Owner and/or their Representative.
2. Lubricants shall be compatible for long term use with PE and DIP pipe.

C. Pipe Pull Heads:

1. Pipe pull heads shall be utilized that employ a positive through-bolt design assuring a smooth wall against the pipe cross-section at all times.
2. Pipe pull heads shall be specifically designed for use with liner pipe, and shall be as recommend by the pipe supplier.

D. Pipe Rollers:

1. Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe during handling and pullback operations.
2. A sufficient quantity of rollers and spacing, per the pipe supplier's guidelines shall be used to assure adequate support and resist excessive sagging of the product pipe.

## 2.03 TRANSPORTATION AND HANDLING

- A. Packaging, handling and shipping shall be done in accordance with the Manufacturer's instructions.
- B. No materials or products shall be shipped to the Site of the Work without the agreement of the Engineer.
- C. The Contractor shall deliver only materials fully conforming to these specifications or for submittals previously provided and approved for use by the Engineer.
- D. The Contractor shall load, transport, and unload pipe and appurtenances at Project Site.

## 2.04 STORAGE AND PROTECTION

- A. The Contractor shall store materials and handle to avoid damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times. The Contractor shall replace any damaged materials and remove damaged materials from site and replace at Contractor's cost.
- B. Pipe shall not be stacked higher than the limits recommended by the Manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipes in adjacent tiers. Support for PE pipe shall suitably prevent damaging contact with the ground.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. The Work under this contract shall comply with these specifications, requirements of work orders, and with all applicable codes, laws, and regulations of the local City, County, State, and Federal Agencies having jurisdiction. In the event of any conflict between the terms of these specifications and such codes, laws, and/or regulations shall prevail. If the Contractor performs any work knowing it to be contrary to such codes, laws, or regulations, and without such notice to the Owner, the Contractor shall assume full responsibility therefore and shall bear any and all costs necessary to correct the Work.
- B. Prior to initiation of a specific project, a schedule for the Project shall be submitted to the Engineer. Once the schedule is approved by the Engineer, it will become part of the scope of work for the specific project. It is the responsibility of the Contractor to maintain this schedule. If circumstances arise affecting the project schedule, the Contractor shall notify the Engineer in writing and request approval from the Engineer for a schedule change.
- C. It is the responsibility of the Contractor to notify all residents potentially affected by the Pipe Bursting activities. This notification shall consist of written information and verbal communication outlining the Pipe Bursting process and timing of the project. The written information shall be delivered to each home/business at least one week prior to the start of the project, and at a minimum shall describe the work, schedule, how it affects the home/business, and local telephone numbers for the Contractor and Engineer. The written notification shall be approved by the Engineer before distribution. At the request of the Engineer, the Contractor shall participate in public meetings regarding the Project.

- D. At no time shall water and sewer service be interrupted by the pipe bursting operations.
- E. The Contractor shall locate all wastewater service lines, plug, and pump prior to pipe bursting and continuously pump until the services are reconnected.
- F. Overflows or Spills:
  - 1. Schedule and perform the Work in a manner that does not cause or contribute to incidence of overflows or spills of sewage from sewer system.
  - 2. In the event Contractor's work activities contribute to overflows or spills, take appropriate action to contain and stop overflow, clean up spillage, disinfect area affected by spill and notify Owner as soon as possible.
- G. Provide water from tanker trucks or approved hydrants for cleaning, installation, and other process related work items requiring water. Comply with Owner's connection and use requirements.

### 3.02 PREPARATORY PROCEDURES

- A. Prior to entering any private property, the Contractor shall ascertain the requirements of applicable permits or recorded easements, and shall conduct the Work in accordance with the requirements thereof; including giving notice and obtaining right- to-enter onto existing easement. The Contractor shall be fully responsible for complying with the requirements of any permit or easement granting entry, although such requirements may be more stringent than otherwise stipulated by this Contract. The Contractor shall compensate the Owner fully for any loss or expense arising from failure of the Contractor to comply with the aforementioned requirements.
- B. Sub-surface and Surface Conditions:
  - 1. Locate and mark existing utilities in areas where excavation is to be performed prior to beginning excavation.
  - 2. Any known pre-existing concrete encasements shall be excavated and broken out prior to the bursting operation to allow the steady and free passage of the pipe bursting head.
  - 3. Examine surface and subsurface path of proposed line segment and notify Engineer if conditions exist that could cause problems with pipe bursting method. This could include utilities and nearby services that could be damaged by the operations, existing slabs that could be damaged, expansive soils, or less than acceptable depth of cover.

- C. Locate insertion or access pits in order that total number is minimized and footage of pipe installed in a single run is maximized. Use excavations at locations of existing manholes scheduled for replacement or at point repair locations where possible. Locate pits where interference to vehicular traffic and inconvenience to public is minimized. Safe and suitable temporary access shall be provided and maintained to all private property and businesses. The duration pits are open shall be kept to a minimum. Pits shall be kept as dry and shall be excavated to at least one foot below the pipe invert to minimize the potential for contamination during connection of the new pipe, fittings, and services.

### 3.03 CLEANING

- A. The existing pipe and manholes shall be cleaned prior to the pre-installation CCTV inspection. The installed pipe and restored manholes shall be cleaned prior to the post-installation CCTV inspection. Cleaning shall be performed in accordance with Section 02750, Sewer Cleaning.

### 3.04 PRE-INSTALLATION CCTV INSPECTION

- A. Refer to Section 02820, Sewer Pipeline Inspection. Inspection of the sewer line or lateral shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by CCTV or man-entry inspection. The interior of the sewer shall be carefully inspected to determine the location of any conditions preventing the proper installation of the new pipe utilizing the pipe bursting method.

### 3.05 LINE SAG

- A. If pre-installation CCTV inspection reveals any sag greater than one-fifth (20 percent) of the existing pipe diameter, eliminate the sag by one of the following:
  - 1. Dig pit around area of sag and install backfill to bring bottom of pipe trench to uniform grade in line with existing pipe invert.
  - 2. Perform point repair in accordance with Section 02730, Sewers and Accessories.
  - 3. Contractor proposed method shall be acceptable to Owner and the Owner's Representative.



3.06 PIPE JOINTING

- A. No materials shall be dumped, dropped, pushed or rolled into a trench. Pipe may be pulled longitudinally into the trench after fusion of the pipeline. Pulling of the main shall be accomplished by mechanical action during pipe bursting operations.
- B. The Contractor shall install all pulleys, rollers. Bumpers, alignment control devices and other equipment required to protect existing manholes, and to protect the new pipe from damage during installation. Lubrication may be used as recommended by the Manufacturer. Under no circumstances shall the pipe be stressed beyond its elastic limit (polyethylene) or compressive or tensile limit (ductile iron).
- C. Pipe Jointing:
  - 1. Fusion Welds:
    - a. Prior to pipe installation, perform sample fusion welds for examination by Owner' Representative. The Engineer reserves the right to randomly inspect welds as deemed necessary.
    - b. Fusion machine employed for trial welds shall be same machine utilized for project installation.
  - 2. Engineer will evaluate sample joints to verify quality. After visual examination, Engineer may conduct destructive tests.
  - 3. If requested by the Owner and/or their Representative, conduct additional training of pipe joint personnel.
- D. Butt Fusion:
  - 1. Conform to ASTM F2620 and pipe Manufacturer's criteria for type of joining.
  - 2. Joint strength shall be equal to that of adjacent pipe.
- E. Heater Plate:
  - 1. Equipped with means, such as infrared thermometer or pyrometer (and associated data loggers), to measure temperature of plate surface and to ensure uniform heating.
  - 2. Use fire-retardant bag or suitable enclosure to facilitate control of heating process and to protect heater plate surfaces from dirt and other debris when not in use.
  - 3. Clean surfaces regularly to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining.

F. Joint Preparation:

1. Clean inside and outside of pipe ends with cotton or non-synthetic cloth to remove dirt, water, greases, and other foreign materials.
2. Cut pipe ends square and carefully aligned prior to heating.

G. Joining:

1. Upon achieving proper melt pattern, bring pipe ends together in firm, rapid motion, applying sufficient pressure to form pipe bead (1/8-inch to 3/16-inch high) around the inside of entire circumference of pipe.
2. Join sections of pipe onsite into continuous lengths aboveground.
3. Electrofusion may be used for field closures when appropriate fusion equipment can be utilized in trench type environment.
4. For end sections or "tail" pipe, use of electrofusion couplings may be utilized.
5. Terminal sections of pipe that are joined within insertion pit shall be connected with mechanical coupling, electrofusion coupling, or non-shear restraint coupling.
6. Connections shall be in conformance with Manufacturer's installation procedures.
7. Butt gap between pipe ends shall not exceed 1/2 inch.

3.07 PIPE INSTALLATION

A. General:

1. Existing pipe shall be clean and free of obstructions so as not to prohibit pipe bursting operations.
2. Pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the Engineer.
3. Lubrication may be used as recommended by Manufacturer.
4. Lay pipe true to lines and grade within existing sewer as shown on Drawings.
5. Conduct pipe laying operations to prevent damage to liner or adjacent facilities.
6. Advancement of bursting head with "chain" shall be prohibited
7. Under no circumstances shall pipe be stressed beyond its yield stress.

B. Sewer Flow Control: Contractor shall divert sewer flow with bypass pumping as specified in Section 01572, Temporary Sewer Flow Control.

- C. Pit Shaft or Trench Excavation:
1. Excavate for purpose of conducting trenchless operations and for placing end joints of pipe.
  2. Wherever end trenches are cut in sides of embankment or beyond, such work shall be sheeted and braced in accordance with Section 02225, Trench Excavation and Backfill.
  3. Install safety barriers around pits during normal working hours.
  4. Insertion pits shall be securely plated over and/or barricaded as required at end of each work day.
  5. Prior to backfilling insertion pits ensure new pipe is properly supported and on required grade.
  6. Backfill after pipe has been installed and tested.
  7. Restore insertion pits and associated surface areas to their original condition.
- D. Where existing main to be replaced is less than 4 feet deep, utilities and services crossing the main or running parallel to it, and lying within a distance of 2 feet horizontal from edge of existing line shall be exposed prior to pipe bursting.
- E. Void created by bursting device shall be sufficient in size to accommodate new carrier pipe. Oversized hammers shall not be used.
- F. After insertion, allow liner a minimum of 12 hours (or as otherwise recommended by pipe Manufacturer) to reach temperature equilibrium with sewer and to stress-relieve itself. No connection shall be made to liner during this period. Pipe shall not protrude or recede past pipe seal at manhole.
- G. Existing Manhole:
1. Utilize where practical. Otherwise, excavate predetermined machine and insertion pits.
  2. Remove inverts, benches, drops, and channels to permit access for installation equipment.
  3. Enlarge input and output openings to accommodate maximum OD size of bursting device.
  4. At no time shall bursting device and installation process place undue stress on existing manhole opening surface.

5. Secure pipe to concrete structure or manhole after pipe has been installed.
  - a. Install water stop or flange adapter that is fused and seated perpendicular to pipe axis, around pipe exterior, and grouted into structure wall to create watertight seal at manhole wall.
  - b. Install pipe to extend 12 inches inside manhole opening.
  - c. Make structure and manhole connections 12 hours, minimum, after pipe insertion.
6. Reconstruct benches and channels after new pipe is installed.

H. Sealing Manhole:

1. Place electrofusion flex restraints on top (180 degrees) section around newly installed pipe against inner manhole wall and fuse in place. Installation of electrofusion flex restraints shall be carried out in conformance with Manufacturer's printed instructions by personnel certified by pipe Manufacturer in proper method of installing electrofusion fittings.
2. Seal annular space at manhole. Seal shall extend a minimum of 8 inches into manhole wall in such a manner as to form smooth, uniform, watertight joint.
3. Reshape and smooth manhole invert as specified in Section 02910, Manhole Rehabilitation.
4. Use approved rehabilitation materials to form a smooth transition with a reshaped invert and a raised manhole bench to eliminate sharp edges of liner pipe, concrete bench, and channeled invert.
5. Build up and smooth invert of manhole to match flow line of new sewer.
6. Repair pipe seals in accordance with Section 02730, Sewers and Accessories.

- I. Manhole Replacement: Where insertion or pull pit is excavated adjacent to existing manhole not scheduled to be replaced, and the manhole sustains visible damage as a result of excavation or activity in the pit, replace manhole with new manhole conforming to Section 02730, Sewers and Accessories.

3.08 RECONNECTION OF SEWER SERVICE CONNECTIONS

- A. Refer to Section 02735, Sewer Service Connections. After the pipe has been installed, all existing, active laterals and service connections shall be reinstated. All cut laterals and service connections shall be free of burrs, frayed edges, or any restriction preventing free flow of wastewater. Laterals shall be reinstated to their original diameter, unless directed otherwise by the Engineer. The burst pipe shall be tightly sealed at the cut openings with no gaps.

- B. If the Contractor fails to reinstall a lateral or service connection and hence causes flooding or damage to the private property it serves, then the Contractor shall be held responsible.
- C. Service Pits: Pits shall be required to install service connection fittings and reconnect services to the newly installed pipe.

