FULTON COUNTY

Vision

People *Families* *Neighborhoods*

Mission

To serve, protect and govern in concert with local municipalities

Values

People *Customer Services*
Ethics *Resource Management*
Innovation *Equal Opportunity*

PURCHASING DEPARTMENT
REQUEST FOR PROPOSAL NO. 05RFP46462K-DJ

DESIGN BUILD SERVICES FOR BIG CREEK INFLOW AND INFILTRATION REDUCTION PHASE I - PROJECT#S220

For

Fulton County Public Works

RFP DUE TIME AND DATE: 11:00 A.M. OCTOBER 3, 2005
PURCHASING CONTACT: Donna Jenkins (404)730-4213
E-MAIL: donna.jenkins@co.fulton.ga.us

LOCATION: FULTON COUNTY PURCHASING DEPARTMENT
130 PEACHTREE STREET, S.W., SUITE 1168
ATLANTA, GA 30303

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Drawing A Fulton County, Big Creek Sewer Basin

SECTION 1
GENERAL INFORMATION

REQUEST FOR PROPOSAL

FULTON COUNTY BIG CREEK INFLOW AND INFILTRATION PHASE I - PROJECT #S220

SECTION 1.0 GENERAL INFORMATION

1.1 PURPOSE

The Fulton County Purchasing Department solicits Proposals from qualified and experienced vendors to provide **DESIGN BUILD SERVICES FOR BIG CREEK INFLOW AND INFILTRATION REDUCTION PHASE I - PROJECT#S220** to establish a contract for the Scope of Work identified within this request for proposal.

1.2 DESCRIPTION OF PROJECT

The purpose of this project is to identify, reduce, and document the reduction of **Inflow and Infiltration (I&I) in the Fulton County Big Creek Sewer Basin (sub-basins BC11, BC12, BC18, BC53, BC54, BC58, BC59, BC61, BC62, BC71, and RSPS)** as shown on drawing A.

The majority of repairs in previous I&I projects include raising manholes, lining manholes and lining sewers. Because this system has not been evaluated for I&I, the proposer should expect any or all types of repairs. The quantities of repairs will be determined after the system has been evaluated and after the estimated I&I per defect is prioritized.

Site Description:

The project focus area is the combination of sub-basins BC11, BC12, BC18, BC53, BC54, BC58, BC59, BC61, BC62, BC71, and RSPS within the Big Creek Sewer Basin (See Drawing A – Attached). The focus area has more than 65 miles of sewer pipe from 8 inches to 60 inches in diameter and more than 1,853 manholes. The majority of the main trunk line is located in the 100-year flood plain and along rivers and creeks. There are no Fulton County rain gauges within the area.

Scope Description:

The selected Design/Builder will be responsible for the following tasks:

Task A Research of Records
Task B Field Investigation and Analysis
Task C Work Order Development
Task D Sewer Repairs
Task E Prioritization Report
Task F Final Report and Documentation of Inflow and Infiltration Reduction
Task G Project Schedule
Task H Progress Meetings and Meeting Minutes

The work to be performed consists of furnishing all labor, material and equipment necessary for the Infiltration and Inflow (I&I) investigation, evaluation, and sewer repairs solely to reduce I&I in Big Creek sub-basins BC11, BC12, BC18, BC53, BC54, BC58, BC59, BC61, BC62, BC71, and RSPS as indicated on the attached Drawing A. A detailed scope of work is included in Exhibit I “Scope of Services”.

1.3 TERM OF CONTRACT

The Term of this contract will be from the date of award by The Fulton County Board of Commissioners and continue for a period of 480 calendar days following the Notice to Proceed.

1.4 NO CONTACT PROVISION

In accordance with Fulton County Policy & Procedure 800-9, no person, firm, or business entity, however situated or composed, obtaining a copy of, or responding to this solicitation, shall initiate or continue any verbal or written communication regarding this solicitation with any County officer, elected official, employee, or designated County representative, between the date of the issuance of this solicitation and the date of the County Manager's recommendation to the Board of Commissioners, except as may otherwise be specifically authorized and permitted by the terms and conditions of this solicitation.

All verbal and written communications initiated by such person, firm, or entity regarding this solicitation shall be directed to The Purchasing Agent, Fulton County Department of Purchasing.

Any violation of this communications policy shall result in a written finding by the Purchasing Agent that the submitted bid or proposal of the person, firm, or entity in violation is not responsive, and shall not thereafter be considered for award.

Between the date of the issuance of any solicitation of bids or proposals for County contracts and the date of the County Manager's recommendation to the Board of Commissioners, no County officer, elected official, employee, or designated County representative, except in the course of carrying out obligations as a member of or a designated advisor to a vendor selection committee acting in accordance with the terms and conditions of the solicitation, shall initiate or continue any verbal or written communications regarding the solicitation with any person, firm, or business entity, however situated or composed, or any such representative of same, who the officer, elected official, employee, or representative knows or should have known has obtained a copy of the solicitation and either has submitted or may submit a bid or proposal; provided, further, except for members of or designated advisors to a vendor selection committee, no County officer, elected official, employee, or designated County representative shall contact any member of such a vendor selection committee regarding a pending solicitation, and all inquiries regarding the solicitation shall be directed to the Purchasing Agent.

1.5 CONTACT PERSON AND INQUIRIES

Any questions or suggestions regarding this RFP should be submitted in writing to the Purchasing Department contact person:

Fulton County Department of Purchasing
Donna Jenkins, Assistant Purchasing Agent
130 Peachtree Street S.W., 1168
Atlanta, GA 30303
Phone: (404)730-4213/Fax: (404) 335-5807
E-Mail: donna.jenkins@co.fulton.ga.us.

Any response made by the County will be provided in writing to all Proposers by addendum. No verbal responses shall be authoritative.

Requirements may be obtained using the following procedure: All inquiries must be submitted in writing to:

1.6 PRE-PROPOSAL CONFERENCE

The County will hold a Pre-Proposal Conference, on **September 8, 2005 at 9:00 A.M.** in the Bid Conference Room of the Purchasing Department, Fulton County Public Safety Building, Suite 1168, 130 Peachtree Street, S.W., Atlanta, Georgia 30303. Attendance at the Pre-Proposal Conference is voluntary for responding to this RFP; however Proposers are encouraged to attend. The purpose of the Pre-Proposal Conference is to provide information regarding the project and to address any questions and concerns regarding the services sought by the County through this RFP.

1.7 CLARIFICATION & ADDENDA

Proposers may submit requests for clarifications or interpretations regarding this RFP and the Contract. Proposers must prepare such requests in writing for the County's consideration as set forth in this section of this RFP. While the County has not placed an initial limitation on the number of requests which can be submitted, Proposers are cautioned that if Proposers do not request meaningful clarifications or interpretations in an organized manner (e.g., limited frequency of requests), the County will set restrictions on the frequency and number of requests permitted. The County will not respond to requests received after **September 22, 2005 at 5:00 PM,** local prevailing time. Proposers are advised that this section places no obligation on the part of the County to respond to any or all requests for clarification or interpretation, and that the County's failure to respond to any such request will not relieve the Proposer of any obligations or conditions required by this RFP.

Requests for clarification or interpretation regarding this RFP shall only be submitted in writing (letter, fax or email) to:

Fulton County Department of Purchasing
Attn: Donna Jenkins, Assistant Purchasing Agent
Public Safety Building
130 Peachtree Street S.W. Suite 1168
Atlanta GA 30303
Email:donna.jenkins@co.fulton.ga.us
Fax: (404) 335-5807
Phone: (404)730-4213

RE: # 05RFP46462K-DJ

All responses to written requests for clarification, interpretation, or additional information will be distributed as addenda to this RFP to all persons registered with the County to have received a copy of the RFP.

No oral interpretation, instruction, or information concerning this RFP given by any employee or agent of the County shall be binding on the County. Proposers who submit a Proposal in reliance on any such oral information risk having their response to this RFP deemed non-responsive by the County. Only written responses issued by addendum to this RFP should be considered by the Proposers.

During the period provided for the preparation of Proposals, the County may issue addenda to this RFP. These addenda will be numbered consecutively and will be distributed to those who have been issued a copy of this RFP. Additionally, the addenda will be posted on the Fulton County website, www.co.fulton.ga.us. These addenda will be issued by, or on behalf of, the County and will constitute a part of this RFP. Each Proposer is required to acknowledge by submitting an executed acknowledgment form included as Technical Proposal Form 2. This acknowledgment shall include all addenda distributed prior to the Proposal Submission Date. All responses to this RFP shall be prepared with full consideration of the addenda issued prior to the Proposal Submission Date.

1.8 LEGAL NAME

Proposals shall clearly indicate the legal name, address and telephone number of the proposer (company, firm, partnership, individual). Proposals shall be signed above the typed or printed name and title of the signer. The signer shall have the legal authority to bind the proposer to the submitted proposal.

1.9 REQUIRED SUBMITTALS

This is a checklist for the forms and affidavits that must be submitted. This section does not contain instructions for submission.

- Technical Proposal
- Cost Proposal
- Certification of Acceptance of Proposal Requirements
- Receipt of Addenda
- Procurement Affidavits
  - Certification Regarding Debarment
  - Non-Collusion Affidavit of Prime Offeror
  - Non-Collusion Affidavit of Subcontractor
- Insurance and Risk Management Provisions
- Contract Compliance Forms
  - Exhibit A - Promise of Non-Discrimination
  - Exhibit B - Employment Report
  - Exhibit C - Schedule of Intended Subcontractor Utilization
  - Exhibit D - Letter of Intent to Perform As a Subcontractor
  - Exhibit E - Declaration Regarding subcontractor Practices
  - Exhibit F - Joint Venture Disclosure Affidavit
  - Equal Business Opportunity (EBO) Plan

1.10 PROPOSAL SUBMISSION DATE AND SUBMITTAL FORMAT

All Proposals, including all attachments, must be received by the County in a sealed package no later than

OCTOBER 3, 2005 at **11:00 A.M**

The Proposal shall consist of a Technical Proposal, a Cost Proposal and executed Contract Compliance Exhibits (A-F) and Procurement Affidavits. The Technical Proposal shall include proposer information, technical information, business-related information, and any Technical Proposal forms requested. The Cost Proposal shall include the Cost Proposal Forms and any information describing the basis for pricing and must be separately, sealed, marked and packaged.

The required content of the Technical Proposal and Price Proposal is further specified in this section of the RFP. The Proposal must be signed and acknowledged by the Proposer, including certain information to be provided under oath as required under applicable law, in accordance with the instructions herein and the various proposal forms.

THE TECHNICAL PROPOSAL, THE COST PROPOSAL AND CONTRACT COMPLIANCE EXHIBITS SHALL BE SUBMITTED IN SEPARATE, SEALED ENVELOPES OR PACKAGES. THE INCLUSION OF ANY COST INFORMATION IN THE TECHNICAL PROPOSAL MAY RESULT IN SUCH PROPOSAL BEING REJECTED BY THE COUNTY.

Each envelope or package shall be clearly marked as follows:

"REQUEST FOR PROPOSALS RFP #05RFP46462K-DJ
DESIGN BUILD SERVICES FOR BIG CREEK INFLOW AND INFILTRATION REDUCTION PHASE I - PROJECT#S220
Design/Build [Technical or Price] Proposal
Utility Contractors License #
Proposer's Name and Address

Utility Contractors. All Bidders/Proposers shall comply with the requirements of O.C.G.A. § 43-14-8.2(h) which states:

After June 30, 1994, it shall be unlawful for any contracting body to open or consider any bid for utility contracting unless the bidder has obtained the license required by this Code section or intends to have the utility contracting work performed by another person who has obtained such license. The utility contractor's license number of the person who will perform the utility work shall be written on the face of the bid envelope, unless otherwise provided. If 50 percent or more of any multifaceted project being proposed is utility work, the bidder must have obtained a utility license and his or her number must be written on the face of the bid. (Code 198, § 43-14-8.2, enacted by Ga. L. 1989, P.175, §7; Ga. L. 1993, p.123, § 31; Ga. L. 1993, p.1339, §7; Ga. L. 1994, p.1, §1; Ga. L. 1994, p. 383, §4.)

ANY BIDDER FAILING TO COMPLY WITH THE REQUIREMENTS OF PLACING ITS UTILITY CONTRACTOR'S LICENSE NUMBER ON THE FACE OF THE BID ENVELOPE SHALL BE DEEMED NON-RESPONSIVE AND ITS BID SHALL NOT BE OPENED.

Number of Copies:

Proposers shall submit one **(1)** original and five **(5)** copies each of the Technical and Cost Proposals. Proposers shall submit one **(1)** original and two **(2)** copies of the Contract Compliance Exhibits. All Proposals must be complete with all requested information.

1.11 OVERVIEW OF PROPOSAL REQUIREMENTS

Proposers shall submit Proposals in accordance with the content and format requirements set forth in this RFP. Proposals should be clearly organized and structured in a manner that allows materials included in the document to be located easily.

Each of the instructions set forth in this section must be followed for a Proposal to be deemed responsive to this RFP. In all cases, the County reserves the right to determine, at its sole discretion, whether any aspect of the Proposal meets the requirements set forth in this section. The County reserves the right to reject any Proposal, which in its judgment, does not comply with these Proposal submission requirements.

Sealed proposals will be received by the Board of Commissioners of Fulton County, Georgia, in the Office of the Purchasing Department, 130 Peachtree Street S.W., Suite 1168, Atlanta, Georgia 30303 until 11:00 AM, local prevailing time, **Monday, OCTOBER 3, 2005**, for the **BIG CREEK I&I PHASE I Project - S220.**

The following proposal schedule will be in effect:

A. Pre-Proposal Conference **Thursday, September 8, 2005** **Time: 9:00 AM**
B. Final date to receive Inquiries **Thursday, September 22, 2005** **Time: 5:00 PM**
C. Proposal Due Date **Monday, OCTOBER 3, 2005** **Time: 11:00 AM**

Any proposals received after the above stated time and date will not be considered. It shall be the sole responsibility of the Proposer to have his/her proposal delivered to the Fulton County Department of Purchasing for receipt on or before the stated due time and due date. If a proposal is sent by U.S. Mail, the Proposer shall be responsible for its timely delivery to the Department of Purchasing. Proposals delayed by mail will not be considered, shall not be opened, and arrangements shall be made for their return at the Proposer's request and expense.

All proposals must clearly indicate the legal name, address and telephone number of the proposer (company, firm, partnership or individual). Proposal shall be signed above the typed or printed name and title of the signer. The signer shall have authority to bind the proposed to the submitted proposal.

1.12 COST OF PROPOSAL PREPARATION AND SELECTION PROCESS

Each Proposal, including preparation of all information required to be included in a Proposal pursuant to this RFP, shall be prepared at the sole cost and expense (including, but not limited to, engineering and legal costs) of the Proposer. In addition, the Proposer shall be solely responsible for all costs (including engineering and legal costs) incurred by such Proposer in connection with this selection process, including any costs incurred by the Proposer in any subsequent negotiations entered into in connection with developing the Proposal. There shall be no claims whatsoever against the County, its staff, or its consultants for reimbursement for the costs or expenses (including, but not limited to, engineering and legal costs) incurred during the preparation of the Proposal or other information required by this RFP or procurement process or in connection with the selection process or any negotiations.

1.13 IRREVOCABLE OFFER

No proposal may be modified, withdrawn or cancelled by the proposer for a period of sixty (60) days following the date and time designated for receipt of Proposals, and each proposer so agrees in submitting it's proposal. All adjustment factors shall remain valid during this time period unless noted otherwise. Prior to the date and time designated for receipt of proposals, a proposal may be withdrawn on written or facsimile (fax) request, provided that written confirmation of any fax withdrawal over the signature of proposer must have been mailed and postmarked on or before the date and time set for receipt of Proposals. A withdrawn proposal may be resubmitted up to the date and time designated fro receipt of the proposals, provided it is then in full conformance with the Instructions to Proposers.

1.14 RESERVED RIGHTS

The County reserves the right to accept or reject any and/or all proposals, to waive irregularities and technicalities, and to request resubmission. Any sole response that is received may or may not be rejected by the County depending on available competition and timely needs of the County. There is no obligation on the part of the County to award the contract to the lowest proposer and the County reserves the right to award the contract to the responsible proposers submitting responsive proposals with resulting agreements most advantageous and in the best interest of the County. The County shall be the sole judge of the proposals and the resulting agreements that are in its best interest and its decision shall be final. Also, the County reserves

the right to make such investigation as it deems necessary to determine the ability of any proposer to perform the work or service requested. Information the County deems necessary to make this determination shall be provided by the proposer. Such information may include, but shall not be limited to, current financial statements by an independent CPA; verification of availability of personnel; and past performance records.

1.15 APPLICABLE LAWS

All applicable laws and regulations of the State of Georgia and ordinances and regulations of Fulton County shall apply. Protestors shall seek resolution of their complaints in the manner provided in the Fulton County Code of Laws §2-324 which is incorporated by reference herein.

1.16 CONTRACT DOCUMENT

The agreement or contract resulting from the acceptance of a proposal shall be the contract agreement document in the format, form and content contained herein, except the County Attorney has the unilateral right to modify this agreement, as may be necessary.

1.17 PURCHASING THE RFP

This document and supporting documents can be downloaded at the Fulton County Website, http://www.co.fulton.ga.us/ under "Bid Opportunities".

Applications for documents, along with a **non-refundable $75.00 payment** must be made to Parsons PM Team, Fulton County Government Center, 141 Pryor Street, S.W., Suite 3077, Atlanta, Georgia 30303. Payment must be in the form of a money order, cashiers check, certified check or company check. Checks returned for any reason will result in the proposal being deemed non-responsive. This amount includes all fees for printing and distribution and will be used to defray a portion of the printing cost that may have been incurred for the tendering of the Project. Partial sets of the bid document will not be issued.

For payment information, contact Carllisa Boyce, Department of Public Works at (404) 893-0873. All other questions should be addressed by the procedures outlined in this RFP to Donna Jenkins, Fulton County Purchasing Department at (404)730-4213, donna.jenkins@co.fulton.ga.us.

Project: **DESIGN BUILD SERVICES FOR BIG CREEK INFLOW AND INFILTRATION PHASE I - PROJECT # S220**
RFP #: **05RFP46462K-DJ**

The Instructions to Proposers, Proposals, Drawings, Specifications, Bid Bond, Performance Bond, Payment Bond Requirements, and other Documents may be examined at the following locations:

F W. Dodge Corporation
2710 Sheraton Drive, Suite 110
Macon, Georgia 31204

Fulton County
Parsons PM Team, Ste 3077
141 Pryor Street, S W., 3rd Floor
Atlanta, Georgia 30303

Atlanta Builders Exchange
1940 The Exchange
Suite 300
Atlanta, Georgia 30339

CMD/Construction Market Data
30 Technology Blvd.
Suite 100
Norcross, Georgia 30092

F W Dodge Corporation
4170 Ashford-Dunwoody Rd.
Suite 200

Minority Business Development Agency
401 West Peachtree St.
Summit Bldg., Suite 1715

Atlanta, Georgia 30319 Atlanta, Georgia 30308

1.18 ADDITIONAL INFORMATION

In the event additional information is required please assume the following procedure: Procedural and Technical information regarding the proposal process may be obtained by contacting the Fulton County Purchasing Department at (404) 730-4213 or by writing to Fulton County Purchasing Department, 130 Peachtree Street, S.W., Suite 1168, Atlanta, Georgia 30303 and reference the proposal number # **05RFP46462K-DJ**. Only communication from firms which are in writing and signed will be recognized by Fulton County. The county shall not be responsible for oral interpretations given by any county employee, representative or others. The issuance of an addendum is the only official method whereby interpretation, clarification or additional information can be given. For Proposal/Document purchases, please contact Parsons PM Team at 404-893-0880 or Carllisa Boyce at 404-893-0873.

1.19 TERMINATION

The county may terminate the contract resulting from this solicitation at any time the vendor fails to carry out the contract provisions, if in the opinion of Fulton County, the performance of the contract is unreasonably delayed, or the vendor is in direct violation of the contract conditions. The County shall provide the vendor with notice of any conditions which violate or endanger the performance of the contract, and if after such notice the contractor fails to remedy such conditions within thirty (30) days, to the satisfaction of the County, the County may exercise their option in writing, to terminate the contract without further notice to the contractor and order the contractor to stop work immediately and vacate the premises. Vendor agrees by its proposal submission that Fulton County's decision is final and valid.

1.20 INSURANCE REQUIREMENTS

Insurance shall be provided as stipulated in the contract agreement Exhibit M as contained herein

1.21 DESIGN/BUILDER's COMPLIANCE WITH ALL ASSURANCES AND/OR PROMISES MADE IN RESPONSE TO PROCUREMENT

Should any proposer (bidder) submit a response to the County promising to provide a certain level of service for either the scope of work, MFBE participation, or any other matter, including where such promise or assurance is greater than what is required by the procurement documents, and should this response containing the promise or assurance be accepted by the County and made a part of the Contract Documents, then this degree or level or service promised by the proposer (bidder) relating to the scope of work, MFBE participation, or other matter shall be considered to be a material part of the Agreement between the proposer (bidder) and the County, such that the Proposer's (bidder's) failure to provide the agreed upon degree or level of service or participation shall be a material breach of the Agreement giving the County just cause to terminate the Agreement for cause, pursuant to General Conditions of the Agreement.

1.22 BID BOND

Each Proposal must be accompanied by a Bid Bond for an amount equal to at least five percent (5%) of the amount Proposed. The Bid Bond can be found in Section 2 (Form 6.0) of this RFP. The Bid Bond must be attached to the proposal for the proposal to be valid. Please submit this (5%) Bid Bond in a separately sealed envelope clearly labeled. Certified cashier's checks in an amount equal to (5%) of your total proposed price are acceptable.

If for any reason whatsoever the Proposer withdraws from the competition after opening of the proposals, or if the Proposer refuses to execute the Contract, the Owner will proceed on the Bid Bond.

The Surety of the Bid Bond, Performance Bond and Payment Bond shall be from a surety company authorized to do business in the State of Georgia, shall be listed in the Department of the Treasury Circular 570 and shall have an underwriting limitation in excess of 100% of the Proposal amount. The Bonds and Surety shall be subject to approval by the Attorney for the Owner.

Attorneys-in-fact who sign Bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

Note: The successful Proposer will be required to furnish a **Performance Bond** and **Payment Bond** after the Notice to Proceed has been issued. **The Performance and Payment Bond must be** in the amount of 100% of the Contract Amount. All other required Contract Documents must be fully executed by the Contractor and his/her Surety, and submitted to the Owner after the issuance of the Notice to Proceed.

1.23 INFORMATION TO BE SUBMITTED

Failure to submit any required data item may be cause for rejection. Proposers shall not submit data other than defined herein. In addition to the data described below, proposers may provide section dividers, a front and back cover, a table of contents and a cover letter not to exceed 2 pages in length which may serve as an introduction to the proposal. A page refers to one side of a single 8 ½ inch x 11 inch page. Text shall be minimum 12 point font.

Proposal information shall include:

A. Organization Description

(Not to exceed two pages total)

Provide an organizational chart and a short resume of the organization. Indicate key individuals: Project Principal, Project Manager, Project Modelers, Safety Manager, Quality Assurance/Quality Control Manager and any other technical and key relevant personnel. Also, include all sub-DESIGN/BUILDER(s) and their proposed function on this project. Indicate which firms are currently certified MFBE vendor by Department of Contract Compliance of Fulton County.

B. Technical Ability/Related Experience

(Not to exceed two pages)

Provide a description of the firm's technical ability/potential and related experience. This section should explain the ability to provide the services outlined in Exhibit I, Scope of Service. To address related experience, give proof that the proposer has successful experience with projects similar to this scope. Include a contact person, project description, project location, name of project, telephone number, and members of your firm that can be contacted regarding these projects. Please limit the number of projects to four (4). The proposer should show experience with Inflow and Infiltration, design, and sewer construction.

C. Key Personnel Experience and Availability

(Not to exceed 6 pages total)

Provide a summary of those personnel anticipated to be assigned to the project and the percentage of their time committed to the project. Resumes (not to exceed 1 page in length each) shall be provided for all key personnel, including project managers, construction managers, safety and QA/ QC managers and lead engineers. These individuals shall work out of the local office and reside in the Metropolitan Atlanta area during the course of their involvement on this project. Fulton County will not pay for direct costs associated with travel, temporary housing, food, supplies, or any other costs of relocating staff temporarily or permanently for this project.

D. Technical and Management Approach

(Not to exceed 8 pages total)

The primary objectives of this project are:

1. To realize I/I abatement through a safe, cost effective and timely project delivery approach.
2. To implement a sewer system rehabilitation program that focuses on rehabilitation actions, not protracted studies.
3. To successfully manage the flow of project related information including, work order management, digital mapping, and related sewer system infrastructure asset attribution.
4. To allow Fulton County to manage work activities and facilitate an approval process as various rehabilitation projects are identified.
5. To implement a process where Fulton County is able to monitor an overall ROI (return on investment) for rehabilitation vs. I/I reduction.

Provide a description of how the Proposer will meet the objectives of this project as outlined in Exhibit I - "Scope of Services" and Exhibit J - "Schedule". Explain how the proposer will investigate and prioritize the sewer repairs, based on flow and flow reduction. Provide a decision matrix for this process and your approach on validating I&I reduction. The proposer may also recommend enhancements or improvements to the scope of services to accomplish project objectives. This section should also include details regarding any unique knowledge or expertise the proposer has regarding this project and should further explain how this unique knowledge or expertise will benefit this project.

E. Proximity of Office to Project Site

(Not to exceed 1 half page)

Provide the office or equivalent project management location from which work on this project will be performed.

F. Equal Business Opportunity Plan (EBO Plan)

(Not to exceed 1 page. This plan must be submitted in accordance with Section 1.9)

In addition to the proposal submission requirements, each vendor must submit an Equal Business Opportunity Plan (EBO Plan) with the Proposal. The respondent must outline a plan of action to encourage and achieve diversity and equality in the available procurement and contracting opportunities with the solicitation. The Plan should be designed to enhance the utilization of racial gender or ethnic groups. Lastly, the Plan should list each subcontractor intended to be used on this project, their contract percentage and a brief scope of services for each subcontractor.

G. Financial Responsibility

(Two copies of the financial responsibility are to be submitted in separately sealed envelopes clearly labeled "Financial Responsibility")

Provide copies of the most recent year-end audited financial statement along with financial references.

H. Price and Schedule of Billing Rates

Provide an estimated cost to perform the project as described in Exhibit I - Scope of Services, and a separate cost to perform the project including any enhancements, additional work, or other modifications presented in Section 1.24.D - "Technical and Management Approach" in a separate sealed envelope labeled "Cost Proposal".

The proposer shall complete Schedule A, B and C below.

Schedule A

Schedule A encompasses the not to exceed cost of the sewer system investigation and evaluation portion of this project. Research of records, flow monitoring, and analysis, all reports, work order generation, progress meetings, and project management and communications should be captured in Schedule A.

Proposer shall create and provide costs in a format showing each service and level of service that is to be provided using a unit value of one (1) and the associated charge per Linear Foot, Vertical Foot, Hour, etc. that may apply to each. The fee proposal shall be based on the scope of work described herein and shall not be qualified or subject to exceptions. Smoke tests, dye tests, flow monitoring, isolation flow monitoring, manhole assessment, and other field investigation work shall be priced by linear foot units and Other Direct Costs as appropriate.

Computer usage is to be included in the overhead rate and will not be considered as a direct expense. No markup is to be provided on expenses or other non-labor cost. The Design/Builder is allowed to markup subcontractor invoices by no more than 7%. Proposer shall provide a list of spending categories, i.e., printing, phone, fax, mail, delivery charge, contract employees, etc. for each task identified in the proposal. As part of Schedule A, please include the number of hours, hourly rates and other direct costs associated with the proposal. The investigation/evaluation effort should only be included with this Schedule.

Schedule B

Schedule B encompasses the unit costs associated with the construction/repair portion of the project. This is to be completed and returned with Schedule A. Costs should be based on Section 01025 – Entitled "Measurement and Payment". The Proposer shall only list the unit costs to furnish all overhead, mobilization, labor, materials, and equipment to accomplish repairs and construction accordingly.

Schedule C

Schedule C encompasses the unit costs associated with the flow meter installation portion of the project. This is to be completed and returned with Schedule A and Schedule B. Costs should be based on Section 01025 – Entitled "Measurement and Payment". The proposer shall only list the unit costs to furnish all labor, materials, and equipment to accomplish repairs and construction accordingly.

SCHEDULE A – ENGINEERING AND INVESTIGATIVE SERVICES COSTS

Task A	Research of Records	$_____
Task B	Field Investigation and Analysis	$_____
Task C	Work Order Development	$_____
Task D	Sewer Repairs	$ Incl. in Schedule B ($3,000,000.00)
Task E	Prioritization Report	$_____
Task F	Final Report & Documentation of I/I Reduction	$_____
Task G	Project Schedule	$_____
Task H	Progress Meetings and Meeting Minutes	$_____

SCHEDULE B – CONSTRUCTION/REPAIR COSTS

The line items in Schedule B reflect the anticipated work the County expects to encounter on this project. In the case that additional items are required to make sewer repairs, the Contractor will submit an estimate for such work or equipment for the Construction Manager's review and acceptance. All such items will be paid from Schedule B funds.

	ITEM		UNIT COST	
ITEM	**1 - SEWER EASEMENT CLEARING**			
a.	LIGHT		$_____	/LF.
b.	MEDIUM		$_____	/LF.
c.	HEAVY		$_____	/LF.
ITEM	**2 - SEWER PRECONDITIONING**			
a.	42" SEWER		$_____	/LF.
b.	31" SEWER		$_____	/LF.
c.	27" SEWER		$_____	/LF.
d.	24" SEWER		$_____	/LF.
e.	21" SEWER		$_____	/LF.
f.	19" SEWER		$_____	/LF.
g.	18" SEWER		$_____	/LF.
h.	16" SEWER		$_____	/LF.
i.	15" SEWER		$_____	/LF.
j.	12" SEWER		$_____	/LF.
k.	10" SEWER		$_____	/LF.
l.	8" SEWER		$_____	/LF.
ITEM	**3 - MANHOLE PRECONDITIONING**			
a.	6-10 FEET DEEP	***(48" diameter)***	$_____	/VF.
b.	11-15 FEET DEEP		$_____	/VF.
c.	16-20 FEET DEEP		$_____	/VF.
d.	21-25 FEET DEEP		$_____	/VF.
e.	> 25 FEET DEEP		$_____	/VF.
f.	6-10 FEET DEEP	***(60" diameter)***	$_____	/VF.
g.	11-15 FEET DEEP		$_____	/VF.

h.	16-20 FEET DEEP	$	/VF.
i.	21-25 FEET DEEP	$	/VF.
j.	> 25 FEET DEEP	$	/VF.
ITEM	**4 - EROSION & SEDIMENT CONTROL**		
a.	CONSTRUCTION EXITS	$	/EA.
b.	EARTH FILL (FOR SINK HOLES & WASHOUT AREAS)	$	/CY.
c.	SEDIMENT BARRIERS	$	/LF.
d.	REINFORCED ROCK FILTER DAMS	$	/EA.
e.	ROCK FILTER DAMS	$	/EA.
f.	SEDIMENT TRAPS	$	/EA.
g.	ORGANIC MATERIAL FIBER BLANKETS	$	/SY.
h.	TREE PROTECTION FENCING	$	/LF.
i.	RIP RAP	$	/SY.
j.	GRASSING	$	/SY.
k.	TEMPORARY STREAM CROSSING	$	/EA.
l.	REINFORCED SILT FENCE	$	/LF.
m.	SODDING	$	/SY.
ITEM	**5 - BEAVER DAM REMOVAL or RELOCATION**		/EA.
ITEM	**6 - SEWER REHABILITATION CURED-IN-PLACE**		
I.	**STRUCTURAL PIPE LINING**		
a.	42" GRAVITY SEWER	$	/LF.
b.	31" GRAVITY SEWER	$	/LF.
c.	27" GRAVITY SEWER	$	/LF.
d.	24" GRAVITY SEWER	$	/LF.
e.	21" GRAVITY SEWER	$	/LF.
f.	19" GRAVITY SEWER	$	/LF.
g.	18" GRAVITY SEWER	$	/LF.
h.	16" GRAVITY SEWER	$	/LF.
i.	15" GRAVITY SEWER	$	/LF.
j.	12" GRAVITY SEWER	$	/LF.
k.	10" GRAVITY SEWER	$	/LF.
l.	8" GRAVITY SEWER	$	/LF.
ITEM	**7 – CCTV**		
a.	CCTV	$	/LF.
b.	Review of CCTV	$	/LF.
ITEM	**8 – SPOT REPAIRS CURED-IN-PLACE STRUCTURAL**		
I.	**SPOT REPAIR (15 feet length)**		
a.	42" GRAVITY SEWER	$	/LF.
b.	31" GRAVITY SEWER	$	/LF.

c.	27" GRAVITY SEWER	$ _____	/LF.
d.	24" GRAVITY SEWER	$ _____	/LF.
e.	21" GRAVITY SEWER	$ _____	/LF.
f.	19" GRAVITY SEWER	$ _____	/LF.
g.	18" GRAVITY SEWER	$ _____	/LF.
h.	16" GRAVITY SEWER	$ _____	/LF.
i.	15" GRAVITY SEWER	$ _____	/LF.
j.	12" GRAVITY SEWER	$ _____	/LF.
k.	10" GRAVITY SEWER	$ _____	/LF.
l.	8" GRAVITY SEWER	$ _____	/LF.
II.	**EXTERNAL POINT REPAIR**		
a.	42" GRAVITY SEWER	$ _____	/LF.
b.	31" GRAVITY SEWER	$ _____	/LF.
c.	27" GRAVITY SEWER	$ _____	/LF.
d.	24" GRAVITY SEWER	$ _____	/LF.
e.	21" GRAVITY SEWER	$ _____	/LF.
f.	19" GRAVITY SEWER	$ _____	/LF.
g.	18" GRAVITY SEWER	$ _____	/LF.
h.	16" GRAVITY SEWER	$ _____	/LF.
i.	15" GRAVITY SEWER	$ _____	/LF.
j.	12" GRAVITY SEWER	$ _____	/LF.
k.	10" GRAVITY SEWER	$ _____	/LF.
l.	8" GRAVITY SEWER	$ _____	/LF.
		UNIT COST	

ITEM 9 - REHABILITATE MANHOLES CURED-IN-PLACE

I.	**EPOXY RESIN LINER**			
a.	6-10 FEET DEEP	***(48" diameter)***	$ _____	/VF.
b.	11-15 FEET DEEP		$ _____	/VF.
c.	16-20 FEET DEEP		$ _____	/VF.
d.	21-25 FEET DEEP		$ _____	/VF.
e.	> 25 FEET DEEP		$ _____	/VF.
f.	6-10 FEET DEEP	***(60" diameter)***	$ _____	/VF.
g.	11-15 FEET DEEP		$ _____	/VF.
h.	16-20 FEET DEEP		$ _____	/VF.
i.	21-25 FEET DEEP		$ _____	/VF.
j.	> 25 FEET DEEP		$ _____	/VF.
			UNIT COST	

II.	**ASSOCIATED MANHOLE WORK**		
a.	DISH INSERTS	$ _____	/EA.
b.	MANHOLE COVERS	$ _____	/EA.
c.	CORBEL SEAL	$ _____	/EA.
d.	EMBEDMENT SEALANT	$ _____	/EA.
e.	RAISE MANHOLE 0.1 FT. TO 2.0 FT. (non-pavement)	$ _____	/EA.

			_____	
f.	RAISE MANHOLE 2.1 FT. TO 3.0 FT. (non-pavement)		$ _____	/EA.
g.	VACUUM TESTING		$ _____	/EA.
h.	FLEX-SEAL UTILITY SEALANT		$ _____	/EA.
III.	**NEW MANHOLES/REPLACEMENT MANHOLES**			
a.	6-10 FEET DEEP	***(48" diameter)***	$ _____	/VF.
b.	11-15 FEET DEEP	***(48" diameter)***	$ _____	/VF.
c.	16-20 FEET DEEP	***(48" diameter)***	$ _____	/VF.
d.	21-25 FEET DEEP	***(48" diameter)***	$ _____	/VF.
e.	> 25 FEET DEEP	***(48" diameter)***	$ _____	/VF.
f.	6-10 FEET DEEP	***(60" diameter)***	$ _____	/VF.
g.	11-15 FEET DEEP	***(60" diameter)***	$ _____	/VF.
h.	16-20 FEET DEEP	***(60" diameter)***	$ _____	/VF.
i.	21-25 FEET DEEP	***(60" diameter)***	$ _____	/VF.
j.	> 25 FEET DEEP	***(60" diameter)***	$ _____	/VF.