### 3.09 TESTING

- A. Tests for compliance with this specification shall be made as specific herein and in accordance with the applicable ASTM Specification. A certificate with this specification shall be furnished, by the Manufacturer for all material furnished under this Specification. All PE pipe and fittings will be inspected to ensure they meet the requirements of this specification. Refer to Section 02730, Sewers and Accessories for testing of installed replacement manholes.

### 3.10 POST-INSTALLATION CCTV INSPECTION

- A. Upon completion of the Work, the Contractor shall inspect the new pipeline using CCTV cameras in accordance with Section 02820, Sewer Pipeline Inspection and submit the CCTV inspection report to the Engineer for approval.
- B. Defects affecting the integrity or strength of the pipe, in the opinion of the Engineer, shall be repaired or the pipe replaced at the Contractor's expense.

### 3.11 ACCEPTANCE

- A. It is the intent of these specifications for the newly installed pipe and all appurtenances to be essentially equivalent in final quality and appearance to new sewer pipe installations, service connections, and manholes.

### 3.12 COLLAPSED SEWERS/DEFECTIVE MANHOLES

- A. Any sewer found with greater than 10 percent deformation (i.e., collapsed or near collapse) shall be reported to the Engineer immediately for remedial action.
- B. Any manhole found broken, cracked/leaking, with missing covers, or surcharged, shall be reported to the Engineer immediately for remedial action.

- C. Any sewer found where the existing conditions pose a threat of personal injury to the public, such as a collapsed sewer with attendant depression to roadway, shall be reported to the Owner immediately.
- D. Any manhole found where the existing conditions pose a threat of personal injury to the public, such as broken, cracked, or missing covers shall be reported to the Owner immediately.

### 3.13 REMOVAL OF DEBRIS

- A. The Contractor shall provide all appropriately sealed equipment and personnel necessary to safely remove and extract silt and debris, load it onto trucks for disposal, and dispose of the silt and debris at the site(s) approved by the Engineer. The debris and liquids are to be disposed of properly in accordance with all applicable laws. The Owner can furnish a letter to the landfill stating the Contractor is authorized to dispose of the non- hazardous materials. Debris and liquids type and quantities are to be tracked in the daily Contractor diary. Hauling and disposal costs will be borne by the Contractor.

### 3.14 SITE RESTORATION

- A. Return all items and all areas disturbed, directly or indirectly by the Work under this Contract, to their original condition or better immediately after the Work is completed in accordance with Section 02730, Sewers and Accessories.

### 3.15 WARRANTY

- A. The Contractor shall guarantee the Work for a warranty period of 1 year from the date of final acceptance. If, at any time during the warranty period, any defect is identified, such as, but not limited to, leaks, cracks, loss of bond, etc., affecting the integrity or strength of the pipe, collected solids, or reduced hydraulic flow capabilities of the product, the Contractor shall make repairs acceptable and at no additional cost to the Owner. In this case, the Contractor shall warrant the Work for 1 year in addition to the warranty required by the Contract.
- B. If the frequency of similar defects requiring repair increases, then the entire Project will be re-evaluated.

### **END OF SECTION**

**APPENDIX A**

**APPROVED MANUFACTURERS LIST FOR  
WASTEWATER SYSTEM CONSTRUCTION**

**PUBLIC UTILITIES DEPARTMENT  
UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY**

**PART 1 GENERAL**

- A. Where specific products are listed below, only products from the listed manufacturers shall be used for wastewater system construction under the jurisdiction of the Unified Government of Athens-Clarke County (ACCUG), Georgia. For those products identified in these Standard Specifications for which no specific manufacturer is listed below, products from any manufacturer, which meet the requirements of the Standard Specifications, may be used.

**PART 2 APPROVED MANUFACTURERS**

- A. Section 02125 –Erosion, Sedimentation and Pollution Control
1. Silt Fence: Those manufacturers on the Georgia DOT Qualified Products List.
  2. Filter Fabric: Mirafi, Amoco, or Exxon.
- B. Section 02730 – Sewers and Accessories
1. Ductile Iron Pipe: American Cast Iron Pipe Company, United States Pipe and Foundry Company, Griffin Pipe Company.
  2. Ductile Iron Fittings: American Cast Iron Pipe Company, United States Pipe and Foundry Company, Union Foundry, Tyler.
  3. PVC Truss Pipe: Contech.
  4. SDR-26 PVC Pipe: JM Pipe, North American, Vulcan Plastics, Diamond Pipe, or P.W. Eagle.
  5. Manhole Pre-cast Products: Hanson Pipe and Pre-Cast, Inc., Foley-Brogden, Atlantic Precast Concrete Products, Old Castle, Southeast Precast, Durham and Taylor Supply Company, Inc. or Tindall Corporation (round bases, risers and eccentric cones only).
  6. Precast Concrete Joint Sealant: Kent Seal No. 2 or Concrete Sealants CS202.
  7. Manhole Frames and Covers: East Jordan Iron Works/Higgins Foundry, U.S. Foundry (V-1360) with ACC on lid.
  8. Rubber Boots: Kor-N-Seal, Press Seal Gasket Corporation, “A-Lok” gaskets shall be used at pipe connections within the 100-year floodplain.
  9. Manhole Steps: M.A. Industries or Approved Equal.

10. Non-shrink Grout: EUCO N-S Grout as manufactured by the Euclid Chemical Company, Masterflow 713 Grout as manufactured by Master Builders Company, or Upcon High Flow Grout as manufactured by Emhart Chemical Company.
11. Detection Tape: Equal to Lineguard Type III Detectable or Allen Systems Detectatape.

C. Section 02910 – Manhole Rehabilitation

1. Diatomaceous earth: Celite 209 by Honeywell.
2. Cement Mortar (patching)
3. Cement Mortar (lining)
4. Epoxy Coating
5. Composite System
6. Flexible Internal Rubber Sleeve
7. Flexible Urethane Resin

D. Section 02920 – Cured-In-Place Pipe Lining

1. Service Reinstatements, External Reconnection (to sewer mains 10-inch and larger):

E. Section 02940 – Pipe Bursting

1. Service Connections (to new PE pipes 10-inch and larger):

**PART 3 APPLICATION PROCEDURES**

- A. Individuals who desire a manufacturer to be listed as an “Approved Manufacturer” may submit an application to the Public Utilities Department.
- B. The Application must be submitted at least ninety days prior to intended actual use of product.
- C. The Application must include the following prior to evaluation:
  1. Generic name of product, including Specification Section, Article and Paragraph number.
  2. Manufacturer of product, along with local manufacturer representative and local distributor of product.
  3. Statement, on manufacturer's letterhead, of total compliance with Specifications, or a statement with a list of exceptions to the Specifications.
  4. Laboratory test results from independent testing laboratory stating that item meets stated Specifications.
  5. Shop Drawings and Product Data.



6. Product Sample - Random sample selection by ACCUG.
  7. Plant Visit.
  8. Product availability.
  9. List of three other municipal users (of comparable size) in the State of Georgia. Include name and phone number of contact persons.
  10. Other information deemed pertinent by ACCUG.
- D. Upon completion of evaluation by ACCUG, written notification will be issued of said results. Not all applications will be approved, even if products meet the Specifications. The Unified Government of Athens-Clarke County reserves the right to not accept products where it is deemed in its best interest.

**END OF APPENDIX A**

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**APPENDIX B**

**APPROVED CONTRACTORS LIST FOR  
CCTV INSPECTION**

**PUBLIC UTILITIES DEPARTMENT  
UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY**

**PART 1 GENERAL**

- A. Only approved Contractors shall be used for CCTV inspection of sewers under the jurisdiction of the Unified Government of Athens-Clarke County (ACCUG), Georgia.

**PART 2 APPROVED CONTRACTORS**

- A. Specialty Testing. Gainesville, Georgia.
- B. TV Testing & Rounding. Macon, Georgia.
- C. Lamar's Inspections, Inc. Jasper, Georgia.
- D. All Pipeline TV & Air Testing, Inc. Hampton, Georgia.
- E. Harmon's Pipe Service, LLC. Dallas, Georgia.

**PART 3 APPLICATION PROCEDURES**

- A. Individuals who desire a Company to be listed as an "Approved CCTV Inspection Contractor" must submit a letter of consideration to the Public Utilities Department.
- B. The letter must be submitted at least thirty days prior to intended use of Company.
- C. The Application must include the following prior to evaluation:
  - 1. Product data for inspection vehicles, equipment and software. Including Manufacturer's representative and local distributor of equipment.
  - 2. Provide three references of municipal clients in the State of Georgia. Include contact names and telephone numbers.
  - 3. Other information deemed pertinent by ACCUG.
- D. Upon completion of evaluation by ACCUG, written notification will be issued of said results. Not all applications will be approved, even if Contractors meet the Specifications. ACCUG reserves the right to not approve Contractors where it is deemed in its best interest.

**END OF APPENDIX B**

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**APPENDIX C**  
**POLICY AND/OR PROCEDURE STATEMENT**

**PUBLIC UTILITIES DEPARTMENT**  
**UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY**

Policy Subject: Contractor's Warranty Obligations  
Functional Area: Water and Sewer

**PURPOSE**

- A. The following is a step by step outline of action required by the Contractor in regard to water and sanitary sewer line extension warranty work:
1. The Contractor performing the initial utility line extensions is responsible for a 1 year warranty period commencing with the date of written acceptance of same by the Public Utilities Department (PUD). All repairs performed under the warranty provision shall be the responsibility of the Contractor and made entirely at the Contractor's expense.
  2. Emergency warranty repairs which require the immediate attention of the Contractor, as determined by the Public Utilities Director, shall be performed within the same day of notification with actual repair commencing within two hours from time of actual notification and completed within a maximum of 24 hours.
  3. Repairs that are non-emergency in nature, as determined by the Public Utilities Director, must be repaired by the Contractor within 5 working days to the PUD's satisfaction.
  4. Failure by the Contractor to respond in a manner acceptable to the Public Utilities Director and within the time frames identified will result in the Contractor being placed on probationary status for a 6-month period. At the end of said 6-month probationary period, the Contractor can request reinstatement to permanent status.
  5. Any repetition of a failure to respond to an emergency repair request in accordance with this policy statement within any given 6-month time frame will result in the Contractor being removed from the PUD's list of qualified contractors for a 1 year period.

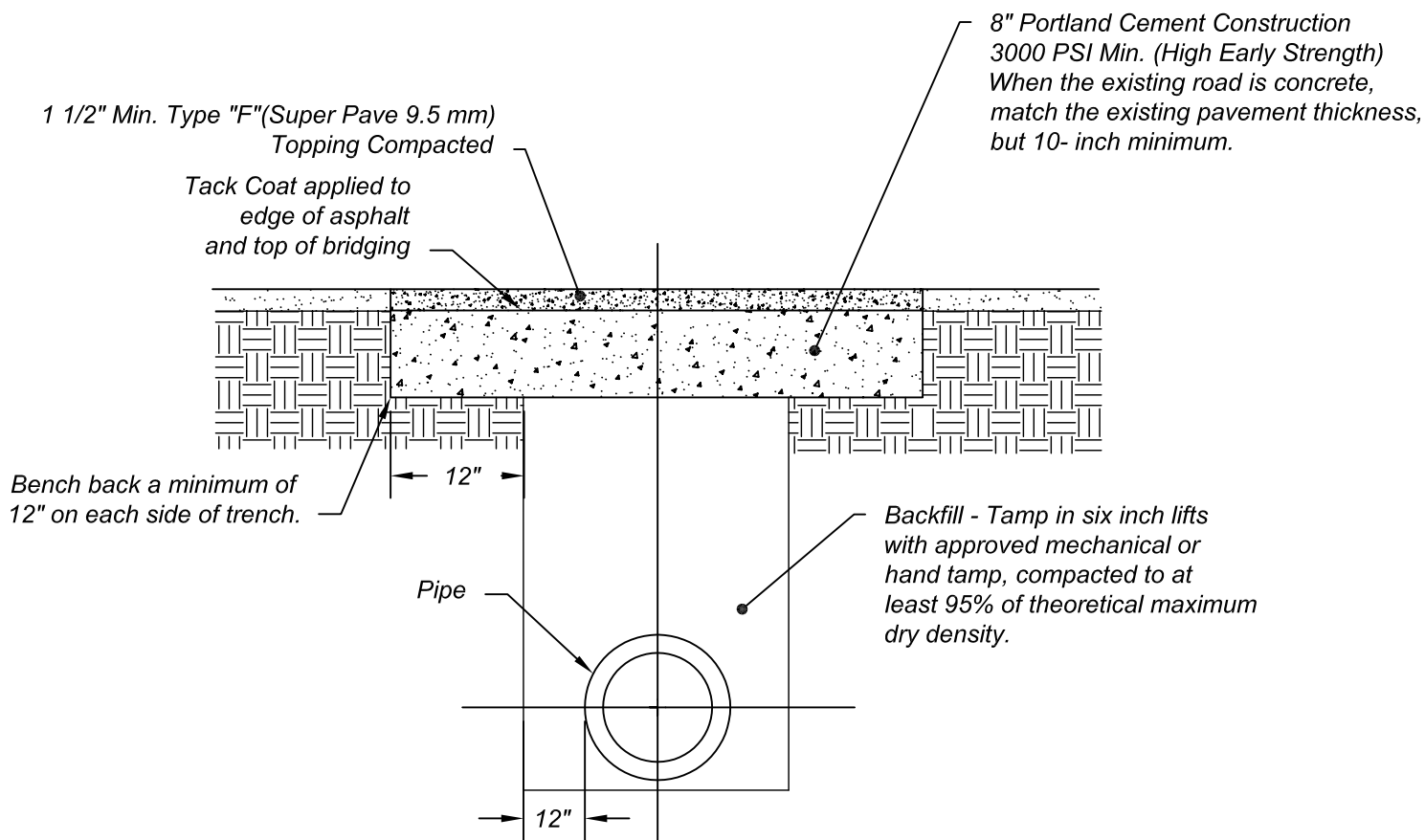
At the end of said 1 year period, the Contractor can submit a written request for reinstatement on a probationary basis for a 6-month time frame. At the end of said 6-month probationary period, the Contractor can request reinstatement to a permanent status.