			UNIT COST	
ITEM	**9 - FLOW BYPASS & DIVERSION PUMPING**			
a.	PIPES > 18" SETUP		$ _____	/EA.
b.	PIPES >18" HOURS OF OPERATION (100 HOURS)		$ _____	/HR.
c.	PIPES < 18" SETUP		$ _____	/EA.
d.	PIPES < 18" HOURS OF OPERATION (100 HOURS)		$ _____	/HR.
ITEM	**10 - PIPELINE REPAIR**			
I.	**SEWER REPLACEMENT**			
	0' to 5.9' DEEP			
a.	SEWER REPLACEMENT --- 42" with DIP		$ _____	/LF.
b.	SEWER REPLACEMENT --- 31" with DIP		$ _____	/LF.
c.	SEWER REPLACEMENT --- 27" with DIP		$ _____	/LF.
d.	SEWER REPLACEMENT --- 24" with DIP		$ _____	/LF.
e.	SEWER REPLACEMENT --- 21" with DIP		$ _____	/LF.
f.	SEWER REPLACEMENT --- 19" with DIP		$ _____	/LF.
g.	SEWER REPLACEMENT --- 18" with DIP		$ _____	/LF.
h.	SEWER REPLACEMENT --- 16" with DIP		$ _____	/LF.
i.	SEWER REPLACEMENT --- 15" with DIP		$ _____	/LF.
j.	SEWER REPLACEMENT --- 12" with DIP		$ _____	/LF.
k.	SEWER REPLACEMENT --- 10" with DIP		$ _____	/LF.
l.	SEWER REPLACEMENT --- 8" with DIP		$ _____	/LF.
m.	SEWER COATING (FOR AERIALS)		$ _____	/SF.
	6' to 9.9' DEEP			
n.	SEWER REPLACEMENT --- 42" with DIP		$ _____	/LF.
o.	SEWER REPLACEMENT --- 31" with DIP		$ _____	/LF.
p.	SEWER REPLACEMENT --- 27" with DIP		$ _____	/LF.

q.	SEWER REPLACEMENT --- 24” with DIP	$ _____	/LF.
r.	SEWER REPLACEMENT --- 21" with DIP	$ _____	/LF.
s.	SEWER REPLACEMENT --- 19" with DIP	$ _____	/LF.
t.	SEWER REPLACEMENT --- 18” with DIP	$ _____	/LF.
u.	SEWER REPLACEMENT --- 16" with DIP	$ _____	/LF.
v.	SEWER REPLACEMENT --- 15" with DIP	$ _____	/LF.
w.	SEWER REPLACEMENT --- 12" with DIP	$ _____	/LF.
x.	SEWER REPLACEMENT --- 10" with DIP	$ _____	/LF.
y.	SEWER REPLACEMENT --- 8" with DIP	$ _____	/LF.
	10' to 13.9' DEEP		
z.	SEWER REPLACEMENT --- 42” with DIP	$ _____	/LF.
aa.	SEWER REPLACEMENT --- 31” with DIP	$ _____	/LF.
bb.	SEWER REPLACEMENT --- 27” with DIP	$ _____	/LF.
cc.	SEWER REPLACEMENT --- 24” with DIP	$ _____	/LF.
dd.	SEWER REPLACEMENT --- 21" with DIP	$ _____	/LF.
ee.	SEWER REPLACEMENT --- 19" with DIP	$ _____	/LF.
ff.	SEWER REPLACEMENT --- 18” with DIP	$ _____	/LF.
gg.	SEWER REPLACEMENT --- 16" with DIP	$ _____	/LF.
hh.	SEWER REPLACEMENT --- 15" with DIP	$ _____	/LF.
ii.	SEWER REPLACEMENT --- 12" with DIP	$ _____	/LF.
jj.	SEWER REPLACEMENT --- 10" with DIP	$ _____	/LF.
kk.	SEWER REPLACEMENT --- 8" with DIP	$ _____	/LF.
	14' to 18' DEEP		
ll.	SEWER REPLACEMENT --- 42” with DIP	$ _____	/LF.
mm.	SEWER REPLACEMENT --- 31” with DIP	$ _____	/LF.
nn.	SEWER REPLACEMENT --- 27” with DIP	$ _____	/LF.
oo.	SEWER REPLACEMENT --- 24” with DIP	$ _____	/LF.
pp.	SEWER REPLACEMENT --- 21" with DIP	$ _____	/LF.
qq.	SEWER REPLACEMENT --- 19" with DIP	$ _____	/LF.
rr.	SEWER REPLACEMENT --- 18” with DIP	$ _____	/LF.
ss.	SEWER REPLACEMENT --- 16" with DIP	$ _____	/LF.
tt.	SEWER REPLACEMENT --- 15" with DIP	$ _____	/LF.
uu.	SEWER REPLACEMENT --- 12" with DIP	$ _____	/LF.
vv.	SEWER REPLACEMENT --- 10" with DIP	$ _____	/LF.
ww.	SEWER REPLACEMENT --- 8" with DIP	$ _____	/LF.
		UNIT COST	

II. PIPE BURSTING

	0' to 5.9' DEEP		
a.	PIPE BURSTING --- 42"	$ _____	/LF.
b.	PIPE BURSTING --- 31"	$ _____	/LF.
c.	PIPE BURSTING --- 27"	$ _____	/LF.
d.	PIPE BURSTING --- 24"	$ _____	/LF.
e.	PIPE BURSTING --- 21"	$ _____	/LF.
f.	PIPE BURSTING --- 19"	$ _____	/LF.
g.	PIPE BURSTING --- 18"	$ _____	/LF.
h.	PIPE BURSTING --- 16"	$ _____	/LF.
i.	PIPE BURSTING --- 15"	$ _____	/LF.
j.	PIPE BURSTING --- 12"	$ _____	/LF.
k.	PIPE BURSTING --- 10"	$ _____	/LF.

l.	PIPE BURSTING --- 8"	$ _____	/LF.
	6' to 9.9' DEEP		
m.	PIPE BURSTING --- 42"	$ _____	/LF.
n.	PIPE BURSTING --- 31"	$ _____	/LF.
o.	PIPE BURSTING --- 27"	$ _____	/LF.
p.	PIPE BURSTING --- 24"	$ _____	/LF.
q.	PIPE BURSTING --- 21"	$ _____	/LF.
r.	PIPE BURSTING --- 19"	$ _____	/LF.
s.	PIPE BURSTING --- 18"	$ _____	/LF.
t.	PIPE BURSTING --- 16"	$ _____	/LF.
u.	PIPE BURSTING --- 15"	$ _____	/LF.
v.	PIPE BURSTING --- 12"	$ _____	/LF.
w.	PIPE BURSTING --- 10"	$ _____	/LF.
x.	PIPE BURSTING --- 8"	$ _____	/LF.
	10' to 13.9' DEEP		
y.	PIPE BURSTING --- 42"	$ _____	/LF.
z.	PIPE BURSTING --- 31"	$ _____	/LF.
aa.	PIPE BURSTING --- 27"	$ _____	/LF.
bb.	PIPE BURSTING --- 24"	$ _____	/LF.
cc.	PIPE BURSTING --- 21"	$ _____	/LF.
dd.	PIPE BURSTING --- 19"	$ _____	/LF.
ee.	PIPE BURSTING --- 18"	$ _____	/LF.
ff.	PIPE BURSTING --- 16"	$ _____	/LF.
gg.	PIPE BURSTING --- 15"	$ _____	/LF.
hh.	PIPE BURSTING --- 12"	$ _____	/LF.
ii.	PIPE BURSTING --- 10"	$ _____	/LF.
jj.	PIPE BURSTING --- 8"	$ _____	/LF.
	14' to 18' DEEP		
kk.	PIPE BURSTING --- 42"	$ _____	/LF.
ll.	PIPE BURSTING --- 31"	$ _____	/LF.
mm.	PIPE BURSTING --- 27"	$ _____	/LF.
nn.	PIPE BURSTING --- 24"	$ _____	/LF.
oo.	PIPE BURSTING --- 21"	$ _____	/LF.
pp.	PIPE BURSTING --- 19"	$ _____	/LF.
qq.	PIPE BURSTING --- 18"	$ _____	/LF.
rr.	PIPE BURSTING --- 16"	$ _____	/LF.
ss.	PIPE BURSTING --- 15"	$ _____	/LF.
tt.	PIPE BURSTING --- 12"	$ _____	/LF.
uu.	PIPE BURSTING --- 10"	$ _____	/LF.
vv.	PIPE BURSTING --- 8"	$ _____	/LF.

ITEM 11 – LATERAL RECONNECTION

a.	0-5 FEET DEEP	$ _____	/EA.
b.	6-10 FEET DEEP	$ _____	/EA.
c.	11-15 FEET DEEP	$ _____	/EA.
d.	16-20 FEET DEEP	$ _____	/EA.
e.	21-25 FEET DEEP	$ _____	/EA.

ITEM 12 – Additional Items

a. #57 STONE $_____ /TON.

SCHEDULE C – FLOW METER INSTALLATION COSTS

		QUANTITY	UNIT COST	TOTAL
ITEM	**1 – ADS Model 4000 FLOW METERS (Installation, Maintenance & Data Collection)**	7		

Note: Unit Costs are to be based on Section 01025- Measurements and Payments.

PLEASE COMPLETE AS DIRECTED AND INSERT IN YOUR SEPARATE SEALED COST PROPOSAL

Investigation Cost (Total from Schedule A) $_____

Sewer Repair Costs (Schedule B Unit Costs) $____3,000,000.00*_____

Flow Meter Installation (Total from Schedule C) $_____

TOTAL CONTRACT **$_____**

** Funds approved through work order process*

1.24 BASIS OF AWARD

The award of this contract will be made by the Board of Commissioners of Fulton County to the responsible proposer whose proposal is determined, upon written recommendation by the County Manager, the Purchasing Agent and the Director of Public Works, to be in the best interest of the County. Consideration is made for price, experience, expertise, location, references, and other evaluation factors set forth in the Request for Proposal.

Evaluation Schedule:

Technical Consideration	Explanation	Weight
Technical & Management Approach	The Design/Builder will be evaluated on the technical approach section presented in the proposal. The County will consider sound engineering principles, ingenuity, and creativity. In particular, the County is interested in the approach that will produce the greatest results in the given project schedule. Special consideration will be given to: 1) a work order tracking system that is comprehensive and responsive, 2) the proposer's approach to identifying I&I, 3) the proposer's ability to understand and manage the project schedule and work order process, and 4) the proposer's ability to manage multiple subcontractors effectively and efficiently. The sewer system within the project area includes major trunk lines. The Design/Builder should discuss its plan to investigate and repair the major sewer lines with minimal disturbance to service.	35%
Experience	The Design/Builder will be evaluated on the experience the firm has with related projects. The references listed in the proposal will be contacted to complete a phone survey. In particular, the County will give special consideration to quality of work and ability to complete projects on schedule.	10%
Documentation	The Design/Builder will be evaluated on the method of analyzing and documenting Inflow and Infiltration reduction quantities. It is critical that an engineeringly sound method be used to document the reduction of I&I. The proposal should illustrate the considerations for the method proposed in documenting I&I reduction.	5%
Location	The Design/Builder will be given the full 10% for having an office in Fulton County, Georgia that performs the majority of work (i.e., prime vendor not subcontractors). 0% will be given otherwise.	10%
Personnel Resumes	The Design/Builder will be evaluated on the experience of the team members. In particular, the County will give special consideration to a well experienced Engineering Manger and Construction Manager.	5%
Total Points		**65%**

Costs

The County will allocate 10% of the evaluation to costs presented on Schedule A, 2% for costs presented on Schedule C and 23% for unit cost considerations presented on Schedule B. The County will award the most points to the lowest reasonable and responsive cost proposal. Any unit costs left blank may result in that proposal being deemed non-responsive and is grounds for rejection.

	Weight
Schedule A	10%
Schedule B	23%
Schedule C	2%

Total (Cost) Points	**35%**

1.25 MINIMUM PARTICIPATION REQUIREMENT (PRIME CONTRACTORS)

Fulton County Code 102-357 – The county manager is hereby directed to ensure that no contract or project is hereafter presented to the board of commissioners for approval which does not require that the prime contractor or vendor for the project or contract actually perform no less than 51 percent of the scope of the work of the prime contract.

Construction contracts shall be exempt from the requirements of this section

1.26 FULTON COUNTY PURCHASING DEPARTMENT GENERAL REQUIREMENTS

The following information pertains to the submission of a proposal to Fulton County ("County"), and contains instructions on how proposals must be presented in order to be considered. If specific conditions or instructions in the text of the Request for Proposal ("RFP") conflict with the General Requirements as listed here, those conditions or instructions in the RFP shall prevail.

1. Proposals submitted in response to the attached RFP must be formatted as specified in the RFP. Additional sheets, literature, etc., should be clearly identified.

2. The original and the required number of copies of the proposal must be returned to:

   Fulton County Purchasing Department
   Donna Jenkins, Assistant Purchasing Agent
   130 Peachtree Street, S.W., Suite 1168
   Atlanta, Georgia 30303

3. The envelope in which the proposal is submitted must be sealed and clearly labeled with the RFP project name and number, due date and time, and the name of the company or individual submitting the proposal. Proposals must be received by the opening date and time shown on this RFP in order to be considered. The Purchasing Agent has no obligation to consider proposals which are not in properly marked envelopes. The Technical Proposal, Cost Proposal and Contract Compliance submittals shall be submitted in separate sealed envelopes. The inclusion of any cost information in the Technical Proposal may result in such proposal being rejected by the County.

4. Proposals received after the time and date specified will not be opened or considered.

5. By submitting a signed proposal, Offeror agrees to accept an award made as a result of the submission of the prices and terms contained in that proposal. Prices proposed must be audited by the Offeror to insure correctness before the proposal is submitted. Person signing the proposal is responsible for the accuracy of information in it. The specifications, provisions, and the terms and conditions of the RFP and proposal shall become a valid contract between Fulton County and the Offeror upon notice of award of contract in writing and/or issuance of a purchase order.

6. Any contract awarded as a result of this proposal, shall comply fully with all Local, State, and Federal laws and regulations.

7. Absolutely no fax proposals or reproduction proposals will be accepted, except that if multiple copies of the proposal are required, photocopies of the original may be submitted as the additional copies, provided that they are clearly marked as such.

8. Type or neatly print company name, as well as the full legal name and title of the person signing the proposal, in all appropriate places. The Offeror's signature must be executed by a Principal of the company duly authorized to make contracts and bind the company to all terms being proposed.

9. Proposals may be withdrawn upon receipt of a written request prior to the stated due date and time. If a firm seeks to withdraw a proposal after the due date and time, the firm must present a notarized statement indicating that an error was made, with an explanation of how it occurred. The withdrawal request must be accompanied by documentation supporting the claim. Prior to approving or disapproving the request, an opinion will be obtained from Fulton County's Legal Counsel indicating whether the firm is bound by its proposal.

   Proposals for projects that are solicited pursuant to the Georgia Local Government Public Works Construction Law (O.C.G.A. § 36-91-1 et seq.) may be withdrawn as follows:

   The County must advise Offerors in the request for proposals of the number of days that Offerors will be required to honor their proposals. If an Offeror is not selected within 60 days of opening the proposals, any Offeror that is determined by the governmental entity to be unlikely of being selected for contract award will be released from the proposal.

10. Show information and prices in the format requested. Prices are to be quoted F.O.B. destination, and must include all costs chargeable to the Offeror in executing the contract, including taxes. Unless otherwise provided in the Contract, Fulton County shall have no liability for any cost not included in the price. The Offeror shall provide Fulton County the benefit through a reduction in price of any decrease in the Offeror's costs by reason of tax exemptions based upon Fulton County's status as a tax-exempt entity.

11. Propose all items specified or indicate under each item what alternative is being proposed and why it should be considered in lieu of the original specification. Failures to indicate any exceptions shall be interpreted as the Offeror's intent to fully comply with the specifications as written. Conditional or qualified proposals (except as specifically allowed in the specifications) are subject to rejection in whole or in part.

12. Fulton County shall be the sole judge of the quality and the applicability of all proposals. Design, features, overall quality, local facilities, terms and other pertinent considerations will be taken into account in determining acceptability.

13. The successful Offeror must assume full responsibility for delivery of all goods and services proposed and agree to relieve Fulton County of all responsibility and costs for prosecuting claims.

14. The successful Offeror must assume full responsibility for replacement of all defective or damaged goods and/or performance of contracted services within thirty (30) days notice by the County of such defect, damage or deficiency.

15. The successful Offeror must assume full responsibility for providing warranty service on all goods, materials, or equipment provided to the County with warranty coverage. Should a vendor

be other than the manufacturer, the vendor and not the County is responsible for contacting the manufacturer. The Offeror is solely responsible for arranging for the service to be performed.

16. The successful Offeror shall be responsible for the proper training and certification of personnel used in the performance of the services proposed.

17. The successful Offeror shall not assign, transfer, convey, sublet, or otherwise dispose of any contract resulting from the RFP or of any of all of its rights, title or interest therein without prior written consent of the Fulton County Board of Commissioners.

18. Proposals must contain references which reflect successful completion of contracts for the types of goods, materials, equipment, or services for which the vendor is submitting a proposal to the County. In instances where that does not apply, the proposal must contain a statement and supporting documentation demonstrating such expertise, knowledge, or experience to establish the vendor submitting the proposal as capable of meeting the demands of the proposal should an award be made to them.

19. Offerors submitting proposals may be required to furnish evidence that they maintain permanent places of business of a type and nature compatible with their proposal, and are in all respects competent and eligible vendors, able to fulfill the terms of the specifications. Fulton County may make such investigations as it deems necessary to determine the ability of the Offeror to perform such work, and reserves the right to reject any proposal if evidence fails to indicate that the proposed vendor is qualified to carry out the obligation of the contract and to complete the work satisfactorily.

20. By submitting a signed proposal, Offeror certifies that there has been no collusion with any other Offeror. Reasonable grounds for believing Offeror has an interest in more than one proposal will result in rejection of all proposals in which the Offeror has an interest. Any party to collusion may not be considered in future proposals for the same or similar work.

21. Upon notice of selection, the Offeror submitting the proposal is obligated to perform. Should a successful Offeror refuse to enter into a contract subsequent to an award, a penalty may be assessed and/or the Offeror may be found to be “non-responsible” in the future.

22. In case of default by the successful Offeror, Fulton County may procure the articles or services from another source and hold the successful Vendor responsible for any resultant excess cost.

23. Successful Offerors contract directly with the County and are the party or parties obligated to perform. Contracts may not be assigned and any failure to perform the Contract in accordance with the specifications will constitute a breach of contract and may result in an Offeror being found to be “non-responsible” in the future.

24. Invoice(s) must list each item separately and must show Fulton County’s purchase order number as well as the proper department and address to whom the service or product was provided.

25. Fulton County reserves the right to accept or reject any or all proposals, or any part thereof, and to waive any technicalities. Fulton County reserves the right to award a contract based on this RFP and the proposal(s) received (in whole or in part) to one or several Vendors.

26. Awards will not necessarily be based on cost alone. Other factors, as detailed in the RFP, will be considered in determining what proposal will be deemed to best meet the needs of Fulton County.

27. All proposals and bids submitted to Fulton County are subject to the Georgia "Open Records Act", Official Code of Georgia, Annotated (O.C.G.A.) § 50-18-70 et seq.

28. All proposals and bids submitted to Fulton County involving Utility Contracting are subject to the Georgia law governing licensing of Utility Contractors, O.C.G.A. §43-14-8.2(h). The Utility Contractor License number of the person who will perform the utility work shall be written on the face of the bid envelope.

29. Prior to beginning any work, the successful Offeror shall furnish to Fulton County (for the contracting firm and for any subcontractors) a certificate from an insurance company showing issuance of Workers' compensation coverage for the State of Georgia or a certificated from the Georgia Workers' Compensation Board showing proof of ability to pay compensation directly.

30. It is the policy of Fulton County that the evaluation and award process for County contracts shall be free from both actual and perceived impropriety, and that contacts between potential vendors and County officials, elected officials and staff regarding pending awards of County contracts shall be prohibited.

    A. No person, firm, or business entity, however situated or composed, obtaining a copy of or responding to this solicitation, shall initiate or continue any verbal or written communication regarding this solicitation with any County officer, elected official, employee, or designated County representative, between the date of the issuance of this solicitation and the date of the County Manager's recommendation to the Board of Commissioners for award of the subject contract, except as may otherwise be specifically authorized and permitted by the terms and conditions of this solicitation.

    B. All verbal and written communications initiated by such person, firm, or entity regarding this solicitation, if same are authorized and permitted by the terms and conditions of this solicitation, shall be directed to the Purchasing Agent.

    C. Any violation of this prohibition of the initiation or continuation of verbal or written communications with County officers, elected officials, employees, or designated County representatives shall result in a written finding by the Purchasing Agent that the submitted bid or proposal of the person, firm, or entity in violation is "non-responsive", and same shall not be considered for award.

31. Any offeror intending to respond to this solicitation as a Joint Venture must submit an executed Joint Venture Agreement with this offer. This agreement must designate those persons or entities authorized to execute documents or otherwise bind the Joint Venture in all transactions with Fulton County, or be accompanied by a document, binding upon the Joint Venture and its constituent members, making such designation. Offers from Joint Ventures that do not include these documents will be rejected as being "non-responsive".

32. Any offeror intending to respond to this solicitation must complete all of the Procurement Affidavit Forms provided in Section 5. Proposals that do not include these completed documents will be rejected as being "non-responsive"

SECTION 2
REQUIRED FORMS

SECTION 2. REQUIRED AFFIDAVITS AND FORMS SUBMISSION

Proposer shall provide the following executed forms and affidavits as appropriate:

CONFIDENTIALITY/NON-DISCLOSURE FORM (Form 1)

CERTIFICATE OF ACCEPTANCE OF PROPOSAL REQUIREMENTS (Form 2)

NON-COLLUSION AFFIDAVIT OF PROPOSER (Form 3)

NON-COLLUSION AFFIDAVIT OF PROPOSER (Form 4)

CERTIFICATION REGARDING DEBARMENT (Form 5)

BID BOND (Form 6)

PERFORMANCE BOND (Form 7) (Post Award)

PAYMENT BOND (Form 8) (Post Award)

CONTRACTOR UTILITY LICENSE (Form 9) (If Applicable)

INDEMNIFICATION AND HOLD HARMLESS AGREEMENT (Form 10)

CONTRACT COMPLIANCE EXHIBITS

PROMISE OF NON-DISCRIMINATION (Exhibit A)

EMPLOYEMENT REPORT (Exhibit B)

LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR (Exhibit C)

MATERIALS OR SERVICES (Exhibit D)

DECLARATION REGARDING SUBCONTRACTOR PRACTICES (Exhibit E)

JOINT VENTURE DISCLOSURE AFFIDAVIT (Exhibit F) (If Applicable)

PRIME CONTRACTOR/SUBCONTRACTOR UTILIZATION REPORT (Exhibit G) (Post Award)

EQUAL BUSINESS OPPORTUNITY PLAN

FORM 1

CONFIDENTIALITY/NON-DISCLOSURE STATEMENT

CERTIFICATION OF NONDISCLOSURE OF CONFIDENTIAL INFORMATION REGARDING FULTON COUNTY WATER SYSTEMS.

PROPOSER agrees that all PROPOSER-Developed Information, all information provided by FULTON COUNTY and PROPOSER, and all information becoming known to PROPOSER concerning FULTON COUNTY'S inventions, discoveries, improvements, processes or methods, business plans, ventures, or practices, enterprises, explorations, mining information, manufacturing or other plant design, location of operation, or any other information affecting the business or professional operations of FULTON COUNTY ("FULTON COUNTY Proprietary Information") will be maintained confidentially by PROPOSER and shall not be published, disseminated, revealed in any manner or to any party, or used in the design, production, manufacture, use, or operation of any other article, material, mine, process plant, business, or the performance of services without first obtaining FULTON COUNTY'S written consent thereto, except for the performance of work or services under this Solicitation or any resulting Contract, that the provisions of this paragraph as they relate to confidentiality will not apply to FULTON COUNTY'S Proprietary Information that was known to PROPOSER at the same time it was obtained directly or indirectly from FULTON COUNTY, or is acquired by PROPOSER from a third party and such third party did not obtain such information directly or indirectly from FULTON COUNTY under an obligation not disclosed, or is or becomes published or otherwise available in the public domain other than by violation of the conditions of this Solicitation or any resulting Contract by PROPOSER. PROPOSER if fully responsible for all such FULTON COUNTY'S Proprietary Information in PROPOSER'S possession and PROPOSER will promptly, upon completion of work or services or on demand, return to FULTON COUNTY all documents and reproductions thereof containing any of FULTON COUNTY'S Proprietary Information. The requirement is subject to the laws or the state of Georgia.

The PROPOSER shall include the foregoing requirement in all solicitations, subcontracts, and purchase orders issued under this solicitation or any contract issued as a result of this solicitation.

_____ _____
(Signature) (Date)

_____ _____
(Name Printed) (Organization)

FORM 2

CERTIFICATE OF ACCEPTANCE OF PROPOSAL REQUIREMENTS

THIS IS TO CERTIFY THAT ON THIS DAY PROPOSER ACKNOWLEDGES THAT HE/SHE HAS READ THIS PROPOSAL DOCUMENT, PAGES ONE (1) TO _____ INCLUSIVE, INCLUDING ADDENDUM(S) _____ TO _____, IN ITS ENTIRETY, AND AGREES THAT NO PAGES OR PARTS OF THE DOCUMENT HAVE BEEN OMITTED, THAT HE/SHE UNDERSTANDS, ACCEPTS AND AGREES TO FULLY COMPLY WITH THE REQUIREMENTS THEREIN, AND THAT THE UNDERSIGNED IS AUTHORIZED BY THE PROPOSING COMPANY TO SUBMIT THE PROPOSAL HEREIN AND TO LEGALLY OBLIGATE THE PROPOSER THERETO.

COMPANY: _____

SIGNATURE: _____

NAME: _____

TITLE: _____

DATE: _____

FORM 3

STATE OF GEORGIA

COUNTY OF FULTON

NON-COLLUSION AFFIDAVIT OF PRIME OFFEROR

I, _____ certify that pursuant to Fulton County Code Section 2-320 (11), this bid or proposal is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same work, labor or service to be done or the supplies, materials or equipment to be furnished and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of state and federal law and can result in fines, prison sentences and civil damages awards. I agree to abide by all conditions of this bid or proposal and certify that I am authorized to sign this bid or proposal for the bidder.

Affiant further states that pursuant to O.C.G.A. Section 36-91-21 (d) and (e), _____ has not, by itself or with others, directly or indirectly, prevented or attempted to prevent competition in such bidding or proposals by any means whatsoever. Affiant further states that (s)he has not prevented or endeavored to prevent anyone from making a bid or offer on the project by any means whatever, nor has Affiant caused or induced another to withdraw a bid or offer for the work.

Affiant further states that the said offer of _____ is bona fide, and that no one has gone to any supplier and attempted to get such person or company to furnish the materials to the bidder only, or if furnished to any other bidder, that the material shall be at a higher price.

_____
(COMPANY NAME)

_____
(PRESIDENT/VICE PRESIDENT)

Sworn to and subscribed before me this _____ day of _____, 200__.

_____
(SECRETARY/ASSISTANT SECRETARY)

(Affix corporate seal here, if a corporation)

Notary Public: _____

County: _____

Commission Expires: _____

NOTE:

IF THE OFFEROR IS A PARTNERSHIP, ALL OF THE PARTNERS AND ANY OFFICER, AGENT, OR OTHER PERSON WHO MAY HAVE REPRESENTED OR ACTED FOR THEM IN BIDDING FOR OR PROCURING THE CONTRACT SHALL ALSO MAKE THIS OATH.

IF THE OFFEROR IS A CORPORATION, ALL OFFICERS, AGENTS, OR OTHER PERSONS WHO MAY HAVE ACTED FOR OR REPRESENTED THE CORPORATION IN BIDDING FOR OR PROCURING THE CONTRACT SHALL MAKE THE OATH.

FORM 4.0

STATE OF GEORGIA

COUNTY OF FULTON

NON-COLLUSION AFFIDAVIT OF SUBCONTRACTOR

I, _____ certify that pursuant to Fulton County Code Section 2-320 (11), this bid or proposal is made without prior understanding, agreement or connection with any corporation, firm or person submitting a bid for the same work, labor or service to be done or the supplies, materials or equipment to be furnished and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of state and federal law and can result in fines, prison sentences and civil damages awards. I agree to abide by all conditions of this bid or proposal and certify that I am authorized to sign this bid or proposal for the bidder.

Affiant further states that pursuant to O.C.G.A. Section 36-91-21 (d) and (e), _____ has not, by itself or with others, directly or indirectly, prevented or attempted to prevent competition in such bidding or proposals by any means whatsoever. Affiant further states that (s)he has not prevented or endeavored to prevent anyone from making a bid or offer on the project by any means whatever, nor has Affiant caused or induced another to withdraw a bid or offer for the work.

Affiant further states that the said offer of _____ is bona fide, and that no one has gone to any supplier and attempted to get such person or company to furnish the materials to the bidder only, or if furnished to any other bidder, that the material shall be at a higher price.

_____
(COMPANY NAME)

_____
(PRESIDENT/VICE PRESIDENT)

Sworn to and subscribed before me this _____ day of _____, 200__.

_____
(SECRETARY/ASSISTANT SECRETARY)

(Affix corporate seal here, if a corporation)

Notary Public: _____

County: _____

Commission Expires: _____

NOTE:

IF THE OFFEROR IS A PARTNERSHIP, ALL OF THE PARTNERS AND ANY OFFICER, AGENT, OR OTHER PERSON WHO MAY HAVE REPRESENTED OR ACTED FOR THEM IN BIDDING FOR OR PROCURING THE CONTRACT SHALL ALSO MAKE THIS OATH.

IF THE OFFEROR IS A CORPORATION, ALL OFFICERS, AGENTS, OR OTHER PERSONS WHO MAY HAVE ACTED FOR OR REPRESENTED THE CORPORATION IN BIDDING FOR OR PROCURING THE CONTRACT SHALL MAKE THE OATH.

FORM 5.0

CERTIFICATION REGARDING DEBARMENT

(1) The Offeror certifies that neither it or its subcontractors is presently debarred, suspended, proposed for debarment, declared ineligible, or otherwise excluded from doing business with any government agency. Any such exclusion may cause prohibition of your firm from participating in any procurement by the Fulton County Government.

(2) If the Offeror is unable to certify to any of the statements in this certification, such Offeror or subcontractor shall attach an explanation to this bid or proposal.

INSTRUCTIONS FOR CERTIFICATION

By signing and submitting this certification, the Offeror is providing the certification set out below:

(1) The certification in this clause is a material representation of fact upon which reliance will be placed. If it is later determined that the prospective vendor knowingly rendered a false certification, the Purchasing Agent may pursue all available remedies, including suspension and/or debarment, for withdrawal of award or termination of a contract.

(2) The prospective Offeror shall provide immediate written notice to the Purchasing Agent if at anytime the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(3) Offeror shall be under a continuing duty to immediately inform the Purchasing Agent in writing of any changes, if as a result of such changes, the Offeror certification regarding debarment is affected.

DEBARMENT ORDINANCE

The following Section 2-322 of Fulton County Code of Laws establishes the procedure for the debarment of contractors.

(a) *Authority to suspend.*

After reasonable notice to the entity involved and reasonable opportunity for that entity to be heard, the Purchasing Agent, after consultation with user department, the County Manager and the County Attorney shall have the authority to suspend an entity for cause from consideration for award of county contracts. As used in this section, the term entity means any business entity, individual, firm, contractor, subcontractor or business corporation, partnership, limited liability corporation, firm, contractor, subcontractor or business structured; provided, further, that any such entity shall also be subject to suspension under this section if any of its constituents, members, subcontractors at any tier of such entity's and the entity, or any constituent or member, knew or should have known of the commission of the act. The suspension shall be for a period not to exceed three (3) years unless cause is based on a felony conviction for an offense related or associated with fraudulent contracting or misappropriation of funds wherein the suspension shall not exceed seven (7) years.

(b) *Causes for Suspension.* The causes for suspension include:

(1) Conviction for commission of a criminal offense as an incident to obtain or attempting to obtain a public or private contract or subcontract, or in performance of such contract or subcontract;

(2) Conviction of state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property or other offense indicating a lack of business integrity or business honesty which currently, seriously and directly affects responsibility as a county contractor.

(3) Conviction of state or federal anti-trust statues arising out of the solicitation and submission of bids and proposals;

(4) Violation of contract provisions, as set forth below, of a character which is regarded by the Purchasing Agent to be so serious as to justify suspension action:

a. Failure to perform in accordance with the specifications within a time limit provided in a county contract;

b. A recent record of failure to perform or unsatisfactory performance in accordance with the terms of one or more contracts; provided, that failure to perform or unsatisfactory performance caused by acts beyond the control of the contractor shall not be considered to be a basis for suspension;

c. Material representation of the composition of the ownership or workforce or business entity certified to the county as a minority business enterprise; or

d. Falsification of any documents.

(4) For violation of the ethical standards set forth in Fulton County Code Chapter 9, Code of Ethics.

(5) Knowing misrepresentation to the county, of the use which a majority owned contractor intends to make a minority business enterprise (a business entity at least 51 percent of which is owned and controlled by minority persons, as defined in Fulton County Code Chapter 6, Article B, Minority Business Enterprise Affirmative Action Program and certified as such by the county), as a sub-contractor or a joint venture partner, in performing work under contract with the county.

Failure to fully and truthfully provide the information required, may result in the disqualification of your bid/proposal from consideration or termination of the Contract, once awarded. This document must be completed and included as a part of the bid/proposal package along with other required documents.

[SIGNATURES ON NEXT PAGE]

Under penalty of perjury, I declare that I have examined this certification and all attachments hereto, if applicable, to the best of my knowledge and belief, and all statements contained hereto are true, correct, and complete.

On this _____ day of _____, 2005

_____
(Legal Name of Offeror) (Date)

_____
(Signature of Authorized Representative) (Date)

_____
(Title)

FORM 6.0

BID BOND

BIG CREEK INFLOW AND INFILTRATION PHASE I
FULTON COUNTY GOVERNMENT

KNOW ALL MEN BY THESE PRESENTS, THAT WE_____
_____
hereinafter called the PRINCIPAL, and _____
_____
hereinafter called the SURETY, a corporation chartered and existing under the laws of the State of _____, and duly authorized to transact Surety business in the State of Georgia, are held and firmly bound unto the Fulton County Government, in the penal sum of _____ Dollars and Cents ($_____) good and lawful money of the United States of America, to be paid upon demand of the Fulton County Government, to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators and assigns, jointly and severally and firmly by these presents.

WHEREAS the PRINCIPAL has submitted to the Fulton County Government, for BIG CREEK INFLOW AND INFILTRATION PHASE I - PROJECT # S220 a Bid;

WHEREAS the PRINCIPAL desires to file this Bond in accordance with law;

NOW THEREFORE: The conditions of this obligation are such that if the Bid be accepted, the PRINCIPAL shall within ten (10) calendar days after receipt of written notification from the COUNTY of the award of the Contract execute a Contract in accordance with the Bid and upon the terms, conditions and prices set forth therein, in the form and manner required by the Fulton County Government, and execute sufficient and satisfactory Performance and Payment Bonds payable to the Fulton County Government, each in the amount of one hundred (100%) percent of the total contract price in form and with security satisfactory to said Fulton County Government, then this obligation to be void; otherwise, to be and remain in full force and virtue in law; and the SURETY shall upon failure of the PRINCIPAL to comply with any or all of the foregoing requirements within the time specified above immediately pay to the Fulton County Government, upon demand the amount hereof in good and lawful money of the United States of America, not as a penalty but as liquidated damages.

In the event suit is brought upon this Bond by the COUNTY and judgment is recovered, the SURETY shall pay all costs incurred by the COUNTY in such suit, including attorney's fees to be fixed by the Court.

Enclosed is a Bid Bond in the approved form, in the amount of
_____Dollars
($_____) being in the amount of five (5%) percent of the CONTRACT Sum. The money payable on this bond shall be paid to the Fulton County Government, for the failure of the Bidder to execute a CONTRACT within ten (10) days after receipt of the Contract form and at the same time furnish a Payment Bond and Performance Bond IN TESTIMONY THEREOF, the PRINCIPAL and SURETY have caused these presents to be duly signed and sealed this _____ day of 2005.

(SIGNATURES NEXT PAGE)

ATTEST:

_____
PRINCIPAL

_____ BY _____
(SEAL)

CERTIFICATE AS TO CORPORATE PRINCIPAL

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

_____
SECRETARY

(CORPORATE SEAL)

_____
SURETY

_____ BY_____
(SEAL)

FORM 7
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS _____ [name of CONTRACTOR] (hereinafter called the "Principal") and _____[name of SURETY] (hereinafter called the "Surety"), are held and firmly bound unto **FULTON COUNTY**, a political subdivision of the State of Georgia (hereinafter called the "Owner") and their successors and assigns, the penal sum of **(100% of Contract Amount)** Dollars ($_____), lawful money of the United States of America, for the payment of which the principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract (hereinafter called the "Contract"), with the Owner, dated _____ which is incorporated herein by reference in its entirety, for the **Fulton County BIG CREEK INFLOW AND INFILTRATION PHASE I** more particularly described in the Contract (herein called the "Project"); and

NOW, THEREFORE, the conditions of this obligation are as follows, that if the Principal shall fully and completely perform all the undertakings, covenants, terms, conditions, warranties, and guarantees contained in the Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, then this obligation shall be void; otherwise it shall remain in full force and effect.

Whenever the Principal shall be, and declared by the Owner to be, in default under the Contract, the Surety shall promptly remedy the default as follows:

1) Complete the Contract in accordance with its terms and conditions; or at the sole option of the Owner,

2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the Surety and the Owner of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as the work progresses (even though there should be a default or succession of defaults under the Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum set forth in the first paragraph hereof, as may be adjusted, and the Surety shall make available and pay to the Owner the funds required by this Paragraph prior to the payment of the Owner of the balance of the Contract price, or any portion thereof. The term "balance of the Contract price," as used in this paragraph, shall mean the total amount payable by the Owner to the Contractor under the Contract, and any amendments thereto, less the amount paid by the Owner to the Contractor; or, at the sole option of the Owner,

3) Allow Owner to complete the work and reimburse the Owner for all reasonable costs incurred in completing the Work.

In addition to performing as required in the above paragraphs, the Surety shall indemnify and hold harmless the Owner from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, including reasonable attorney's fees, litigation costs and expert witness fees, which the Owner may incur, sustain or suffer by reason of the failure or default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Contract, including any and all amendments and modifications thereto, or incurred by the Owner in making good any such failure of performance on the part of the Principal.

THE SURETY SHALL COMMENCE PERFORMANCE OF ITS OBLIGATIONS AND UNDERTAKINGS UNDER THIS BOND PROMPTLY AND WITHOUT DELAY, AFTER WRITTEN NOTICE FROM THE OWNER TO THE SURETY.

Form 8 - PAYMENT BOND
FULTON COUNTY GEORGIA

KNOW ALL MEN BY THESE PRESENTS that [insert name of contractor] (hereinafter called the "Principal") and [insert name of surety] (hereinafter called the "Surety"), are held and firmly bound unto **FULTON COUNTY**, a political subdivision of the State of Georgia (hereinafter called the "Owner"), its successors and assigns as obligee, in the penal sum of [100% of contract amount], lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated [insert date of contract], which is incorporated herein by reference in its entirety (hereinafter called the "Contract"), for construction-type services of a project known as [insert name of project], as more particularly described in the Contract (hereinafter called the "Project");

NOW, THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to all persons working on or supplying labor or materials under the Contract, and any amendments thereto, with regard to labor or materials furnished and used in the Project, and with regard to labor or materials furnished but not so used, then this obligation shall be void; but otherwise it shall remain in full force and effect.

1. A "Claimant' shall be defined herein as any subcontractor, person, party, partnership, corporation or the entity furnishing labor, services or materials used, or reasonably required for use, in the performance of the Contract, without regard to whether such labor, services or materials were sold, leased or rented, and without regard to whether such Claimant is or is not in privity of contract with the Principal or any subcontractor performing work on the Project, including, but not limited to, the following labor, services, or materials: water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. In the event a Claimant files a lien against the property of the Owner, and the Principal fails or refuses to satisfy or remove it promptly, the Surety shall satisfy or remove the lien promptly upon written notice from the Owner, either by bond or as otherwise provided in the Contract.

3. The Surety hereby waives notice of any and all modifications, omissions, additions, changes, alterations, extensions of time, changes in the payment terms, and any other amendments in or about the Contract and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, alterations, extensions of time, changes in payment terms, and amendments.

4. The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment or modifications to the Contract, so as to bind the Principal and Surety, jointly and severally, to the full payment of any Claimant under the Contract, as amended or modified, provided only that the Surety shall not be liable for more than the penal sum of the Bond, as specified in the first paragraph hereof.

5. This Bond is made for the use and benefit of all persons, firms, and corporations who or which may furnish any materials or perform any labor for or on account of the construction-type services to be performed or supplied under the Contract, and any amendments thereto, and they and each of them may sue hereon.

6. No action may be maintained on this Bond after one (1) year from the date the last services, labor, or materials were provided under the Contract by the Claimant prosecuting said action.

7. This Bond is intended to comply with O.C.G.A. Section 13-10-1, and shall be interpreted so as to comply with the minimum requirements thereof. However, in the event the express language of this Bond extends protection to the Owner beyond that contemplated by O.C.G.A. Section 13-10-1, or any other statutory law applicable to this Project, then the additional protection shall be enforced in favor of the Owner, whether or not such protection is found in the applicable statutes.

IN WITNESS WHEREOF, the Principal and Surety have hereunto affixed their corporate seals and caused this obligations to be signed by their duly authorized representatives this _____of _____,

_____(SEAL)
(Principal)

By:

Attest:

Secretary

_____(SEAL)
(Surety)

By: _____

Attest:

Secretary

(Address of Surety's Home Office)

(Resident Agent of Surety)

Form 9 - CONTRACTOR'S LICENSE CERTIFICATION

Contractor's Name: _____

Utility Contractor's Name: _____

Expiration Date of License: _____

(ATTACHED COPY 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.

Signed: _____

Date: _____

Form 10 - INDEMNIFICATION AND HOLD HARMLESS AGREEMENT

The successful contractor will agree to indemnify, save harmless and defend the County, its agents, servants, and employees from all lawsuits, claims, demands, liabilities, losses and expenses for or on account of any injury or loss in connection with the work performed under this contractor: Provided, however the contractor shall not be liable for any damages resulting from the sole negligent or intentional acts or omission of the County and its employees, agents or representatives.

THE RESPONDENT ACKNOWLEDGES HAVING READ, UNDERSTANDING, AND AGREES TO COMPLY WITH THE ABOVE STATEMENTS, AND IS AUTHORIZED TO SIGN CONTRACTS ON BEHALF OF THE RESPONDING COMPANY.

COMPANY:_____ SIGNATURE:_____

NAME:_____ TITLE:_____ DATE:_____

* COMPLIANCE PROCEDURES

In order to be compliant with the intent and provisions of the Non-Discrimination Ordinance providing for non-discrimination in purchasing and contracting in Fulton County, all **proposers must submit the following completed documents**.

< Promise of Non-Discrimination (Exhibit A)
< Employment Report (Exhibit B)
< Schedule of Intended Subcontractor Utilization (Exhibit C)
< Letter of Intent to Perform As A Subcontractor Or Provide Materials Or Services (Exhibit D)
< Declaration Regarding Subcontractor Practices (Exhibit E)
< Joint Venture Disclosure Affidavit (Exhibit F), if applicable.
< **Equal Business Opportunity (EBO) Plan**,

The following document **must** be completed as instructed if awarded the proposal:

< Prime Contractor's Subcontractor Utilization Report (Exhibit G)

EXHIBIT A – PROMISE OF NON-DISCRIMINATION

"Know all persons by these presents, that I/WE (_____),
Name

(_____, _____
Title Firm Name
Hereinafter "Company"), in consideration of the privilege to bid on or obtain contracts funded, in whole or in part, by Fulton County, hereby consent, covenant and agree as follows:

1) No person shall be excluded from participation in, denied the benefit of, or otherwise discriminated against on the basis of race, color, national origin or gender in connection with any bid submitted to Fulton County for the performance of any resulting there from,

2) That it is and shall be the policy of this Company to provide equal opportunity to all businesses seeking to contract or otherwise interested in contracting with this Company without regard to the race, color, gender or national origin of the ownership of this business,

3) That the promises of non-discrimination as made and set forth herein shall be continuing in nature and shall remain in full force and effect without interruption,

4) That the promise of non-discrimination as made and set forth herein shall be made a part of, and incorporated by reference into, any contract or portion thereof which this Company may hereafter obtain,

5) That the failure of this Company to satisfactorily discharge any of the promises of non-discrimination as made and set forth herein shall constitute a material breach of contract entitling the Board to declare the contract in default and to exercise any and all applicable rights and remedies, including but not limited to cancellation of the contract, termination of the contract, suspension and debarment from future contracting opportunities, and withholding and/or forfeiture of compensation due and owning on a contract; and

6) That the bidder shall provide such information as may be required by the Director of Contract Compliance pursuant to Section 4.4 of the Fulton County Non-Discrimination in Purchasing and Contracting Ordinance.

SIGNATURE:_____

ADDRESS:_____

_____

TELEPHONE NUMBER:_____

EXHIBIT B – EMPLOYMENT REPORT

The demographic employment make-up for the bidder **must** be identified and submitted with this bid. In addition, if subcontractors will be utilized by the bidder to complete this project, then the demographic employment make-up of the subcontractor(s) must be identified and submitted with this bid.

EMPLOYEES

CATEGORY	NATIVE INDIAN		AFRICAN AMERICAN		ASIAN AMERICAN		HISPANIC AMERICAN		CAUCASIAN AMERICAN		OTHER	
Male/Female	M	F	M	F	M	F	M	F	M	F	M	F
Mgmt/Official												
Professional (Arch., P.E., etc.)												
Supervisors												
Office/Sales Clerical												
Craftsmen												
Laborers												
Others (Specify)												
TOTALS												

FIRM'S NAME:_____

ADDRESS:_____

_____

TELEPHONE NUMBER:_____

This completed form is for (Check one) _____Bidder_____Subcontractor

Date Completed:_____

EXHIBIT C - SCHEDULE OF INTENDED SUBCONTRACTOR UTILIZATION

If the bidder intends to subcontract any portion of this scope of work/service(s), this form **must be** completed and **submitted with the bid.** All prime bidders **must** include Letter(s) of Intent (Exhibit D) in the bid document for all subcontractors who will be utilized under the scope of work/services.

PRIME BIDDER:_____

ITB/RFP NUMBER:_____

Project Name or Description of Work/Service(s)_____

_____

_____

1. My firm, as Prime Bidder on this scope of work/service(s) is_____is not___a minority or female owned and controlled business. (Please indicate below the portion of work, including, percentage of bid amount, that your firm will carry out directly):

   _____
   _____

2. If the Prime Bidder is a Joint Venture, please complete Exhibit F: Joint Venture Disclosure Affidavit.

3. Sub-Contractors (Including suppliers) to be utilized in the performance of t his scope of work/service(s), if awarded, are:

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

***Ethnic Groups: African American (AABE); Asian American (ABE); Hispanic American (HBE); Native American (NABE); White Female American (WFBE); **If yes, attach copy of recent certification letter.**

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

SUBCONTRACTOR NAME:_____
ADDRESS:_____
_____
PHONE:_____
CONTACT PERSON:_____
ETHNIC GROUP*:_____COUNTY CERTIFIED**_____
WORK TO BE PERFORMED:_____
_____
DOLLAR VALUE OF WORK: $_____ PERCENTAGE VALUE:_____%

***Ethnic Groups: African American (AABE); Asian American (ABE); Hispanic American (HBE); Native American (NABE); White Female American (WFBE); **If yes, attach copy of recent certification letter.**

Total Dollar Value of Small Business Enterprise Agreements: ($)

Total Percentage Value: (%)

CERTIFICATION: The undersigned certifies that he/she has read, understands, and agrees to be bound by the Bid provisions, including the accompanying Exhibits and other terms and conditions regarding sub-contractor utilization. The undersigned further certifies that he/she is legally authorized by the Bidder to make the statement and representation in this Exhibit and that said statements and representations are true and correct to the best of his/her knowledge and belief. The undersigned understands and agrees that if any of the statements and representations are made by the Bidder knowing them to be false, or if there is a failure of the intentions, objectives and commitments set forth herein without prior approval of the Owner, then in any such event the Contractor's acts or failure to act, as the case may be, shall constitute a material breach of the contract, entitling the Owner to terminate the Contract for default. The right to so terminate shall be in addition to, and in lieu of, any other rights and remedies the Owner may have for other defaults under the contract.

Signature/Title:_____

Firm or Corporate Name:_____

Address:_____

_____

Telephone: ( )_____

Fax Number: ( )_____

Email Address:_____

EXHIBIT D

LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR
OR
PROVIDE MATERIALS OR SERVICES

This form **must** be completed by **ALL** known subcontractor and submitted with the bid. The Prime Contractor **must** submit Letters of Intent for ALL known subcontractors at time of bid submission.

To:_____
(Name of Prime Contractor Firm)

From:_____
(Name of Subcontractor Firm)

ITB/RFP Number_____
Project Name_____

The undersigned is prepared to perform the following described work or provide materials or services in connection with the above project (specify in detail particular work items, materials, or services to be performed or provided):

Description of Work	Project Commence Date	Project Completion Date	Estimated Dollar Amount

_____ (Prime Bidder)

Signature_____

Title_____

Date_____

_____ (Subcontractor)

Signature_____

Title_____

Date_____

EXHIBIT E - DECLARATION REGARDING SUBCONTRACTING PRACTICES

If the bidder **does not intend to subcontract** any portion of the scope of work services(s), this form **must be** completed and submitted with the bid.

_____hereby declares that it is my/our intent to
(Bidder)

perform 100% of the work required for_____
(ITB/RFP Number)

_____
(Description of Work)

In making this declaration, the bidder states the following:

1. That the bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform **all elements** of the work on this project with his/her own current work forces;

2. If it should become necessary to subcontract some portion of the work at a later date, the bidder will comply with all requirements of the County's Non-Discrimination Ordinance in providing equal opportunities to all firms to subcontract the work. The determination to subcontract some portion of the work at a later date shall be made in good faith and the County reserves the right to require additional information to substantiate a bidder's decision to subcontract work following the award of the contract. Nothing contained in this provision shall be employed to circumvent the spirit and intent of the County's Non-Discrimination Ordinances;

3. The bidder will provide, upon request, information sufficient for the County to verify Item Number one.

AUTHORIZED COMPANY REPRESENTATIVE

Name:_____ Title:_____ Date:_____

Signature:_____

Firm:_____

Address:_____

Phone Number:_____

Fax Number:_____

Email Address:_____

EXHIBIT F - JOINT VENTURE DISCLOSURE AFFIDAVIT

RFP No._____

Project Name_____

This form must be completed and submitted with the bid if a joint venture approach is to be undertaken.

In order to evaluate the extent of small, minority and female business involvement being proposed by a Bidder, certain relevant information must be provided prior to contract award. The information requested below is to clearly identify and explain the extent of small business participation in the proposed joint venture. All items must be properly addressed before the business entity can be evaluated.

1. Firms:

   1) Name of Business:_____
      Street Address:_____
      Telephone No.:_____
      Nature of Business:_____

   2) Name of Business:_____
      Street Address:_____
      Telephone No.:_____
      Nature of Business:_____

   3) Name of Business:_____
      Street Address:_____
      Telephone No.:_____
      Nature of Business:_____

NAME OF JOINT VENTURE (If applicable):_____

ADDRESS:_____

_____

PRINCIPAL OFFICE:_____

OFFICE PHONE:_____

Note: Attach additional sheets as required

1. Describe the capital contributions by each joint venture entity and accounting thereof.

2. Describe the financial controls of the joint venture, e.g., will a separate cost center be established? Which venture entity will be responsible for keeping the books? How will the expense therefore be reimbursed? What is the authority of each joint venture to commit or obligate the order?

3. Describe any ownership, options for ownership, or loans between the joint ventures. Identify terms thereof.

4. Describe the estimate contract cash flow for each joint venture entity

5. To what extent and by whom will the on-site work be supervised?

6. To what extent and by whom will the administrative office be supervised?

7. Which joint venture entity will be responsible for material purchases including the estimated cost thereof? How will the purchase be financed?

8. Which joint venture entity will provide equipment? What is the estimated cost thereof? How will the equipment be financed?

9. Describe the experience and business qualifications of each joint venture entity.

10. Submit a copy of all joint venture agreements and evidence of authority to do business in the State of Georgia as well as locally, to include all necessary business licenses.

11. Percent of small business ownership by each joint venture in terms of profit and loss sharing:____
_____
_____
_____

12. The authority of each joint venture entity to commit or obligate the other:_____
_____

13. Number of personnel to be involved in project, their crafts and positions and whether they are employees of the small business enterprise, the majority firm or the joint venture:_____
_____
_____

14. Identification of control and participation in venture; list those individuals who are responsible for day-to-day management and policy decision-maker, including, but not limited to, those with prime responsibility for areas designated below; (use additional sheets if necessary)____

Name	Race	Sex	Financial Decisions	Supervision Field Operation
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

In connection with any work that these firms, as a joint venture, might be authorized to perform in connection with above captioned contract, we each do hereby authorize representatives of the Fulton County Department of Contract Compliance, Departments of Purchasing and Finance, under the direction of the County Manger's Office, to examine, from time to time, the books, records and files to the extent that such relate to this County project.

WE DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THE FOREGOING DOCUMENT ARE TRUE AND CORRECT, AND THAT WE ARE AUTHORIZED, ON BEHALF OF THE ABOVE FIRMS, TO MAKE THIS AFFIDAVIT AND GRANT THE ABOVE PRIVILEGE.

FOR_____
(Company)

Date:_____ **_____**
(Signature of Affiant)

_____
(Printed Name)

_____
(Company)

Date:_____ **_____**
(Signature of Affiant)

_____
(Printed Name)

State of_____:

County of_____:

On this _____ day of _____, 20_____, before me, appeared_____

_____, the undersigned officer, personally appeared

_____, known to me to be the person described in the foregoing Affidavit and acknowledge that he (she) executed the same in the capacity therein stated and for the purpose therein contained.

EXHIBIT – G PRIME CONTRACTOR/SUB-CONTRACTOR UTILIZATION REPORT

This report is required to be submitted by the tenth day of each month, with a copy of your payment invoice (schedule of values/payment application) to Contract Compliance. Failure to comply may result in the County commencing proceedings to impose sanctions on the successful bidder, in addition to purchasing any other available legal remedy. Sanctions may include the suspending of any payment or part thereof, termination or cancellation of the contract, and the denial to participate in any future contracts awarded by Fulton County.

REPORTING PERIOD		PROJECT NAME:	
FROM:		PROJECT NUMBER:	
TO:		PROJECT LOCATION:	

PRIME CONTRACTOR		Contract Award Date	Contract Award Amount	Change Order Amount	Contract Period	% Complete to Date
Name:						
Address:						
Telephone #:						

AMOUNT OF REQUISITION THIS PERIOD: $_____

TOTAL AMOUNT REQUISITION TO DATE: $_____

SUBCONTRACTOR UTILIZATION (add additional rows as necessary)

Name of Sub-contractor	Description of Work	Contract Amount	Amount Paid To Date	Amount Requisition This Period	Contract Period Starting Date	Ending Date
TOTALS						

Executed By:_____ _____

(Signature) (Printed Name)

EXHIBIT H – EQUAL BUSINESS OPPORTUNITY (EBO) PLAN

Non-Discrimination in Contracting & Procurement Policy Statement: It is the policy of Fulton County Government that discrimination against businesses by reason of race, color, gender or national origin of the ownership of any such business be prohibited.

Furthermore, it is the policy of the Board of Commissioners that Fulton County Government and all vendors and contractors doing business with Fulton County shall provide to all businesses, the opportunity to participate in contracting and procurement paid, in whole or in part, with monetary appropriations of the Board without regard to the race, color, gender or national origin of the ownership of any such business. Similarly, it is the policy of Fulton County Government that the contracting and procurement practices of Fulton County Government should not implicate Fulton County as either an active or passive participant in the discriminatory practices engaged in by private contractors or vendors who seek to obtain contracts with Fulton County. Refer to the enclosed attachment or section, "Non-Discrimination in Contracting and Procurement" for specific requirements.

Equal Business Opportunity Plan (EBO Plan): In addition to the proposal submission requirements, each vendor **must** submit an Equal Business Opportunity Plan (EBO Plan) with the proposal. The respondent **must** outline a plan of action to encourage and achieve diversity and equality in the available procurement and contracting opportunities with this solicitation. The Plan should be designed to enhance the utilization of racial, gender or ethnic groups.

The Plan **must** identify and include:

1. Potential opportunities within the scope of work of this solicitation that will be afforded to racial, gender or ethnic groups for participation in the solicitation.
2. Efforts that will be identified to encourage and solicit minority and female businesses for opportunities within this solicitation.

Fulton County encourages joint ventures, teaming, partnering and mentor-protégé relationships with minority and female businesses in an effort to achieve contracting and procurement diversity.

Prompt Payment: The prime contractor **must** certify in writing and **must** document on the Department of Contract Compliance's Exhibit G Form (Prime Contractor's/Subcontractor Utilization Report), that all subcontractors, sub-consultants and suppliers have been promptly paid for work and materials and previous progress payments received (less any retainage held by the prime contractor prior to receipt of any further progress payments). The prime contractor **must** complete Fulton County OCIP Project Payroll Report Exhibit C for **all** OCIP enrolled subcontractors and sub-consultants, whether they have performed any work or not during that time period or not. Exhibits C and G **must** be completed and submitted, for the prior month, **by the 10th of each following month**, whether application for payment is made or not. These forms **must** include information for **all** OCIP enrolled subcontractors and sub-consultants, whether they have done any work or are due any payment during the period covered by the form or not. The prime contractor shall also provide an update schedule, as described in Article 10, and monthly progress photos. In the event these forms, schedules and other materials have not been completed and provided for all time periods up to and including the period covered by an application for payment, the application for payment will be returned unprocessed to the prime contractor. The prime contractor shall pay all subcontractors, sub-consultants and suppliers funds due for said progress payments within forty-eight (48) hours of receipt of payment from Fulton County, and **must** in no event make such payments no later than fifteen (15) days following receipt of payment from Fulton County, as provided for by state law.

SECTION 3
DRAFT AGREEMENT

EXHIBIT K - DRAFT AGREEMENT
Index of Articles

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ARTICLE 2. **SEVERABILITY**
ARTICLE 3. **DESCRIPTION OF PROJECT**
ARTICLE 4. **SCOPE OF SERVICES**
ARTICLE 5. **DELIVERABLES**
ARTICLE 6. **SERVICES PROVIDED BY COUNTY**
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DRAFT AGREEMENT

This Agreement, made and entered into as of the _____ day of _____, 2005 by and between **FULTON COUNTY, GEORGIA** a political subdivision of the State of Georgia, hereinafter referred to as "COUNTY", and **[NAME OF CONTRACTOR]** to provide professional engineering and construction services to reduce inflow and infiltration in the sanitary sewer system of Fulton County in the State of Georgia, hereinafter referred to as "DESIGN/BUILDER" or "CONTRACTOR"**:**

WITNESSETH

WHEREAS, COUNTY through its Department of Public Works (hereinafter referred to as the DEPARTMENT") desires to retain a qualified and experienced DESIGN/BUILDER to perform certain services regarding **BIG CREEK INFLOW AND INFILTRATION PHASE I - PROJECT #S220** (hereinafter, referred to as the "Project").

WHEREAS, DESIGN/BUILDER has represented to COUNTY that it is experienced and has qualified and local staff available to commit to the PROJECT and COUNTY has relied upon such representations.

NOW THEREFORE, for and in consideration of the mutual covenants contained herein, and for other good and valuable consideration, COUNTY and DESIGN/BUILDER agree as follows:

ARTICLE 1. **CONTRACT DOCUMENTS:** COUNTY hereby engages DESIGN/BUILDER, and DESIGN/BUILDER hereby agrees to perform the services hereinafter set forth. This Agreement, together with the COUNTY'S request for proposal, acknowledgements, the Agreement, general conditions **[where applicable]**, special conditions **[where applicable**], specifications, addenda, exhibits, drawings **[where applicable]**, acceptable portions of DESIGN/BUILDER'S submitted proposal, and change orders shall all form essential parts of this Agreement. The foregoing documents constitute the entire Agreement of the parties pertaining to the Project hereof and is intended as a complete and exclusive statement of promises, representations, discussions and agreements oral or otherwise that have been made in connection therewith. No modifications or amendment to this Agreement shall be binding upon the parties unless the same is in writing, conform to Fulton County Policy and Procedure 800-6 governing change orders, is signed by the **COUNTY'S** and the DESIGN/BUILDER'S duly authorized representatives, and entered upon the meeting minutes of the Fulton County Board of Commissioners.

If any portion of the Contract Documents shall be in conflict with any other portion, the various documents comprising the Contract Documents shall govern in the following order of precedence: 1) the Agreement, 2) the RFP, 3) any Addenda, 4) change orders, 5) the exhibits, and 6) portions of DESIGN/BUILDER'S proposal that was accepted by the county and made a part of the Contract Documents.

ARTICLE 2. **SEVERABILITY:** If any provision of this Agreement is held to be unenforceable for any reason, the unenforceability thereof shall not affect the remainder of the Agreement, which shall remain in full force and effect, and enforceable in accordance with its terms.

ARTICLE 3. **DESCRIPTION OF PROJECT:** COUNTY and DESIGN/BUILDER agree the PROJECT is as described in Exhibit I, entitled, - "Scope of Services". All exhibits referenced in this Agreement are incorporated by reference and constitute an integral part of this Agreement as if they were contained herein.

ARTICLE 4. **SCOPE OF SERVICES:** Unless modified in writing by both parties in the manner specified in the Agreement, duties of DESIGN/BUILDER shall not be construed to exceed those services specifically set forth herein. DESIGN/BUILDER agrees to provide all services, products, and data and to perform all tasks described in Exhibit "I" entitled, - "Scope of Services". All work must be performed in accordance with

Section 4.0, "Fulton County General Conditions 0700," and the specifications listed in Section 4.0, contained herein.

ARTICLE 5. **DELIVERABLES:** DESIGN/BUILDER shall deliver to COUNTY all reports, specifications, schedules and drawings prepared under the terms of this AGREEMENT that are specified in Exhibit I entitled, - "Scope of Services." DESIGN/BUILDER shall provide to COUNTY all deliverables specified in Exhibit "J" should they not already be covered in Exhibit "I". Deliverables shall be furnished by specified or agreed upon due dates to COUNTY by DESIGN/BUILDER in a media of form that is acceptable and usable by COUNTY at no additional cost. The DESIGN/BUILDER will provide ten (10) copies of the prioritization report at each submittal occurrence.

ARTICLE 6. **SERVICES PROVIDED BY COUNTY:** DESIGN/BUILDER shall gather from COUNTY all available non-privileged data and information pertinent to the performance of the services for the Project. COUNTY shall have the final decision as to what data and information is pertinent.

COUNTY will hold public meetings and issue notices regarding the scope of this project.

COUNTY has appointed Parsons PM Team, Program and Construction Managers for this project, a COUNTY Authorized Representative with respect to work to be performed under this Agreement until COUNTY gives written notice of the appointment of a successor. The COUNTY'S Authorized Representative shall have complete authority to transmit instructions, receive information, and define COUNTY'S policies, consistent with COUNTY rules and regulations. DESIGN/BUILDER may rely upon written consents and approvals signed by COUNTY'S Authorized Representative that are consistent with COUNTY rules and regulations.

ARTICLE 7. **MODIFICATIONS/CHANGE ORDERS:** If during the course of performing the Project, COUNTY and DESIGN/BUILDER agree that it is necessary to make changes in the Project, such changes will be incorporated by written Change Order and/or supplemental agreements to this AGREEMENT. Any such Change Order and/or supplemental shall not become effective or binding unless approved by the Board of Commissioners and entered on the minutes. Such modifications shall conform to the requirements of Fulton County Policy 800-6, which is incorporated by reference herein.

ARTICLE 8. **SCHEDULE OF WORK**: DESIGN/BUILDER shall not proceed to furnish such services and COUNTY shall not become obligated to pay for same until a written authorization to proceed (Notice to Proceed) has been sent to DESIGN/BUILDER from COUNTY. The schedule of work shall begin upon the date of Notice to Proceed and continue for the total contract time of four hundred eighty **(480)** calendar days. Services, deliverables and construction shall be furnished in accordance with the time schedule as presented in Exhibit "J" entitled, - "Schedule". The DESIGN/BUILDER shall begin work under this Agreement no later than five (5) days after the effective date of notification to proceed.

ARTICLE 9**. CONTRACT TERMS:**
The term of this Agreement shall commence on the date of issuance of Notice to Proceed and continue for a period of **480** calendar days and is subject to and funded through Capital Improvements Funds. Not withstanding the foregoing, this Agreement shall continue until Fulton County has received and accepted all deliverables, but if the wok is not completed by the contract completion date, liquidated damages will fully apply.

The DESIGN/BUILDER shall begin the Work on the date specified in the Notice to Proceed. The DESIGN/BUILDER shall carry out the Work forward expeditiously with adequate forces and achieve the

milestones set forth in Exhibit "J" or this Contract shall be subject to termination by the County in addition to the imposition of damages set forth herein.

9.1 DAMAGES FOR LATE COMPLETION

All time limits stated in the Contract Documents are of the essence of the Contract. The DESIGN/BUILDER confirms that the Contract Time is a reasonable period for performing the Work. It is understood and agreed by the DESIGN/BUILDER that failure to meet the time limits shall result in damages to the County for which the DESIGN/BUILDER shall be liable, including, but not limited to the County's costs for extended professional services (program management, construction management, etc.) and other costs and expenses incurred by the County for failure by the DESIGN/BUILDER to meet the time limits.

9.2 The DESIGN/BUILDER and the DESIGN/BUILDER's surety shall be liable for and shall pay the County the sum of five hundred ($500.00) per calendar day as liquidated damages for each calendar day of delay beyond the Substantial Completion Date required by Exhibit "J", adjustment for any schedule extensions may be granted by the County by written authorization, until the Work is considered substantially complete. This sum represents the amount that is reasonably estimated to be incurred by the County for the causes cited in Subparagraph 9.1, as a direct result of the DESIGN/BUILDER's delay, should such delay occur. This amount is not negotiable and will be withheld from progress payments as accrued and projected after the Substantial Completion Date required by Exhibit "J", as adjusted for any schedule extensions that may be granted by the County by written authorization.

9.3 The sums which may be paid by the DESIGN/BUILDER for liquidated damages are strictly designed to cover the estimated losses to the County as a direct result of possible DESIGN/BUILDER delays on the project. The assessment of liquidated damages in no way limits the amount of damages which may be recoverable by the County for the completion of unfinished or defective work performed by the DESIGN/BUILDER.

9.4 DELAYS AND EXTENSIONS OF TIME

It is hereby understood and mutually agreed by and between the DESIGN/BUILDER and the County that the date of beginning and the time for completion of the Work, including any activities to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the Contract Time specified in this Contract shall commence on the date specified in the Notice to Proceed. The County and separate contractors are entitled to rely upon such dates which by its acceptance of this Contract, have been agreed upon by the DESIGN/BUILDER.

9.4.1 The DESIGN/BUILDER agrees that said Work shall be executed regularly, diligently and uninterruptedly at such rate of progress as shall insure full completion thereof within the time specified. It is expressly understood and agreed that the DESIGN/BUILDER has considered all contingencies and factors affecting his ability to perform all the Work within the time specified, including among others, delays caused by bad weather and other possible delays caused by the industrial conditions prevailing in this locality, and after consideration of these factors, he has made an allowance for such factors before agreeing to the completion date specified in the Contract Documents, and does, further, agree that all things considered, such completion date is a reasonable time for completion of all Work to be performed hereunder, without the need for any extension of time or any other reasons than those specified below.

9.4.2 Completion time shall not be extended for normal bad weather. The following bad weather days per month shall be anticipated and included in the contractual time period given for project completion. The DESIGN/BUILDER's request for additional time shall only be granted for days beyond those listed below for which work was actually significantly impeded or precluded by bad weather. The burden of proof and documentation for such request for additional time beyond the days shown below shall rest solely with the DESIGN/BUILDER. Documentation must clearly show the additional weather days are historically unique to the area. No change in Contract Sum will be granted by the County for adjustments to the Contract Time due to weather.

January	10 days
February	10 days
March	7 days
April	6 days
May	4 days
June	3 days

July	4 days
August	2 days
September	2 days
October	2 days
November	5 days
December	9 days

9.4.2.1 Requests for time extensions for delays due to severe weather shall normally not be processed until after the building is enclosed.

9.4.2.2 Only those days lost in excess of the cumulative allowable number of bad weather calendar days, according to the schedule above, will be considered.

9.4.2.3 Time extensions for time losses due to severe weather conditions will not be considered in fractions of less than one-half (1/2) day.

9.4.3 It is further agreed that time is of the essence of each and every portion of this Contract wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any of the Work, the new time limit fixed by such extension shall be of the essence of this Contract.

9.4.4 The County or the County's Authorized Representatives shall not be responsible or liable to the DESIGN/BUILDER for compensation, damages, expenses or any other costs as a result of, or due to any delays, impact and/or acceleration.

9.4.5 In no event shall delay damages be due resulting from the DESIGN/BUILDER's submittal of a schedule indicating early completion of the Work, regardless of whether such schedule is acknowledged or approved by the Construction Manager, which is then followed by the DESIGN/BUILDER's subsequent completion of the Work on a later date but still within the Contract Time, regardless of cause.

9.4.6 If the DESIGN/BUILDER is delayed at any time in the progress of the Work by any of the following causes, or by any other cause which the Construction Manager determines may cause the delay, then the Contract Time may be extended, without cost as a no cost change order, for such time as the Construction Manager may determine when the delay in completion of work is due:

9.4.6.1 to any preference, priority or allocation order duly issued by Government or the County.

9.4.6.2 to unforeseeable cause beyond the control and without the fault or negligence of the DESIGN/BUILDER, restricted to acts of God, or of the public enemy, acts of another

contractor in the performance of the Contract with the County, fire, floods, epidemics, quarantine restrictions, strikes or labor disputes, freight embargoes or other unusual delays in transportation, and unusually severe weather in excess of normal weather losses allowed in Subparagraph 9.4.3 above.

9.4.6.3 to review the DESIGN/BUILDER's design submissions by the County beyond the milestones provided in Exhibit "J".

9.4.6.4 to any delays of subcontractors or suppliers occasioned by any of the causes specified except that delays occasioned by the failure of the DESIGN/BUILDER, subcontractors, or suppliers to issue purchase orders with sufficient lead time to assure delivery by the date needed, and production line schedule delays of the product manufacturer, shall not be considered grounds for a time extension.

9.4.7 Provided further, that the DESIGN/BUILDER shall, **within ten (10) days** from the beginning of such delay notify the County through the Construction Manager as agent for the County, in writing, of the causes of the delay for each delay caused by reasons other than the weather, and provide whatever supporting or substantiating information required by the Construction Manager. The Construction Manager shall, where possible, ascertain the facts and extent of the delay or delays for time extension, other than those caused by weather, filed by the DESIGN/BUILDER and report his findings and recommendations to the County no less frequently than monthly. If the Construction Manager recommends a time extension, it shall be documented in a no cost change order. In cases where a time extension is filed, except those that are of a continuing nature and extend beyond the normal monthly reporting period stated herein, the Construction Manager shall ascertain the facts and render its recommendation **within thirty (30) days** of the receipt of the final data relating to the time extension.

ARTICLE 10. **COMPENSATION AND PAYMENT FOR DESIGN/BUILDER SERVICES:**
Compensation for work performed by DESIGN/BUILDER on PROJECT shall be on the basis of rates shown in Section 1.0 (Schedules A, B and C).

The DESIGN/BUILDER may submit to the COUNTY, an invoice, in a form acceptable to the COUNTY and accompanied by all support documentation requested by the Construction Manager, for payment and for services that were completed during the preceding phase. The COUNTY shall review for approval said invoices. The COUNTY shall have the right not to pay any invoice or part thereof if not properly supported, not accompanied by an updated project schedule, or if the costs requested or a part thereof, as determined by the COUNTY, are reasonably in excess of the actual stage of completion. Disputes concerning the payment of submitted invoices shall be resolved pursuant to the dispute process outlined in Article 13. The COUNTY shall pay each such invoice or portion thereof as approved, provided that the approval or payment of any such invoice shall not be considered to be evidence of the performance of the DESIGN/BUILDER to the point indicated by such invoice, or receipt of acceptance by the COUNTY of the services covered by such invoice. The COUNTY shall promptly pay any undisputed items contained in such invoices. As a minimum, each invoice shall include a narrative report describing the total work accomplished for each phase, an accurate updated schedule in both hard copy and approved electronic format, a description of the percentage of total work completed for each schedule line item through the date of the invoice, and an updated draw-down of the Task-Discipline Matrix submitted with the DESIGN/BUILDER'S cost proposal.

County will make payments to the DESIGN/BUILDER on the basis of a duly certified and approved estimate of the Work completed through the 25th day of each calendar month, as reviewed by the Construction Manager, provided the estimate was submitted in accordance with the following requirements:

10.1 The Applications for Payment shall be itemized as directed by the Project Manager. Applications for Payment are to serve as certification by the DESIGN/BUILDER as to the status of the Work. The Design/Builder will be compensated in accordance with the County approved Work Order. Work Orders must use the costs outlined in Schedule B of the Proposal as the basis for repair and construction costs where applicable. The Design/Builder will be compensated based upon Section 01025 – "Measurement and Payment". Engineering and Investigative work will be compensated based upon Schedule A of the Proposal as directed and approved by the Project Manager. Work Orders will be paid from the Sewer Repair Cost - Schedule B budget.

10.2 On or prior to the 20th day of each month, the DESIGN/BUILDER will prepare a preliminary, itemized Application for Payment for work completed and the value of any stored materials, projected through the 25th of the current month, as well as additional information required herein or as the County and Construction Manager may require to verify and approve the amount of payment applied for. The DESIGN/BUILDER may be requested and must comply to review the Application for Payment with the Construction Manager on the jobsite in order to verify work in place or the location of stored materials.