6. Should the Contractor be unable to perform the necessary repairs within the guidelines of this policy statement, the following action will be taken:
  - a. The Public Utilities Director will direct the PUD work forces to make the necessary repairs.
  - b. A cost determination will be made as to the actual expense incurred by the PUD to make said repairs. The Contractor will be responsible for reimbursing the PUD 200 percent of said cost. Failure by the Contractor to reimburse the PUD in the amount established within 30 working days will result in the Contractor's immediate removal from the PUD's list of approved contractors for 1 year beginning no later than the date of actual remittance for cost incurred. Upon expiration of said 1 year time frame, the Contractor can request reinstatement on a probationary basis for 6 months.

#### **NOTES**

1. All repairs must be performed in compliance with the Unified Government of Athens-Clarke County standards and procedures.
2. The appropriate PUD representative must be notified prior to the commencement of any warranty work repairs.
3. The Contractor performing the warranty work repairs is responsible for obtaining the appropriate permits and any associated fees.

#### **END OF APPENDIX C**



**Notes:**

1. All lateral street cuts must be covered with a steel plate of sufficient thickness to span the cut without noticeable deflection. Plates to remain in place until the concrete base has gained sufficient strength to with stand traffic loads (24 hr Min.). Within not longer than seven calendar days of beginning of concrete pour the area will be topped out.
2. On Longitudinal cuts exceeding 150 feet in length, the concrete in the trench will be brought flush with the existing pavement and the entire width of the roadway resurfaced with a minimum of 1 1/2" Type "F" (Super Pave) 9.5 mm asphalt topping.
3. Where compaction can not be obtained with earth materials, use No.57 or flowable fill as determined by ACCUG or Inspector.
4. Work to be inspected by the Athens Clarke County Public Works inspector.

## Paving Cut Detail

G-1

Standard Specification and Detail for:

### **Paving Cut**

GMD: NA County: Athens-Clarke State: Georgia Date: May 2008

Drawn by: RMP

Approved by: EAF

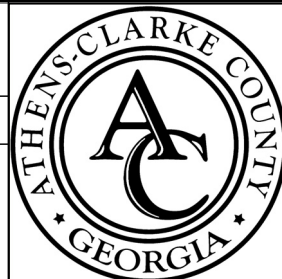
Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County  
**Department of Public Utilities**

1865 W.Broad St. Ste C  
Athens, Georgia 30606

Fax: 706-613-3476

Voice: 706-613-3490

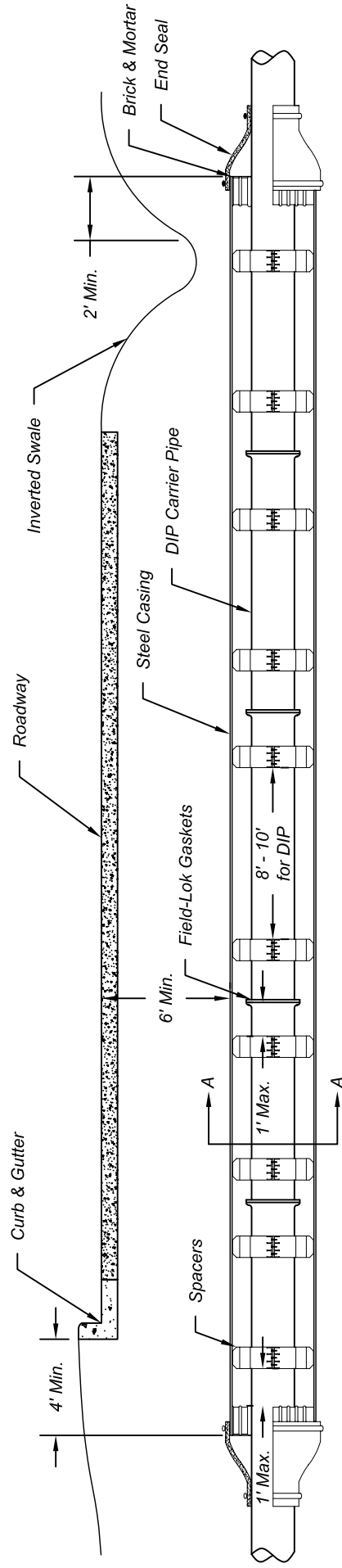






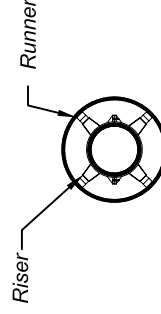
Note:

1. Casing to extend 4' beyond curb & gutter or edge of pavement in fill section.
2. Casing to extend 2' beyond the back edge of the bottom of the ditch or 2' beyond the bottom of a V-ditch.
3. For water and/or sanitary sewer only.



Under Railroads		
Pipe Diameter	Casing Diameter	Min. Wall Thickness
8"	18"	.313"
10"	20"	.344"
12"	22"	.375"
14"	24"	.407"
16"	30"	.469"

## SECTION A - A



Under Highways		
Pipe Diameter	Casing Diameter	Min. Wall Thickness
8"	16"	.250"
10"	16"	.250"
12"	18"	.250"
16"	24"	.250"
20"	30"	.312"
30"	42"	.375"

# Casing and Spacer Detail

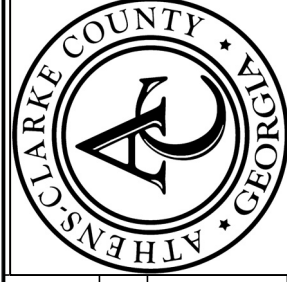
## NTS

G-2

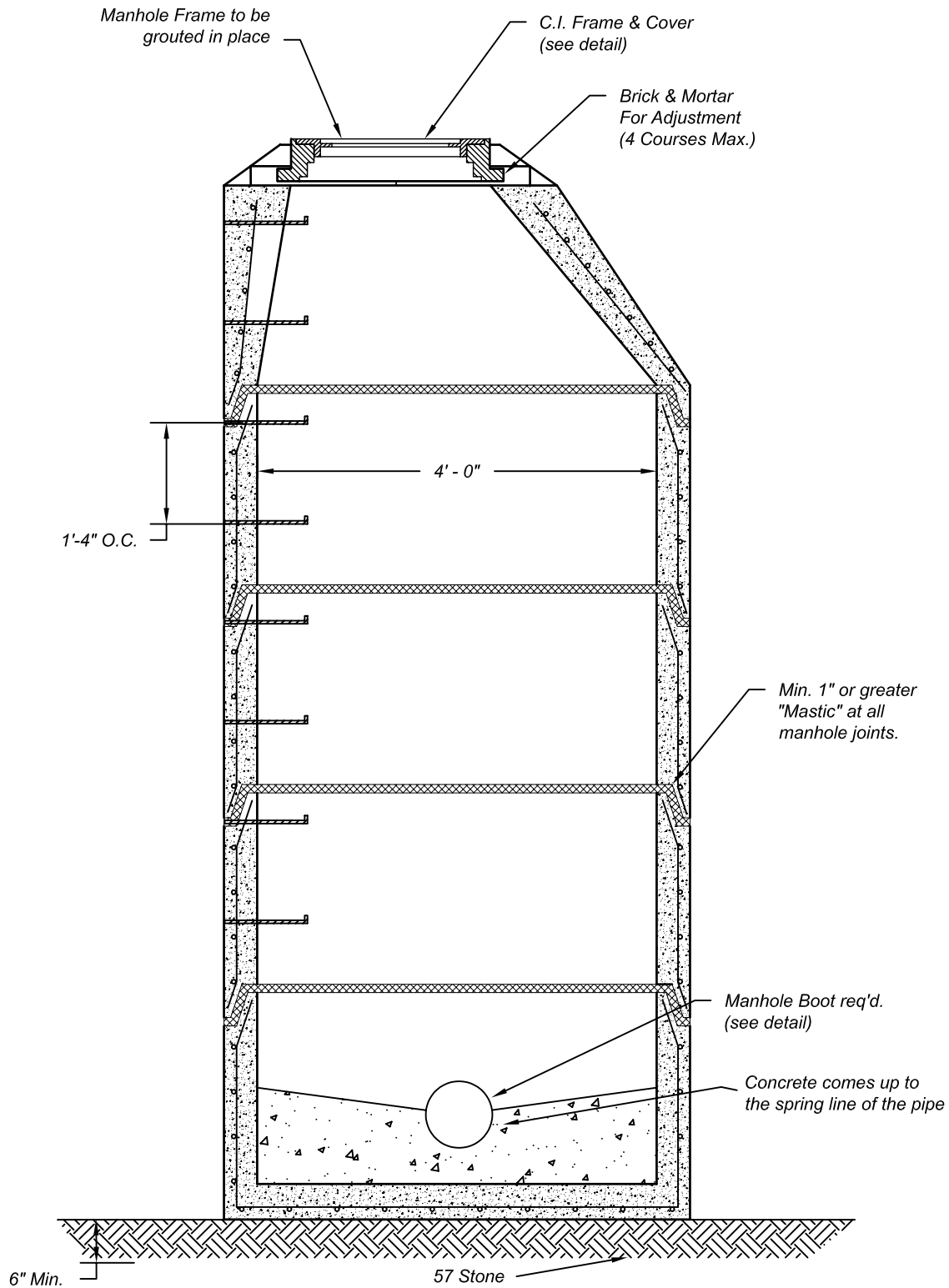
Standard Specification and Detail for:

## Casing and Spacer

GMD: NA	County: Athens-Clarke	State: Georgia	Date: May 2008
Drawn by: RMP	The Unified Government of Athens-Clarke County <b>Department of Public Utilities</b> 1865 W. Broad St. Ste C. Athens, Georgia 30606		
Approved by: EAF			
Dwg Name: ACC PU Details			
Fax: 706-613-3476			Voice: 706-613-3490







## Standard Concrete Manhole Detail NTS

SS-1

Standard Specification and Detail for:

### Standard Concrete Manhole

GMD: NA	County: Athens-Clarke	State: Georgia	Date: May 2008
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Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County  
**Department of Public Utilities**