10.3 After the Construction Manager has advised the DESIGN/BUILDER of the acceptability of the Application for Payment, and on or before the 25th day of each month, the DESIGN/BUILDER shall submit to the Construction Manager an itemized, notarized Application for Payment. The DESIGN/BUILDER shall also submit, if requested, additional documentation, including, but not limited to, all sworn statements, waivers and releases of liens and claims, including those required of sub DESIGN/BUILDER(s) of any tier as may be requested by the Construction Manager, reflecting all retainage, previous Applications for Payment, payment for labor and material, payment for materials stored and other documentation and requirements related to Work performed as provided elsewhere in the Contract Documents or as required by the Construction Manager.

10.4 Late applications will not be accepted for any reason whatsoever. If the DESIGN/BUILDER is late with its pay application, it will not be processed until the next pay cycle.

10.5 The DESIGN/BUILDER shall submit the Application for Payment in four (4) paper hardcopies and one electronic copy on 3 ½ floppy disk or Compact Disk. Each copy shall display an original signature by a duly authorized agent of the DESIGN/BUILDER. The application shall be generated by the use of Microsoft Excel or other application packages acceptable to the Construction Manager. <u>All four copies shall be individually notarized.</u>

10.6 The Owner will withhold ten (10) percent of each payment until the DESIGN/BUILDER's contracted Work is fifty (50) percent complete. If the DESIGN/BUILDER's performance is satisfactory, and if the DESIGN/BUILDER is on schedule, then at the Construction Manager's discretion further retainage may cease to be withheld, effectively freezing the retainage at five (5) percent of the total contract amount until final completion of the Work. If at any later date, the Construction Manager determines that the DESIGN/BUILDER's progress is unsatisfactory in any manner, the Construction Manager may reinstate the entire ten (10) percent withholding on the sum of all of the payments made to that date. The Construction Manager shall be the sole determining party with regards to the reinstatement of the entire ten (10) percent retainage.

10.7 <u>At no time during the contract will the DESIGN/BUILDER be allowed to bill for an amount which is in excess of the amount of its contract, including all signed and executed change orders.</u>

10.8 As provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work, but delivered and suitably stored at the site, provided such materials are stored according to the provisions of the Contract Documents and the satisfaction of the Construction Manager. Sufficient documentation must be provided as determined by the Construction Manager before payments will be made.

10.9 The DESIGN/BUILDER shall include with his payment request an itemization of the quantity of such materials, and shall document with invoices, Bills of Sale or other documentation acceptable to the Construction Manager, the cost of said materials.

10.11 Payment for materials stored at a location off the project site will not be made under any circumstance.

10.12 If the DESIGN/BUILDER has made Application for Payment as detailed herein, the Construction Manager will confirm the amounts to be paid to the DESIGN/BUILDER, certify each copy by original signature, retain one signed copy for its project files, and transmit the remaining copies as Certification for Payment to the County.

10.13 The DESIGN/BUILDER may expect payment from the County within forty-five (45) days of the Certification by the Construction Manager of the DESIGN/BUILDER's submittal of an Application for Payment per Paragraph 1.0 of this Section. Any follow-up inquiries on the status of payments shall be through the Construction Manager. The DESIGN/BUILDER is not permitted to contact the County directly with any payment inquiries.

No approval of any application for progress payment, nor any progress payment, nor any partial or entire use of occupancy of the Work or the Project by the County, shall constitute an acceptance of any Work not in accordance with the Contract

The prime contractor **must** certify in writing and **must** document on the Department of Contract Compliance's Exhibit G Form (Prime Contractor's/Subcontractor Utilization Report), that all subcontractors, sub-consultants and suppliers have been promptly paid for work and materials and previous progress payments received (less any retainage held by the prime contractor prior to receipt of any further progress payments). The prime contractor **must** complete Fulton County OCIP Project Payroll Report Exhibit C for **all** OCIP enrolled subcontractors and sub-consultants, whether they have performed any work or not during that time period or not. Exhibits C and G **must** be completed and submitted, for the prior month, **by the 10th of each following month**, whether application for payment is made or not. These forms **must** include information for **all** OCIP enrolled subcontractors and sub-consultants, whether they have done any work or are due any payment during the period covered by the form or not. The prime contractor shall also provide an update schedule, as described in Article 10, and monthly progress photos. In the event these forms, schedules and other materials have not been completed and provided for all time periods up to and including the period covered by an application for payment, the application for payment will be returned unprocessed to the prime contractor. The prime contractor shall pay all subcontractors, sub-consultants and suppliers funds due for said progress payments within forty-eight (48) hours of receipt of payment from Fulton County, and **must** in no event make such payments no later than fifteen (15) days following receipt of payment from Fulton County, as provided for by state law.

DESIGN/BUILDER agrees that the compensation provided within shall be full and final settlement of all claims arising against COUNTY for work done, materials furnished, cost incurred or otherwise arising out of this AGREEMENT and shall release COUNTY from any and all further claims related to payment for services and materials furnished in connection with this AGREEMENT.

COUNTY and DESIGN/BUILDER agree that in the event any agreement provision pertaining to the time of payment, the rate of payment, and any rates of interest differs from any provision of the Prompt Pay Act, such provision of the Prompt Pay Act is hereby waived and said agreement provision shall control.

County shall not be responsible for any interest penalty for any late payment.

ARTICLE 11. **PERSONNEL AND EQUIPMENT:** DESIGN/BUILDER shall identify in writing a project manager who shall have sole authority to represent DESIGN/BUILDER on all manners pertaining to this contract.

DESIGN/BUILDER represents that it has secured or will secure, at its' own expense, all equipment and personnel necessary to complete this Agreement, none of whom shall be employees of or have any contractual relationship with COUNTY. All of the services required hereunder will be performed by DESIGN/BUILDER under his supervision and all personnel engaged in the work shall be fully qualified and shall be authorized or permitted under law to perform such services.

Key personnel, including subcontractors, engaged in performing services for DESIGN/BUILDER under this Agreement are indicated in Exhibit F entitled, - "Key Personnel Listing." Written notification shall be immediately provided to COUNTY upon change or severance of any listed key personnel or subcontractor performing services on this Project by DESIGN/BUILDER. No changes or substitutions shall be permitted in DESIGN/BUILDER'S key personnel or subcontractor as set forth herein without the prior written approval of the COUNTY. Requests for changes in key personnel or subcontractors will not be unreasonably withheld by COUNTY. Changing of key personnel or subcontractor during the course of this Project shall constitute a cause for termination under the terms outlined in Article 14. Termination of Agreement for Cause of this Agreement.

DESIGN/BUILDER shall employ those people, who are in responsible charge of supervision on the work performed on this Project, duly registered in the State of Georgia in the appropriate area.

DESIGN/BUILDER shall endorse all deliverables including reports, and contract plans. Such endorsements shall be made by a person duly registered for such services by the governing authority authorized by the State of Georgia, being in the full employ of DESIGN/BUILDER and responsible for the work prescribed by this Agreement.

ARTICLE 12. **SUSPENSION OF WORK:** COUNTY may order DESIGN/BUILDER in writing to suspend, delay or interrupt all or any part of the work for such period of time as he may determine appropriate for the convenience of COUNTY, or for delays caused by third parties not in any away affiliated with the DESIGN/BUILDER. The time for completion of the Project shall be extended by the number of days the work is suspended. COUNTY shall not be responsible for any claims, damages or cost stemming from any delay of the project.

ARTICLE 13. **DISPUTES:** Except as otherwise provided in this Agreement, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the COUNTY'S Authorized Representative. The representative shall reduce the decision to writing and mail or otherwise furnish a copy thereof to the DESIGN/BUILDER. The DESIGN/BUILDER shall have 30 days from date of receipt to appeal the decision to the County Manager or his designee by mailing or otherwise furnishing to the County Manager or designee, copy of the written appeal. The decision of the County Manager or his designee for the determination of such appeal shall be final and conclusive. This condition shall not be pleaded in any suit involving a question of fact arising under this Agreement, unless the same is

fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or is not supported by substantial evidence. In connection with any appeal proceeding under this clause, DESIGN/BUILDER shall be afforded an opportunity to be heard and to offer evidence in support of an appeal. Pending any final decision of a dispute hereunder, DESIGN/BUILDER shall proceed diligently with performance of the Agreement and in accordance with the Director of Public Works' decision.

ARTICLE 14. **TERMINATION OF AGREEMENT FOR CAUSE:** Either COUNTY or DESIGN/BUILDER may terminate work under this Agreement in the event the other party fails to perform in accordance with the provisions of the Agreement. Any party seeking to terminate this Agreement is required to give thirty (30) days prior written notice to the other party. Notice of termination shall be delivered by certified mail with receipt for delivery returned to the sender. **TIME IS OF THE ESSENCE** and if the DESIGN/BUILDER refuses or fails to perform the work, maintain the scheduled level of effort as proposed and described in Exhibit "J" entitled, - Schedule of Work, or any separable part thereof, with such diligence as will insure completion of the work within the specified time period, as more thoroughly described in Article 8 **(where Article 8 is a part of the Agreement)**, or any extension or tolling there of, or fails to complete said work within such time. Failure to maintain the scheduled level of effort as proposed or deviation from the aforesaid proposal without prior approval of COUNTY shall constitute cause for termination.

The COUNTY may, by written notice to DESIGN/BUILDER, terminate DESIGN/BUILDER'S right to proceed with the Project or such part of the Project as to which there has been delay. In such event, the COUNTY may take over the work and perform the same to completion, by contract or otherwise, and DESIGN/BUILDER shall be required to provide all copies of finished or unfinished documents prepared by DESIGN/BUILDER under this Agreement to the COUNTY as stated in Exhibit "I" and Exhibit "J". DESIGN/BUILDER shall be entitled to receive compensation for any satisfactory work completed on such documents as reasonably determined by County. Whether or not the DESIGN/BUILDER'S right to proceed with the work has been terminated, the DESIGN/BUILDER shall be liable for any damage to the COUNTY resulting from the DESIGN/BUILDER'S refusal or failure to complete the work within the specified time period, and said damages shall include, but not be limited to, any additional costs associated with the COUNTY obtaining the services of another DESIGN/BUILDER to complete the design of the project.

ARTICLE 15. **TERMINATION FOR CONVENIENCE OF COUNTY:** Notwithstanding any other provisions, COUNTY may terminate this Agreement for its convenience at any time by a written notice to DESIGN/BUILDER. If the Agreement is terminated for convenience by COUNTY as provided in this article, DESIGN/BUILDER will be paid compensation for those services actually performed. Partially completed tasks will be compensated for based on a signed statement of completion to be submitted by DESIGN/BUILDER which shall itemize each task element and briefly state what work has been completed and what work remains to be done.

ARTICLE 16. **WAIVER OF BREACH:** The waiver by either party of a breach or violation of any provision of this Agreement, shall not operate or be construed to be, a waiver of any subsequent breach or violation of the same or other provision thereof.

ARTICLE 17. **INDEPENDENT CONTRACTOR:** DESIGN/BUILDER shall perform the services under this Agreement as an independent contractor and nothing contained herein shall be constructed to be inconsistent with relationship or status. Nothing in this Agreement shall be interpreted or construed to constitute DESIGN/BUILDER or any of its agents or employees to be the agent, employee or representative of COUNTY.

ARTICLE 18. **RESPONSIBILITY OF DESIGN/BUILDER:** DESIGN/BUILDER is employed to render a

professional service only and any payments made to DESIGN/BUILDER are compensation solely for such services rendered and recommendations made in carrying out the work. DESIGN/BUILDER shall follow the practice of the engineering and construction profession to make findings, opinions, factual presentations, professional advice and recommendations. Errors due to DESIGN/BUILDER'S failure to comply with standard engineering procedures and standard construction practices shall be corrected in a time frame agreed to by COUNTY and at DESIGN/BUILDER'S expense.

ARTICLE 19. **COOPERATION WITH OTHER CONSULTANTS:** DESIGN/BUILDER will undertake the Project in cooperation with and in coordination with other studies, projects or related work performed for, with or by COUNTY'S employees, appointed committee(s) or other CONSULTANTS. DESIGN/BUILDER shall fully cooperate with such other related CONSULTANTS and COUNTY employees or appointed committees. DESIGN/BUILDER shall provide within his schedule of work, time and effort to coordinate with other CONSULTANTS under contract with COUNTY. DESIGN/BUILDER shall not commit or permit any act, which will interfere with the performance of work by any other CONSULTANT or by COUNTY employees. DESIGN/BUILDER shall not be liable or responsible for the delays of third parties not under its control nor affiliated with the DESIGN/BUILDER in any manner.

ARTICLE 20. **ACCURACY OF WORK:** DESIGN/BUILDER shall be responsible for the accuracy of his work and shall promptly correct its errors and omissions without additional compensation. Acceptance of the work by the COUNTY will not relieve DESIGN/BUILDER of the responsibility of subsequent corrections of any errors and the clarification of any ambiguities. DESIGN/BUILDER shall prepare any plans, report, fieldwork, or data required by COUNTY to correct its errors or omissions. The above consultation, clarification or correction shall be made without added compensation to DESIGN/BUILDER. DESIGN/BUILDER shall give immediate attention to these changes so there will be a minimum of delay to others.

ARTICLE 21. **REVIEW OF WORK:** Authorized representatives of COUNTY may at all reasonable times review and inspect Project activities and data collected under this Agreement and amendments thereto. All schedules, reports, drawings, studies, specifications, estimates, maps and computations prepared by or for DESIGN/BUILDER, whether in hard copy or electronically, shall be available to authorized representatives of COUNTY for inspection and review at all reasonable times in the main office of COUNTY. Acceptance shall not relieve DESIGN/BUILDER of its professional obligation to correct, at its expense, any of its errors in work. COUNTY may request at any time and DESIGN/BUILDER shall produce progress prints or copies of any work as performed under this Agreement. Refusal by DESIGN/BUILDER to submit progress reports and/or plans shall be cause for COUNTY, without any liability thereof, to withhold payment to DESIGN/BUILDER until DESIGN/BUILDER complies with COUNTY'S request in this regard. COUNTY'S review recommendations shall be incorporated into the plans by DESIGN/BUILDER.

ARTICLE 22. **INDEMNIFICATION:** The DESIGN/BUILDER shall indemnify, defend and hold harmless the COUNTY, its officers, agents, employees and successors and assigns and Parsons Pm Team from and against any and all liability, loss, damages, claims, suits, liens, and judgments including attorneys fees, of whatever nature, including claims for contributions and/or indemnification, for injuries to or death or any person or persons, or damage to property or other rights of any person or persons caused by (1) any failure by the DESIGN/BUILDER to perform its obligations under this Agreement; (2) the negligent, intentional or willful misconduct of the DESIGN/BUILDER or any of its officers, directors, employees, representatives, agents or Subcontractors in connection with this Agreement; (3) DESIGN/BUILDER'S fault; or (4) the performance of the DESIGN/BUILDER'S obligations under this Agreement. The DESIGN/BUILDER shall also indemnify the COUNTY to the extent provided elsewhere in this Agreement. DESIGN/BUILDER shall not indemnify or hold harmless the COUNTY for the sole acts or omissions of employees or officers of the

COUNTY. DESIGN/BUILDER'S obligation to protect, defend, indemnify, and hold harmless, as set forth hereinabove, shall also include but not limited to any matter arising out of any actual or alleged infringement of any patent, trademark, copyright, or service mark, or any actual or alleged unfair competition disparagement of produce or service, or other business tort of any type whatsoever, or any actual or alleged violation of trade regulations.

DESIGN/BUILDER further agrees to protect, defend, indemnify and hold harmless COUNTY, its officers, agents and employees and Parsons PM Team from and against any and all claims or liability for compensation under the Worker's Compensation Act arising out of injuries sustained by any employees of DESIGN/BUILDER. These DESIGN/BUILDER'S indemnities shall not be limited by reason of the listing of any insurance coverage.

These indemnity provisions are for the protection of the COUNTY indemnities only and shall not establish, of themselves, any liability to third parties. The provisions of this ARTICLE shall survive termination of this Agreement.

ARTICLE 23. **CONFIDENTIALITY:** DESIGN/BUILDER agrees that its conclusions and any reports are for the confidential information of COUNTY and that it will not disclose its conclusions in whole or in part to any persons whatsoever, other than to submit its written documentation to COUNTY, and will only discuss the same with it or its authorized representatives, except as required under this Agreement to provide information to the public. Upon completion of this Agreement term, all documents, reports, maps, data and studies prepared by DESIGN/BUILDER pursuant thereto and any equipment paid for by COUNTY as a result of this Agreement, shall become the property of COUNTY and be delivered to the Director of the DEPARTMENT.

Articles, papers, bulletins, reports, or other materials reporting the plans, progress, analyses, or results and findings of the work conducted under this Agreement shall not be presented publicly or published without prior approval in writing of COUNTY.

It is further agreed that if any information concerning the Project, its conduct results, or data gathered or processed should be released by DESIGN/BUILDER without prior approval from COUNTY, the release of the same shall constitute grounds for termination of this Agreement without indemnity to DESIGN/BUILDER, but should any such information be released by COUNTY or by DESIGN/BUILDER with such prior written approval, the same shall be regarded as Public information and no longer subject to the restrictions of this Agreement.

ARTICLE 24. **OWNERSHIP OF INTELLECTUAL PROPERTY AND INFORMATION:** DESIGN/BUILDER agrees that Fulton County is the sole owner of all information, data, and materials (hereafter "Information") that are developed or prepared subject to this Agreement. DESIGN/BUILDER or any Subcontractor is not allowed to use or sell such Information subject to this AGREEMENT for educational, publication, profit, research or any other purpose without the written and authorized consent of the Director of the Department of Public Works. All electronic files used in connection to this Agreement, which are by definition, any custom software developed by DESIGN/BUILDER, or commercially available software procured by DESIGN/BUILDER, pursuant to this Agreement, (collectively, the "Software"), shall be turned over to the COUNTY for its use after termination hereof and DESIGN/BUILDER shall have no interest of any kind in such electronic files. Any required licenses and fees for the Software or other required materials shall be purchased and/or paid for by DESIGN/BUILDER and registered in the name of the Director of the Department of Public Works, if possible. The Software as defined hereunder, specifically excludes all software, documentation, information, and materials in which DESIGN/BUILDER has pre-existing

proprietary rights and/or has otherwise been licensed to DESIGN/BUILDER prior to this Agreement, and any upgrades, updates, modifications or enhancements thereto. DESIGN/BUILDER agrees to provide at no cost to COUNTY any upgrades to any Software used in connection with this Agreement which may be subsequently developed or upgraded for a period of three (3) years from the date of completion of the work under this Agreement, except in the case of commercial Software licensed to the COUNTY or Director of the Department of Public Works. Any Information developed for use in connection with this Agreement may be released as public domain information by the COUNTY at its sole discretion.

ARTICLE 25. **COVENANT AGAINST CONTINGENT FEES:** DESIGN/BUILDER warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon an Agreement or understanding for a commission, percentage, brokerage or contingent fee, excepting bona fide employees maintained by DESIGN/BUILDER for the purpose of securing business and that DESIGN/BUILDER has not received any non-COUNTY fee related to this Agreement without the prior written consent of COUNTY. For breach or violation of this warranty, COUNTY shall have the right to annul this Agreement without liability or at its discretion to deduct from the Contract Price or consideration the full amount of such commission, percentage, brokerage or contingent fee.

ARTICLE 26. **SAFETY AND INSURANCE REQUIREMENTS:** Safety guidelines, insurance requirements, and OCIP procedures is to meet the guidelines and occur in accordance with Exhibit L – "CONTRACTOR SAFETY AND HEALTH MANAGEMENT PROCESS", Exhibit M – "INSURANCE" , and Exhibit N - "SAFETY".

ARTICLE 27. **PROHIBITED INTEREST:**

Section 27.1 Conflict of Interest: DESIGN/BUILDER agrees that it presently has no interest and shall acquire no interest direct or indirect, which would conflict in any manner or degree with the performance of its service hereunder. DESIGN/BUILDER further agrees that, in the performance of the Agreement, no person having any such interest shall be employed.

Section 27.2 Interest of Public Officials: No member, officer or employee of COUNTY during his tenure shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

ARTICLE 28. **SUBCONTRACTING:** Except as identified in Exhibit - "Key Personnel Listing", DESIGN/BUILDER shall not subcontract any part of the work covered by this Agreement or permit subcontracted work to be further subcontracted without prior written approval of COUNTY.

ARTICLE 29. **ASSIGNABILITY:** DESIGN/BUILDER shall not assign or subcontract this Agreement or any portion thereof without the prior expressed written consent of COUNTY. Any attempted assignment (including factoring arrangements) or subcontracting by DESIGN/BUILDER without the prior expressed written consent of COUNTY shall at COUNTY'S sole option terminate this Agreement without any notice to DESIGN/BUILDER of such termination. DESIGN/BUILDER binds itself, its successors, assigns, and legal representatives of such other party in respect to all covenants, Agreements and obligations contained herein.

ARTICLE 30. **ANTI-KICKBACK CLAUSE:** Salaries of engineers, surveyors, draftsmen, clerical and technicians performing work under this Agreement shall be paid unconditionally and not less often than once a month without deduction or rebate on any account except only such payroll deductions as are mandatory by law. DESIGN/BUILDER hereby promises to comply with all applicable "Anti-Kickback" Laws, and shall insert appropriate provisions in all subcontracts covering work under this Agreement.

ARTICLE 31. **AUDITS AND INSPECTORS:** At any time during normal business hours and as often as COUNTY may deem necessary, DESIGN/BUILDER shall make available to COUNTY and/or representatives of the COUNTY for examination all of its records with respect to all matters covered by this Agreement.

It shall also permit COUNTY and/or representative of the COUNTY to audit, examine and make copies, excerpts or transcripts from such records of personnel, conditions of employment and other data relating to all matters covered by this Agreement. DESIGN/BUILDER'S records of personnel, conditions of employment, and financial statements (hereinafter "Information") constitute trade secrets and are considered confidential and proprietary by DESIGN/BUILDER. To the extent COUNTY audits or examines such Information related to this Agreement, COUNTY shall not disclose or otherwise make available to third parties any such Information without DESIGN/BUILDER'S prior written consent unless required to do so by a court order. Nothing in this Agreement shall be construed as granting COUNTY any right to make copies, excerpts or transcripts of such Information outside the area covered by this Agreement without the prior written consent of DESIGN/BUILDER. DESIGN/BUILDER shall maintain all books, documents, papers, accounting records and other evidence pertaining to costs incurred on the Project and used in support of its proposal and shall make such material available at all reasonable times during the period of the Agreement and for three years from the date of final payment under the Agreement, for inspection by COUNTY or any reviewing agencies and copies thereof shall be furnished upon request and at no additional cost to COUNTY. DESIGN/BUILDER agrees that the provisions of this Article shall be included in any Agreements it may make with any subcontractor, assignee or transferee.

ARTICLE 32. **ACCOUNTING SYSTEM:** DESIGN/BUILDER shall have an accounting system, which is established, and maintaining in accordance with generally accepted accounting principles. DESIGN/BUILDER must account for cost in a manner consistent with generally accepted accounting procedures, as approved by Fulton County.

ARTICLE 33. **VERBAL AGREEMENT:** No verbal agreement or conversation with any officer, agent or employee of COUNTY either before, during or after the execution of this Agreement shall affect or modify any of the terms of obligations herein contained, nor shall such verbal agreement or conversation entitle DESIGN/BUILDER to any additional payment whatsoever under the terms of this Agreement. All changes to this shall be in writing and the form of a change order approved by the COUNTY, and entered on the Minutes of the Board of Commissioners.

ARTICLE 34. **NOTICES:** All notices shall be in writing and delivered in person or transmitted by certified mail, postage prepaid.

Notice to the COUNTY, shall be addressed as follows:

T.K. Equels, Assistant Director
141 Pryor Street, S.W., Suite 6001
Atlanta, Georgia 30303

Notices to DESIGN/BUILDER shall be addressed as follows:

Contact Name
Name of DESIGN/BUILDER
Address of DESIGN/BUILDER
Phone Number of DESIGN/BUILDER

ARTICLE 35. **JURISDICTION:** This Agreement shall be administered and interpreted under the laws of the State of Georgia. Jurisdiction of litigation arising from this Agreement shall be in that state. If any part of this Agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void insofar as it is in conflict with said laws, but the remainder of this Agreement shall be in full force and effect.

Whenever reference is made in the Agreement to standards or codes in accordance with which work is to be performed, the edition or revision of the standards or codes current on the effective date of this Agreement shall apply, unless otherwise expressly stated.

ARTICLE 36. **EQUAL EMPLOYMENT OPPORTUNITY:** During the performance of this Agreement, DESIGN/BUILDER agrees as follows:

Section 36.1 DESIGN/BUILDER will not discriminate against any employee or applicant for employment because of race, creed, color, sex or national origin;

Section 36.2 DESIGN/BUILDER will, in all solicitations or advertisements for employees placed by, or on behalf of, DESIGN/BUILDER state that all qualified applicants, will receive consideration for employment without regard to race, creed, color, sex or national origin;

Section 36.3 DESIGN/BUILDER will cause the foregoing provisions to be inserted in all subcontracts for any work covered by the Agreement so that such provision will be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

ARTICLE 37. **FORCE MAJEURE:** Neither COUNTY nor DESIGN/BUILDER shall be deemed in violation of this AGREEMENT if either is prevented from performing its obligations hereunder for any reason beyond its control, including but not limited to acts of GOD, civil or military authority, act of public enemy, accidents, fires, explosions, earthquakes, floods or catastrophic failures of public transportation, provided however, that nothing herein shall relieve or be construed to relieve DESIGN/BUILDER from performing its obligations hereunder in the event of riots, rebellions or legal strikes.

ARTICLE 38**.** **OPEN RECORDS ACT:** The Georgia Open Records Act, O. C.G.A. Section 50-18-70 et seq., applies to this AGREEMENT. The DESIGN/BUILDER acknowledges that any documents or computerized data provided to the COUNTY by the DESIGN/BUILDER may be subject to release to the public. The DESIGN/BUILDER also acknowledges that documents and computerized data created or held by The DESIGN/BUILDER in relation to the Agreement may be subject to release to the public, to include documents turned over to the COUNTY. The DESIGN/BUILDER shall cooperate with and provide assistance to the COUNTY in rapidly responding to Open Records Act requests. The DESIGN/BUILDER shall notify the COUNTY of any Open Records Act requests no later than 24 hours following receipt of any such requests by the DESIGN/BUILDER. The DESIGN/BUILDER shall promptly comply with the instructions or requests of the COUNTY in relation to responding to Open Records Act requests.

ARTICLE 39**. DESIGN/BUILDER'S COMPLIANCE WITH ALL ASSURANCES AND/OR PROMISES MADE IN RESPONSE TO PROCUREMENT**: Should any proposer (bidder) submit a response to the County promising to provide a certain level of service for either the scope of work, MFBE participation, or any other matter, including where such promise or assurance is greater than what is required by the procurement documents, and should this response containing the promise or assurance be accepted by the County and made a part of the Contract Documents, then this degree or level of service promised by the proposer (bidder) relating to the scope of work, MFBE participation, or other matter shall be considered to be

a material part of the Agreement between the proposer (bidder) and the County, such that the proposer's (bidder's) failure to provide the agreed upon degree or level of service or participation shall be a material breach of the Agreement giving the County just cause to terminate the Agreement for cause, pursuant to Article 14 of the Agreement.

[SIGNATURES ON NEXT PAGE]

WITNESS WHEREOF, each of the parties hereto has caused **Agreement** to be executed and delivered on this, the _____ day of _____, 2005.

Attest: [DESIGN/BUILDER]

_____ By: _____

Title: _____

Seal (Affix)

Attest: FULTON COUNTY, GEORGIA

_____ By: _____

Mark Massey, Clerk to the Commission Karen C. Handel, Chairman,
Board of Commissioners

APPROVED AS TO FORM: APPROVED AS TO CONTENT:

By: _____ By:_____

Office of County Attorney T.K. Equels, Assistant Director
Department of Public Works

SAMPLE FINAL AFFIDAVIT

TO FULTON COUNTY, GEORGIA

I, _____, hereby certify that all suppliers of materials, equipment and service, subcontractors, mechanic, and laborers employed by _____ or any of his subcontractors in connection with the design and/or construction of _____ at Fulton County have been paid and satisfied in full as of _____, 20___, and that there are no outstanding obligations or claims of any kind for the payment of which Fulton County on the above-named Project might be liable, or subject to, in any lawful proceeding at law or in equity.

_____
Signature

_____
Title

Personally appeared before me this _____ day of _____20_____.
_____, who under Oath deposes and says that he is,
_____of the firm of _____, that he has read the above statement and that to the best of his knowledge and belief same is an exact true statement.

_____
Notary Public

Commission expires:

_____

My Commission expires:

_____

SECTION 4
CONTRACT EXHIBITS

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Drawing A	Fulton County Big Creek Sewer Basin

SECTION 4.0 CONTRACT EXHIBITS

EXHIBIT I – SCOPE OF SERVICES

This project consists of inspecting, evaluating and repairing the sewer systems in sub-basins BC11, BC12, BC18, BC53, BC54, BC58, BC59, BC61, BC62, BC71, and RSPS for the sole purpose of reducing inflow and infiltration. DESIGN/BUILDER, engineer, contractor, and design/builder are all used interchangeably within all of the Contract Exhibits and are defined as "Design/Builder."

Although, there is no pre-set goal or projected amount of flow removal for this project, the intent of this project is to identify, report, repair and eliminate the sewer system defects that contribute quantities of I&I into the system. There are many SSO locations within this area. However, the DESIGN/BUILDER will have the opportunity to interview Public Works staff for operation and maintenance answers. The project Focus Area is sub-basins BC11, BC12, BC18, BC53, BC54, BC58, BC59, BC61, BC62, BC71, and RSPS as shown in Drawing A.

The selected DESIGN/BUILDER will be responsible for the following tasks:

Task A Research of Records

The Design/Builder is responsible for reviewing reports, plans, as-built drawings, the Fulton County SSES Program, and maintenance activities to delineate the sewer system in the BIG CREEK I&I PHASE I, I&I Focus Area, sub-basins BC11, BC12, BC18, BC53, BC54, BC58, BC59, BC61, BC62, BC71, and RSPS. Fulton County has GIS records for sewer systems in the focus area; however, this information is not complete. The County's information is 85% complete and 15% of the system is new and is not documented in Drawing A (attached). The Design/Builder may interview County staff and the O&M contractors to further delineate the sewer systems.

Task B Field Investigation and Analysis

The Design/Builder will investigate and evaluate the sewer system within the Focus Area to meet the objectives of this project. The Design/Builder may use any or all, of the following techniques as necessary when performing the evaluations:

1. Flow Monitoring
2. Piezometer readings
3. Smoke Tests
4. Manhole Assessments
5. Dye Testing
6. Isolation Flow Tests
7. CCTV (to be paid out of Schedule B)

The Design/Builder <u>will</u> install a minimum of 5 piezometers as part of this Task B. Where investigative efforts are undertaken, the contractor shall notify the County of any residents and/or businesses that are illegally connected to the sewer. At its discretion, the County may approve or deny the Work Order to disconnect the resident or business from the sewer.

The Contractor will be required to provide and completely install **seven (7) ADS** Model 4000 flow meters or approved equal, for the BIG CREEK I&I PHASE I Focus Area. The DESIGN/BUILDER must maintain each meter to ensure its accuracy pursuant to manufacturer's specifications. The DESIGN/BUILDER must submit to the County monthly readings from each flow meter. The DESIGN/BUILDER will install a permanent phone line to each of the flow meters such that data can be collected via the Telephone system using remote access. Data collection, storage, and reporting must be capable of being conveniently imported, transferred or converted into the Excel and/or Access database formats. At a minimum, the output of the monitoring program shall be capable of generating/producing quantity in a manner consistent with calculating flow for the continuity flow for the continuity equation, which is as follows:

$$Q = A * V, \text{ or } \text{Flow Rate} = \text{Area} * \text{Average Velocity} \quad \text{(Respectively)}$$

Q= Flow Rate
A=Area
V=Average Velocity

All quantity figures shall be expressed in units of MGD (million gallons per day). The accuracy of flow readings must meet a standard of within plus or minus ten percent (10%). The flow monitors will be installed and calibrated by the DESIGN/BUILDER and at the end of the project become the property of Fulton County.

The County does not own any rain gauges in the BIG CREEK I&I PHASE I Sewer Basin. Rainfall should also be monitored by the DESIGN/BUILDER within this area.

Task C Work Order Development

Each sewer repair associated with Inflow and Infiltration effort will be detailed and authorized using a work order process. All Work Orders will include:

1. The identification of defects and its associated Inflow and Infiltration contribution as determined by the DESIGN/BUILDER.
2. The proposed type of repairs and the estimated duration of the repair.
3. Estimated repair cost and the cost per gpm of Inflow and Infiltration reduced.
4. A drawing identifying the defects and proposed repairs.
5. Photos and video on a CD identifying the sewer defects.
6. Updated Project Schedule listing each line item in the work order and appropriately resource loaded and cost loaded.

Upon identifying defects with obvious large contributors of Inflow and Infiltration, the DESIGN/BUILDER will immediately add said defect to the next work order to be submitted to the County for approval. Each work order will be signed and stamped by a Georgia State Licensed PE. The work orders will then be reviewed by the Construction Manager and then the County. Once approved, the Design/Builder will sign and accept the work order as their Notice to Proceed for each repair. If there is a circumstance where the work order quantities are under estimated, and the Construction Manager concurs, after the work order is fully approved, the Construction Manager may approve an increase of 10% of the work order value.

Easements obtained by the County will be attached to all work orders by the DESIGN/BUILDER. The DESIGN/BUILDER will receive all easements in the focus area at the pre-construction meeting.

The DESIGN/BUILDER shall create 30 work orders. Each work order should be worth approximately $100,000 unless specified otherwise by the Construction Manager.

Within one month after the completion of each work order the following three (3) actions must occur:

1. The DESIGN/BUILDER must accompany the Construction Manager to present all completed work to the Construction Manager for acceptance
2. The DESIGN/BUILDER must submit to the Construction Manager photos and/or video (as required by the specifications) of the completed work.
3. The DESIGN/BUILDER must sign the work order verifying the work to be complete.

Each work order will contain an Inspection & Test Plan for all repair activities on the work order. The Inspection & Test Plan will list any and all third party inspections and will allow the Construction Manager to identify, hold, and witness inspection points, if any. Construction activities shall not proceed until the inspection & test plan is accepted.

The DESIGN/BUILDER will provide an individual cost estimate to repair each defect. The DESIGN/BUILDER will use the unit costs provided on Schedule B where applicable. If the DESIGN/BUILDER proposes a repair not listed in Schedule B, the DESIGN/BUILDER will get three quotes from suppliers and manufacturer's (as appropriate). The DESIGN/BUILDER will be compensated based upon the approved cost estimate.

Task D Sewer Repairs

The work to be performed consists of furnishing all labor, material and equipment necessary for the sewer repairs solely to reduce I&I in the Focus Area. The DESIGN/BUILDER must have a full time superintendent to oversee all repair work. The superintendent will supervise and oversee, site preparation, construction, cleanup, and safety. The superintendent must be OSHA trained to supervise construction activities.

Each week for the duration of the project DESIGN/BUILDER must submit to the Construction Manager an Inspection Schedule that outlines the next week's inspection activities. Inspection activities include but are not limited to: all testing (i.e. concrete slump tests, vacuum testing, compaction testing, etc.), installation of rock or stone, clearing, manhole preconditioning, etc. The Inspection Schedule will be submitted via fax and email by 5:00pm on every Thursday for the next week's inspection activities. The Inspection Schedule will be in MS Excel or MS Project format.

The DESIGN/BUILDER will submit a Submittal Register at the Preconstruction Meeting. The Submittal Register will list all of the project's anticipated submittals and deliverables. The Submittal Register will include but is not limited to the following information: the contract specification that references the submittal, the submittal description, the anticipated date of the submittal, and any relevant comments. The DESIGN/BUILDER will maintain the Submittal Register and bring an updated version to each project meeting.

The DESIGN/BUILDER will have full access to a construction office within the project focus area. The office location will be determined after the Notice to Proceed is given. Schedule B funds may be utilized thru the work order process to compensate the DESIGN/BUILDER for the rental of a construction office and furnishings. The office will be equipped with DSL internet access, a phone line, a fax line, internal lighting, electricity, a water cooler, and a half size refrigerator.

Sewer Repairs are to be done in accordance with the corresponding specifications presented in Section 00900 through 02730. All Sewer work orders and repairs **MUST** be completed and accepted by the construction manager on or by the substantial completion date listed in Exhibit J (30 calendar days prior to the contract completion date).

Task E Prioritization Report

The Design/Builder will create and submit 10 copies of a Prioritization Report. The Prioritization Report must include the following sections:

1.1 Flow Analysis
This section will include a map that describes the location of every flow monitor and rain gauge in the focus area. This section will present the results and conclusions of the flow monitoring data, rain gauge data, smoke tests, flow isolation test, dye tests, and CCTV. This section should also discuss surface water and the 100-year flood plain and their relevance to reducing I&I in the sewers. Lastly, this section will include a set of maps that delineates the area where smoke tests, dye tests, CCTV, flow isolation tests, and any other investigation work occurred.