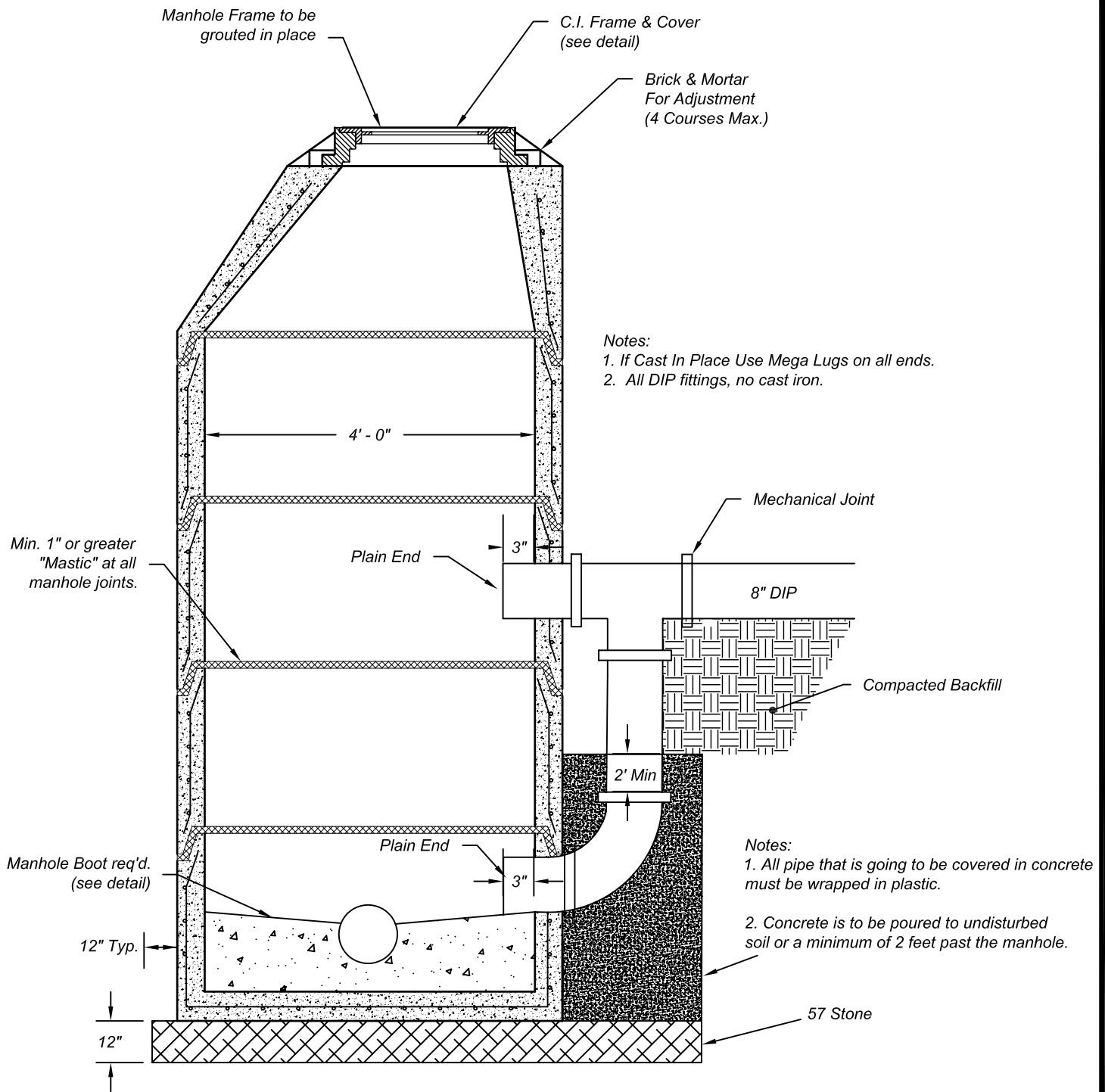
1865 W. Broad St. Ste C.  
Athens, Georgia 30606

Fax: 706-613-3476

Voice: 706-613-3490







**Outside Drop Manhole Detail**  
**NTS**

SS-2

Standard Specification and Detail for:

**Outside Drop Manhole**

GMD: NA County: Athens-Clarke State: Georgia Date: May 2008

Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County  
**Department of Public Utilities**

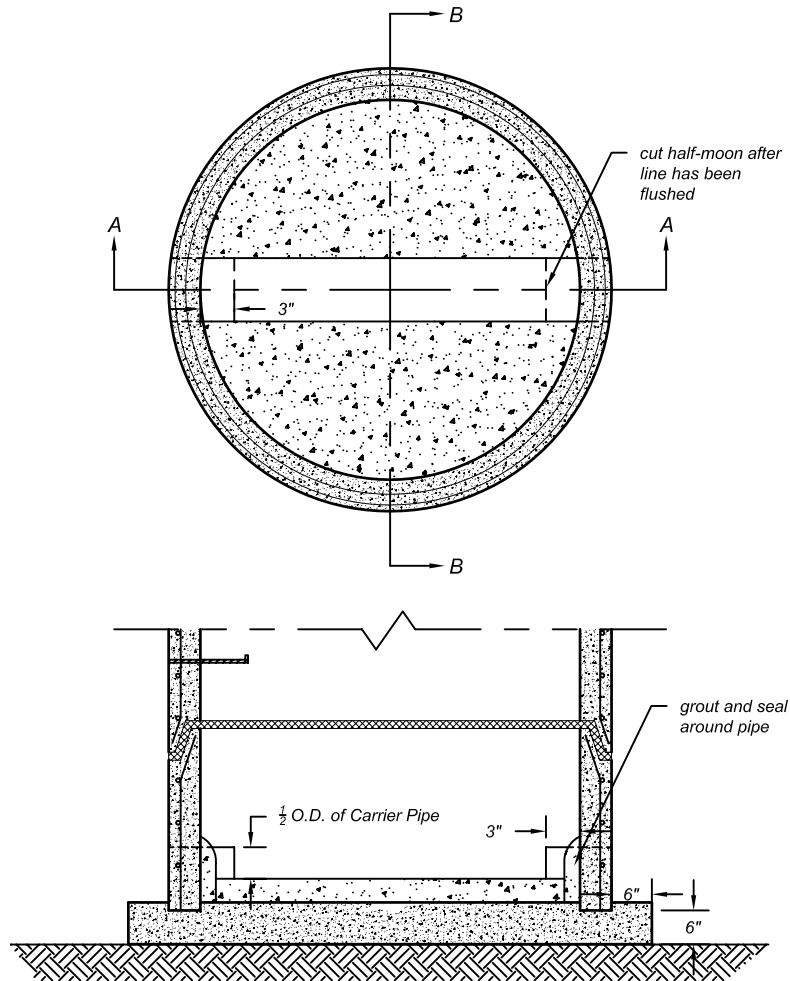
1865 W. Broad St. Ste C  
Athens, Georgia 30606

Fax: 706-613-3476

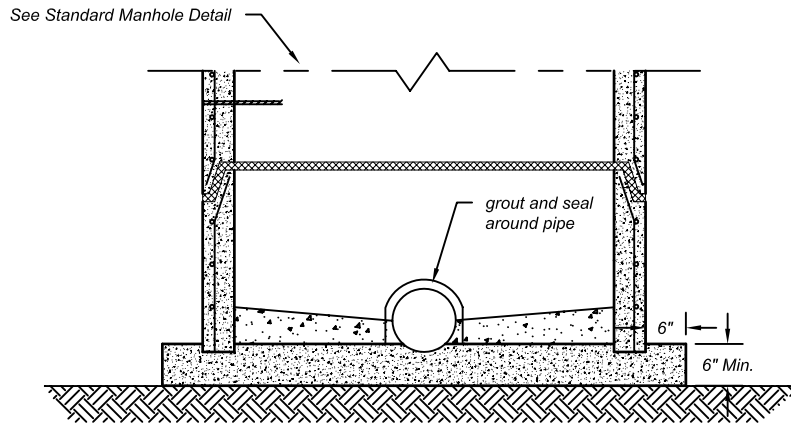
Voice: 706-613-3490







Section A - A



Section B - B

## Doghouse Manhole Detail NTS

SS-3

Standard Specification and Detail for:

## Doghouse Manhole

GMD: NA County: Athens-Clarke State: Georgia Date: May 2008

Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County  
**Department of Public Utilities**

1865 W. Broad St. Ste C.  
Athens, Georgia 30606

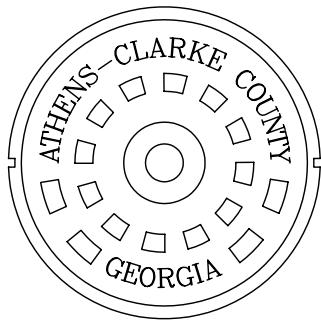
Fax: 706-613-3476

Voice: 706-613-3490

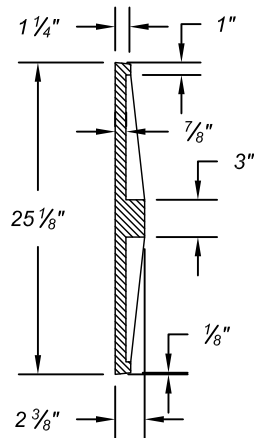




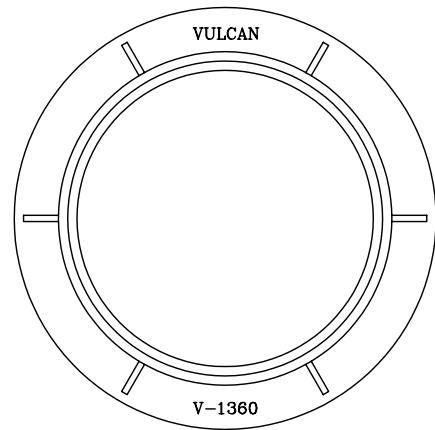




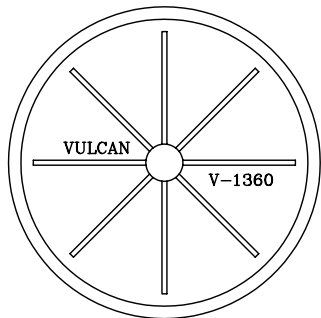
Cover  
(Top)



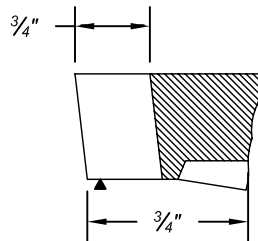
Cover Section



Frame  
(Top)

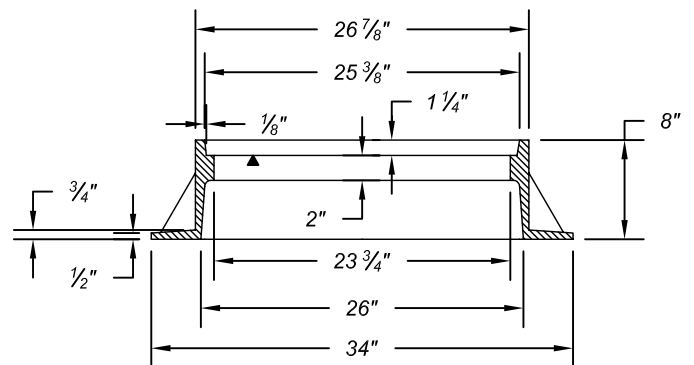


Cover  
(Bottom)



2 - type one pickslots

Pickslot  
Section



Frame  
Section

## Heavy Duty Cover & Frame Detail NTS

SS-4

Standard Specification and Detail for:

### **Heavy Duty Manhole & Frame**

GMD: NA County: Athens-Clarke State: Georgia Date: May 2008

Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County  
**Department of Public Utilities**

1865 W. Broad St. Ste C.  
Athens, Georgia 30606

Fax: 706-613-3476

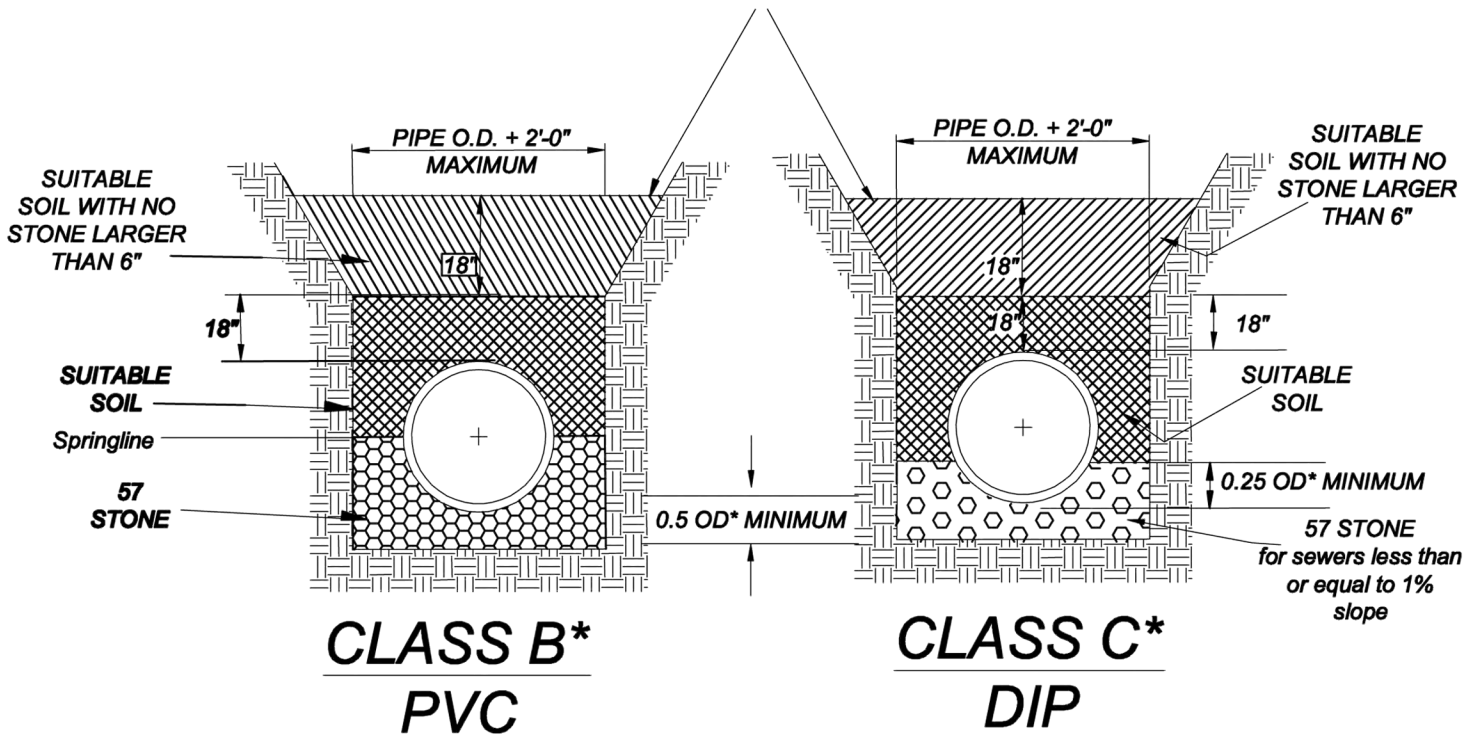
Voice: 706-613-3490





**COMPACTED BACKFILL**  
**95% OF THEORETICAL MAXIMUM DRY**  
**DENSITY WHEN UNDER PAVEMENT**

**TOP 12" OF COMPACTED BACKFILL**  
**98% OF THEORETICAL MAXIMUM DRY**  
**DENSITY WHEN UNDER PAVEMENT**



**NOTE: FOR TRENCHES IN ROCK**  
**MINIMUM TRENCH WIDTH IS 3'-0"**  
**AND MINIMUM BEDDING IS 6"**

\*TYPE 3 MODIFIED (ACC 1990)

**NOTE: 12" DIP DEEPER THAN 15'**  
**SHALL HAVE STONE UP TO**  
**SPRING LINE.**

\*TYPE 3 MODIFIED (ACC 1990)

\*TYPE 4 MODIFIED DIPRA

**NOTE: IF THE TRENCH IS EXCAVATED TO EXCESSIVE WIDTH, BEDDING AND**  
**HAUNCHING WITH NO. 57 CRUSHED STONE IS REQUIRED TO 12 INCHES**  
**ABOVE THE TOP OF PIPE (PVC) AND TO THE CROWN (DIP)**

\*PLUS ANY UNDERCUT

# **Typical Sewer Pipe Bedding Detail** **NTS**

**SS-5**

Standard Specification and Detail for:

## **Typical Sewer Pipe Bedding**

GMD: NA County: Athens-Clarke State: Georgia Date: May 2008

Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

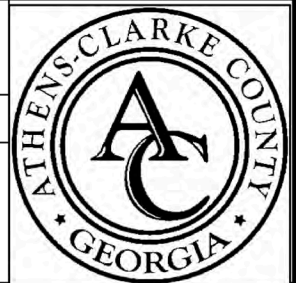
The Unified Government of Athens-Clarke County  
**Department of Public Utilities**

1865 W. Broad St.

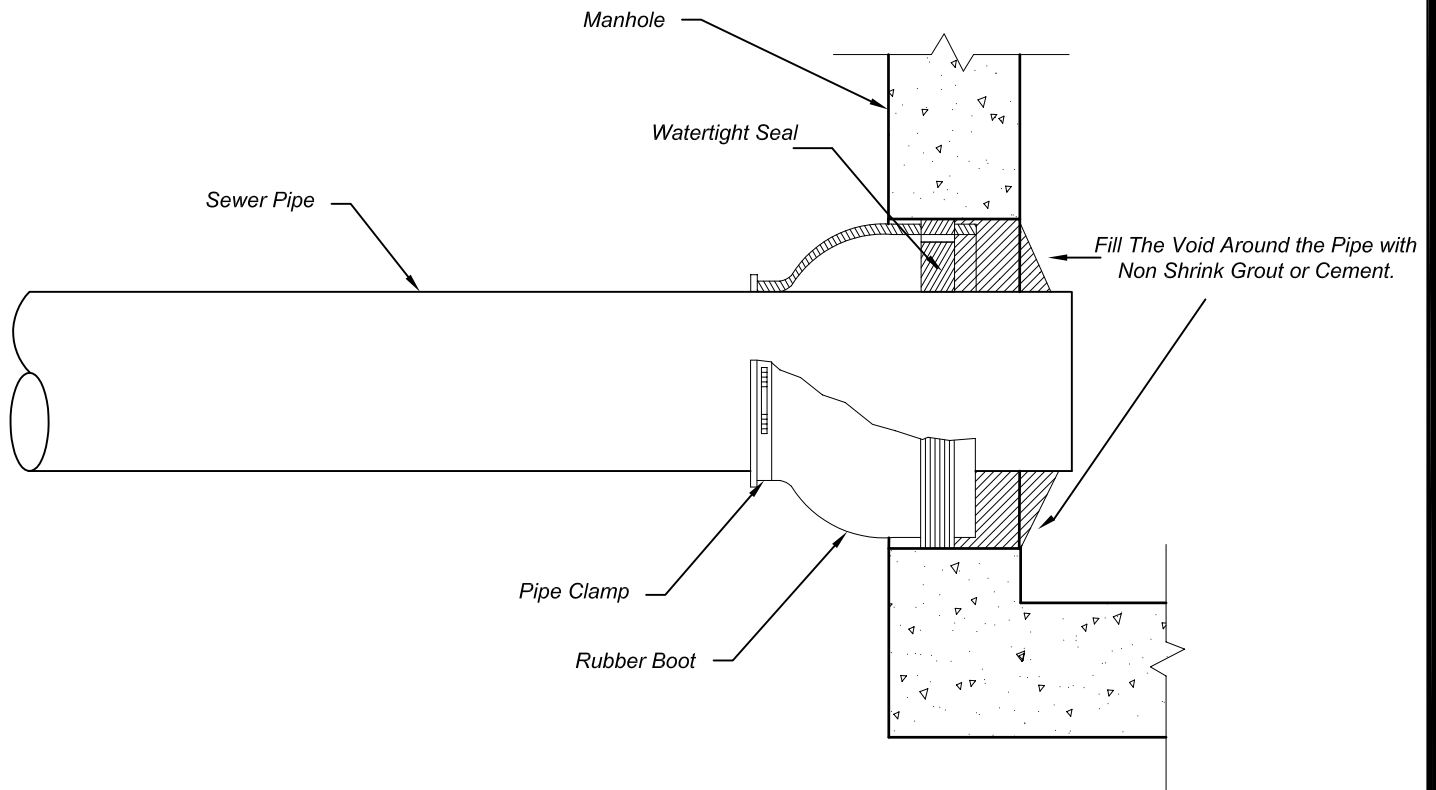
Athens, Georgia 30606

Voice: 706-613-3490

Fax: 706-613-3476







## Rubber Boot Detail NTS

SS-6

Standard Specification and Detail for:

### **Rubber Boot**

GMD: NA	County: Athens-Clarke	State: Georgia	Date: May 2008
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Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County

**Department of Public Utilities**

1865 W. Broad St. Ste C.

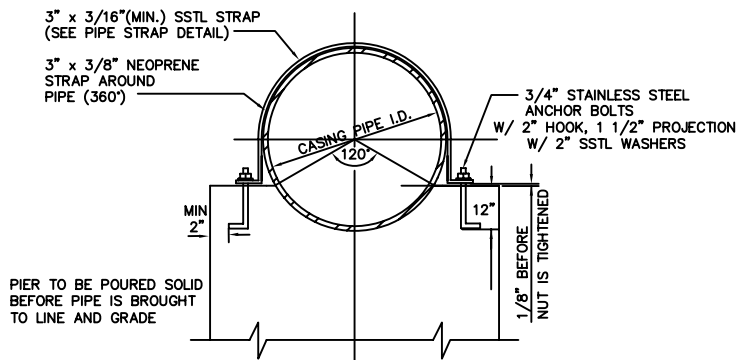
Athens, Georgia 30606

Fax: 706-613-3476

Voice: 706-613-3490

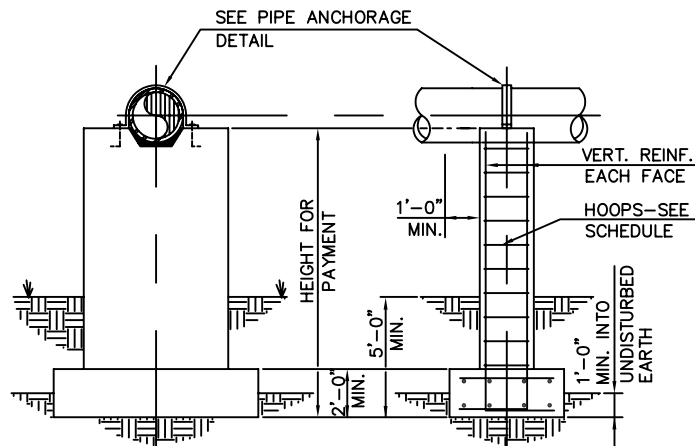




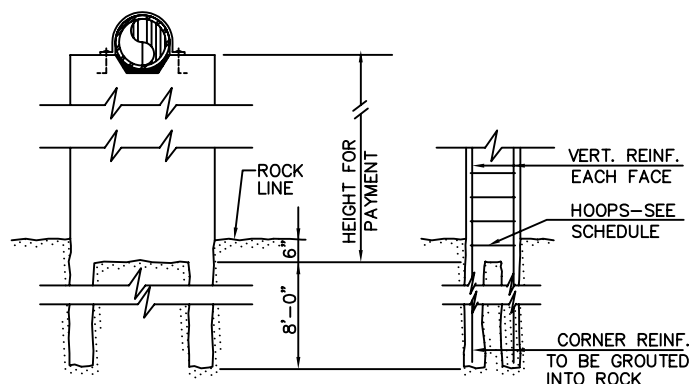


PIPE ANCHORAGE DETAIL  
N.T.S.

- THICKNESS DESIGN OF CASING SHALL BE APPROPRIATE FOR THE DIAMETER AND SPAN USED TO STAY WITHIN ALLOWABLE DEFLECTION LIMITS.
- CASING SHALL EXTEND A MINIMUM OF 4' INTO THE SOIL AT EACH END.



FOOTING IN EARTH



FOUNDATION IN ROCK

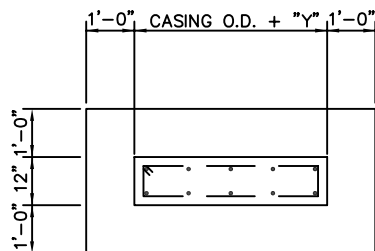
CONCRETE PIER DETAILS  
N.T.S.

NOTES:

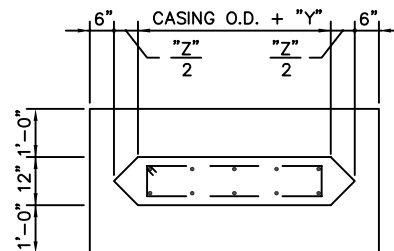
1. FOOTING REINF. SAME AS VERT. REINF. EA. WAY TOP & BOTTOM.
2. WHEN BASE IS IN ROCK OMIT FOOTING & GROUT VERTICAL CORNER BARS 8' INTO ROCK.

CASING O.D.	"Y"	"Z"	VERT. REINF. @12" O.C.	HOOPS @12" O.C.
16"-24"	24"	12"	#5	#3

- ACC MAY REQUIRE HELICAL PIER FOUNDATIONS; TO BE DECIDED ON A CASE BY CASE BASIS.



PLAN - OVERLAND



PLAN - IN STREAM

CONCRETE PIER DETAILS  
N.T.S.

SS-7

Standard Specification and Detail for:

PIER DETAIL

GMD: NA County: Athens-Clarke State: Georgia Date: May 2008

Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County  
Department of Public Utilities

1865 W. Broad St. Ste C.

Athens, Georgia 30606

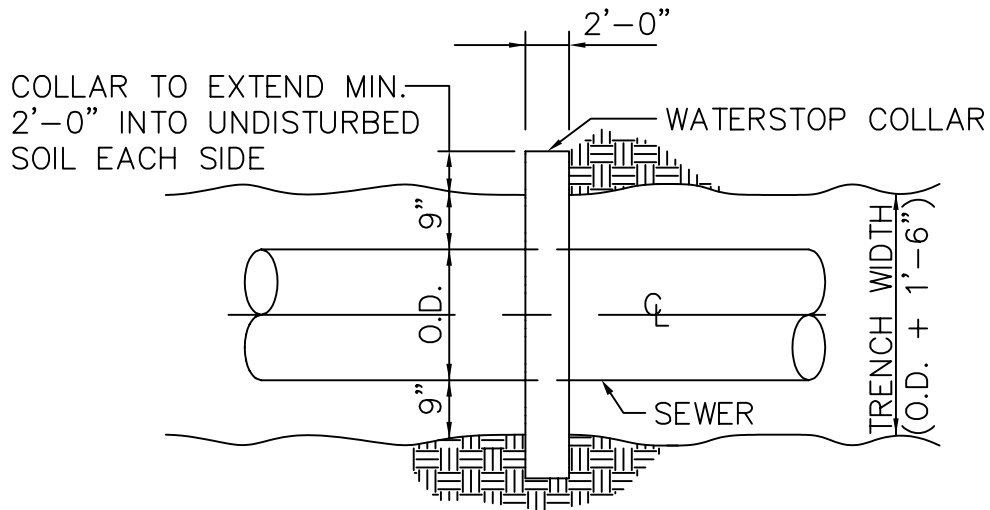
Fax: 706-613-3476

Voice: 706-613-3490

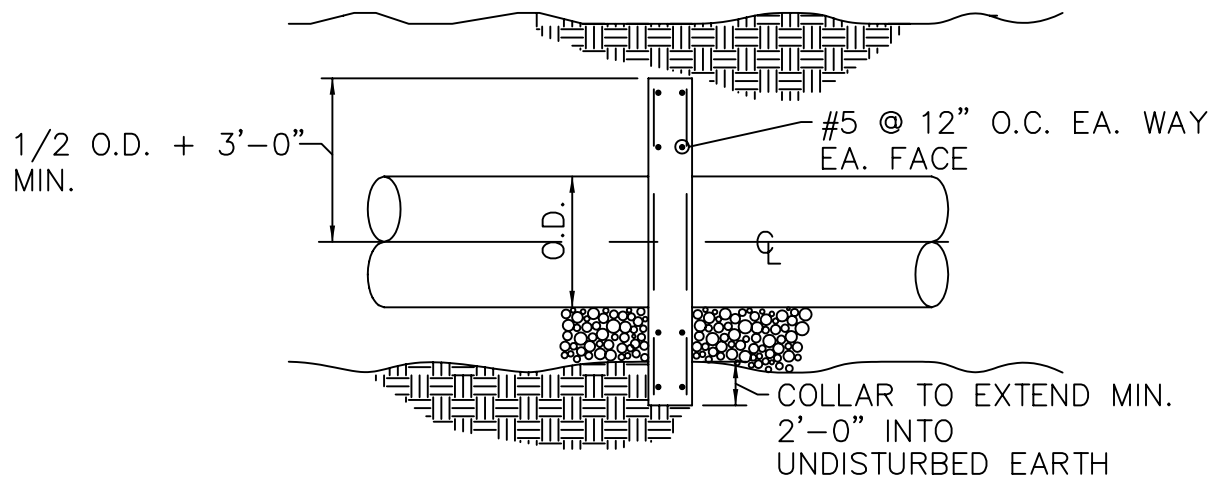








PLAN



SECTION

# WATERSTOP COLLAR DETAIL

N.T.S.