1.2 List of Defects
This section will present a list of all the sewer system defects and sources of I&I obtained from the field investigation effort. Each defect will be associated with an estimated I&I flow calculated by the DESIGN/BUILDER. Sewer defects and repairs will be prioritized by the estimated I&I flow with no consideration to structural or mechanical defects. This section will include a map presenting each defected.

1.3 Repairs
This section will recommend the type of repair for each defect. The DESIGN/BUILDER will choose from the pre-selected Schedule B items in this contract for the method for fixing the defects. Under unique circumstances and proper documentation, the DESIGN/BUILDER may recommend a repair type not listed in the contract; however, in this case the DESIGN/BUILDER will create the specifications and provide a detailed cost estimate. This section will include a map presenting each proposed repair.

Sewer Service Connections: All connections which are not according to Fulton County Standards or which convey either surface water or ground water into the sewer system shall be considered illegal and reported to the County. “Hammer taps” into sewer pipes are illegal. Open inside drops greater than 30” vertically are illegal. Manhole-pipe connections shall be made with a flexible water-tight connection to allow for settlement.

1.4 Work Order Sheets
Work orders must be generated in accordance with Task C “Work Order Development”. Each sewer repair effort will be authorized using a work order process. This section will include the work orders proposed to reduce I&I in the focus Area. Each work order should be worth approximately $100,000. The DESIGN/BUILDER will create most work orders as part of the prioritization report. Other work orders may be generated as sewer defects are identified. Each work order will be signed by a Georgia State Licensed PE. The work orders will then be reviewed by the Construction Manager, Project Manager and then the County. Once approved, the DESIGN/BUILDER will sign and accept the work order as their Notice to Proceed for each repair.

1.5 Field Photos and Daily Reports
Field notes, photos, daily reports and all other supporting documents for repairs must be submitted to the

Program Construction Manager on a weekly basis.

Task F Final Report and Documentation of Inflow and Infiltration Reduction

The Prioritization Report will be completely updated with all of the work orders approve and repairs made. Two sections will be added to the Preliminary Finding Report.

1. A section that documents the repairs made to the sewer system shall be added to the Preliminary Finding Report. This section shall include a map that displays the flow monitors, rain gauges, defects, repairs. The foregoing shall serve as the record documents. The Repairs should be documented in GIS format (shape file format). Hard copies and soft copies of the GIS maps will be delivered to the County. The shape file will store information about the repair such as: type of repair made, sewer or manhole ID, when the repair was made, and measurements of the repaired structure.

1. The DESIGN/BUILDER will perform flow monitoring for the duration of the project. At the substantial completion date, the DESIGN/BUILDER shall collect the final flow monitoring data and calculate the final result of Inflow and Infiltration reduction effort.

Task G Project Schedule

The DESIGN/BUILDER will create, maintain and submit a detailed project schedule that will outline all project tasks and major milestones e.g. research, analysis, construction. The project schedule will list each line item on all work orders. The project schedule will show a critical path and must resource and cost load each task. This project schedule will be submitted via an electronic copy and hard copy with each pay application or invoice. The electronic deliverable will be in MS Project 2000 format or later. The project schedule should also show a baseline schedule (initially approved schedule), progress bars and a clear critical path.

The DESIGN/BUILDER will submit the project schedule to the Construction Manager ten (10) calendar days after the Notice to Proceed. The Construction Manager must accept the project schedule before the DESIGN/BUILDER will be allowed to proceed. The DESIGN/BUILDER will load all of the items on Schedule A, Schedule B, and Schedule C in the resources of the project schedule and appropriately apply each to all tasks. The DESIGN/BUILDER will bring an updated copy of the project schedule to each biweekly project progress meeting. In the event that the project meeting is canceled, the DESIGN/BUILDER will email the schedule to the Construction Manager on the date of the meeting.

Task H Progress Meetings and Meeting Minutes

Project progress meetings will be held bi-weekly for the duration of the project. The DESIGN/BUILDER will be responsible for attending each meeting and recording and submitting the progress meeting minutes. Two (2) days after each bi-weekly progress meeting, the Design/Builder will submit a draft of the minutes for the Construction Manager's approval. Once approved, the Construction Manager will distribute the minutes. The DESIGN/BUILDER shall bring a revised updated schedule to each progress meeting. The schedule should show progress on each task.

The DESIGN/BUILDER will bring three paper copies and one electronic copy of the biweekly report to each meeting. The report will contain the following information:

The work performed during the last two weeks.
The work to be performed during the next three weeks.

The updated Submittal Register.
An updated Inspection Schedule (spreadsheet or MS project format).
An updated Project Schedule.

BIG CREEK I&I PHASE I REDUCTION WORK ORDER COVER FORM

WORK ORDER NO:_____ DATE:_____

ENGINEER:_____CONTRACTOR:_____

PROJECT NO:	
PHYSICAL LOCATION:	(SEE MAP ATTACHED)
PROPERTY OWNER:	(SEE ATTACHED EASEMENTS)
PARCEL ID:	(SEE ATTACHED SCHEDULE OF PARCEL IDs)

DESCRIPTION OF WORK

STRUCTURE & STRUCTURE ID:	(SEE ATTACHED LIST OF STRUCTURES AS IDENTIFIED BY STRUCTURE ID)
ESTIMATED TOTAL I&I (THIS WORK ORDER):	
TYPE OF REPAIR:	
TOTAL WORK ORDER COST:	
ESTIMATED COST/ESTIMATED TOTAL I&I)	
SPECIFICATIONS/NOTES:	

All work, materials and measurements is to be performed in accordance with the terms and conditions of the original contract and/or the standard specifications and attached special provisions. The payments and/or time specified and agreed to in this order include every claim by the Contractor for payment or schedule with respect to the work described herein.

RECOMMENDED BY:	SIGNATURE:	DATE:
ENGINEER, PE		
APPROVED BY:	SIGNATURE:	DATE:
CONSTRUCTION MGR.		
PROJECT MGR.		
FULTON CO. PUBLIC WORKS		
ACCEPTED BY:	SIGNATURE:	DATE:
CONTRACTOR		
WORK COMPLETED & ACCEPTED	CM SIGNATURE:	DATE:

EXHIBIT J – SCHEDULE

The following are the major milestones for the Design/Builder.

MILESTONE	SCHEDULE
Issue Notice to Proceed (NTP)	Issued within 90 business days after award of contract.
Submit Project Schedule	10 calendar days after notice to proceed (NTP) date.
Submittal Register	10 calendar days after notice to proceed (NTP) date.
Prioritization Report	120 calendar day after the notice to proceed (NTP) date.
*Substantial Completion	45 calendar days prior to project completion date.
Final Report and Documentation of Inflow and infiltration Reduction	30 calendar day prior to the project completion date.
Last Day to submit work orders	380 calendar days after notice to proceed (NTP) date.
Project Completion Date	480 calendar days after notice to proceed (NTP) date.
Progress Meetings	Bi-weekly
Updated Project Schedule Submittal	Bi-weekly deliverable
Bi-weekly Progress Reports	Bi-weekly deliverable
Inspection Schedule	Weekly deliverable
Project Close-out Meeting #1	30 calendar days prior to project completion date.
Project Close-Out Meeting #2	15 calendar days prior to project completion date.

Substantial completion is defined as: having all approved sewer repairs complete and accepted by the Construction Manager.

Work Orders, submittals, and deliverables will be reviewed and returned to the DESIGN/BUILDER within 9 calendar days of receipt save the Prioritization Report. The Prioritization Report will be reviewed and returned to the DESIGN/BUILDER within 15 calendar days of receipt.

(END OF EXHIBIT J)

EXHIBIT L

CONTRACTOR SAFETY & HEALTH MANAGEMENT PROCESS
SAFETY POLICY STATEMENT

It is the policy of Fulton County to establish a comprehensive accident and loss prevention process for all Capital Projects implemented by Fulton County or its agents.

The goals of this comprehensive accident and loss prevention process are as follows:

- To prevent personal injury, property damage, and injury to the public.
- To implement safety and loss prevention processes as critical elements in the complete design and build process.
- To establish a proactive safety and health process that complies with all laws, regulations, consensus standards, and good management practices.
- To have the Contractors partner with Fulton County in the implementation of a Safety and Loss Prevention Process and Owner Controlled Insurance Program to minimize loss potential and to minimize risk.

Fulton County requires safety, health and loss prevention requirements and expectations to be included in project design, in the invitation to bid, in bid award and project meetings, and in the post job evaluations. The Contractor is required to develop and submit a project safety and health program for acceptance by Fulton County prior to Notice to Proceed. The Contractor is required to implement these requirements, and develop a management system to ensure compliance following the safety and health process outlined in this document and the bid documents.

The Contractor and other entities placed under contract with Fulton County will be obligated to implement, adhere to and enforce this Policy. The safety and health of the Contractor's employees, Sub-Contractors, and the public are the sole responsibility of the Contractor. The County may use and direct designated Representatives to implement and enforce this policy. **Failure of the Contractor to comply with this policy or any Safety related obligations may be grounds for contract termination.**

Safety Professionals, Fulton County's designated Representative and Insurance Carrier will periodically inspect all Fulton County construction projects to identify safety hazards and make recommendations to resolve the issues. Contractor will be responsible for abating the identified issues in a timely manner, and submitting written description of corrective action within 48 hours to Fulton County designated Representatives. Failure to bring timely resolution to the issues may result in work stoppage at Contractor's expense.

Prior to commencing work under this contract, Contractor's Project Manager and Project Superintendent shall attend a Pre-Construction Meeting and Safety Pre-Planning meeting to address insurance and safety issues/requirements.

CONTRACTOR SAFETY & HEALTH MANAGEMENT PROCESS

1.0 NOT USED

2.0 REFERENCES

1.1 Occupational Safety and Health Regulations (OSHA) 29CFR1910 and 29CFR1926
1.2 Environmental Protection Agency Regulations (EPA) 40CFR
1.3 Fulton County Safety and Health and Requirements
1.4 Georgia Department of Transportation Regulations and Requirements
1.5 US Department of Transportation Requirements
1.6 Manual of Uniform Traffic Control Devices for Streets and Highways (ANSI D6.1)
1.7 Georgia Department of Natural Resources Environmental Protection Division Regulations

Safety rules and regulations will be followed using federal, state or local regulations in force. Should a Contractor's rule be in use which is more effective, the most stringent rule or regulation will be enforced by the Contractor, Sub-Contractor's and Fulton County designated Safety Representative(s).

3.0 RESPONSIBILITY

The Contractor receiving the bid has the ultimate responsibility for the safety and health of all Sub-Contractors, all employees on the project, and the general public and complying with all governmental regulations and requirements (OSHA, EPA, DOT, state, local). Nothing contained herein shall relieve the Contractor or any Sub-Contractor of such responsibility or liability.

4.0 PROCEDURE

4.1 The Contractor and each Sub-Contractor must implement a written safety and health prevention process and program following the guidelines contained in this document and in any other relevant portion of the Contract Documents. This program must be accepted by Fulton County or its Representatives prior to Notice to Proceed.

4.2 The Contractor and each Sub-Contractor must implement a drug and alcohol policy following the guidelines contained in this document and in the bid specific actions. This program must be accepted by Fulton County or its Representatives prior to Notice to Proceed.

4.3 The Contractor must designate a person responsible for site safety. Each Sub-Contractor must designate a person responsible for site safety.

4.4 Not Used.

4.5 Contractor is responsible for providing all necessary safety supplies and personal protective equipment required to protect its employees, Sub-Contractors, and the general public.

4.6 Contractor shall make available certified First-aid services, First-aid supplies, and provisions for medical care for all employees at the construction site prior to beginning work on site.

4.7 Contractor shall maintain a competent person at the construction site at all times with an OSHA 10-hour certification. Said person shall have the knowledge to recognize hazards or potential hazards and has the authority to correct such hazards.

4.8 The status of project safety shall be included in the Contractor's agenda, which is required in Progress Meetings.

5.0 DRUG AND ALCOHOL POLICY

The Contractor and each Sub-Contractor must implement a drug and alcohol policy in order to maintain a safe and efficient work environment. This policy must include the following elements.

1. Written policy that prohibits the use, transportation, sale and possession of these materials.
2. Disciplinary action plan for violations
3. Any treatment or reinstatement/reemployment options
4. Drug and alcohol testing schedule that includes pre-employment, periodic for safety sensitive or critical jobs, and for cause

Note: AGC, ABC and/or Fulton County programs may be used as guidance documents.

6.0 OTHER CONTROLLED ITEMS

The Contractor and each Sub-Contractor is required to include in the Project Safety Program a prohibition against the use, possession, concealment, transportation, promotion or sale of the following controlled items

1. Firearms, weapons, and ammunition.
2. Switchblades
3. Unauthorized explosives including fireworks
4. Stolen property or contraband
5. Controlled chemicals or chemicals recognized as being able to be used for improper purposes.

7.0 EMERGENCY PROCEDURES/GUIDELINES

A. The Contractor is required to establish site specific emergency procedures in the Project Safety Program to manage emergencies that may occur at any time in the following categories:

1. Fire
2. Employee injury
3. Pedestrian injury due to work activity of any kind
4. Property damage and damage to various utilities (i.e., electrical, gas, sewerage, water, telephone or public roadways)
5. Public demonstrations
6. Bomb threats
7. Flood, Wind, Lightening, Hail
8. Terrorists Threats
9. Work place violence

B. These Emergency procedures will be made part of the Contractor's Project Safety Program submittal and shall include but not be limited to the following elements:

1. A list of emergency phone numbers posted at the job site, along with information to be transmitted in such emergencies.
2. An incident command structure defining duties and responsibilities
3. A system to train supervisors and employees on this emergency plan
4. Procedures on how to handle emergencies including access to the site by emergency responders, accounting for workers, and securing the area.
5. Procedures for media releases. These releases must be coordinated through the Fulton County Information and Public Affairs Office in coordination with the County's designated Representative.
6. A plan that addresses serious incidents that includes notification to Fulton County, Fulton County's designated Representative, the OCIP Administrator, and the Insurance Carrier immediately after the incident.
7. A review and updating frequency that includes forwarding a copy to Fulton County and the County's designated Representative.

8.0 ACCIDENT AND INCIDENT INVESTIGATION AND REPORTING

8.1 The Contractor is responsible for reporting all accidents and incidents on the project site to the County's designated Representative within (1) business day. Accidents or incidents resulting in a fatality, property loss in excess of $5,000, or involvement with the general public must be reported immediately to Fulton County's designated Representative and the investigation of the accident or incident coordinated with Fulton County Safety staff and Insurance Carrier.

8.2 The Contractor will maintain a log of all injuries that occur on the job site. This log will be current and available for review.

8.3 For any incidents such as fires, explosions, fatalities, etc., the Contractor must notify Fulton County's designated Representative immediately and must coordinate any releases to the news media through the County's designated Representative and the County's Information and Public Affairs Office.

8.4 If a work-related injury should occur on this project, Contractor shall perform a thorough investigation of the incident and document the information on a worker's compensation 1st Report of Injury. This report shall be submitted to the Insurance Carrier within 24 hours of the incident.

8.5 A written accident investigation report containing the following information as a minimum must be forwarded to the Fulton County's designated Representative and OCIP Administrator within 24 hours of incident.

1. Company Name
2. Location
3. Date and Time of incident
4. Description of incident
5. Names of all parties involved and all witnesses
6. Corrective action(s) taken to prevent recurrence
7. If the incident involves injury or illness, the following information must be provided:
   a) A medical description of the injury or illness

b) OSHA recordability status i.e. first aid, medical treatment, lost time, days of restricted work.
c) If the public is involved, information about treatment and treatment location.

8. Any pictures, site drawings, etc. if they assist in describing the incident.

If the investigation cannot be completed in 24 hours, a preliminary report marked as such shall be forwarded and the report completed and forwarded as soon as possible.

9.0 JOB SAFETY ANALYSIS

9.1 The Contractor and each Sub-Contractor must implement a procedure to conduct a written job safety analysis or job hazard analysis for all project work tasks prior to beginning each task. Reference Appendix A.

9.2 The job safety analysis should follow National Safety Council, AGC, or other recognized guidelines and address all safety and health hazards for the work, identify personal protective and other safety equipment required, identify potential hazards to the general public if applicable, and identify any safety equipment, training, or controls that must be implemented prior to starting the work.

9.3 The Contractor must maintain a file for all job safety analysis forms, which is accessible for review.

10.0 SAFETY AND HEALTH COMPLIANCE AUDITING

10.1 SELF AUDITING REQUIREMENTS

10.1.1 The Contractor and each Sub-Contractor must implement a procedure to assure that written safety and health audits or inspections are conducted at least biweekly (every 2 weeks). Safety checklists used by Fulton County's designated Representative may be used. The Contractor may use this checklist or an equivalent approved by Fulton County's designated Representative.

10.1.2 Each written safety audit must be filed on the site and a copy forwarded to Fulton County designated Representative. This audit will be routed to Fulton County's Insurance Carrier for review and comment and then filed in the Construction Project files.

10.2 NOT USED

10.3 INSPECTIONS BY REGULATORY AGENCIES

10.3.1 The Contractor must notify the Fulton County designated Representative whenever an OSHA compliance officer, health inspector, or EPA or Georgia Environmental Protection Division Representative arrives at the project site to conduct an inspection.

10.3.2 The Contractor is required to forward a copy of all regulatory citations, notice of violations, or similar for this project to Fulton County's designated Representative. Copies must be forwarded to the Insurance Carrier.

10.3.3 These records will be reviewed with Fulton County designated Representative and included in the Construction Project files.

10.4 SAFETY INSPECTION AND AUDIT FOLLOW UP

10.4.1 Every safety audit or regulatory inspection conducted per the requirements above may be reviewed by the Fulton County designated Representative and/or Insurance Carrier loss control staff. This review may identify serious and repeat safety items, look at trends, identify risks and potential losses, and site safety and loss prevention activities.

10.4.2 After this review the findings may identify areas needing improvement.

10.4.3 A copy of the audit and any areas identified, as needing improvement will be forwarded to the Contractor's senior management.

10.4.4 For findings that indicate major loss potential or serious concerns about site safety, the areas identified as needing improvement and the overall performance may be reviewed in a meeting with the OCIP Administrator, Fulton County's designated Representative, and the Insurance Carrier loss control staff. A written action plan to address the Contractor's performance issues may be developed.

10.4.5 Fulton County or designated Representative may meet the Contractor's senior management to discuss the findings, contract requirements, and their plans to address the findings.

10.4.6 The number and frequency of safety audits and site visits may be increased until improvements are noted.

11.0 SAFETY MEETINGS

11.1 The Contractor will conduct weekly safety meetings with all Contractor and Sub-Contractor employees on the site.

11.2 The Contractor will keep safety-meeting records that include meeting topic(s), outline of items discussed, and attendance and sign in sheet. At this meeting any accidents or audit findings and corrective actions from the previous week will be discussed.

11.3 The Contractor will maintain a job site file that contains copies of the safety meeting records.

12.0 TRAINING, INSPECTION AND CERTIFICATION

12.1 Employee Training

12.1.1 The Contractor must be able to show when requested the required safety training for all Contractor and Sub-Contractor employees and competent persons working on the site including any required craft training.

12.1.2 The Contractor must be able to show when requested that all employees operating mobile equipment or cranes have met or exceeded training and licensing requirements.

12.1.3 The Contractor must be able to show when requested that all scaffolds are erected under the direction of a competent scaffold builder, that all users are properly trained, and that the scaffold is inspected daily.

12.1.4 The Contractor shall ensure that each employee is properly trained in the recognition and avoidance of unsafe conditions and the regulations applicable to his or her work environment to control or eliminate any hazards or other exposure to illness or injury.

12.1.5 If Contractor or Sub-Contractor employs anyone who cannot effectively communicate using the English language, a translator must be maintained on site who can relay instructions, questions, or concerns in a manner that the non-English and English-speaking employees will understand. The identification of this translator shall be provided to Fulton County's designated Representative.

12.1.6 Contractor shall orient all supervision and employees concerning safety requirements before working on the project site.

12.2 Equipment Certification and Inspection

12.2.1 The Contractor must be able to document that all cranes and mobile equipment used on the job site have current inspections and certifications.

12.2.2 The Contractor must assure that required daily and weekly equipment inspections are performed and documented in writing per governmental regulations and the requirements of this policy.

12.2.3 The Contractor must maintain a job site file for these required inspections and certifications.

12.2.4 Equipment identified as having safety problems or not meeting standards or codes shall be tagged as defective and shall not be used until those identified items have been corrected.

12.2.5 Contractor shall maintain, and have available for viewing, safety inspection reports for ladder, electrical cords, scaffolds, and trenches/excavations.

13.0 SAFETY AND HEALTH PROGRAM ELEMENTS

Note: Based on the project work activities and scope of work, some program elements may be not applicable to the project work and therefore do not have to be implemented. Elements marked with an asterisk are applicable to all Projects.

13.1 Return to Work Policy*

The Contractor and each Sub-Contractor will be required to establish a transitional work program for employees injured at work, which provides modified duty within the employee's physical limitations.

13.2 Fire Prevention Program*

The Contractor and each Sub-Contractor will be required to submit a temporary fire protection plan to be in effect for the duration of the contract. This plan must be submitted as part of the Contractor's Safety Program submittal. It must include provisions for fire

protection systems and equipment, as identified in OSHA Safety and Health for Construction 1926, Sub-Part F, Fire Protection and Prevention.

13.3 Hazard Communication (HAZCOM)*

The Contractor and each Sub-Contractor shall have a written HAZCOM Program. The program shall meet OSHA 1926 Requirements and provide for training so that all employees will be able to:

- Understand the program and identify hazardous chemicals with which they work.
- Understand product-warning labels.
- Have an MSDS for all potentially hazardous materials brought onto, used on, or stored at the job site.
- Know the physical location of the Material Safety Data Sheets (MSDS).

13.4 Personal Protective Equipment(PPE)*

All Contractor and Sub-Contractor employees and other site visitors will be required to wear the PPE necessary to accomplish the work in a safe manner. PPE required will vary from job to job and must be based on a written hazard assessment. A list of PPE that is required is identified below:

- Hard Hats shall be worn at all times on all projects
- Hearing Protection for operations that create noise in excess of 85 dBA is required.
- Contractor shall provide eye or face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.
- Work boots or work shoes made of leather shall be required. No open toed shoes or canvas shoes are allowed
- Shirts with sleeves at least 4 inches long are required. Tank tops and mesh shirt are not allowed.
- Full Body Safety Harnesses with shock absorbing lanyards for fall protection are required.
- Full body and chemical splash protection is required when handling hazardous chemicals.
- Respirators are required when employees maybe exposed to dust and/or chemicals in excess of the OSHA permissible exposure limits.
- Long pants are required.

13.5 Confined Space Entry

If the project work involves permit required confined spaces, a permit required confined space entry program that meets OSHA requirements must be established. This program must include but is not limited to the following elements.

- Confined Space Identification
- Environmental Testing
- Rescue
- Communication with employees in the confined space
- Employee Training
- Permit System for entry

13.6 Excavations

If the Contractor or Sub-Contractor must make a cut, cavity, trench or depression in an earth surface formed by earth removal, the work must comply with the OSHA Regulations on trenching and excavations. A competent person must be assigned for each excavation. Requirements include but are not limited to

- Employee Training
- Daily inspections
- Soil testing
- Protective or support systems.

13.7 Electrical Tools, Equipment, and Systems*

- The Contractor and each Sub-Contractor must implement Assured Grounding Program or use Ground Fault Circuit Interrupter (GFCI) devices on all electrical tools and extension cords.
- All electrical work must be performed in accordance with the National Electrical Code (NEC) and OSHA.
- All electrical tools and extension cords must be in good repair and the Contractor must establish a written inspection program for all electrical tools. The frequency of inspection shall be at least monthly.

13.8 Lockout/Tagout Procedure

The Contractor and each Sub-Contractor will be required to implement a written Lockout/Tag procedure that meets OSHA requirements if their work requires energy isolation. Program elements include but are not limited to the following:

- Energy isolation lists for each piece of equipment
- Employee training
- Individually keyed locks and danger tags
- Written Procedure that assigns responsibilities

13.9 Fall Protection*****

Contractor shall provide an approved fall protection system for all employees working at an elevation of 6 feet or higher on this project, including scaffolding work and steel erection. Employees will be responsible for utilizing the fall protection 100% of the time. Sub-Contractor will be responsible for ascertaining their employees' compliance with this requirement. The plan must address the following items:

- Only full body harnesses with shock absorbing lanyards and double locking hooks shall be use.
- Falls should be limited to less than 6 feet such than employee can neither fall more than 6 feet nor contact any lower level.
- Fall protection systems must be planned into the job and must be designed to handle loads and forces expected. The project goal is 100% fall protection.
- Employee training and enforcement of these requirements are mandatory to assure an effective program.

13.10 Scaffolding*

All scaffolds and work platforms shall be constructed to meet the requirements of OSHA 1926.451 and ANSI A10.8. Some program elements include but are not limited to

- User training for all employees who may use scaffolds
- Scaffolding is to be designed and erected by competent person(s) following manufacturer's guidelines. Employees must use fall protection when erecting scaffolding.
- Daily inspection by competent person. Must implement daily tag system to document inspection.
- Must have engineering approval for scaffolds above 100 feet in height.
- Must be able to document competent person credentials.
- Scaffolds must have proper egress (ladder/stairs) and should have guardrails, complete deck, toe boards and netting if anything can fall on people below. If guardrails or decking is not complete, fall protection must be used.

13.11 Cranes And Other Lifting Devices

- Trained and experienced operators shall operate Cranes in accordance with the applicable OSHA and ANSI/ASME.
- The Contractor is responsible for ensuring that the crane is properly sized for the job and that all required inspections and maintenance required by OSHA and ANSI/ASME standards have been conducted.
- All cranes should have anti-two block devices installed and operational. Cranes lifting employees in personnel baskets must have an anti-two block device to stops the crane if this condition occurs (positive acting).
- Tag lines are required to secure materials while being moved or handled by cranes.
- All cranes working in the vicinity of overhead power lines shall be grounded and be equipped with proximity guards.
- A lift plan must be submitted for all lifts that exceed 20,000 pounds or 75% of the cranes lift capacity. This plan must be reviewed and approved by the Contractor.
- Slings, hooks, and other lifting devices must be inspected on regular basis and stored properly.

13.12 Use Of Personnel Baskets

- Personnel baskets should only be used as the last practical means after documenting that all other means are unacceptable.
- The personnel basket must be manufactured, tested, and used in accordance with OSHA 1926.550. The crane lifting the basket must also meet OSHA requirements.

13.13 Personal Lifts With Articulating Booms (Jlg) And Scissors Lifts

- Operators must be trained in the safe operation of the lift including daily inspection procedures prior to use.
- Operators of JLG lifts must wear a full body harness with shock absorbing lanyard and be tied off while the lift is operation. Operators in a scissors lift must use fall protection

anytime the guardrail system removed or altered.

13.14 Ladders*

- Ladders are acceptable means of access when used in compliance with OSHA 1926.1053.
- Ladders must be in good repair, have safety feet and be inspected.
- Extension ladders must be either held by an employee on the ground or tied off at the top.
- Homemade ladders not meeting OSHA requirements should not be used.
- Non-conducting ladders are required for electrical work.
- Fall protection is encouraged for employees working on ladders especially if they will be leaning and turning in their work activities.

13.15 Tools And Equipment*

All tools and equipment used on the project must be in a safe operating condition, with all guards in place, and must meet or exceed all governmental regulations (OSHA, EPA, DOT, etc.). Tools and equipment must be maintained, inspected, tested, and used in accordance with OSHA regulations.

13.16 Compressed Gas Cylinders*

- Compressed gas cylinders must be used, stored, and transported in accordance with OSHA requirements, DOT requirements, and Compressed Gas Association standards.
- Fuel and oxygen cylinders must be store separately or separated by a ½ hour rated firewall.
- Compressed gas cylinders are not allowed inside confined spaces.

13.17 Welding, Burning, And Cutting*

- The Contractor's program must meet or exceed OSHA and NFPA requirements.
- All flammables must be removed from work area and a fire watch posted in area until 30 minutes after the job is completed.
- At a minimum a 10 LB ABC rated fire extinguisher must be available in the immediate work area.
- Regulators must be in good working order and must have anti-flash back and check valves.
- Welding shields and burning goggles must be used.

13.18 Sanitation And Housekeeping*

- The project site shall have an adequate number of portable toilets and hand washing facilities.
- The project site must establish a housekeeping plan that includes daily site clean up and trash and debris removal.

13.19 Hearing Conservation*

The Contractor and each Sub-Contractor who has employees exposed to noise levels exceeding 85 dBA must establish a hearing conservation program that meets or exceeds

OSHA requirements. Minimum program elements include audiometric testing, noise monitoring, use of hearing protectors, and employee training.

13.20 Respiratory Protection

The Contractor and each Sub-Contractor who has employees who wear respiratory protection must implement a respiratory protection program that meets or exceeds OSHA requirements. Minimum program elements include risk based respirator selection, medical surveillance, employee training, respirator fit testing, and written operating procedures.

14.0 SPECIALIZED SAFETY PROGRAM ELEMENTS

If required by the project scope of work and specific work site or activities, specialized programs listed below shall be included in the Contractor's Safety Program submittal. The Contractor is required to implement the required programs and assure that they meet or exceed all contractual, regulatory and Fulton County's requirements applicable. Details for specific program elements may be included in the contract documents.

14.1 Asbestos Removal
14.2 Lead Based Paint Removal
14.3 Exposure Assessment and Employee Monitoring (Industrial Hygiene)
14.4 Hazardous Waste Operations and Training
14.5 Overhead Power Lines
14.6 Locating underground utilities
14.7 Dust Control
14.8 Guarding for floor holes and roof openings
14.9 Heavy Equipment, Truck and Earth Moving Equipment requirements
14.10 Environmental Requirements

15.0 ROAD AND TRANSPORTATION SAFETY REQUIREMENTS

The Contractor shall implement the following into its safety program whether required by the contract or any other authority having jurisdiction if required to perform the work and maintain vehicular and pedestrian traffic safety:

15.1 Barricades and Cones
15.2 Traffic and Warning Signs
15.3 Traffic control devices
15.4 Equipment and materials storage
15.5 Reflective Clothing and other personal protective equipment
15.6 Excavation and road hole protection
15.7 Erosion protection
15.8 Trained flaggers

16.0 ADDITIONAL REQUIREMENTS TO PROTECT THE GENERAL PUBLIC

Based on the Contractor's scope of work and specific work activities or location the Contractor may be required to implement the following into its safety program to protect the general public:

16.1 Fencing and other measures for site security
16.2 Warning, direction and no trespassing signs
16.3 Alternate public walk ways
16.4 Protection of the public from over head and other construction hazards
16.5 Site Traffic Control
16.6 Barricading off hazardous areas and open pits and holes

Appendix A Job Safety Analysis Worksheet Example and Information

Job Safety Analysis/ Job Pre-Planning Worksheet

Job Name and #:		**Completed By:**	
Date:		**Phase/Operation:**	

Task	**Hazard**	**Control**

PRE-OPERATIONAL PLANNING

FACT FINDING GUIDE - GL

I. Evaluate present conditions at job site to determine items that could lead to liability claims during work and after completion of the project.

A. PRESENT OCCUPANCY OR USE OF THE SITE

- Demolition to be done?
- Structures will remain (condition)?

B. HISTORY OF THE SITE

- For what was the site used before?
- Underground tanks?
- Underground utilities?

C. GEOLOGY OF THE SITE

- Rock to be blasted?
- Water to be removed/diverted?
- Fill needed? (where and how obtained?)
- Excavation needed? (where and how disposed of?)

II. Evaluate controls needed in reference to site security and public protection.

A. FENCING NEEDED?

B. ACCESS/GATES

- Can traffic be routed past office or checkpoint?
- "Non-Vendor" visitors escorted?
- Gate lockable after hours?
- "Hard Hat" signs at entrance?
- Dirt removal/tarp placed at area at exit?
- Ready Mix chute wash area?

C. PEDESTRIANS

- Sidewalk maintained outside fence?
- Covered sidewalk needed?
- Special access requirements for neighboring occupants?
- Special after-hours considerations?

D. ENVIRONMENTAL

- Dust control?
- Silt control?
- Mud control on streets?
- Vibration control?

E. UTILITIES

- Underground utilities located?
- Overhead power lines in work area relocated, removed, or deenergized?
- Temporary power service away from high traffic areas?

F. SUB-CONTRACTORS

- Method to secure proof of adequate insurance coverage in place?
- List of hazardous materials obtained?
- List of hazardous materials provided?
- Responsibilities established
- Job site safety meetings
- Materials delivery
- Debris removal
- Access to site
- Weekly Sub-Contractors' meetings
- Schedule of safety inspections
- Emergency Procedures

G. MATERIALS HANDLING

- Crane selection criteria established
- Maximum weight to be handled
- Maximum lifting height
- Maximum horizontal reach needed
- Amount of travel needed
- Swing radius available
- Set-up area available
- Ground bearing capacity
- Approximate frequency of lifts
- Crane operations responsibilities established
- Triangle or leasing company crane to be used?
- Operator trained and experienced on specific machine?
- Operator can accurately read and interpret machine load chart?
- Critical lift identified (75% of net capacity)?
- Machine fully inspected by a qualified outside agency?
- Rigging hardware properly selected?
- Inspecting and maintaining the crane per owner/manufacturer specifications?

III. Start Up.

A. ELECTRICAL

- Temporary Power
- Underground service possible?
- Maintenance responsibilities established?
- Main circuit panel barricaded?
- Lighting planned?
- Circuit Protection

- Ground fault circuit interrupt protection?
- Assured grounding conductor program?
- Responsibilities established?

B. FIRE PROTECTION

- ABC extinguishers adequately distributed?
- Properly sized?
- Maintenance of fire extinguishers?
- Stand pipe/hydrant available? Adequate?
- Housekeeping checks/inspections?

C. FALL PROTECTION

- Critical Job Phases Identified?
- Critical exposures identified by phase? (e.g. "Worker falls into basement excavation")
- Scheduled start dates for critical phases?
- General Fall Protection Procedures
- Perimeters
- Floor openings
- Working deck
- Work area access
- Ladders
- Elevator hatchways

D. PERSONAL PROTECTIVE EQUIPMENT

- General
  - Hard hats
  - Work shoes
- Specific by Task

E. HAZARD COMMUNICATION PROGRAM ESTABLISHED AND EMPLOYEES TRAINED

F. CONFINED SPACE ENTRY

- Procedures established and task(s) identified requiring use of procedures?

G. TRENCHING

- Procedures established and task(s) requiring procedures identified?

H. PHASE PRE-PLANNING

- Job schedules established?
- Agreed upon target dates for meeting?
- Follow up system

END OF EXHIBIT L

EXHIBIT M

OWNER-CONTROLLED INSURANCE PROGRAM
ARTICLE 11

11.1.1 INTRODUCTION

Fulton County has implemented an Owner-Controlled Insurance Program ("OCIP") that covers this Project. Certain relevant provisions of the County's OCIP are outlined below. This OCIP does not affect Fulton County Government's statutory immunity. Under the OCIP, the County shall **furnish certain portions** of the Workers' Compensation, General Liability, and Builder's Risk insurance associated with the County's construction projects. Insurance furnished under the OCIP covers the County, the Contractor and its Sub-Contractors of all tiers (with some exceptions, as described below), and other persons or interests as the County may designate in connection with the performance of the Work. As detailed below, the **Contractor** still provides certain other portions of insurance coverage not included in the OCIP.

11.1.2 DEFINITIONS SPECIFIC TO THIS ARTICLE 11

11.1.2.1 "Owner-Controlled Insurance Program" (OCIP) means an insurance delivery method that assures the Contractor, and its Sub-Contractors of all tiers, and other persons or interests as the County may designate in connection with the performance of the work are insured for certain prescribed Statutory Workers' Compensation, Employers Liability and Commercial General Liability, and such other coverage's as the County may in writing specifically add or delete for the Project.

11.1.2.2 "OCIP Administrator" means the administrator retained by the County to implement and administer the OCIP. The OCIP Administrator is <u>Resurgens Risk Management/Willis</u>.

11.1.2.3 The term "enrolled" applies to the entities covered under the OCIP. The Contractor is enrolled in the OCIP. The Contractor's Sub-Contractors of all tiers shall be enrolled in the OCIP, provided in general that they are performing construction work at the Project site and that the work being performed is not temporary to the project and is an elemental component of the completed project. The Contractor shall assure that all enrolled Sub-Contractors of all tiers satisfy all safety program obligations, claim management and applicable insurance requirements relative to the OCIP. The Contractor understands that all Contractor obligations set forth in the County's OCIP, whether performed directly by the Contractor obligations set forth in the County's OCIP, whether performed directly by the Contractor or indirectly by its enrolled Sub-Contractors, are the responsibility of the Contractor. Whenever this Agreement establishes obligations for Contractor with respect to the OCIP, it shall also be deemed to establish obligations for enrolled Sub-Contractors. Certain exceptions apply to enrolled entities, as described below.