SS-8

Standard Specification and Detail for:

## Waterstop Collar

GMD: NA

County: Athens-Clarke

State: Georgia

Date: May 2008

Drawn by: RMP

Approved by: EAF

Dwg Name: ACC PU Details

The Unified Government of Athens-Clarke County

**Department of Public Utilities**

1865 W. Broad St. Ste C.

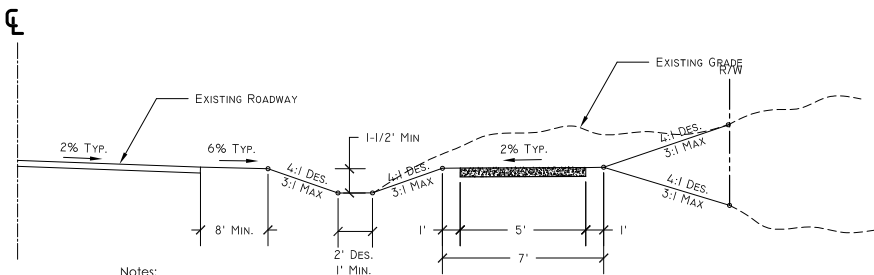
Athens, Georgia 30606

Fax: 706-613-3476

Voice: 706-613-3490

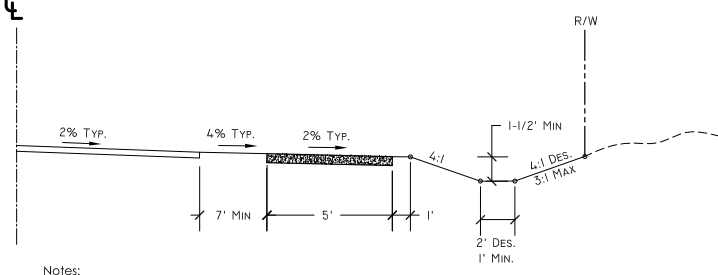






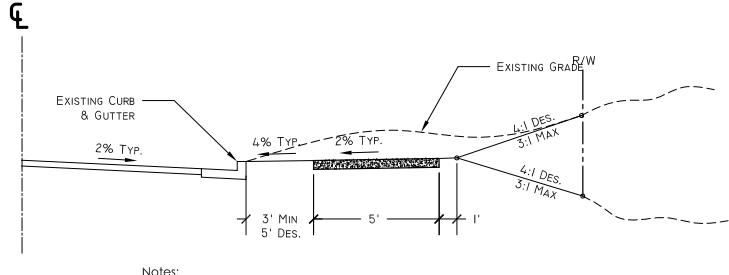
- Notes:
- This typical section to be used when right of way and terrain will allow the sidewalk to be constructed between the ditch and right of way.
  - The centerline profile of the sidewalk should conform to the centerline profile of the roadway whenever possible.
  - Longitudinal slope should not exceed 1:12 or 8.33% except where centerline profile of roadway exceeds 8.33%.
  - All areas should be compacted to 95% standard proctor.

TYPICAL SIDEWALK CROSS-SECTION  
TYPE #1  
NTS



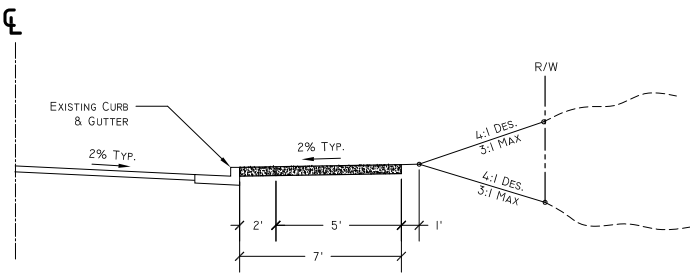
- Notes:
- This detail to be used on ditch sections where the construction of sidewalks behind the ditch is not practical or feasible.
  - The centerline profile of the sidewalk should conform to the centerline profile of the roadway whenever possible.
  - Longitudinal slope should not exceed 1:12 or 8.33% except where centerline profile of roadway exceeds 8.33%.
  - All areas should be compacted to 95% standard proctor.

TYPICAL SIDEWALK CROSS-SECTION  
TYPE #2  
NTS



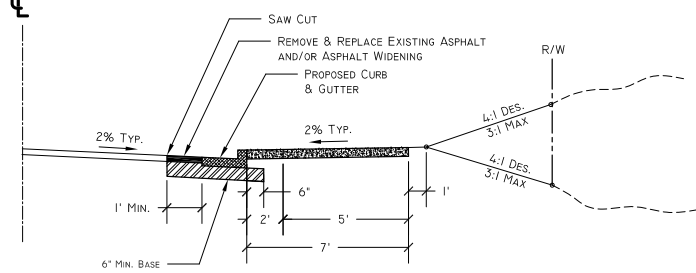
- Notes:
- This detail to be used on streets with existing or proposed curb and gutter.
  - The centerline profile of the sidewalk should conform to the centerline profile of the roadway whenever possible.
  - Longitudinal slope should not exceed 1:12 or 8.33% except where centerline profile of roadway exceeds 8.33%.
  - All areas should be compacted to 95% standard proctor.

TYPICAL SIDEWALK CROSS-SECTION  
TYPE #3  
NTS



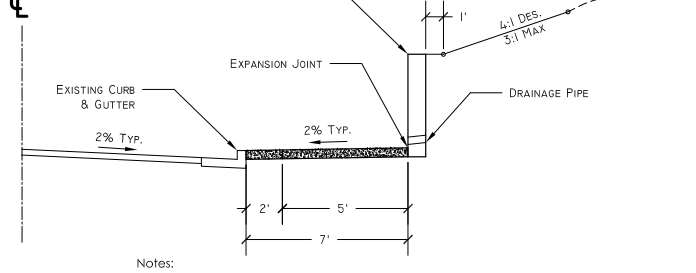
- Notes:
- This detail to be used on streets with existing curb and gutter.
  - See "7' Sidewalk Joint Pattern and Finish Detail".
  - All areas should be compacted to 95% standard proctor.

TYPICAL SIDEWALK CROSS-SECTION  
TYPE #4  
NTS



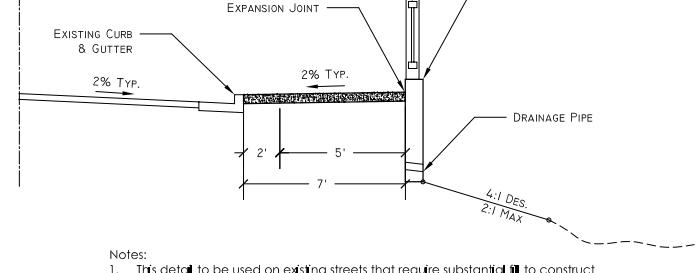
- Notes:
- This detail to be used on streets with proposed curb & gutter or limited right of way, (e.g., deceleration lane, bike lanes, etc).
  - See "7' Sidewalk Joint Pattern and Finish Detail".
  - All areas should be compacted to 95% standard proctor.

TYPICAL SIDEWALK CROSS-SECTION  
TYPE #5  
NTS



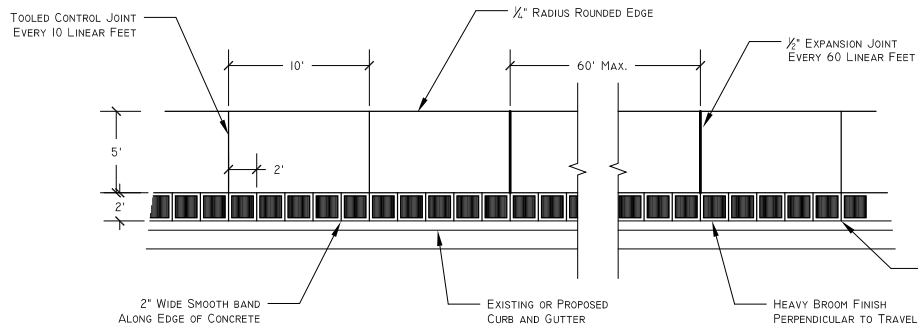
- Notes:
- This detail to be used on existing streets that require substantial cut to construct the proposed sidewalk.
  - Handrails may be required along the top of the proposed wall.
  - See GDOT Standard 9031L.
  - All areas should be compacted to 95% standard proctor.

TYPICAL SIDEWALK CROSS-SECTION  
TYPE #6  
NTS



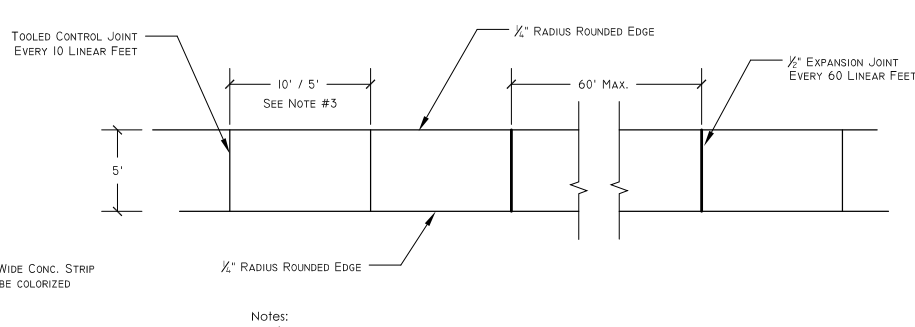
- Notes:
- This detail to be used on existing streets that require substantial cut to construct the proposed sidewalk.
  - Handrails may be required along the top of the proposed wall.
  - See GDOT Standard 9031L.
  - All areas should be compacted to 95% standard proctor.

TYPICAL SIDEWALK CROSS-SECTION  
TYPE #7  
NTS



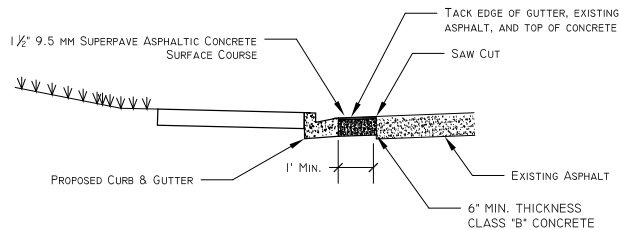
- Notes:
- 1/2" Expansion Joints to be placed every 60' LF., where sidewalks abut structures, at driveways, driveway aprons and curb cut ramps.
  - This detail substitutes "Concrete Sidewalk Detail" from GDOT Detail Sheet A3.
  - Proposed Curb & Gutter and Concrete Sidewalk must be formed and poured separate.
  - Concrete to be placed 4" (except where otherwise specified) thick with tamps, wood floats and stiff bristle brooms to achieve a type 5 sidewalk finish acceptable to Athens-Clarke County Department of Transportation and Public Works.
  - Sidewalk joints shall be tooled to match curb joints whenever possible.
  - Maximum cross-slope not to exceed 2.00%.
  - 2' wide concrete strip to be colored concrete per Department direction.