11.1.2.4 The term "non-enrolled" applies to the entities not covered under the OCIP. In general vendors, suppliers, fabricators, material dealers, drivers and others who merely transport, pick up, deliver or carry materials, personnel, parts or equipment or any other items or persons to or form the Project site shall be considered non-enrolled entities for the purpose of insurance coverage under the County's OCIP. This non-enrolled OCIP Contractor status also applies to those contractors whose only work is temporary to the site and are not involved in any project construction that is part of

the work on the finished project. The Contractor shall assure that all non-enrolled Sub-Contractors of all tiers satisfy all safety program obligations, claim management and applicable insurance requirements relative to the OCIP.

11.1.2.5 "Agent" means the Fulton County's designated Representative, as defined within this Agreement. For purposes of the OCIP, the County's designated Representative shall serve as the County's primary contact for communication with the Contractor related to the OCIP.

11.1.3 INSURANCE OBLIGATIONS OF THE COUNTY AND CONTRACTOR

11.1.3.1 INSURANCE PROVIDED BY THE COUNTY UNDER ITS OCIP.

(a)The County shall secure and thereafter maintain, except as otherwise provided herein, the insurance coverage's described in Subparagraphs 11.1.3.2, 11.1.3.3, and 11.1.3.4 below, covering as insured parties the County, the Contractor and its Sub-Contractors of all tiers (except as detailed below), and such other persons or interests as the County may designate in connection with the performance of the Work, and with limits not less than those specified for each coverage ("OCIP insurance coverage").

(b) No insurance coverage provided by the County's OCIP shall extend to the activities or products of the following:

(i) Any person and/or organization that fabricates and/or manufactures products, materials, and/or supplies away from the Project site(s).

(ii) Any non-enrolled architect, engineer or surveyor and their consultants except where required by the Contract Documents.

(iii) Truckers, material-delivery, vendors, suppliers, and operators (as independent contractors), whose operation(s) and/or employee(s) is/are engaged solely in the loading, hauling and/or unloading of material, supplies and/or equipment to or from the Project site(s).

(iv) Any employee(s) of the Contractor or an enrolled or non-enrolled Sub-Contractor of any tier, including employee(s) of truckers, material-delivery, vendors, suppliers, and operators (as independent contractors), which is/are engaged solely in the loading, hauling and/or unloading of material, supplies and/or equipment to or from the Project site(s).

(v) Any employee(s) of the Contractor or an enrolled Sub-Contractor of any tier that does not work and/or generate payroll at the Project site(s).

(vi) Any employee(s) of the Contractor or an enrolled Sub-Contractor of any tier, not specifically required to perform Work at the Project site(s), that occasionally visits the Project site(s) to make deliveries, pick up supplies and/or personnel, to perform supervisory and/or progress inspections, or for any other reason.

(vii) Any other entity specifically to be determined by the County to be excluded.

(viii) Any leased or temporary laborers.

(c) Unless herein otherwise specifically indicated, the policies set forth in Subparagraphs 11.1.3.2, 11.1.3.3 and 11.1.3.4 below shall cover only those operations of the insured parties performed at the Project site or sites incidental to the Work called for in this Owner-Contractor Agreement.

(d) The County assumes no obligation to provide insurance other than that evidenced by the policies referred to in Subparagraphs 11.1.3.2, 11.1.3.3 and 11.1.3.4. Furthermore, any obligation of the County to provide insurance under its OCIP is expressly limited to the insurance referred to in Subparagraphs 11.1.3.2, 11.1.3.3 and 11.1.3.4. The County, however, reserves the right to furnish insurance coverage of various types and limits, provided that such coverage shall not be less than that specified below (so long as such insurance and limits are reasonably available in the insurance market) and provided that the costs of such insurance shall be borne by the County.

11.1.3.2 WORKERS' COMPENSATION INSURANCE

Workers' Compensation insurance in statutory limits of the Workers' Compensation laws of the State of Georgia, with Coverage B - Employer's Liability, to limits of not less than one million dollars ($1,000,000) covering operations of the insured parties at the Project site. Coverage under the Broad Form All States extension is also included. This insurance is primary for all occurrences at the Project site.

11.1.3.3 LIABILITY INSURANCE (EXCLUDING MOTOR VEHICLE LIABILITY)

(a) Liability insurance (excluding Motor Vehicle Liability) under a Commercial General Liability insurance policy and covering the insured parties in connection with the performance of the Work at the Project site, including hazards of operations (explosion, collapse and underground exposures), independent contractors, employees as additional insured’s, completed operations (for 5 years after final completion of the Work), contractual liability coverage (for contracts related to the Work), personal injury liability coverage, and excess Employer's Liability coverage for claims arising out of the Work hereunder, for personal injury, bodily injury, and property damage, in policies of insurance such that the total available limits to all insured’s combined will not be less than twenty-five million dollars ($25,000,000) combined single limits for each occurrence and aggregates, as applicable.

(b) Notwithstanding the actual policy deductible, the Contractor shall be liable for a deductible not to exceed five thousand dollars ($5,000) each occurrence, to the extent losses payable are attributable to, involve, or relate to the performance, actions, errors, omissions, or negligence of the Contractor or its Sub-Contractors, uninsured parties, or any other entity or person for whom it may be responsible. The Contractor's deductible shall include the costs of defense, including court costs and attorneys' fees of a covered OCIP claim and shall not be construed to affect the Contractor rights to indemnify the County under the contract. All such deductibles shall be collected as part of the Contract close-out process and final payment.

(c) The insurance provided under the OCIP will not extend coverage for products liability to any insured party or uninsured party. However, Products/Completed Operations liability arising from manufacturing or assembly of items manufactured or assembled at the Project site, as required by the contract is covered.

11.1.3.4 ALL RISK BUILDER'S RISK, INCLUDING TRANSIT

(a) All Risk Builder's Risk, including transit and installation risks, insuring the interest of the County, the Contractor and its Sub-Contractors, providing coverage on an All Risk basis, including, but not limited to, coverage against flood, fire, lightning, wind damage, hail, explosion, riot or civil commotion, aircraft and other vehicles, and collapse.

(b) The policies for such insurance will be secured and maintained by the County in a form and amount as determined by Fulton County. The amount may be amended depending on the amount of a specific project.

(c) Coverage will include materials, supplies and equipment that are intended for specific installation in the Work while such materials, supplies and equipment are located at the Project site, in transit or while temporarily located away from the Project site for the purpose of repair, adjustment or storage at the risk of one of the insured parties.

(d) Except as otherwise provided in Subparagraph 11.1.3.4(c), this insurance will not include coverage for tools or clothing of workers, or tools, equipment, protective fencing, scaffolding, temporary structures, coffer damming, pipe stulling or bracing, or forms owned, rented or used by the Contractor, its Sub-Contractors, or uninsured parties and used in the performance of the Work, unless such items are specifically identified in this Agreement and their values declared under the Builder's Risk insurance policy.

(e) The County, its officers, agents, employees and consultants rendering services at the Project site, and the OCIP Administrator will not be liable or responsible for loss or damage to the items excluded in Subparagraph 111.3.4(d), and the Contractor shall indemnify and hold harmless the County, its officers, agents, employees, its consultants rendering services at the Project site, the OCIP Administrator, and other Project contractors and their Sub-Contractors from claims or causes of action brought by any person or parties as a result of loss or damage to such excluded items.

(f) The Builder's Risk policy will be endorsed waiving the carrier's rights of recovery under subrogation against the County, its officers, agents, employees and consultants rendering services at the Project site, the OCIP Administrator, and the Contractor and its Sub-Contractors, whose respective interests are insured under such policy.

(g) Notwithstanding the actual policy deductible, the Contractor shall be liable for a deductible not to exceed five thousand dollars ($5,000) each occurrence for all perils excluding theft and mysterious disappearance, and twenty-five thousand dollars ($25,000) each occurrence for theft and mysterious disappearance. All such deductibles shall be collected as part of the Contract close-out process and final payment.

11.1.3.5 CONTRACTOR RETAINS VARIOUS OBLIGATIONS

Nothing contained herein, or in any document referenced herein, shall relieve, limit or be construed to relieve or limit the Contractor, its Sub-Contractors or uninsured parties of responsibility or obligations otherwise imposed by the Contract. The OCIP shall not be construed as limiting, among other things:

(a) The extent to which the Contractor may be held legally responsible for damages to persons or property.

(b) The Contractor's indemnity obligations under this Agreement.

11.1.3.6 CONTRACTOR RESPONSIBILITY TO REPAIR DEFECTIVE OR DAMAGED WORK

(a) Notwithstanding the provisions of this Agreement, and until final acceptance of the Work by the County, the Contractor shall have full and complete charge and care of the Work or any portion thereof (including the Owner-furnished supplies, material, equipment or other items to be utilized or incorporated in the Work).

(b) The Contractor shall rebuild, repair, restore and make good losses of, and injuries or damages to, the Work or any portion thereof (including the Owner-furnished supplies, material, equipment or other items to be utilized with, or incorporated in, the Work and which are in the Project site) before final acceptance of the Work. Such rebuilding, repair or restoration shall be at the Contractor's sole cost and expense provided, however, the County will make available applicable proceeds from the Builder's Risk policy provided by the County, as specified in Section 11.1.3.4.

11.1.3.7 ADDITIONAL INSURED

The Additional Insured on the County’s OCIP policies shall include Fulton County; the County’s officers, agents, employees, and consultants; the OCIP Administrator; and Contractors, including their Sub-Contractors of any tier (but excluding suppliers, vendors, material-delivery, truckers or haulers) whom Fulton County has contracted with and for whom the County has agreed to furnish coverage under the OCIP.

11.1.3.8 OWNER'S RIGHT TO AUDIT

(a) The Contractor hereby warrants to the County the accuracy of the information provided on the OCIP Insurance Information Form submitted with its bid, and agrees that the County, its officers, agents, insurance carriers and the OCIP Administrator may audit the records of the Contractor and its Sub-Contractors to confirm the accuracy of the information provided, including, but not limited to, the accuracy of all estimated payrolls, and to ascertain any effect on insurance resulting from changes in the Work. The audit will be held during the Contractor's normal business hours at the office of the Contractor or at another mutually agreeable location.

(b) The County shall be entitled to credits in OCIP insurance premiums that may accrue as a result of the audit.

(c) The Contractor shall maintain or cause to be maintained sufficient records as may be necessary to audit its compliance and its Sub-Contractors' compliance with the requirements of the OCIP.

11.1.3.9 ASSIGNMENT

The Contractor and each of its Sub-Contractors of any tier shall assign to the County all return premiums, premium refunds, dividends and other monies due or to become due in connection with the insurance provided by the County. The Contractor and its Sub-Contractors of any tier shall execute such other further documentation as may be required by the County to effectuate this assignment.

11.1.3.10 OCIP CLAIMS

The Contractor, its Sub-Contractors and uninsured parties shall assist the County, its agents, and the OCIP Administrator and provide the utmost cooperation in the adjustment of claims arising out of the operations conducted under, or in connection with, the Work and shall cooperate with the County's insurance carriers in claims and demands that arise out of the Work and that the insurance carriers are called upon to adjust or resist.

11.1.3.11 LIMITATIONS ON OCIP COVERAGES

Although the scope of coverage's afforded under this program may provide coverage beyond the scope required by the Owner-Contractor Agreement in the absence of an OCIP, the County makes no warranty or representation that such broad coverage will remain in effect throughout the duration of the Work. The County further does not warrant or represent that the OCIP coverage's constitute an insurance portfolio, which adequately addresses all the risk faced by the Contractor or its Sub-Contractor(s). The Contractor and Sub-Contractors of every tier shall satisfy themselves as to the existence, extent and adequacy of the OCIP coverage's prior to the commencement of the Work. The cost to obtain any "extra" coverage's shall be the responsibility of the Contractor. The County shall not assume any responsibility for the premium cost of any "extra" insurance. The County shall issue Certificates of Insurance and make available copies of specimen insurance policies at the time of the Notice to Proceed.

11.1.3.12 ALTERNATIVE INSURANCE

In the event the County, after commencement of the Work, is unable to furnish, or elects not to furnish or to continue to furnish, the insurance coverage herein described, and upon 30 days written notice from the County, the following shall be required:

(a) The Contractor shall secure and maintain all, or as much of the insurance herein described, as the County designates, at the County's expense, and the County will thereafter no longer be obligated to furnish such insurance.

(b) All insurance secured by the Contractor or its Sub-Contractors pursuant to this subparagraph shall be in policies subject to the prior written approval of the County as to form, content, limits of liability, cost and issuing company as outlined in the "Base Bid" version of this Article 11, i.e., as if the OCIP had not been implemented for the Project.

11.1.3.13 PROCEDURES AND SERVICES

The Contractor shall fully comply with, and shall require its Sub-Contractors of any tier to fully comply with, all of said plans, procedures and services, including but not limited to, completion of all necessary applications for coverage, prompt and full compliance with all audit requests and claim reporting procedures, and full compliance with the safety, loss prevention and loss control programs implemented by, or at the request of the County.

11.1.3.14 INSURANCE NECESSARY FOR THE WORK, BUT COVERING OPERATIONS OUTSIDE THE OCIP

(a) The Contractor shall, for the duration of this Agreement, provide and maintain insurance and shall require each Sub-Contractor to provide and maintain insurance of the type and in the limits as described in Paragraph 11.2, which is intended to cover employee injury, personal injury, bodily injury and property damage liability for ongoing operations work performed away from the Project site.

(b) The insurance described in Subparagraphs 11.2.1.2.B (Motor Vehicle Liability) and 11.2.1.2.D (Professional Liability) shall apply to Work performed by both enrolled and non-enrolled entities both at and away from the Project site, and shall be provided and maintained for the duration of this Agreement. Such insurance shall name the parties required to secure same as insured's and shall be in a form and through issuing companies acceptable to the County. Such insurance shall contain a defense of suits provision.

(c) The Contractor shall assure that all non-enrolled entities provide and maintain, for the duration of this Agreement, insurance of the type and in the limits as described in Paragraph 11.2, which shall cover those entities for employee injury, personal injury, bodily injury, and property damage liability for any Work performed at the Project site.

11.1.3.15 CONTRACTOR OCIP OBLIGATIONS

(a) The Contractor and each of its Sub-Contractors shall:

(i) Furnish to Fulton County's designated Representative all information and documentation that the County may require from time to time, in connection with the issuance of policies under this Agreement, in such form and substance as the OCIP Administrator may prescribe.

(ii) Furnish to the County's designated Representative monthly certified payroll and accident summary reports on forms provided by the OCIP Administrator, and payroll records, as required.

(iii) Segregate their respective reports relating to the Work for which OCIP coverage is herein provided, from their records relating to other work for which such coverage is not provided.

(iv) Promptly comply with the recommendations of the OCIP insurance carriers, as submitted through the County's designated Representative.

(b) The Contractor shall not violate or knowingly permit to be violated any conditions of the policies of insurance provided by the County under the terms of this Agreement, and shall at all times satisfy the requirements of the issuing insurance companies.

(c) The Contractor shall assure that all OCIP requirements imposed upon and to be performed by the Contractor shall likewise be imposed upon, assumed and performed by each of its Sub-Contractors and uninsured parties with whom it or its Sub-Contractors have a contractual relationship and are performing work under the Contract.

(d) The Contractor shall furnish each bidding and negotiating Sub-Contractor, vendor, supplier, material dealer or other person or business entity that may provide goods or services in connection with the Work, a copy of this document describing the insurance requirements for the Contractor, and its Sub-Contractors shall require each to impose the same requirement in their subcontracting and procurement procedures.

(e) If the Contractor or any of its Sub-Contractors should fail to comply with the requirements of this document, the County may withhold payments due to the Contractor or suspend the Work until such time as the Contractor and its Sub-Contractors have performed such obligations to the reasonable satisfaction of the County.

(f) The Contractor agrees that the Contract Sum includes all costs of complying with the OCIP, as herein described.

11.1.3.16 NOTICES, COSTS AND LOSSES

(a) All policies of insurance that either the Contractor, its Sub-Contractors, or the County is required to secure and maintain, shall be endorsed to provide that the insurance company shall notify the County, the Contractor, and each Named Insured at least thirty (30) days prior to the effective date of any cancellation or modification of such policies.

(b) The Contractor shall furnish to the County's designated Representative certificates of insurance for insurance required to be maintained by the Contractor and its Sub-Contractors, as provided herein. Prior to the issuance of the Notice to Proceed, the Contractor shall not be permitted on the Project site.

(c) The County will pay the cost of the premiums for the insurance described above as being provided by the County, and the County will receive and pay, as the case may be, all adjustments in such costs, whether by way of dividends or otherwise. The Contractor shall execute such instruments of assignment as may be necessary to permit the County's receipt of such adjustments and shall cause all Sub-Contractors covered by such insurance to do the same.

(d) The Contractor shall be responsible for the payment of the deductible amounts indicated in Subparagraphs 11.1.3.3 and 11.1.3.4. If the actual County-provided OCIP. Policies have deductible amounts greater than those indicated in Subparagraphs 11.1.3.3 and 11.1.3.4; such excess amounts will be paid by the Contractor.

(d) The Contractor shall be responsible for all losses greater than OCIP policy limits.

(f) Payments by the insurer for all losses covered under the All Risk Builder's Risk policy, as specified in Section 11.1.3.4, will be made to the County. The County will make proceeds from the Builder's Risk policy available to the Contractor for rebuilding work damaged by covered perils.

11.1.3.17 SUBROGATION AND WAIVER

(a) The Contractor shall require all policies of insurance that are related to the Work and that are secured and maintained by the Contractor and its Sub-Contractors to include clauses providing that each underwriter and carrier shall waive all of their respective rights of recovery, under subrogation or otherwise, against the County, its officers, agents, employees and consultants rendering services at the Project site, the OCIP Administrator, the Contractor and its Sub-Contractors, regardless of tier, and all other Project contractors and their Sub-Contractors, regardless of tier.

(b) The Contractor waives all rights of recovery against its Sub-Contractors, the County, its officers, agents, employees and consultants rendering services at the Project site, the OCIP Administrator, and other Project contractors and their Sub-Contractors, regardless of tier, that the Contractor may have or acquire because of deductible clauses in or inadequacy of limits of policies of insurance that are in any way related to the Work and that are secured and maintained by the Contractor.

(b) The Contractor shall require its Sub-Contractors of every tier to waive the rights of recovery in the same manner (as waived in the preceding paragraph by the Contractor) against the County, its officers, agents, employees and consultants rendering services at the Project site, the OCIP Administrator, the Contractor, and other Project contractors and their Sub-Contractors, regardless of tier.

11.1.3.18 COVERAGE DETERMINED BY POLICY

The coverage’s referred to above are set forth in full in the respective policy forms, and the foregoing descriptions of such policies are not intended to be complete, or to alter or amend any provision of the actual policies, and in matters, if any, in which the said description may be conflicting with such instruments, the provisions of the policies of the insurance shall govern.

11.2 CONTRACTOR’S LIABILITY INSURANCE

11.2.1 Pursuant to the exclusions of the Owner-Controlled Insurance Program (OCIP) described in Paragraph 11.1 above, the Contractor shall purchase and maintain during the life of this Agreement, from a company or companies licensed to do business in its agents and acceptable to the County, such insurance as shall fully protect him, the County, any other Professional Consultant or Architect or Engineer hired by the County, and any parties, consultants, or Sub-Contractors performing work covered by this Agreement from any and all claims, including those resulting from bodily injury (including accidental death), professional liability of the property damage (other than to the work itself) or personal injury which may arise or result from the Contractor's operations under this Agreement **which are not covered under the OCIP**, whether such operations be by himself or by any Sub-Contractor, or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

(a) Said insurance shall specifically provide coverage during the life of this Agreement to the County, its agents, any Professional Consultant or Architect or Engineer hired by the County, and any Sub-Contractor performing work covered by this Agreement for claims made by any persons, including the employees and parties in privity of the contract with the Contractor, claiming injury as a result of the performance of the Project.

(b) At a minimum, such insurance must include but not necessarily be limited to:

(i) Worker's Compensation and Employer's Liability insurance (**for all operations away from the Project site**);

(ii) Motor Vehicle Liability insurance, covering all motor vehicles, whether owned, non-owned, or hired (**for all operations both at and away from the Project site**);

(iii) Comprehensive (or Commercial) General Liability insurance, with Broad Form Liability endorsement. Comprehensive (or Commercial) General Liability policy with Broad Form Liability endorsement shall be further endorsed naming County, Program Manager, Construction Manager, and County's Professional Consultants as additional insured (**for all operations away from the Project site**).

(iii) Professional Liability insurance, specifying that the Contractor shall be responsible to the County for acts, errors and omissions of the Contractor's directors, officers, employees and parties in privity of the contract with the Contractor to perform a portion of the work, including their agents and employees (**for all operations both at and away from the Project site**). The Contractor shall require the architects and the engineers that are responsible for the design and engineering to purchase and maintain liability insurance with no less coverage than $1,000,000.00 or 10% of the construction value of the Work, whichever is greater, throughout the duration of the project and for two years following the Date of Substantial Completion.

11.2.2 The insurance required by Subparagraph 11.2.1 above shall be written for not less than the following liability limits, or greater if required by law. Evidence of such insurance shall be provided PRIOR to the day of actual work being performed (refer to OCIP Enrollment procedures provided by the OCIP Administrator for more assistance, or contact Fulton County's designated Representative.)

(a) <u>Worker's Compensation</u>

Each Accident	GA Statutory Limits
Disease – Policy Limit	$500,000
Disease – Each Employee	$100,000
Employers Liability	$1,000,000

<u>General Liability</u>

Bodily Injury/Property Damage	$1,000,000
Personal Injury	$1,000,000
General Aggregate	$2,000,000

<u>Automobile Liability</u>

Bodily Injury	$1,000,000 CLS

Excess/Umbrella

As specified and required in the Contract

Professional Liability (if required by the specific Contract and Project)

Limit of $1,000,000 or 10% of Contract value, whichever is greater.

Note: The Contractor shall provide and shall require all Sub-Contractors performing work under this Agreement to obtain an insurance certificate showing proof of insurance coverage conforming to the above limits, and showing FULTON COUNTY GOVERNMENT as the "Certificate Holder" and "Additional Insured" without such certificate, the Contractor and any Sub-contractor are considered NON-ENROLLED in OCIP, and cannot commence work.

EXHIBIT M - OCIP INSURANCE INFORMATION FORM

The attached form is required to be completed and submitted by Bidder and its subcontractors. Refer to the instruction sheet attached to the form for specific instructions.

OCIP INSURANCE INFORMATION FORM
OCIP Insurance Information Form Instructions (one page) follows

FULTON COUNTY OCIP
INSURANCE COST IDENTIFICATION WORKSHEET

Contractor _____ **Indv** _____ **Ptshp** _____ **Corp** _____ **J/V** _____

Address _____ FEIN _____

Office Contact: _____ Phone _____ Fax: _____

Site Contact _____ Phone _____ Fax: _____

Safety Contact _____ Phone _____ Fax: _____

CONTRACT INFORMATION – Contract Value: $ _____ **JOB#:** _____

Job Name Description _____

Awarding Contractor: Prime Contractor:

Start Date: _____ Est. Completion Date **%**Self Performed _____ Est. Man-hours _____

% Subcontracted: Est. # of Subcontractors

CURRENT INSURANCE INFORMATION; REQUIRED INSURANCE COVERAGE(S) AND LIMITS ARE SHOWN IN THE BID AND CONTRACT DOCUMENTATIONS. INFORMATION DISCLOSED ON THIS FORM IS SUBJECT TO AUDIT AND ADJUSTMENT THROUGHOUT THE TERM OF THE CONSTRUCTION OF PROJECT

CONTRACTOR'S INSURANCE BROKER OR AGENT:

Company Name _____ **Contract:** _____

City _____ **Phone:** _____

WORKER'S COMPENSATION

Current WC Ins. Co.: _____ Policy Period _____

Experience Modifier: _____ Rate Date: _____ Deductible _____ Retention: _____

A. Workers' Compensation (Project Site Payroll Only) Attach additional pages if required				
W.C. Classification	**W.C. Code**	**W.C. Rate/ $100 Payroll**	**Estimated Payroll***	**Premium**
1.				
2.				
3.				
4.				
5.				
6.				
		Subtotal		
* ***Although credits should be identified, the only allowable credits are Experience Modifier and Premium Discount***			Increases Limit Factor:_____%	$
			Experience Modifier	$
It is extremely important to accurately estimate payrolls anticipated for this contract. Payroll should be raw wages without burden, fringes, or overtime premium: but should include sick, vacation, holiday pay and imputed income.			Discounts or Surcharges	$
Attach a copy of your declaration page and schedule rate sheets			Deductible/Self Insured Retention Credit*	$
			OR	
			*Expected Losses within Deductible/Self Insured Retention	$
			Total Workers' Compensation Premium	**A** $

NO CERTIFICATES OF INSURANCE OR POLICIES WILL BE PROVIDED UNDER THE OCIP UNTIL THIS FORM IS RECEIVED.

FULTON COUNTY OCIP
INSURANCE COST IDENTIFICATION WORKSHEET

GENERAL LIABILITY
Current GL Ins. Co.: _____ Policy Period _____

Current GL rate is based on _____ Payroll or _____ Receipts per _____ $100 ___ $1,000 or Flat Premium ____

Deductible _____ Retention $: _____

B. General Liability (Project Site Payroll/Receipts Only) Attach additional pages if required				
G.L Classification	**G. L. Code**	**G.L. Rate**	**Estimated Payroll/Receipts ***	**Premium**
1.				
2.				
3.				
4.				
It is extremely important to accurately estimate payrolls anticipated for this contract. ***Attach a copy of your declaration page and schedule rate sheet.***			Deductible/Self Insured Retention Credit OR Expected Losses within Deductible/Self Insured Retention	$ $
			Total General Liability Premium	**B**$
C. Estimated Subcontractor Premiums FORM-1 MUST BE COMPLETED BY AWARDING CONTRACTOR FOR EACH SUBCONTRACTOR.				**C**$
D. Umbrella Excess Rate: _____ Per $ _____ Name of Insurer:_____ Term: _____				**D**$
E. Builder's Risk Rate: _____ Per $ _____ Name of Insurer: _____ Term: _____				**E**$
F. TOTAL PREMUIMS (A+B+C+D+E) This amount must equal the insurance credit indicated on your bid proposal.				**F**$
"Total Premiums" indicated in F represent the amount of insurance premiums the contractor has excluded from the bid amount since the Owner is furnishing the construction insurance.				

It is each Contractor's responsibility to notify its own insurance carrier to exclude all work to be done under this contract from your current insurance program.

AGREEMENT

Fulton County, Georgia, as sponsor of the OCIP, or their Agent, is granted permission by Contractor to inspect the insurance and payroll records used in determining the above credit. Fulton County will deduct the above amount from Contractor's bid to determine contract amount. At completion of the Work, Fulton County's Agent shall audit the project payroll records of Contractor and adjust Contract amount for final audited insurance premiums in accordance with the insurance premium audit provisions of the insurance policy. Any and all returns of premiums, dividends, discounts or other adjustments to any OCIP policy is assigned, transferred and set over absolutely to Fulton County. This assignment is valid for insurance policies whose premiums have been paid by Fulton County on behalf of such Contractor.

Signed _____ Title _____ Date _____

NO CERTIFICATES OF INSURANCE OR POLICIES WILL BE PROVIDED UNDER THE OCIP UNTIL THIS FORM IS RECEIVED.

INSTRUCTIONS

Specific instructions for completing the "OCIP Insurance Information Form":

Section I: Workers' Compensation

A. For project site operations only, report the classifications, codes, experience modifier and rates and payroll estimates used in your appropriate workers compensation policy. Provide the name of your regular workers' compensation carrier, along with your policy effective dates and Federal Employer ID#.

B. If your regular W.C. program includes a deductible or retention level, include allocated losses you would expect within that deductible/retention on this Project.

Section II: General Liability

A. Use the appropriate rates and payroll estimates applicable to on-site project operations as outlined in your appropriate policy.

B. If your regular G.L. program includes a deductible or retention level, include allocated losses you would expect within that deductible/retention on this Project.

Section III: Excess/Umbrella Liability

A. Use the appropriate rates applicable to on-site project operations as outlined in your appropriate policy.

B. If you presently do not carry an Excess or Umbrella liability policy, contact your insurance representative or broker for an estimate.

Section IV: Completed Operations (1 Year)

Use the appropriate rates applicable to on-site project operations as outlined in your appropriate policy.

Section V: Subcontractor Premiums and Allocated Losses (excluding Motor Vehicle)

A. If lower-tier contractors (subcontractors or sub-subcontractors) are included in your bid, you must provide them with a set of these forms and instructions. Attach the lower-tier contractors' forms to your submission. (Reference O.C.I.P. contract language for information regarding which entities are eligible for coverage under the O.C.I.P.)

B. If lower-tier contractors have a deductible or retention level within their insurance program, they must also include allocated losses which they would expect within that deductible/retention on this Project.

Section VI: Overhead & Profit on Insurance Premiums
Enter the overhead and profit percentage your firm adds to the insurance premiums (5%, 10%, etc.).

EXHIBIT N

DESIGN BUILDER'S SAFETY, HEALTH AND LOSS PREVENTION PROGRAM

1.0 The Design/Builder shall be responsible for designing and implementing a comprehensive project-specific safety, health and loss prevention process and/or program and employee substance abuse program for this project. All Sub-Contractors must either implement their own program that meets these requirements or follow the Design/Builder's safety, health and loss prevention process and/or employee substance abuse program

1.1 Safety, health and loss prevention process and/or employee substance abuse program must meet or exceed all governmental regulations (OSHA, EPA, DOT, State, local), comply and other specific Fulton County or Owner Controlled Insurance Program (OCIP) requirements, and with any other safety, health and loss prevention requirements detailed in the contract documents including the requirements of the Contractor Safety and Health Management Process which is attached hereto and incorporated herein.

1.2 Within ten (10) business days of receipt of the Notice of Award (NOA), the Design/Builder shall submit in writing to the County's designated Representative, the Design/Builder's written Safety, Health and Loss Prevention Process and/or Program and Employee Substance Abuse Program and those of Sub-Contractors that meet or exceed the requirements referenced in the contract documents. Included in this submittal will be the name and qualifications of the site safety representative.

1.3 Prior to issuing the Notice to Proceed (NTP), a meeting will be held with the Design/Builder and all Sub-Contractors to review the safety, health and loss prevention process and/or program requirements, submittals to be provided by the Design/Builder, OCIP requirements and procedures, and the OCIP accident prevention process.

1.4 These program submittals must be reviewed and accepted by the County's designated Representative as meeting or exceeding safety, health, and loss prevention process and/or program requirements. A Notice to Proceed (NTP) with the work may not be issued until these submittals have been accepted.

1.5 DESIGNATION OF SAFETY REPRESENTATIVE

A. The Design/Builder will designate an employee by (name, phone number, pager number) as Site Safety Representative. This employee will have sufficient training and knowledge of safety and health principles, regulations, and procedures to report to the Contractor's project manager and/or superintendent. Sub-Contractors must also designate a similar employee responsible for safety and health. The Sub-Contractor's safety designee will coordinate safety activities with the general contractor's safety designee.

B. For projects with significant risk or hazard potential or for any project for which the contractor and its Sub-Contractors of any tier have 50 total employees or greater on site, Design/Builder must designate a qualified employee to be the full time Site Safety Representative. This person should address safety, health and loss prevention activities for the complete project including Sub-Contractors.

1.6 FULTON COUNTY'S SAFETY, HEALTH, AND LOSS PREVENTION PROCESS GUIDELINES AND REQUIREMENTS

A. The County and its agents reserve the right, but assume no duty, to establish and enforce safety, health, and loss prevention guidelines and to make the appropriate changes in the guidelines, for the protection of persons and property and to review the efficiency of all protective measures taken by the Design/Builder. The Design/Builder shall comply with all

safety, health, and loss prevention process guidelines and requirements and changes made by the County or its agent(s). The issuance of any such guidelines or changes by the County or its agent(s) shall not relieve the Design/Builder of its duties and responsibilities under this Agreement, and the County or its agent(s) shall not thereby assume, nor be deemed to have assumed, any such duties or responsibilities of the Design/Builder.

1.7 COMPLIANCE OF WORK, EQUIPMENT, AND PROCEDURES WITH ALL APPLICABLE LAWS and REGULATIONS

A. All Work, whether performed by the Design/Builder or its Sub-Contractors of any tier, or anyone directly or indirectly employed by any of them, and all equipment, appliances, machinery, materials, tools and like items incorporated or used in the Work, shall be in compliance with and conform to:

(a) All applicable laws, ordinances, rules, regulations and orders of any public, quasi-public or other governmental authority relating to the safety of persons and their protection against injury, specifically including, but in no event limited to, the Federal Occupational Safety and Health Act of 1970, as amended, and all rules and regulations now or hereafter in effect pursuant to said Act.

(b) All rules, regulations, and requirements of the County or its agent(s) and its insurance carriers relating there to. In the event of a conflict or differing requirements the more stringent shall govern.

1.8 PROTECTION OF THE WORK

A. The Design/Builder shall, throughout the performance of the Work, maintain adequate and continuous protection of all Work and temporary facilities against loss or damage from whatever cause, shall protect the property of the County and third parties from loss or damage from whatever cause arising out of the performance of the Work, and shall comply with the requirements of the County or its agent(s) and its insurance carriers, and with all applicable laws, codes, rules and regulations, (as same may be amended) with respect to the prevention of loss or damage to property as a result of fire or other hazards.

B. The County or its agent(s) may, but shall not be required to, make periodic inspections of the Project work area. In such event, however, the Design/Builder shall not be relieved of its aforesaid responsibilities and the County or its agent(s) shall not assume, nor shall it be deemed to have assumed, any responsibility otherwise imposed upon the assurance of Design/Builder by this Agreement.

1.9 SAFETY EQUIPMENT

A. The Design/Builder shall provide to each worker on the Project work area the proper safety equipment for the duties being performed by that worker and will not permit any worker on the Project work area who fails or refuses to use the same. The County or its agent shall have the right, but not the obligation, to order the removal of a worker from the Project work site for his/her failure to comply with safe practices or substance abuse policies, and the Design/Builder shall promptly comply with the Safety Program or Substance Abuse Program and all such orders.

1.10 EMERGENCIES

A. In any emergency affecting the safety of persons or property, or in the event of a claimed violation of any federal or state safety or health law or regulation, arising out of or in any way connected with the Work or its performance, the Design/Builder shall act immediately to prevent threatened damage, injury or loss and to remedy said violation. Failing such action the County or its agent(s) may immediately take whatever steps it deems necessary including, but not limited to, suspending the Work as provided in this Agreement.

B. The County or its agent(s) may offset any and all costs or expenses of whatever nature, including attorneys' fees, paid or incurred by the County or its agent(s) (whether such fees are for in-house counsel or counsel retained by the County or its agent), in taking the steps authorized by Section 10.7.1 above against any sums then or thereafter due to the Design/Builder. The Design/Builder shall defend, indemnify and hold the County, its officers, agents, employees and the O.C.I.P. Administrator harmless against any and all costs or expenses pursuant to Section 10.7.1, by whosoever incurred. If the Design/Builder shall be entitled to any additional compensation or extension of time change order on account of emergency work not due to the fault or neglect of the Design/Builder or its Sub-Contractors, such additional compensation or extension of time shall be determined in accordance with Section 8 and Section 12 of this Agreement.

1.11 SUSPENSION OF THE WORK

A. Should, in the judgment of the County or its agent(s), the Design/Builder or any Sub-Contractor fail to provide a safe and healthy work place or fail to follow the safety requirements defined in the contract documents and approvals, the County or its agent shall have the right, but not the obligation, to suspend work in the unsafe areas until deficiencies are corrected. All costs of any nature (including, without limitation, overtime pay, liquidated damages or other costs arising out of delays) resulting from the suspension, by whomsoever incurred, shall be borne by the Design/Builder.

B. Should the Design/Builder or any Sub-Contractor fail to provide a safe and healthy work place or fail to follow the safety requirements defined in the contract documents and approvals after being formally notified in writing by the County or its agents of such non-compliance, the contract may be terminated following the termination provision of the contract.

1.12 DESIGN/BUILDER'S INDEMNITY OF THE COUNTY FOR DESIGN/BUILDER'S NON-COMPLIANCE WITH SAFETY PROGRAM

A. The Design/Builder recognizes that it has sole responsibility to assure its Safety Program is implemented and to assure its construction services are safely provided. The Design/Builder shall indemnify, defend and hold the County and its agents harmless, from and against any and all liability (whether public or private), penalties (contractual or otherwise), losses, damages, costs, attorneys' fees, expenses, causes of action, claims or judgments resulting, either in whole or in part, from any failure of the Design/Builder, its Sub-Contractors of any tier or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, to comply with the safety requirements of the contract. The Design/Builder shall not be relieved of its responsibilities under the safety requirements of the Contract should the County or its agent(s) act or fail to act pursuant to its rights hereunder. The County, its agents, and the O.C.I.P. Administrator shall not assume, nor be deemed to have

assumed, any responsibilities otherwise imposed upon the Design/Builder by this Agreement, by virtue of providing the Safety Program Guidelines.

B. The Design/Builder shall not raise as a defense to its obligation to indemnify under this Subparagraph 10.9 any failure of those indemnified hereunder to assure Design/Builder operates safely, it being understood and agreed that no such failure shall relieve the Design/Builder from its obligation to assure safe operations or from its obligation to so indemnify. The Design/Builder also hereby waives any rights it may have to seek contribution, either directly or indirectly, from those indemnified hereunder.

C. In any and all claims against those indemnified hereunder by any employee of the Design/Builder, any Sub-Contractor of any tier or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Subparagraph 10.9 shall not be limited in any way as to the amount or type of damages, compensation or benefits payable by or for the Design/Builder or any Sub-Contractor of any tier under any workers' compensation act, disability benefit or other employee benefit acts.

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SECTION 00 700 - FULTON COUNTY GENERAL CONDITIONS

GENERAL CONDITIONS

FOR FULTON COUNTY
PUBLIC UTILITIES SEWER/WATER CONSTRUCTION CONTRACTS

00700-1 NOT USED.

00700-2 NOT USED

00700-3 NOT USED

00700-4 NOT USED

0700-5 NOT USED

00700-6 STRICT COMPLIANCE

No observation, inspection, test or approval of the County or Construction Manager shall relieve the Contractor from its obligation to perform the work in strict conformity with the contract documents except as provided in General Condition 00700-48.

00700-7 APPLICABLE LAW

All applicable State laws, County ordinances, codes, and rules and regulations of all authorities having jurisdiction over the construction of the project shall apply to this agreement. The Contractor shall comply with the requirements of any Fulton County program concerning non-discrimination in contracting, hereto, and the Fulton County Safety Management Program, as set out in the Contractor Safety and Health Management Process, attached hereto as Exhibit "B", and the Owner Controlled Insurance Program and contractor's insurance requirements, as set out in Exhibit "C" hereto. All work performed within the right of way of the Georgia Department of Transportation and any railroad crossing shall be in accordance with Georgia Department of Transportation regulations, policies and procedures and, where applicable, those of any affected railroad. The Contractor shall comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work as specified and the Contractor agrees to indemnify and hold harmless the County, its officers, agents and employees, as well as the Construction Manager and the Program Manager against any claim or liability arising from or based on the violation of any law, ordinance, regulation, order or decree affecting the conduct of the work, whether occasioned by the Contractor, his agents or employees.

00700-8 PERMITS, LICENSES AND BONDS

All permits and licenses necessary for the work shall be secured and paid for by the Contractor. If any permit, license or certificate expires or is revoked, terminated, or suspended as a result of any action on the part of the Contractor, the Contractor shall not be entitled to additional compensation or time. The Contractor shall obtain and keep in force at all times performance and payment bonds payable to Fulton County in penal amounts equal to 100% of the Contract price.

00700-9 TAXES

A. The Contractor shall pay all sales, retail, occupational, service, excise, old age benefit and unemployment compensation taxes, consumer, use and other similar taxes, as well as any other taxes or duties on the materials, equipment, and labor for the work provided by the Contractor which are legally enacted by any municipal, county, state or federal authority, department or agency at the time bids are received, whether or not yet effective. The Contractor shall maintain records pertaining to such taxes and levies as well as payment thereof and shall make the same available to the County at all reasonable times for inspection and copying. The Contractor shall apply for any and all tax exemptions which may be applicable and shall timely request from the County such documents and information as may be necessary to obtain such tax exemptions. The County shall have no liability to the Contractor for payment of any tax from which it is exempt.

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

Acceptance of the project as complete and final payment will not be made by the Owner until the Contractor has fully complied with this requirement.

00700-10 DELINQUENT CONTRACTORS

The County shall not pay any claim, debt, demand or account whatsoever to any person firm or corporation who is in arrears to the County for taxes. The County shall be entitled to a counterclaim, backcharge, and offset for any such debt in the amount of taxes in arrears, and no assignment or transfer of such debt after the taxes become due shall affect the right of the County to offset any taxes owed against said debt.

00700-11 LIEN WAIVERS

The Contractor shall furnish the County with evidence that all persons who have performed work or furnished materials pursuant to this agreement have been paid in full prior to submitting its demand for final payment pursuant to this agreement. A final affidavit, Exhibit D, must be completed, and submitted to comply with requirements of 00700-11. In the event that such evidence is not furnished, the County may retain sufficient sums necessary to meet all lawful claims of such laborers and materialmen. The County assumes no obligation nor in any way undertakes to pay such lawful claims from any funds due or that may become due to the Contractor.

00700-12 MEASUREMENT

All items of work to be paid for per unit of measurement shall be subject to inspection, measurement, and confirmation by the Construction Manager.

00700-13 ASSIGNMENT

The Contractor shall not assign any portion of this agreement or moneys due there from (include factoring of receivables) without the prior written consent of the County. The Contractor shall retain personal control and shall provide personal attention to the fulfillment of its obligations pursuant to this agreement. Any assignment without the express written consent of the County shall render this contract voidable at the sole option of the County.

00700-14 FOREIGN CONTRACTORS

In the event that the Contractor is a foreign corporation, partnership, or sole proprietorship, the Contractor hereby irrevocably appoints the Secretary of State of Georgia as its agent for service of all legal process for the purpose of this contract only.

00700-15 NOT USED

00700-16 SUPERVISION OF WORK AND COORDINATION WITH OTHERS

The Contractor shall supervise and direct the work using the Contractor's best skill and attention. The Contractor shall be solely responsible for all construction methods and procedures and shall coordinate all portions of the work pursuant to the contract subject to the overall coordination of the Construction Manager. All work pursuant to this agreement shall be performed in a skillful and workmanlike manner.

The County reserves the right to perform work related to the Project with the County's own forces and to award separate contracts in connection with other portions of the project, other work on the site under these or similar conditions of the contract, or work which has been extracted from the Contractor's work by the County.

When separate contracts are awarded for different portions of the project or other work on the site, the term "separate contractor" in the Contract Documents in each case shall mean the contractor who executes each separate County Agreement.

The Contractor shall cooperate with the County and separate contractors in arranging the introduction and storage of materials and equipment and execution of their work, and shall cooperate in coordinating connection of its work with theirs as required by the Contract Documents.

If any part of the Contractor's Work depends for proper execution or results upon the work of the County or any separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results **within fourteen (14) days** of discovery of such discrepancy or defect. Failure of the Contractor to so report in writing shall constitute an acceptance of the County's or separate contractor's work as fit and proper to receive the Work, except as to any defects which may subsequently become apparent in such work by others.

Any costs caused by defective or untimely work shall be borne by the party responsible therefore.

Should the Contractor wrongfully cause damage to the work or property of the County or to other work or property on the site, including the work of separate contractors, the Contractor shall promptly remedy such damage at the Contractor's expense.

Should the Contractor be caused damage by any other contractor on the Project, by reason of such other contractor's failure to perform properly his contract with the County, no action shall lie against the County or the Construction Manager inasmuch as the parties to this agreement are the only beneficiaries hereof and there are no third party beneficiaries and neither the County nor the Construction Manager shall have liabilities therefore, but the Contractor may assert his claim for damages solely against such other contractor. The Contractor shall not be excused from performance of the contract by reason of any dispute as to damages with any other contractor or third party.

Where the Work of this Contract shall be performed concurrently in the same areas as other construction work, the Contractor shall coordinate with the Construction Manager and the separate contractors in establishing mutually acceptable schedules and procedures that shall permit all jobs to proceed with minimum interference.

If a dispute arises between the Contractor and separate contractors as to their responsibility for cleaning up, the County may clean up and charge the cost thereof to the Contractor or contractors responsible therefore as the County shall determine to be just.

00700-17 ADMINISTRATION OF CONTRACT

The Construction Manager shall provide administration services as hereinafter described.

For the administration of this Contract, the Construction Manager shall serve as the County's primary representative during design and construction and until final payment to the Contractor is due. The primary point of contact for the Contractor shall be the Construction Manager. All correspondence from the Contractor to the County shall be forwarded through the Construction Manager. Likewise, all correspondence and instructions to the Contractor shall be forwarded through the Construction Manager.

The Construction Manager will determine in general that the construction is being performed in accordance with design and engineering requirements, and will endeavor to guard the County against defects and deficiencies in the Work.

The Construction Manager will not be responsible for; or have control or charge of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, nor will it be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Construction Manager will not be responsible for; or have control or charge over the acts or omissions of the Contractor, its engineers, consultants, subcontractors, or any of their agents or employees, or any other persons performing the Work.

Based on the Construction Manager's observations regarding the Contractor's Applications for Payment, the Construction Manager shall determine the amounts owing to the Contractor, in accordance with the payment terms of the Contract, and shall issue Certificates for Payment in such amount to the County.

The Construction Manager shall render interpretations necessary for the proper execution or progress of the Work. Either party to the Contract may make written requests to the Construction Manager for such interpretations.

Claims, disputes and other matters in question between the Contractor and the County relating to the progress of the Work or the interpretation of the Contract Documents shall be referred to the Construction Manager for interpretation.

All interpretations of the Construction Manager shall be consistent with the intent of and reasonably inferable from the Contract Documents and shall be in writing or in graphic form.

Except as otherwise provided in this Contract; the Construction Manager shall issue a decision on any disagreement concerning a question of fact arising under this Contract. The Construction Manager shall reduce the decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Construction Manager shall be final and conclusive unless, within thirty (30) days from the date of receipt of such copy, the Contractor files a written appeal with the Director of Public Works and mails or otherwise

furnishes the Construction Manager a copy of such appeal. The decision of the Director of Public Works or the Director's duly authorized representative for the determination of such appeals shall be final and conclusive. Such final decision shall not be pleaded in any suit involving a question of fact arising under this Contract, provided such is not fraudulent, capricious, arbitrary, so grossly erroneous as necessarily implying bad faith, or is not supported by substantial evidence. In connection with any appeal proceeding under this Article, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of Contractor's appeal. Pending any final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract as directed by the Construction Manager.

The Construction Manager shall have authority to reject Work which does not conform to the Contract Documents. Whenever, in the Construction Manager's opinion, it is considered necessary or advisable for the implementation of the intent of the Contract Documents, the County shall have authority to require special inspection or testing of the Work whether or not such Work be then fabricated, installed or completed. The Contractor shall pay for such special inspection or testing if the Work so inspected or tested is found not to comply with the requirements of the contract; the County shall pay for special inspection and testing if the Work is found to comply with the contract. Neither the Construction Manager's authority to act under this Subparagraph, nor any decision made by the Construction Manager in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Construction Manager to the Contractor, any subcontractor, any of their agents or employees, or any other person performing any of the Work.

The Contractor shall provide such shop drawings, product data, and samples as may be required by the Construction Manager and/or as required by these Contract Documents.

The Construction Manager shall conduct inspections to determine Substantial Completion and Final Completion, and shall receive and forward to the County for review written warranties and related documents required by the Contract Documents and assembled by the Contractor. The Construction Manager shall approve and issue Certificates for Payment upon compliance with Substantial and Final Completion requirements indicated in General Conditions 00700-81, 00700-84 and 00700-85 of this Agreement.

The Contractor shall not be relieved from the Contractor's obligations to perform the work in accordance with the contract documents by the activities or duties of the County or any of its officers, employees, or agents, including inspections, tests or approvals, required or performed pursuant to this agreement.

00700-18 NOT USED

00700-19 LABOR, MATERIALS, SUPPLIES, AND EQUIPMENT

Unless otherwise provided in this agreement, the Contractor shall make all arrangements with necessary support agencies and utility companies provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the execution and completion of the work.

00700-20 NOT USED

00700-21 HOURS OF OPERATION

All work at the construction site shall be performed during regular business hours of the FULTON County government, except upon the Construction Manager's prior written consent to other work hours. It is further understood that the Contractor's construction schedule is based on a normal 40 hours, five day work week,

less Fulton County-recognized holidays. If the Contractor desires to work in excess of this limit, the Contractor shall submit a written request to the Construction Manager, a minimum of five days prior to the desired work date. The Contractor shall be responsible for any additional expenses incurred by the Owner as a result of the extended work hours, including resident inspection overtime. The cost associated with resident inspector overtime shall be deducted form the Contractor monthly payment request.

00700-22 FAMILIARITY WITH WORK CONDITIONS

The Contractor shall take all steps necessary to ascertain the nature and location of the work and the general and local conditions which may affect the work or the cost thereof. The Contractor's failure to fully acquaint itself with the conditions which may affect the work, including, but not limited to conditions relating to transportation, handling, storage of materials, availability of utilities, labor, water, roads, weather, topographic and subsurface conditions, other separate contracts to be entered into by the County relating to the project which may affect the work of the Contractor, applicable provisions of law, and the character and availability of equipment and facilities necessary prior to and during the performance of the work shall not relieve the Contractor of its responsibilities pursuant to this agreement and shall not constitute a basis for an equitable adjustment of the contract terms. The County reserves the right to perform with its own forces or to contract with other entities for other portions of the project work, in which case the Contractor’s responsibility to assure its familiarity with work conditions hereunder shall include all coordination with such other contractors and the County necessary to insure that there is no interference between contractors as will delay or hinder any contractor in its prosecution of work on the project. The County assumes no responsibility for any understandings or representations concerning conditions of the work made by any of its officers, agents, or employees prior to the execution of this agreement.

00700-23 RIGHT OF ENTRY

The County reserves the right to enter the site of the work by such agent, including the Construction Manager, as it may elect for the purpose of inspecting the work or installing such collateral work as the County may desire. The Contractor shall provide safe facilities for such access so that the County and its agents may perform their functions.

00700-24 NOT USED

00700-25 SAFETY

A. COUNTY-CONTRACTOR SAFETY, HEALTH AND LOSS PREVENTION PROGRAM

1. The Contractor shall be responsible for designing and implementing a comprehensive project-specific safety, health and loss prevention process and/or program and employee substance abuse program for this project. All Sub-Contractors must either implement their own program that meets these requirements or follow the Contractor’s safety, health and loss prevention process and/or employee substance abuse program.

2. Safety, health and loss prevention process and/or employee substance abuse program must meet or exceed all governmental regulations (OSHA, EPA, DOT, State, local), comply and other specific Fulton County or Owner Controlled Insurance Program (OCIP) requirements, and with any other safety, health and loss prevention requirements detailed in the contract documents including the requirements of the Contractor Safety and Health Management Process which is attached hereto and incorporated herein.

3. Within ten (10) business days of receipt of the Notice of Award (NOA), the Contractor shall submit in writing to the County's designated Representative, the Contractor's written Safety, Health and Loss Prevention Process and/or Program and Employee Substance Abuse Program and those of Sub-Contractors that meet or exceed the requirements referenced in the contract documents. Included in this submittal will be the name and qualifications of the site safety representative.

   Prior to issuing the Notice to Proceed (NTP), a meeting will be held with the Contractor and all Sub-Contractors to review the safety, health and loss prevention process and/or program requirements, submittals to be provided by the Contractor, OCIP requirements and procedures, and the OCIP accident prevention process.

   These program submittals must be reviewed and accepted by the County's designated Representative as meeting or exceeding safety, health, and loss prevention process and/or program requirements. A Notice to Proceed (NTP) with the work may not be issued until these submittals have been accepted.

B. DESIGNATION OF SAFETY REPRESENTATIVE

1. The Contractor will designate an employee by (name, phone number, pager number) as Site Safety Representative. This employee will have sufficient training and knowledge of safety and health principles, regulations, and procedures to report to the Contractor's project manager and/or superintendent. Sub-Contractors must also designate a similar employee responsible for safety and health. The Sub-Contractor's safety designee will coordinate safety activities with the general contractor's safety designee.

   For projects with significant risk or hazard potential or for any project for which the Contractor and its Sub-Contractors of any tier have 50 total employees or greater on site, Contractor must designate a qualified employee to be the full time Site Safety Representative. This person should address safety, health and loss prevention activities for the complete project including Sub-Contractors.

C. COUNTY'S SAFETY, HEALTH, AND LOSS PREVENTION PROCESS GUIDELINES AND REQUIREMENTS

1. The County and its agents reserve the right, but assume no duty, to establish and enforce safety, health, and loss prevention guidelines and to make the appropriate changes in the guidelines, for the protection of persons and property and to review the efficiency of all protective measures taken by the Contractor. The Contractor shall comply with all safety, health, and loss prevention process guidelines and requirements and changes made by the County or its agent(s). The issuance of any such guidelines or changes by the County or its agent(s) shall not relieve the Contractor of its duties and responsibilities under this Agreement, and the County or its agent(s) shall not thereby assume, nor be deemed to have assumed, any such duties or responsibilities of the Contractor.

D. COMPLIANCE OF WORK, EQUIPMENT, AND PROCEDURES WITH ALL APPLICABLE LAWS and REGULATIONS

1. All Work, whether performed by the Contractor or its Sub-Contractors of any tier, or anyone directly or indirectly employed by any of them, and all equipment, appliances, machinery, materials, tools and like items incorporated or used in the Work, shall be in compliance with and conform to:

a. All applicable laws, ordinances, rules, regulations and orders of any public, quasi-public or other governmental authority relating to the safety of persons and their protection against injury, specifically including, but in no event limited to, the Federal Occupational Safety and Health Act of 1970, as amended, and all rules and regulations now or hereafter in effect pursuant to said Act.

b. All rules, regulations, and requirements of the County or its agent(s) and its insurance carriers relating there to. In the event of a conflict or differing requirements the more stringent shall govern.

E. PROTECTION OF THE WORK

1. The Contractor shall, throughout the performance of the Work, maintain adequate and continuous protection of all Work and temporary facilities against loss or damage from whatever cause, shall protect the property of the County and third parties from loss or damage from whatever cause arising out of the performance of the Work, and shall comply with the requirements of the County or its agent(s) and its insurance carriers, and with all applicable laws, codes, rules and regulations, (as same may be amended) with respect to the prevention of loss or damage to property as a result of fire or other hazards.

2. The County or its agent(s) may, but shall not be required to, make periodic inspections of the Project work area. In such event, however, the Contractor shall not be relieved of its aforesaid responsibilities and the County or its agent(s) shall not assume, nor shall it be deemed to have assumed, any responsibility otherwise imposed upon the assurance of Contractor by this Agreement.

F. SAFETY EQUIPMENT

1. The Contractor shall provide to each worker on the Project work area the proper safety equipment for the duties being performed by that worker and will not permit any worker on the Project work area who fails or refuses to use the same. The County or its agent shall have the right, but not the obligation, to order the removal of a worker from the Project work site for his/her failure to comply with safe practices or substance abuse policies, and the Contractor shall promptly comply with the Safety Program or Substance Abuse Program and all such orders.

G. EMERGENCIES

1. In any emergency affecting the safety of persons or property, or in the event of a claimed violation of any federal or state safety or health law or regulation, arising out of or in any way connected with the Work or its performance, the Contractor shall act immediately to prevent threatened damage, injury or loss and to remedy said violation. Failing such action the County or its agent(s) may immediately take whatever steps it deems necessary including, but not limited to, suspending the Work as provided in this Agreement.

2. The County or its agent(s) may offset any and all costs or expenses of whatever nature, including attorneys' fees, paid or incurred by the County or its agent(s) (whether such fees are for in-house counsel or counsel retained by the County or its

agent), in taking the steps authorized by Section 00700-25(G)(1) above against any sums then or thereafter due to the Contractor. The Contractor shall defend, indemnify, and hold the County, its officers, agents, employees, and the County's O.C.I.P. Administrator harmless against any and all costs or expenses caused by or arising from the exercise by the County of its authority to act in an emergency as set out herein. If the Contractor shall be entitled to any additional compensation or extension of time change order on account of emergency work not due to the fault or neglect of the Contractor or its Sub-Contractors, such additional compensation or extension of time shall be determined in accordance with General Condition 00700-52 and General Condition 00700-87 of this Agreement.

H. SUSPENSION OF THE WORK

1. Should, in the judgment of the County or its agent(s), the Contractor or any Sub-Contractor fail to provide a safe and healthy work place or fail to follow the safety requirements defined in the contract documents and approvals, the County or its agent shall have the right, but not the obligation, to suspend work in the unsafe areas until deficiencies are corrected. All costs of any nature (including, without limitation, overtime pay, liquidated damages or other costs arising out of delays) resulting from the suspension, by whomsoever incurred, shall be borne by the Contractor.

2. Should the Contractor or any Sub-Contractor fail to provide a safe and healthy work place or fail to follow the safety requirements defined in the contract documents and approvals after being formally notified in writing by the County or its agents of such non-compliance, the contract may be terminated following the termination provision of the contract.

I. CONTRACTOR'S INDEMNITY OF THE COUNTY FOR CONTRACTOR'S NON-COMPLIANCE WITH SAFETY PROGRAM

1. The Contractor recognizes that it has sole responsibility to assure its Safety Program is implemented and to assure its construction services are safely provided. The Contractor shall indemnify, defend and hold the County and its agents harmless, from and against any and all liability (whether public or private), penalties (contractual or otherwise), losses, damages, costs, attorneys' fees, expenses, causes of action, claims or judgments resulting, either in whole or in part, from any failure of the Contractor, its Sub-Contractors of any tier or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, to comply with the safety requirements of the contract. The Contractor shall not be relieved of its responsibilities under the safety requirements of the Contract should the County or its agent(s) act or fail to act pursuant to its rights hereunder. The County, its agents, and the County's O.C.I.P. Administrator shall not assume, nor be deemed to have assumed, any responsibilities otherwise imposed upon the Contractor by this Agreement, by virtue of providing the Safety Program Guidelines.

2. The Contractor shall not raise as a defense to its obligation to indemnify under this Subparagraph I any failure of those indemnified hereunder to assure Contractor operates safely, it being understood and agreed that no such failure shall relieve the Contractor from its obligation to assure safe operations or from its obligation to so

indemnify. The Contractor also hereby waives any rights it may have to seek contribution, either directly or indirectly, from those indemnified hereunder.

3. In any and all claims against those indemnified hereunder by any employee of the Contractor, any Sub-Contractor of any tier or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Subparagraph I shall not be limited in any way as to the amount or type of damages, compensation or benefits payable by or for the Contractor or any Sub-Contractor of any tier under any workers' compensation act, disability benefit or other employee benefit acts.

00700-26 BLASTING AND EXCAVATION

The Contractor acknowledges that it is fully aware of the contents and requirements of O.C.G.A. § 25-9-1 through 25-9-12 concerning blasting and excavation near underground gas pipes and facilities and shall fully comply therewith.

00700-27 HIGH VOLTAGE LINES

The Contractor acknowledges that it is fully aware of the contents and requirements O.C.G.A. § 46-3-30 through 46-3-39 concerning safeguards against contact with high voltage lines, and the Contractor shall fully comply with said provisions.

00700-28 SCAFFOLDING AND STAGING

The Contractor acknowledges that it is the person responsible for employing and directing others to perform labor within the meaning of O.C.G.A. § 34-1-1 and agrees to comply with said provisions.

00700-29 CLEAN-UP

The Contractor shall clean up all refuse, rubbish, scrap materials, and debris caused by its operations to the end that the site of the work shall present a neat, orderly and workmanlike appearance at all times.

00700-30 PROTECTION OF WORK

The Contractor shall be responsible for maintenance and protection of the work, which shall include any County-furnished supplies, material, equipment, until final completion of this agreement and acceptance of the work as defined herein. Any portion of the work suffering injury, damage or loss shall be considered defective and shall be corrected or replaced by the Contractor without additional cost to the County.

00700-31 REJECTED WORK

The Contractor shall promptly remove from the project all work rejected by the Construction Manager for failure to comply with the contract documents and the Contractor shall promptly replace and re-execute the work in accordance with the contract documents and without expense to the County. The Contractor shall also bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

00700-32 DEFECTIVE WORK

If the Contractor defaults or neglects to carry out any portion of the work in accordance with the contract documents, and fails within three days after receipt of written notice from the Construction Manager to commence and continue correction of such default or neglect with diligence and promptness, the County may, after three days following receipt by the Contractor of an additional written notice and without prejudice to any other remedy the County may have, make good such deficiencies and complete all or any portion of any work through such means as the County may select, including the use of a separate Contractor. In such case, an appropriate change order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies. In the event the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the County on demand.

The County may, at its option, accept defective or nonconforming work instead of requiring its removal or correction. In such case, a change order shall be issued reducing the price due the contractor to the extent appropriate and equitable. Such contract price adjustment shall be effected whether or not final payment has been made.

00700-33 WARRANTY OF NEW MATERIALS

The Contractor warrants to the County that all materials and equipment furnished under this contract will be new unless otherwise specified, and the Contractor further warrants that all work will be of good quality, free from faults and defects, and in conformance with the contract documents. The warranty set forth in this paragraph shall survive final acceptance of the work.

00700-34 CONTRACTOR'S WARRANTY OF THE WORK

If within one year after the date of issuance of the certificate of final payment pursuant to General Condition 84, or within such longer period of time as may be prescribed by law or by the term of any applicable special warranty required by the contract documents, any of the work is found to be defective or not in accordance with the contract documents, the Contractor shall correct such work promptly after receipt of written notice from the Construction Manager to do so. This obligation shall survive both final payment for the work and termination of the contract.

00700-35 ASSIGNMENT OF MANUFACTURERS' WARRANTIES

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 County. If requested, the Contractor shall execute formal assignments of said manufacturer's warranties to the County. All such warranties shall be directly enforceable by the County.

00700-36 WARRANTIES IMPLIED BY LAW

The warranties contained in this agreement, as well as those warranties implied by law, shall be deemed cumulative and shall not be deemed alternative or exclusive. No one or more of the warranties contained herein shall be deemed to alter or limit any other.

00700-37 STOP WORK ORDERS

In the event that the Contractor fails to correct defective work as required by the contract documents or fails to carry out the work in accordance with contract documents, the Construction Manager, in writing, may order the Contractor to stop work until the cause for such order has been eliminated. This right of the County to

stop work shall not give rise to any duty on the part of the County or the Construction Manager to execute this right for the benefit of the Contractor or for any other person or entity.

00700-38 NOT USED

00700-39 NOT USED

00700-40 NOT USED

00700-41 NOT USED

00700-42 NOT USED

00700-43 NOT USED

00700-44 NOT USED

00700-45 RECORDS

The Contractor shall preserve and make available to the County all of its records, books, documents and other evidence bearing on the costs and expenses of the Contractor and any subcontractor pursuant to this agreement upon three days advance notice to the Contractor.

00700-46 DEDUCTIONS

In arriving at any amount due the Contractor pursuant to the terms of this agreement, there shall be deducted all liquidated damages, advance payments made to the Contractor applicable to the termination portion of the contract, the amount of any claim which the County may have against the Contractor, the amount determined by the Construction Manager to be necessary to protect the County against loss due to outstanding potential liens or claims, and the agreed price of any materials acquired or sold by the Contractor and not otherwise recovered by or credited to the County.

00700-47 NOT USED

00700-48 NOT USED

00700-49 COMMENCEMENT AND DURATION OF WORK

The capacity of the Contractor's construction and manufacturing equipment and plan, sequence and method of operation and forces employed, including management and supervisory personnel, shall be such as to insure completion of the work within the time specified in the Agreement. The Contractor and County hereby agree that the contract time for completion of the work is reasonable taking into consideration the average climatic conditions prevailing in the locality of the work and anticipated work schedules of other contractors whose activities are in conjunction with or may affect the work under this contract.

00700-50 TIME OF THE ESSENCE

All time limits stated in this agreement are of the essence of this contract.

00700-51 IMPACT DAMAGES

Except as specifically provided pursuant to a stop work order or change order, the Contractor shall not be entitled to payment or compensation of any kind from the County for direct or indirect or impact damages including, but not limited to, costs of acceleration arising because of delay, disruption, interference or hindrance from any cause whatsoever whether such delay, disruption, interference or hindrance is reasonable or unreasonable, foreseeable or unforeseeable, or avoidable, provided, however, that this provision shall not preclude the recovery of damages by the Contractor for hindrances or delays due solely to fraud or bad faith on the part of the County, its agents, or employees. The Contractor shall be entitled only to extensions in the time required for performance of the work as specifically provided in the contract.

00700-52 DELAY

The Contractor may be entitled to an extension of the contract time, but not an increase in the contract price or damages, for delays arising from unforeseeable causes beyond the control and without the fault or negligence of the Contractor or its subcontractors for labor strikes, acts of God, acts of the public enemy, acts of the state, federal or local government in its sovereign capacity, by acts of another separate contractor, or by an act or neglect of the County.

00700-53 - NOT USED

00700-54 DELAY – NOT USED

00700-55 STATEMENT OF CLAIM - CONTENTS

The Statement of Claim referenced in the preceding 00700-54 shall include specific information concerning the nature of the delay, the date of commencement of the delay, the construction activities affected by the delay, the person or organization responsible for the delay, the anticipated extent of the delay, and any recommended action to avoid or minimize the delay.

00700-56 WORK BEHIND SCHEDULE, REMEDY BY CONTRACTOR

If the work actually in place falls behind the currently updated and approved schedule, and it becomes apparent from the current schedule that work will not be completed within the contract time, the Contractor agrees that it will, as necessary, or as directed by the Construction Manager, take action at no additional cost to the County to improve the progress of the work, including increasing manpower, increasing the number of working hours per shift or shifts per working day, increasing the amount of equipment at the site, and any other measure reasonably required to complete the work in a timely fashion.

00700-57 NOT USED

00700-58 SET-OFFS

Any monies due to the Contractor pursuant to the preceding paragraph of this agreement may be deducted by the County against monies due from the County to the Contractor.

00700-59 REMEDIES CUMULATIVE

The remedies of the County under General Condition 56 and 58 are in addition to and without prejudice to all of the rights and remedies of the County at law, in equity, or contained in this agreement.

00700-60 TITLE TO MATERIALS

No materials or supplies shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sales contract or other agreement by which any interest is retained by the seller. The Contractor hereby warrants that it has good and marketable title to all materials and supplies used by it in the work, and the Contractor further warrants that all materials and supplies shall be free from all liens, claims, or encumbrances at the time of incorporation in the work.

00700-61 INSPECTION OF MATERIALS

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards and in accordance with the requirements of the contract documents. Additional tests performed after the rejection of materials or equipment shall be at the Contractor's expense.

00700-62 CONSTRUCTION MANAGER'S PRESENCE DURING TESTING

All tests performed by the Contractor shall be witnessed by the Construction Manager or his designee unless the requirement is waived in writing. The Construction Manager may perform additional tests on materials previously tested by the Contractor.

00700-63 MATERIALS INCORPORATED IN WORK

The Contractor shall furnish all materials and equipment to be incorporated in the work. All such materials or equipment shall be new and of the highest quality available. Manufactured materials and equipment shall be obtained from sources which are currently manufacturing such materials, except as otherwise specifically approved by the Construction Manager.

00700-64 NOT USED

00700-65 NOT USED

00700-66 NOT USED

0700-67 SPECIALTY SUB-CONTRACTORS

The Contractor may utilize the services of specialty subcontractors on those parts of the project which, under normal contracting practices, are performed by specialty subcontractors. The Contractor shall not award more than seventy-five percent of the work to subcontractors.

00700-68 INSPECTION BY THE CONSTRUCTION MANAGER

All work pursuant to this agreement shall be subject to inspection by the Construction Manager for conformity with contract drawings and specifications. The Contractor shall give the Construction Manager reasonable advance notice of operations requiring special inspection of a portion of the work.

00700-69 NOT USED

00700-70 NOT USED

00700-71 NOT USED

00700-72 NOT USED

00700-73 NOT USED

00700-74 NOT USED

00700-75 NOT USED

00700-76 COUNTY'S RESPONSIBILITIES TO SUBCONTRACTORS

Neither the County nor the Construction Manager shall have any obligation to pay any subcontractor except as otherwise required by law.

00700-77 PROGRESS PAYMENTS - ACCEPTANCE OF WORK

Certification of progress payments, as well as the actual payment thereof, shall not constitute the County’s acceptance of work performed pursuant to this agreement.

00700-78 NOT USED

00700-79 NOT USED

00700-80 RIGHT TO WITHHOLD PAYMENT

The Construction Manager may decline to approve payment and may withhold payment in whole or in part to the extent reasonable and necessary to protect the County against loss due to defective work, probable or actual third party claims, the Contractor's failure to pay subcontractors or material men, reasonable evidence that the work will not be completed within the contract time or contract price or damage to the County or any other contractor on the project.

00700-81 CERTIFICATE OF SUBSTANTIAL COMPLETION

Upon the Contractor's submission of a request for a certificate of Substantial Completion, the Construction Manager shall inspect the work and determine whether the work is Substantially Complete. If the work is Substantially Complete, the Construction Manager shall issue a certificate of Substantial Completion of the work which shall establish the date of Substantial Completion, shall state the responsibilities of the County and the Contractor for security, maintenance, heat, utilities, damage to the work and insurance, and shall fix the time within which the Contractor shall complete the items submitted by the Contractor as requiring correction or further work. The certificate of substantial completion of the work shall be submitted to the County and the Contractor for their written acceptance of the responsibilities assigned to them pursuant to such certificate.

If in the sole opinion of the Construction Manager, the work is not substantially complete, the Construction Manager shall notify the Contractor of such, in writing, and outline requirements to be met to achieve Substantial Completion.

00700-82 NOT USED

00700-83 NOT USED

00700-84 FINAL PAYMENT - WAIVER OF CLAIMS, DISPUTE OF FINAL PAYMENT

The acceptance of the Substantial Completion payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of application for payment at Substantial Completion and except for the retainage sums due at final acceptance. Following the Construction Manager's issuance of the certificate of Substantial Completion and the Contractor's completion of the work pursuant to this agreement, the Contractor shall forward to the Construction Manager a written notice that the work is ready for final inspection and acceptance. If after inspection the Construction Manager certifies that the work is complete and issues written notification of such to the Contractor, the Contractor shall forward to the Construction Manager a final application for payment. The Construction Manager shall issue a certificate for payment, which shall approve final payment to the Contractor and shall establish the date of final completion.

In the event the Contractor timely disputes the amount of the final payment, the amount due the CONTRACTOR shall be deemed by the CONTRACTOR and the COUNTY to be an un-liquidated sum and no interest shall accrue or be payable on the sum finally determined to be due to the CONTRACTOR for any period prior to final determination of such sum, whether such determination be by agreement of the CONTRACTOR and the COUNTY or by final judgment of the proper court in the event of litigation between the COUNTY and the CONTRACTOR. The CONTRACTOR specifically waives and renounces any and all rights it may have under Section 13-6-13 of the Official Code of Georgia and agrees that in the event suit is brought by the CONTRACTOR against the COUNTY for any sum claimed by the CONTRACTOR under the Contract or for any extra or additional work, no interest shall be awarded on any sum found to be due from the COUNTY to the CONTRACTOR in the final judgment entered in such suit. All final judgments shall draw interest at the legal rate, as specified by law.

00700-85 DOCUMENTATION OF COMPLETION OF WORK

Neither the final payment nor the remaining retainage shall become due until the Contractor submits the following documents to the Construction Manager:

A. An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the work have been paid other otherwise satisfied;
B. The surety's consent to final payment; and
C. Any other data reasonably required by the County or Construction Manager establishing payment or satisfaction of all such obligations, including releases, waivers of liens, and documents of satisfaction of debts.

In the event that a subcontractor refuses to furnish a release or waiver as required by the County or Construction Manager, the Contractor may furnish a bond satisfactory to the County to indemnify the County against such loss. In the event that any lien or indebtedness remains unsatisfied after all payments are made, the contractor shall refund to the County all moneys that the County may become compelled to pay in discharging such lien or other indebtedness, including all costs and reasonable attorney's fees.

00700-86 NOT USED

00700-87 CHANGES IN THE WORK

A. CHANGE ORDERS

1. A Change Order is a written order to the Contractor signed to show the approval and the authorization of the County, issued after execution of the Contract, authorizing a change in the Work and/or an adjustment in the Contract Sum or the Contract Time. Change Orders shall be written using forms designated by the County with Contractor providing supporting documentation as required by the Construction Manager. The Contract Sum and the Contract Time may be changed only by approved Change Order pursuant to Fulton County Procedure 800-6. The amount payable by the Change Order is payment in full for all direct and indirect costs incurred and related to the work under said Change Order, including but not limited to delays, imports, acceleration, disruption and extended overhead. A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including the adjustment in either or both of the Contract Sum or the Contract Time.

2. The cost or credit to the County resulting from a change in the Work shall be determined in one or more of the following ways:

   a. By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
   b. By unit prices stated in the Contract Documents or subsequently agreed upon;
   c. By cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
   d. By the method provided in Subparagraph A4 below.

4. If none of the methods set forth in Subparagraphs 3a, 3b, or 3c above is agreed upon, the Contractor, provided a written order signed by the Construction Manager is received, shall promptly proceed with the Work involved. The cost of such Work shall then be determined by the Construction Manager on basis of the reasonable expenditures and savings of those performing the Work attributable to the change. The cost of the change shall include only the items listed in Subparagraph 5a below, and in the case of either a decrease or an increase in the Contract Sum, an allowance for overhead and profit in accordance with the schedules set forth in Subparagraphs 5b and 6 below shall be applied to the cost or credit.

   a. In such case, and also under Subparagraph 3a above, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting of all actual costs expended, together with appropriate supporting data for inclusion in a Change Order.

b. All hourly rate charges shall be submitted to the Construction Manager for prior review and approval. All hourly rate charges shall be properly supported as required by the Construction Manager with certified payrolls, or their acceptable equivalent. When authorized to proceed for a given change and actual expenditures have been made prior to execution of a Change Order for the entire change, such actual expenditures may be summarized monthly, and if approved, incorporated into a Change Order. When both additions and credits covering related Work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase or decrease, if any, with respect to that change.