7' SIDEWALK JOINT PATTERN  
AND FINISH DETAIL  
NTS



- Notes:
- 1/2" Expansion Joints to be placed every 60' LF., where sidewalks abut structures, at driveways, driveway aprons and curb cut ramps.
  - This detail substitutes "Concrete Sidewalk Detail" from GDOT Detail Sheet A3.
  - Contraction joints shall be placed every 5' in an Urban Section (Curb and Gutter Section) and every 10' in a Rural Section (Shoulder and Ditch Section).
  - Concrete to be placed 4" (except where otherwise specified) thick with tamps, wood floats and stiff bristle brooms to achieve a type 5 sidewalk finish acceptable to Athens-Clarke County Department of Transportation and Public Works.
  - Maximum running slope not to exceed 8.33%.
  - Maximum cross-slope not to exceed 2.00%.

5' SIDEWALK JOINT PATTERN  
AND FINISH DETAIL  
NTS

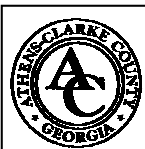


- Notes:
- Class "B" concrete base or pavement widening item code 500-9999 - cu yds
  - In excavated areas between the existing paving and new curb and gutter that are 5'-0" or less in width, class "B" concrete shall be placed in lieu of the base and paving specified by the typical section. Payment will be made under "class B concrete base and pavement widening."
  - In excavated areas greater than 5'-0" in width, the contractor shall place base and paving as specified on the typical section.
  - See plans for details of curb and gutter construction.

CLASS "B" CONCRETE BASE  
OR WIDENING DETAIL  
NTS

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA  
DESIGNED BY: BCB  
DRAWN BY: BCB  
CHECKED BY: BCB  
APPROVED BY: JHP



THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY  
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS  
ENGINEERING DIVISION  
120 WEST DOUGHERTY STREET  
ATHENS, GEORGIA 30603

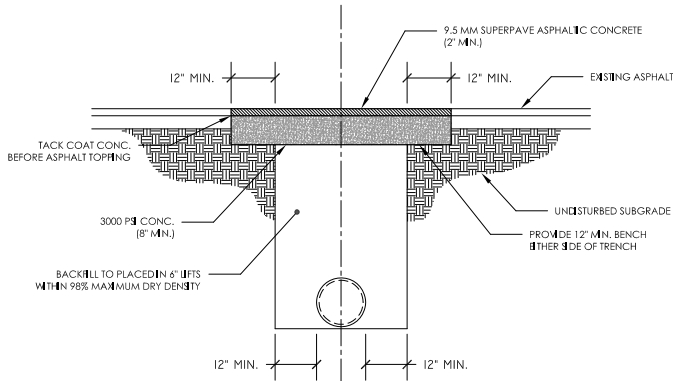
PHONE 706.613.3440  
FAX 706.613.3444

PROJECT:  
CONSTRUCTION STANDARDS AND DETAILS

DATE: FEBRUARY 2009

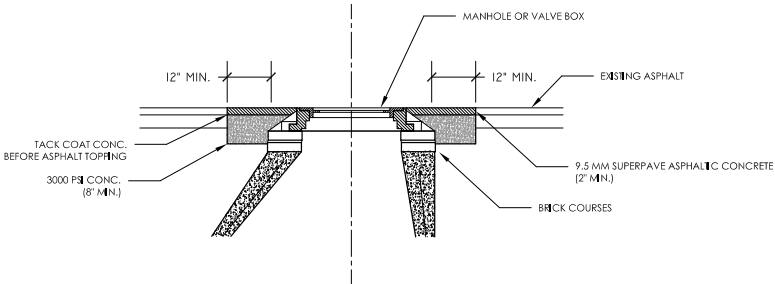
SHEET: TYPICAL SIDEWALK  
CROSS-SECTIONS  
(EXISTING STREETS)  
SHEET: I-060





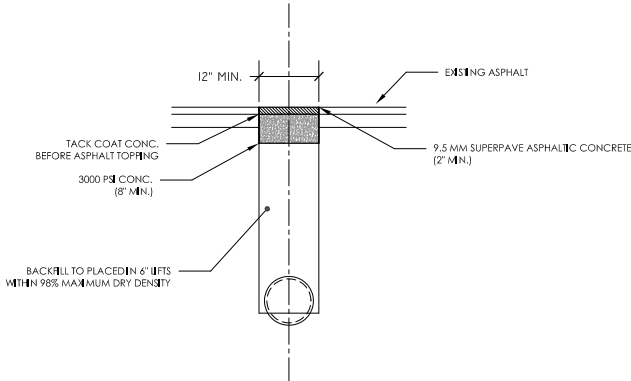
- Notes:
1. All material to be placed in 6" lifts to 98% Standard Proctor Density.
  2. Asphalt topping must be in place within 7 calendar days of concrete pour.
  3. All Longitudinal Cuts exceeding 150 L.F. will require the resurfacing of the entire road width for the length of the cut.
  4. Successive Lateral Cuts having a separation distance less than 50 L.F., as measured along the lane centerline, will require the resurfacing of the entire road width throughout the length of the successive lateral cuts.
  5. All saw cuts to be straight, with smooth, even edge.

PAVEMENT REPLACEMENT DETAIL  
NTS



- Notes:
1. All material to be placed in 6" lifts to 98% Standard Proctor Density.
  2. All Street Cuts must be covered with a steel plate of sufficient thickness to span the cut without noticeable deflection. Steel plates must remain in place until concrete has sufficient strength to withstand traffic loads, a minimum of 24 hours.
  3. Asphalt topping must be in place within 7 calendar days of concrete pour.
  4. Ring and Cover must be adjusted flush with asphalt.
  5. All saw cuts to be straight, with smooth, even edge.

STRUCTURE ADJUSTMENT DETAIL  
NTS



- Notes:
1. All material to be placed in 6" lifts to 98% Standard Proctor Density.
  2. All Street Cuts must be covered with a steel plate of sufficient thickness to span the cut without noticeable deflection. Steel plates must remain in place until concrete has sufficient strength to withstand traffic loads, a minimum of 24 hours.
  3. Asphalt topping must be in place within 7 calendar days of concrete pour.
  4. All saw cuts to be straight, with smooth, even edge.

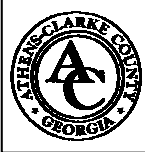
STRUCTURE ADJUSTMENT DETAIL  
NTS

- Procedural Notes:
1. Sawcut existing pavement for the necessary trench width only, and perform trench excavation.
  2. Complete the utility installation.
  3. Backfill trench by placing and compacting in 6-inch lifts to at least 95% theoretical maximum dry density.
  4. Sawcut in a neat straight line, an additional one-foot pavement width on each side of the trench to provide an undisturbed shoulder for the concrete trench cap. Excavate trench and shoulder to proper depth for installation of concrete trench cap and asphalt finish, per detail.
  5. Place 8-inch thick, 3000 PSI, high early strength portland cement concrete trench cap, screed and level concrete to a consistent depth of 1 1/2 inches for subsequent installation of asphalt finish. Do not apply a smooth trowel finish.
  6. Plate or otherwise protect, and restrict traffic for 7 days cure time.\*
  7. Apply asphalt tack coat to edges of existing pavement and top of concrete trench cap.
  8. Place asphalt Type "F" (Superpave 9.5 mm) 1 1/2 inches thick and compact.

\* Note: GDOT twenty-four hour accelerated strength concrete (GDOT Standard Specifications Construction of Transportation Systems, 2001 Edition, Section 504) may be substituted for 3000PSI concrete. A 3x (6) hour cure time will be applicable under this condition.

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA  
DESIGNED BY: BCB  
DRAWN BY: BCB  
CHECKED BY: BCB  
APPROVED BY: JHP

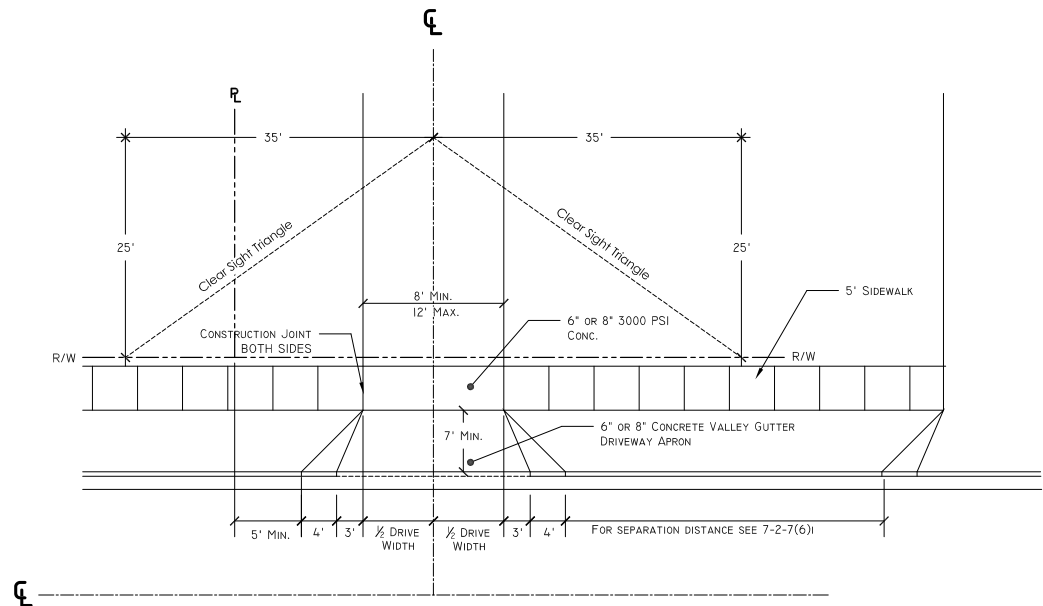


THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY  
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS  
ENGINEERING DIVISION  
120 WEST DOUGHERTY STREET  
ATHENS, GEORGIA 30603  
PHONE 706.613.3440  
FAX 706.613.3444

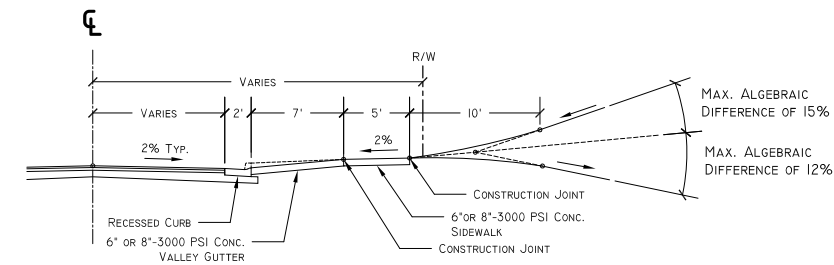
PROJECT:  
CONSTRUCTION STANDARDS AND DETAILS  
DATE: FEBRUARY 2009

SHEET:  
UTILITY CUT AND  
ADJUSTMENT DETAIL  
SHEET: I-070

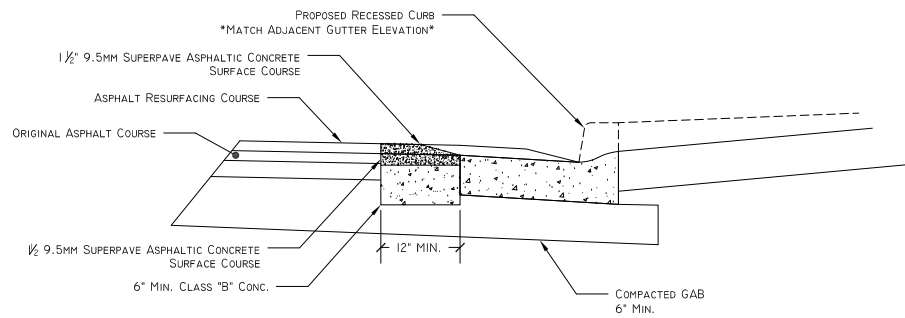




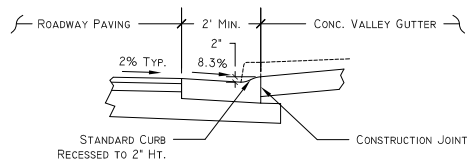
PLAN VIEW



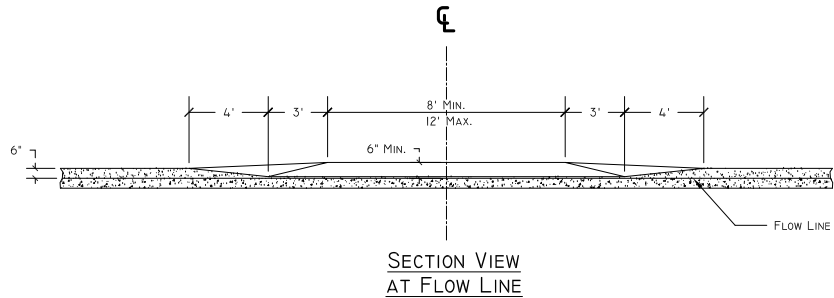
PROFILE VIEW



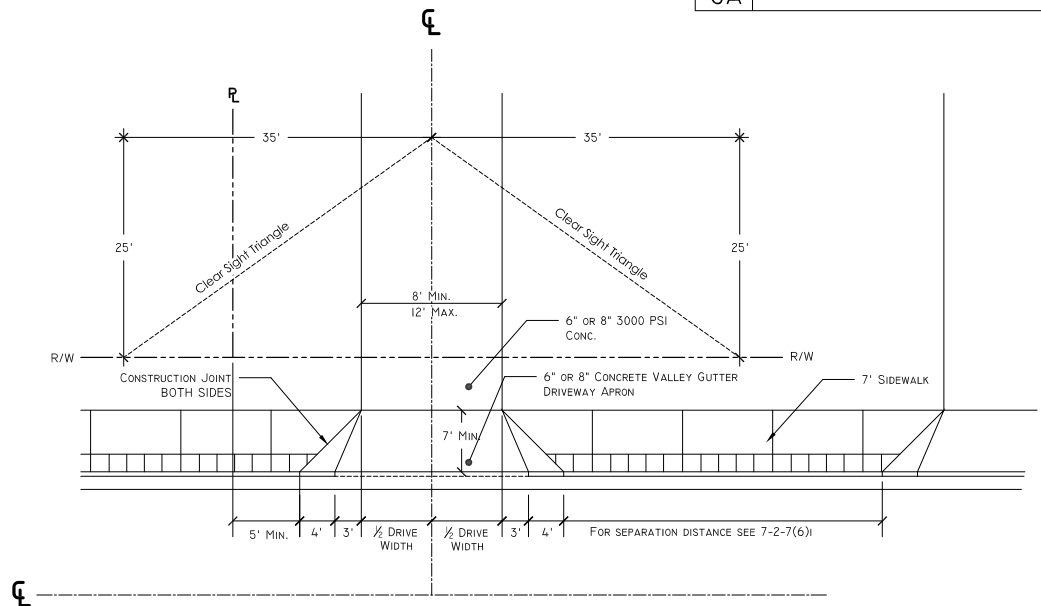
- Notes:
1. Sidewalk must be the same thickness of the driveway (4" or 8") through the first full segment of sidewalk.
  2. See Typical Intersection Detail 1-040 and 7-2-7(6) of Athens-Clarke County Code of Ordinances for driveway separation from intersections.
  3. See 7-2-7(6) of the Athens-Clarke County Code of Ordinance for separation between driveways.



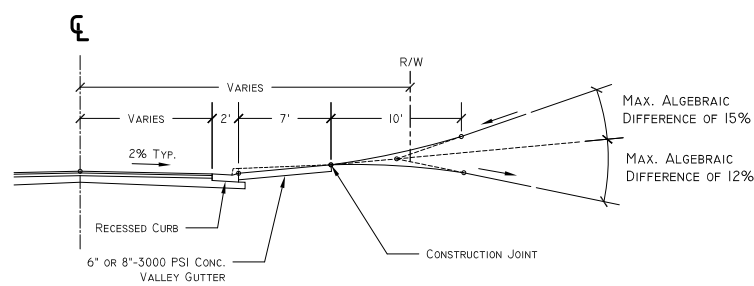
RECESSED CURB



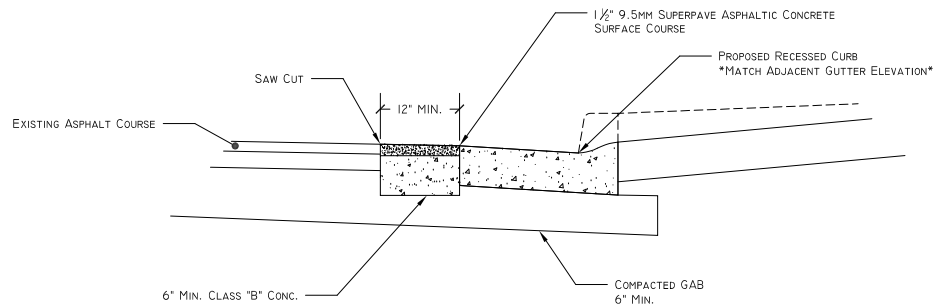
SECTION VIEW  
AT FLOW LINE



PLAN VIEW



PROFILE VIEW



- Notes:
1. For installation of curb and gutter along existing streets where excavated area with a width less than 5'.
  2. Use typical section detail for excavated areas wider than 5'.
  3. Graded Aggregate Base to be placed under curb at a minimum thickness of 6" and extend beyond the back of curb a minimum of 6'.

CLASS "B" CONCRETE BASE  
NTS

REVISIONS:				
NO.	BY	DATE	DESCRIPTION	
1				
2				
3				
4				
5				
6				
7				
8				

SURVEYED BY: NA  
DESIGNED BY: BCB  
DRAWN BY: BCB  
CHECKED BY: BCB  
APPROVED BY: JMP



THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY  
DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS  
ENGINEERING DIVISION  
120 WEST DOUGHERTY STREET  
ATHENS, GEORGIA 30603

PHONE 706.613.3440  
FAX 706.613.3444

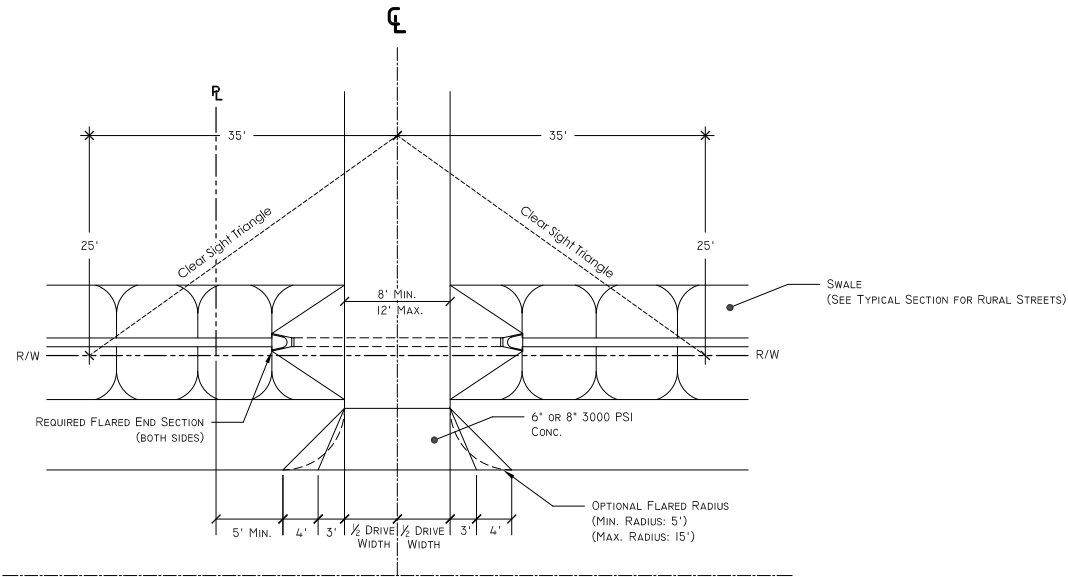
PROJECT:  
  
CONSTRUCTION STANDARDS AND DETAILS

DATE: JUNE 2009

SHEET:  
URBAN RESIDENTIAL  
DRIVEWAY APRON DETAIL  
SHEET: 2-010

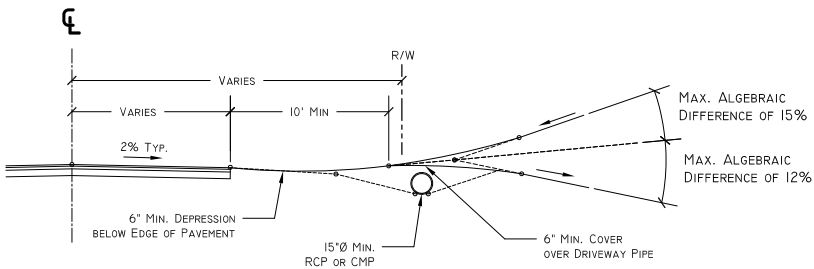




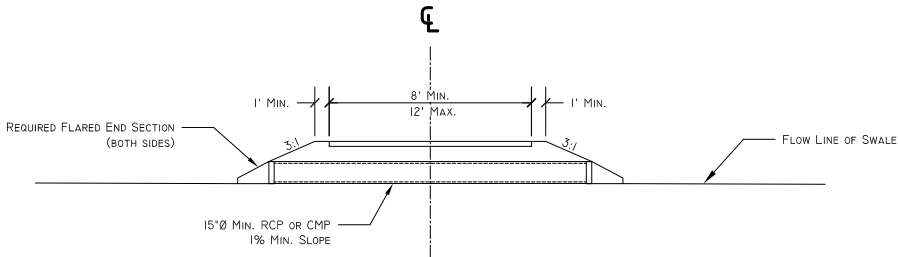


- Notes:
1. Sidewalk placement per Typical Section for Rural Streets, (See Detail 40-001).
  2. Sidewalk must be the same thickness of the driveway (6" or 8") through the first full segment of sidewalk.

PLAN VIEW



PROFILE



CROSS-SECTION

REVISIONS:			
NO.	BY	DATE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			

SURVEYED BY: NA  
DESIGNED BY: BCB  
DRAWN BY: BCB  
CHECKED BY: BCB  
APPROVED BY: JMP



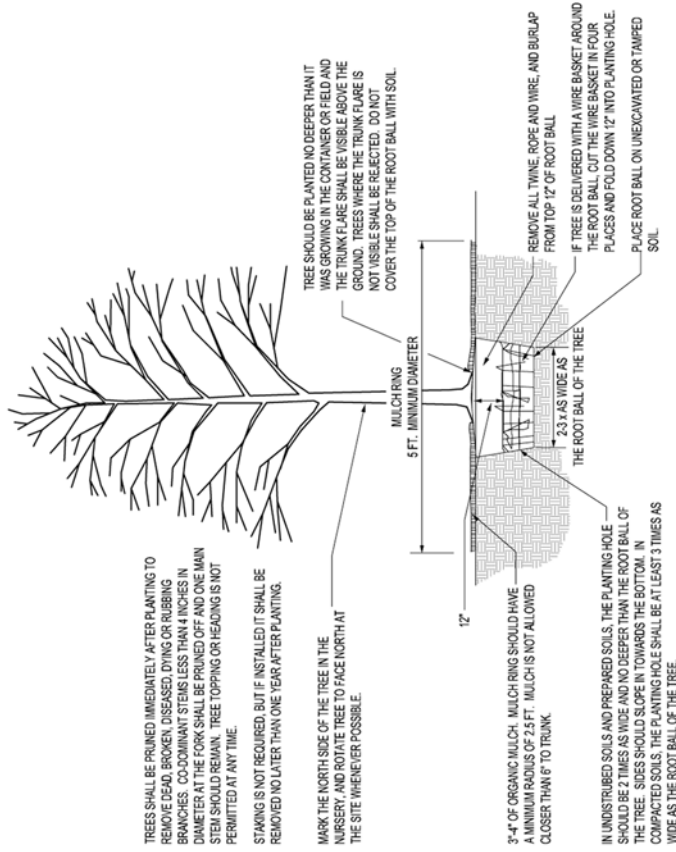
THE UNIFIED GOVERNMENT OF ATHENS-CLARKE COUNTY  
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PROJECT:  
CONSTRUCTION STANDARDS AND DETAILS  
DATE: FEBRUARY 2009

SHEET:  
RURAL RESIDENTIAL  
DRIVEWAY DETAIL  
SHEET: 2-020



1. Trees planted or conserved to satisfy requirements of the ACC Community Tree Ordinance shall not be removed without prior approval of the Planning Director.
2. Trees planted to meet development requirements should be watered throughout the growing season to the equivalent of 1" of water per week.
3. Staking materials should be removed within one year of planting.
4. Burlap (and all other materials) must be removed from at least the top 12" of the root ball and tree should be planted so that trunk flare is visible above the ground.
5. Planted trees should be mulched immediately after planting. Mulch is not allowed closer than 6" to the trunk flare.
6. The ACC Arborist or Community Forester must inspect installation of tree protection fencing prior to commencement of construction activity. Tree protection fencing shall remain in place until construction activities end or a certificate of occupancy is issued, whichever is later. No vehicle or equipment traffic, parking or storage of materials is allowed within the tree protection area.
7. Forested areas contributing towards conservation credit must remain in natural, undisturbed condition. Clearing of underbrush is not permitted, except for the removal of invasive species.



#### SOIL PREPARATION NOTES

1. SOIL WITHIN THE OPEN SOIL SURFACE AREA SHALL BE WELL AERATED TO A DEPTH OF EIGHT INCHES, EXCEPT THAT IN TREE PLANTING ISLANDS SURROUNDED BY PAVEMENT, IT SHALL BE WELL AERATED TO A DEPTH OF 18 INCHES.
2. THE SOIL SHALL CONTAIN AT LEAST 5% ORGANIC MATTER.
3. SOIL pH SHALL BE WITHIN THE RANGE OF 5.8 TO 7.0.

#### 3 TREE PLANTING DETAIL - B & B OR CONTAINER GROWN TREES

010 PLANTING SHOULD FOLLOW ALL STANDARDS FOUND IN SECTION 8.3.1.15 OF THE ATHENS-CLARKE COUNTY UNIFIED CODE OF ORDINANCES.







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