5. In Subparagraphs 3 and 4 above, the items included in "Cost and "Overhead" shall be based on the following schedule:

a. Unless otherwise provided in the Contract Documents, "Cost" shall be limited to the following: cost of materials incorporated into the Work, including sales tax and cost of delivery; cost of direct labor (labor cost may include a pro rata share of foreman's account of the change) including social security, old age and unemployment insurance, and fringe benefits required by agreement or custom; workers' or workmen's compensation insurance; rental value of equipment and machinery; costs for preparing Shop Drawings.

b. Unless otherwise provided in the Contract Documents, "Overhead" shall include the following: bond and insurance premiums including increase and decreases from change in the Work, supervision, superintendence, construction parking, wages of timekeepers, watchmen and clerks, small tools, consumable supplies, expendables, incidentals, general office expense, the cost of additional reproduction for the Contractor's subcontractors beyond that agreed upon in the Contract Documents, construction parking, any additional costs of craft supervision by the Contractor's or subcontractors' superintendents, and overhead charges which would be customary and expended regardless of the change in the Work due to other overlapping activities which are included as part of the original Contract, and all other expenses not included in "Cost" above.

c. In the event that a change is issued by the County which would require the expenditure of substantial amounts of special supervision (beyond the foreman level) by the Contractor, the Contractor may, at the sole direction of the Construction Manager, be allowed to incorporate these charges into the agreement cost for the change.

6. In Subparagraphs 3 and 4 above, the allowance for overhead and profit combined, included in the total cost or credit to the County, shall be based on the following schedule:

a. For the Contractor, for any work performed by the Contractor's own forces, <u>ten (10) percent</u> of the cost.

b. For the Contractor, for any work performed by a Contractor's subcontractor, five (5) percent of the amount due the subcontractor.

c. For each subcontractor or sub-subcontractor involved, for any work performed by that subcontractor's or sub-subcontractor's own forces, ten (10) percent of the cost.

d. For each subcontractor, for work performed by a sub-subcontractor, five (5) percent of the amount due to the sub-subcontractor.

e. Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 5 above unless modified otherwise.

7. In order to facilitate checking of quotations for extras or credits, all proposals or bids, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs, including labor cost, materials and subcontracts. Labor and materials shall be itemized in the manner defined in Subparagraph 4 above. Where major cost items are subcontracts, they shall be itemized also. In no case shall a change be approved without such itemization.

8. No payment shall be made for any changes to the contract that are not included in a fully executed Change Order.

B. CONCEALED, UNKNOWN AND DIFFERING CONDITIONS

Should concealed conditions be encountered in the performance of the Work below the surface of the ground, or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, or should unknown physical conditions below the surface of the ground or concealed or unknown conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract, be encountered, the Contract Sum and Contract Time shall be equitably adjusted by Change Order upon request by either party made **within twenty (20) days after the first observance** of the conditions. No such request for equitable adjustment shall be valid unless the Contractor complies with this (20) days notice and Subparagraph C.1. below.

The Contractor shall promptly, and before such conditions are disturbed, notify the Construction Manager in writing of any claim of concealed, unknown or differing conditions pursuant to this paragraph. The Construction Manager shall authorize the Contractor to investigate the conditions, and if it is found that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the Work under this Contract, whether or not changed as a result of such conditions, an equitable adjustment shall be recommended to the Construction Manager.

No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required in (a) above, prior to disturbing the condition.

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

Any materially differing site condition as between what is shown on the Drawings and Specifications and actually found on site shall be immediately reported to the Construction Manager in writing prior to the commencement of Work at the site. Failure of the Contractor

to notify the Construction Manager in writing of the differing site condition prior to performance of Work at the site shall constitute a waiver of any claim for additional monies. Any Change Order necessitated by the differing site condition shall be processed as provided under "Changes in the Contract".

C. REQUESTS FOR ADDITIONAL COST

1. If the Contractor wishes to request an increase in the Contract Sum, the Contractor shall give the Construction Manager written notice thereof **within twenty (20) days** after the occurrence of the event, or identification of the conditions, giving rise to such request. This notice shall be give by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with Paragraph 10.7 of this Agreement, and Subparagraph A.4 above. **No such request shall be valid unless so made within the twenty (20) days specified above**. If the County and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the Construction Manager. Any change in the Contract Sum resulting from such claim shall be documented by Change Order.
2. If the Contractor claims that addition cost is involved because of, but not limited to (1) any written interpretation pursuant to General Condition 00700-17 of this Agreement, (2) any order by the County to stop the Work pursuant to General Conditions 00700-25 and 00700-37 of this Agreement where the Contractor was not at fault, or any such order by the Construction Manager as the County's agent, or (3) any written order for a minor change in the Work issued pursuant to Paragraph D below, the Contractor shall submit a request for an increase in the Contract Sum as provided in Subparagraph C.1 above. No such claim shall be valid unless the Contractor complies with Subparagraph C.1 above.

D. MINOR CHANGES IN THE WORK

The Construction Manager may order minor changes in the Work not involving an adjustment in the Contract Price, extension of the time allowed for performance of the work and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by a written Change Directive issued by the Construction Manager, and shall be binding on the County and the Contractor. The Contractor shall carry out such written orders promptly.

E. BONDS

If any change order results in an increase in the contract price, the contractor shall increase the penal sum of the performance and payment bonds to equal the increased price.

00700-88 NOT USED

00700-89 NOT USED

00700-90 LAND AND RIGHTS-OF-WAY

The owner will provide, as indicated in the Contract Documents and prior to Notice to Proceed, the lands upon which the work is to be done, right-of-way for access thereto, and such other lands which are designated

for the use of the Contractor. The Contractor shall confine the Contractor's work and all associated activities to the easements and other areas designated for the Contractor's use. The Contractor shall comply with any limits on construction methods and practices which may be required by easement agreements. If, due to some unforeseen reason, the necessary easements are not obtained, the Contractor shall receive an equitable extension of contract time dependent upon the effect on the critical path of the project schedule or the County may terminate the Contract for its convenience.

00700-91 COORDINATION WITH STATE DEPARTMENT OF TRANSPORTATION

A. No clearing or grading shall be completed by Contractor within the State Department of Transportation (DOT) area under construction. The Contractor must coordinate his construction scheduling with DOT.

B. If the Contractor begins work before DOT's completion date, he must obtain the approval of DOT before starting work in the area. The state DOT has the right to stop the Contractor's work the DOT area.

C. The Contractor shall receive no additional compensation or damages resulting from delay or work stoppage from DOT actions or scheduling.

D. Contractor shall obtain DOT drawings of the DOT, project area for verification of road geometry, storm drains, etc. from Georgia Department of Transportation or Fulton County. The Contractor is responsible for obtaining any pertinent DOT revisions.

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SECTION 00 900

TECHNICAL SPECIFICATIONS

PART 1 GENERAL

CURED-IN-PLACE PIPE (CIPP) LINING OF EXISTING SEWER MAINS

1.01 Description

A. Technical Specifications for the rehabilitation of sewer lines by inversion lining, by inserting a lining with a winch or by drawing into place by other means using a cured-in-place, thermo-setting-resin impregnated, flexible, fabric tubing (C.I.P.P.). Additionally, the Technical Specifications cover the work items that support the performance of C.I.P.P. field work in general, as well as the ancillary technical work items that allow for the complete rehabilitation of a sewer line.

1.02Definitions

A. The term “Engineer”, “Design/Builder”, and “Contractor” in this Section 00900 is defined as Design/Builder.

B. The Work covered by this Section includes furnishing all labor, equipment, and materials required to install cured-in-place inversion pipe liner as well as the denoted supporting and ancillary items of work that effect an overall sewer rehabilitation program. All work performed must meet or exceed the minimum requirements as set forth in ASTM F1216, latest revision, “Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube”.

1.03 Requirements

A. It is the intent that these specifications be non-preferential and not restrict installation methodology or materials to a single vendor or sole source. Recognized cured-in-place-pipe liner systems include but are not limited to:

1. Inliner USA
2. Insituform Technologies
3. Cure-Line
4. Equivalent equals approved by the Construction Manager.

B. Not Used

C. Fulton County will coordinate with the Contractor to assign and schedule the work in a logical and efficient format. However, all items in this contract shall be priced such that each item can be assigned independently or combined with other items at the County's sole discretion in regards to both quantity and scope. There shall be no consideration of any claim for extra payment arising from a decision by Fulton County to assign potential work items under this contract in any combination or in combination with another contract utilizing alternate technologies (e.g. Fold and Form, Pipe-Bursting). The Contractor shall perform only those work items directed by the Department of Public Works at the prices specified herein. (For example: if Fulton County determines that a line segment shall be cleaned but not televised or lined, the same unit price for cleaning shall apply).

D. Cured-in-place-pipe (CIPP) sewer line rehabilitation systems are defined as the reconstruction or reinforcing of the pipe walls of an existing sanitary sewer pipe line by the insertion of a resin impregnated, flexible, fabric tube into the existing sewer line using hydrostatic pressure, air pressure, a winch or other means. The flexible tube is expanded by pressure to fit tight against the interior walls of the existing pipe. With the thermo-setting, resin-impregnated, flexible fabric tube in position, the resin is cured by the circulation of a uniform heat for a specific period of time throughout the length of the tube, forming a hard, impermeable pipe within the existing pipe. After curing of the resin is completed, the hardened liner extends from manhole to manhole of the section being lined, provides a structurally sound, corrosion resistant, water tight conduit that excludes infiltration or exfiltration, is tight fitting within the existing pipe and is free of voids or annular spaces between the liner and the existing pipe walls. The finished liner provides a uniform, smooth, interior wall surface having hydraulic characteristics that offer no greater resistance to flow than the sewer being rehabilitated based on its capacity as originally designed.

1.04 Contractor Qualifications and References

A. Cured-in-Place Pipe (CIPP) construction shall be performed in accordance with these specifications and by the methods practiced by the system approved by the Department of Public Works. The CIPP contractor shall provide evidence and references for successfully installing a minimum of 100,000 linear feet of CIPP in the United States of America. The Contractor shall also provide documentation that the specified material to be used has been successfully installed in 250,000 linear feet of pipe in the United States of America and has been in place for a minimum of five (5) years.

1.05 Laws and Ordinances

A. The Contractor shall conform to all laws and ordinances of the State or Fulton County. The Contractor shall keep himself fully informed of all laws, ordinances and regulations of State, and Fulton County in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same if any discrepancy or inconsistency should be discovered in these Specifications in relation to any such law, ordinance, regulation order or decree, Contractor shall forthwith report the same in writing to the Owner. The Contractor shall at all times observe and comply with all such existing and future laws, ordinances and regulations and shall protect and indemnify the Owner and its agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or by his employees.

1.06 Notices, Signals, and Precautions

A. The Contractor shall be responsible for all practicable and legal notices and signals to the public while the work is in progress, and shall keep adequate warning lights burning at such times and at such points as may be necessary, and take any other precautions which in the judgment of the Construction Manager may be necessary to protect life and property. Sufficient lighting and waterproofing conductors shall be provided by the contractor to insure proper working conditions and inspections at all times.

1.07 Damage to Persons, Property, Etc.

A. The Contractor shall be responsible for all damage that may occur to persons, animals, vehicle, utilities and/or property from lack of proper lighting, enclosing of the workspace, bracing, and/or any accidents due to defective scaffolding, shoring or any negligence on the part of the Contractor or his employees.

1.08 Defective Work

A. All materials furnished and work done by the contractor at any time during the progress of the work, shall be subject to the inspection of the Construction Manager, with full power to accept or reject any part thereof. The contractor must, at his own expense and within a reasonable time, remedy any defective or unsatisfactory work or material. In the event of his failure to initiate corrections within 48 hours after written notice, the Construction Manager shall have full right to have same done, and to bill the contractor for cost thereof. Any condemned material must be removed from the work within twenty-four (24) hours.

1.09 Bypassing of Flows

1.09.1 Notification Of Proposed Interruption Of Service

A. The work covered by this section consists of the maintenance and rehabilitation of an existing public sewer system. In general, Fulton County is the holder of easements covering sewers not in the public rights-of-way on private property, which easements convey to the County or its agents the right to “enter the property of construct, operate and maintain” that sewer system. No other legal authorization is required for these purposes. However, Fulton County recognizes, in the exercise of its easement rights, it has an obligation to minimize disruption or interruption of sewer service to the properties served.

B. Prior to any proposed interruption of sewer service to properties by reason of this work, for each section of sewer to be lined, the contractor in cooperation with the Construction Manager shall make an evaluation of the impacts of any proposed interruption of sewer service on each property impacted based on the estimated length of the service interruption and the estimated normal effluent discharge from that property. The evaluation shall determine the usage of each property (hospital, place of public assembly, retail establishment, manufacturing facility, retail establishment, apartment, residence, etc.) where it is proposed to temporarily interrupt sewer service. This evaluation will include an estimate of the probable economic impact of such interruption of sewer service. Based on the information thus developed, the contractor shall submit a proposal to the Construction Manager

for each segment of sewer where it is contemplated that sewer service is to be interrupted for this work for the review and approval of the Construction Manager.

C. In some instances it shall be determined that it is unreasonable or not possible to interrupt sewer service to certain facilities for reasons of public health, economics or other compelling public or private purpose. In these cases, it shall be the contractor's responsibility to "by-pass" effluent discharges from such facilities around the section of sewer that it is determined necessary to interrupt sewer service to.

D. On approval by the Construction Manager of the contractor's proposal to interrupt sewer service (or to by-pass certain establishments), the contractor shall provide written notification to each sewer service customer affected by the proposed work of the intent to interrupt sewer service. This notification will be sent to the owner and occupant of each parcel impacted, to the mailing address of each improved parcel (or mailing address of owner of record for unimproved property). The outside of each envelope containing the notification will be clearly and prominently marked: "NOTIFICATION OF INTENT TO INTERRUPT SEWER SERVICE." These notifications shall be sent by United States Mail, return receipt requested which, for the purposes of scheduling the work, may be presumed to have been delivered within three calendar days after posting. This notification shall identify the property impacted, include all appropriate information about the contractor, the purpose of the service interruption, the estimated length of the interruption of service, and both the telephone number where the contractor can be contacted during normal working hours and an emergency (24 hour) number where he can be contacted in the event of the occurrence of an emergency such as the back-up or overflow of sewage, which emergency number is to be responsive on weekends and holidays. The sewer service customer shall be allowed three (3) working days, excluding weekends and holidays, after the presumed date of delivery of the notification of intention to interrupt service, to make known his objections, if any, to the interruption of service contemplated. It shall be the contractor's responsibility to record or maintain a log of the responses to these notifications and to make known this information to the Construction Manager. In the case of objections that, in the opinion of the Construction Manager, are valid and reasonable, the contractor will modify his proposals accordingly. The contractor shall also retain the signed receipts for delivery of the certified mail notification of intention to interrupt sewer service and to make note of those instances when delivery was not or can reasonably assumed to have not been made. In these instances, contractor will make every reasonable effort to personally visit the property proposed to be impacted and to notify the sewer service customer of the impending interruption of service. A record or log of these efforts shall be maintained identifying person's contacted and record responses, if any. Copies of the signed receipts for certified mail, logs or records of responses to notification and of personal efforts made shall be delivered to the Construction Manager prior to interruption of service.

E. Approval by the Construction Manager of contractor's proposal to interrupt sewer service will not be construed as relieving the contractor of any responsibilities for property damages or claims because of such interruption of services.

F. All work associated with NOTIFICATION OF PROPOSED INTERRUPTION OF SERVICE, Section 1.09.1 is considered incidental to the other items of the work in the bid proposal and no additional compensation for these tasks shall be paid to the

contractor.

1.09.2 Bypassing Sewerage and Sewer Flows

A. During the installation of the liner and the curing process (and television inspection of the lines, if appropriate), the contractor shall provide for bypassing of the flows, when necessary, around the sections of the pipe being lined. The bypass shall be accomplished by plugging the line at an existing upstream manhole and pumping the flow to the downstream manhole clear of the proposed work. The pump and bypass lines shall be of adequate capacity and size to accommodate the anticipated peak flow. In so far as is possible, work shall be so scheduled that the lining of the pipe, curing of the tube and the restoration of service connections can be accomplished in a single working day or shift. At the end of each working day, temporary tie connections shall be made between the relined section of pipe and the existing system and the plug in the upstream manhole removed, but not before the section being lined has been properly cured in accordance with the manufacturer's instructions. In some instances, it may be necessary to bypass effluent from service connections to specific parcels, which parcels will be identified in the contractor's approved proposal to interrupt sewer service. Prior to beginning this work, the contractor shall submit to the Construction Manager his proposal to accomplish THE BYPASS OF THE FLOWS. This proposal will include rationale and supporting calculations used to determine the anticipated average flow, anticipated peak flow, and maximum flow. It shall also include the make, model, flow and velocity (in gpm) and identification of pump(s) employed, the provision of standby pumps, the method of transporting effluent around the work, power or fuel sources and storage and all other relevant data necessary for the Construction Manager to make a judgment that the contractor has mobilized adequate resources to accomplish the intent.

1.09.3 Back-ups, Overflow or Spillage of Sewage

A. The installation methodology contemplated requires the temporary blocking and back-ups of sewers and sewage. Contractor shall be responsible to limit the extent and duration of such blockages and back-ups so that overflows and spillage onto public or private property and into storm sewers, water ways and streets does not occur. In the event that such spillage or overflows do occur during the course of, or as a result of, the work, the contractor performing the work shall immediately eliminate the spillage or overflow and, as necessary, remove the blockage and eliminate the back-up. Upon elimination of the spillage or overflow, the contractor is to clean up and disinfect the area of possible contamination taking all steps that may be deemed necessary by the Construction Manager and/or the Environmental Protection Division of the State of Georgia. Work to stop or contain such events is to be deemed EMERGENCY in nature and is sufficient justification for total mobilization of resources, the use of overtime or double time, and any other reasonable measures to assure correction of the problem without delay.

B. All sewage overflows or spillage shall be reported immediately to the Deputy Director of Public Work – Systems Maintenance Division. Reporting shall take place as early as is feasible after the occurrence of such events but, in no case, more than 12 (12) hours after occurrence.

C. Damages arising from blockages, back-ups, spillage or overflows of sewage during the

course of the work or because of the work shall be the sole responsibility of the Contractor. Contractor shall be liable for any fines imposed on the Fulton County by enforcement agencies as a result of any spillage or overflow.

D. Prevention of spillage or overflows of sewage is considered incidental to the other items of work in the bid proposal and no additional compensation shall be paid the contractor for their prevention or for expenses relating to clean-up and disinfection that may be required as a result of failure to prevent on the contractor's part.

PART 2 PROJECT SUPPORT ITEMS (NOT USED)

PART 3 CURED-IN-PLACE PIPE (CIPP)

3.01 General

A. The cured-in-place pipe material shall be fabricated from materials which, when cured, will be chemically resistant to withstand exposure to sewage gases containing normal levels for domestic sewage of hydrogen sulfide, carbon monoxide, carbon dioxide, methane, traces of mercaptan, kerosene, saturation with moisture, dilute sulfuric acid, external exposure to soil bacteria, and any chemical attack which may be due to materials in the surrounding ground.

3.02 Other Applicable Specifications or Publications

A. The publications listed below form a part of these specifications:

American Society for Testing and Materials (ASTM)

ASTM F1216	Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
ASTM D638	Test method for tensile strength properties.
ASTM D790	Flexural Strength
ASTM D790	Modulus of Elasticity
ASTM D732	Shear Strength
ASTM D695	Compressive Strength

3.03 Resin

A. The resin used shall be a general purpose, unsaturated, styrene-based, thermoset resin and catalyst system or an epoxy resin and hardener or such other resin system, approved by the manufacturer that is compatible with the process proposed.

3.04 Reinforcing Material

A. The reinforcing material of the liner shall be needle interlocked terylene felt or of woven fiberglass or such other material, approved by the manufacturer, formed into sheets or plys of the required thickness. Layers may be of single or multiple layer construction where any layer may not be less than 1.5 mm thick. A suitable mechanical strengthener membrane or strip may be sandwiched in between layers where required to control longitudinal stretching. The minimum thickness of a bonded polyurethane membrane and liner, if used, shall be 0.25 mm + 5 percent and shall not affect the structural dimension requirement of the cured liner.

3.05 Mechanical Properties

A. The cured resin/fabric shall have the following minimum strength requirements:

Tensile Strength at Yield 20° C	3,000 psi
Flexural Strength	4,500 psi
Modulus of Elasticity-Long term	125,000 psi
Impact Strength	1.5 ft.-lb./in.
Shear Strength	7,000 psi
Flexural Modulus	250,000 psi

3.06 Liner Thickness

A. The wall thickness of the cured-in-place pipe (CIPP) liner shall be based on generally accepted pipe formula and anticipated potential modes of failure. Design parameters to consider include, but are not limited to, pipe wall material strength, long term strength required to provide fifty (50) year design life, earth loads, water table loads, live loads, condition of existing pipe being lined, missing section geometry of existing pipe, and localized or structural defects in the existing pipe. The design selection shall, at a minimum, be capable or resisting buckling stresses and flexural stresses from external loads and ring tension and deflection failure from internal loads such that deflection along any diameter of the cross section does not exceed five (5) percent of the nominal inside diameter of the pipe being lined. If a determination is made that the existing pipe being lined is fully deteriorated and provides no support to the composite existing pipe/liner system, the equation for wall thickness (buckling) shall be based on equation number 33 as set forth in the American Water Works Association publication AWWA C950, latest edition. In no case shall the wall thickness of the liner as installed be less than the nominal thickness.

3.07 Liner Size

A. The lining shall be fabricated to a size that, when installed, will neatly fit the internal circumference of the conduit(s) being lined.

3.08 Liner Length

A. The contractor shall be responsible for determining the minimum length to effectively span the distance from manhole to manhole and shall verify the length of the fabric lining material in the field before impregnation. The lining material may run through one or more manholes, but shall not be spliced or joined between manholes.

3.09 Preliminary Preparations

3.09.1 Pre-Installation Television Inspection (not used)

3.09.2 Water Requirements for the Work

A. The contractor shall be responsible for providing water required to perform this work. In general, water is available from Fulton County's privatized water distribution system.

3.09.3 Traffic Control

A. The contractor shall be responsible for traffic control during the course of each phase of the work. Ten days prior to beginning work, the contractor shall submit a traffic control plan for each section of the work for the review of the Construction Manager. It is the intent that this work be accomplished with as little disturbance to the traffic, private property and the public as is reasonably possible consistent with timely completion thereof. Parts or all of the work may have to be done during off-peak traffic periods, at night, on weekends or on holidays. Flagmen, when required, shall be Georgia DOT certified. If a second flagman or second uniformed police officer is required, that cost shall be reimbursed at actual cost without a multiplier for overhead and profit. The traffic control plan shall reflect such requirements where applicable. Signs, signals and detours shall conform to the Georgia Manual of Uniform Traffic Control Devices for Streets and Highways, latest edition. The laws and ordinances governing noise, work at night, Sundays and certain holidays, and the proximity of the work to churches, hospitals, apartments and places of public assembly are applicable.

B. Regular traffic control is considered incidental to the other items of the work in the bid proposal and no additional compensation for this task shall be paid to the contractor.

3.10 Execution

3.10.1 General

All work shall be in strict accordance with the manufacturer's recommendation, the standard specifications, the rules and the guidelines and regulations of the Occupational Safety and Health Administration (OSHA) and all ordinances, laws and regulations of the governing authorities having jurisdiction.

3.10.2 Resin Impregnation of the Flexible Tube

A. The flexible tube shall be vacuum impregnated with resin under controlled conditions or, with the approval of the manufacturer, by such other means compatible with the system employed that the contractor may elect. The volume of resin used shall be sufficient to fill all voids in the tube material at normal or design thickness and diameter. The volume of resin shall be adjusted by adding five to ten percent excess resin for the change in resin volume due to polymerization and to allow for any migration of resin into the cracks and joints in the original pipe.

3.10.3 Insertion of the Flexible Tube

A. The resin impregnated tube shall be inserted through an existing manhole or other access by means of an inversion process, drawing in place with a winch or by other approved method and the application of a hydrostatic or other pressure head. The pressure or force exerted shall be sufficient to fully extend the tube to the next designated manhole or termination point. The inversion head or other pressure head shall be sufficiently large to expand the flexible tube tightly to the pipe wall producing dimples at side connections. Care shall be taken during tube installation not to over-stress the fabric fiber.

3.10.4 Lubricant

A. A lubricant meeting the manufacturer's recommendations, if any, shall be used. The lubricant shall be a nontoxic, oil-based product that has no detrimental effect on the tube, boiler or other heating system, pumps or other equipment used for the tube installation or curing process. The lubricant will not support the growth of bacteria and shall not adversely affect the existing conduit or the fluids to be transported by it.

3.10.5 Curing

A. After installation of the resin-impregnated, flexible tube is complete, a suitable heat source and appropriate equipment are required to circulate the heat uniformly throughout the length of the pipe being lined. The heat source and circulation equipment shall be capable of raising the pressurized interior of the pipe uniformly to and above the temperature required to affect a cure of the resin. The curing process, temperature and period of the process shall conform to the manufacturer's recommendations. The procedures employed shall include the provision of temperature and pressure gages to be placed both at the upstream inlet and downstream outlet as well as at intermediate access points, if any, to monitor temperatures and pressures during the cure period. Initial cure will occur during the temperature heat-up and is completed when exposed portions of the liner appear to be hard and sound and the temperature sensors indicate that the temperature is of a magnitude to realize an exothermic cure in the resin. After initial cure is reached, the temperature shall be raised to the post cure temperature and held for the period recommended by the resin manufacturer. Curing must take into account the existing pipe material, the resin system, and the ground conditions (temperature, moisture level, and thermal conductivity of the soil).

3.10.6 Cool Down

A. Cool down of the cured pipe liner shall be in accordance with the manufacturer's recommendations.

3.10.7 Sealing and Benches in Manhole

A. The CIPP shall make a tight fitting seal with the existing pipe(s) in the manhole. An acceptable seal approved by the manufacturer shall be applied circumferentially near the annular space touching the end of existing pipe and be properly encased with a cement-based mortar. The top half of the pipe shall be neatly cut off, at least four (4) inches away from the walls. Breaking or shearing the pipe will not be allowed. The channel in the manhole shall be a smooth continuation of the pipe(s) and shall be merged with other lines or channels, if any. The channel cross-section shall be U-shaped with a minimum height of one-half pipe diameter to three-fourths of the pipe diameter for fifteen (15) inches and larger. The side of the channels shall be built up with mortar/concrete to provide benches at a maximum 1 in 12 pitch towards the channel.

B. CIPP and the existing pipe in the manhole shall be sealed as above before proceeding on to the next manhole section and all manholes shall be individually inspected for liner cut-offs, benches and sealing works.

C. The connection between the cured-in-place pipe and the existing manhole shall be sealed to eliminate all ground water infiltration into the sanitary sewer system at this connection.

3.10.8 Service Connections

A. After the liner has been cured-in-place, the existing service connections and laterals shall be reconnected. In general, reconnection of service connections and laterals shall be accomplished internally without surface excavation using a remote controlled cutting device equipped with a television monitor. In some cases, remote reconnection may not be possible. In these instances, reconnection by conventional methods in accordance with the standard specifications is applicable.

3.10.9 Finished Product and Workmanship

A. All workmanship and materials will meet the standards of the industry. The finished, cured-in-place liner shall be continuous over the length of pipe between two manholes and shall be an impermeable, joint-less conduit, free from visual defects such as foreign intrusions, dry spots, pin holes, lifts or delaminations. The inner surface shall be free of cracks and crazing with a smooth finish and with an average of not more than 2 pits per square foot, providing the pits are less than 3 mm in diameter and not more than 1 mm deep and are covered with sufficient resin to avoid exposure of the inner fabric. With the approval of the manufacturer, some minor waviness shall be permitted, providing that the flow cross section is not reduced appreciably, the flow characteristics are essentially unchanged and potential line blockage does not occur. In the event the finished liner does not fit tightly against the original pipe at its termination point(s), the space between the liner and the pipe shall be sealed and cured with a resin mixture compatible with the lining system employed.

B. In the event that the installed product does not meet the above requirements, contractor shall remove and replace cured-in-place liner at no cost to Fulton County.

3.10.10 Testing and Inspection

A. The Construction Manager shall have access to the work site at all times to observe the work in progress, to monitor the work and to take such additional tests as he may deem appropriate. **The cost of the testing required by this Section 3.10.10 shall be included in the unit cost for installation.**

B. After the installation procedures have been performed and prior to reinstatement of service connections, the Contractor shall perform a hydrostatic test on the sewer line to determine if it is watertight. The test shall be performed using the existing hydrostatic head provided by the inversion standpipe. The test time shall be 5 minutes during which no makeup water shall be added to the standpipe. If at the end of the test period no water loss is observed in the standpipe, the water tightness of the cured-in-place pipe shall be considered satisfactory.

C. For each length of line installed, two liner samples shall be required: a section of cured pipe cut from the installation at an intermediate or terminal manhole and which has been

inserted through a like diameter pipe held in place by a suitable heat sink (such as sandbags); and a sample fabricated from material taken from the tube and the resin/catalyst system used and cured in a clamped mold placed in the down tube. Each sample shall be large enough to provide a minimum of three (3) test specimens.

D. For each section of pipe lined, the initial tangent flexural modulus of elasticity and the flexural strength of the specimens taken from the work shall be measured in accordance with test method ASTM D-790 to verify that the requirements of section 3.05 have been met.

E. Pipe failing to meet these requirements is subject to rejection and replacement at the contractor's expense.

F. Testing shall be performed by a professional materials testing laboratory, picked by the contractor and retained by the contractor. Copies of all test results, signed and sealed by a registered professional engineer licensed to practice in the State of Georgia, are to be furnished to the Construction Manager in a timely manner and prior to acceptance of the work.

G. After completion of the lining process and reinstatement of service connections, the installation shall be inspected by remote television camera. This post-installation television inspection is to take place as shortly after completion of each section as is feasible but, in no case more than ten (10) calendar days thereafter. Post-installation television inspection shall take place in the presence of a representative of the Construction Manager and shall verify that the requirements of Section 00900 3.10.9, including the reinstated sewer connections, have been met or exceeded. A video CD shall be made and provided to the Construction Manager of this post-installation inspection. No work shall be accepted that fails this post-installation television inspection.

H. **Testing and inspection, including taking of test specimens and post installation television inspection, are considered incidental to the items of work in the bid proposal and no additional compensation shall be paid therefore.**

PART 4 ANCILLARY ITEMS

4.01 Remote Reconnection and Grouting of Service Lines

4.01.1 Reconnection of Service Lines by Remote Methods

A. After the liner has been cured; the Contractor shall reconnect only the existing active service connections. The reconnection of service connections and laterals shall be done without excavation, from the interior of the newly installed liner by the use of a remote controlled cutting device equipped with a television monitor. All active connections shall be satisfactorily opened to the approximate size and shape of the original opening and shall be smooth and flush wherever there is a chance of debris buildup. In some cases, remote reconnection may not be possible. In these instances, reconnection by conventional methods in accordance with the standard specifications is applicable.

B. If in the course of the work, an existing service connection is omitted and the contractor must return to that location to reconnect a service.

4.01.2 Packer-Grouting of Service Connections

Preparatory Procedures

1. Cleaning shall be performed by the Contractor using a hydraulic cleaner and is to be adequate for seating a lateral packer. The Contractor will inspect the line by a "Quick Pull" to determine if the sewer line is clean, and if the laterals are accessible. Cleaning will continue until the "Quick Pull" inspection verifies that the service and lateral are clean and accessible.
2. Television inspection is limited to a "Quick Pull". During this inspection the operator notes obstruction, offset joints, debris, the location of lateral connections, and the general condition of each lateral. The "Quick Pull" inspection is videotaped, and only data relating to the lateral sealing report is logged. Also during this inspection, the Contractor determines which laterals can be accessed, and if there is enough clearance for the lateral sealing pacer. The Contractor makes the final determination on lateral sealing packer clearance.

B. Equipment

1. The lateral sealing inversion tube is designed to accommodate two sizes of laterals, 4-inch and 6-inch diameters, with a tube for each size. Both diameters' inversion tubes shall measure at least two feet in length.

C. Execution

1. Air testing laterals is accomplished by isolating the area to be tested with the packer and applying positive pressure into the isolated VOID area. A sensing unit is used for continuous monitoring of the Void pressure. This sensing unit is located within the Void area and accurately transmits pressure readout to the control panel.

2. The test procedure consists of applying air pressure into each isolated Void area. To isolate a Void, the lateral sealing packer is positioned straddling the lateral. The operator inflates the packer ends to isolate the lateral and inserts an inflatable inversion tube. Once the designated pressure in the isolated Void is displayed on the meter of the control panel, the application of air pressure is stopped and a twenty-second waiting period commences. The Void pressure is observed during this period. If the Void pressure drop is greater than that allowed in the following Air Test Table, the lateral is considered to have failed the air test and is grouted.

AIR TEST TABLE

Initial Void Pressure (psi)	VOID Pressure After 20 Seconds (psi)
12-11	4.8-4.4
11-10	4.4-4.0
10-9	4.0-3.6
9-8	3.6-3.2
8-7	3.2-2.8

7-6	2.8-2.4
6-5	2.4-2.0

3. After completing the air test for each individual lateral, the lateral packer is deflated, with the Void pressure meter continuing to display Void pressure. If the Void pressure does not drop to approximately zero, the equipment is adjusted to provide a zero Void pressure reading at the monitor.

4. Lateral sealing begins if the lateral does not pass the air test as described above. The lateral packer remains in position, maintaining the isolated Void. Chemical grout sealant is pressure injected through the lateral packer into the annular space between the inversion tube and the lateral pipe. Under pressure, the grout material is then forced out into the soil through leaking joints and pipe defects. The amount of chemical grout pumped is based on the number of pump strokes delivered to each lateral. The number is recorded on the sealing log.

5. Upon completion of the lateral sealing procedure the lateral is air tested a second time to verify the sealing of the connection. The air test is the same as outlined above. If the lateral fails the air test a second time, the grouting procedure is repeated. This sequence of air testing, grouting, and subsequent air testing is repeated until either the lateral is sealed or it is determined that the grout consumption is too high and may result in the blockage of the lateral pipe. The final determination to stop subsequent attempts to seal a service line will be made jointly between the Construction Manager and the Contractor.

6. Lateral flow is verified after the successful sealing of each lateral. With the lateral packer in position, the inversion tube is retracted and air pressure is injected into the lateral. Should a pressure build in the lateral and not drop to approximately zero in a few seconds, the packer is moved off the connection and the connection is viewed with a television camera. With the camera viewing the connection point, an attempt is made to obtain a water flush by the occupant. If no water is viewed during the procedure, it is assumed the building sewer is blocked with grout and the responsibility to clear the lateral will be the Contractor's.

7. A notification form is attached to the door of each home or building for which laterals have been grouted. This notification to the occupant states that the lateral servicing this listed address was grouted on this particular date and if any blockage of sanitary flow occurs, the occupant should call a given phone number. The Contractor will supply a notification form to the Construction Manager for his approval.

8. The complete procedure is videotaped during the air testing and sealing operation. The videotapes are submitted to the Construction Manager for review and permanent record. The videotape displays the date, manhole numbers, footage to the service, and Void pressure readout. In addition, the data obtained during this operation is recorded on a service testing and sealing log provided by the Contractor.

D. Products

1. Chemical Sealing (Grouting) Materials – The Contractor shall submit a mix design for the review of the Construction Manager. The material selected is to be one recommended by the Remote Grouting Packer manufacturer that takes into account the temperature, soil condition, soil type and soil water content found in the Atlanta area.

2. The mixing and handling of the chemical grouting materials used shall be in accordance with the approved mix design and the manufacturer's recommendations.

4.01.3 Cleanup

A. The Contractor shall remove all residual grouting materials that extend into the pipe, reduce the pipe diameter, or otherwise restrict the flow in the pipe. The grouted connections shall be left reasonably "flush" with the existing pipe surface.

4.01.4 Warranty

A. The Contractor shall guarantee his work under Section 4.01 for warranty period of one (1) year from the date of acceptance. If, at anytime during the warranty period, any leakage, cracking, loss of bond, or other discontinuity is identified, the Contractor shall make repairs acceptable and at no additional cost to the Owner.

4.02 External Point Repairs

4.02.1 Definitions

A. Point repairs as used in these Specifications shall mean repair of pipe segments (up to 15 feet) of existing sanitary sewer lines that require excavation to accurately locate sources of infiltration, or inflow and to eliminate them by making necessary repairs.

B. Point repair of sewer lines (up to 15 feet) where the repair of pipe segments extends into manhole locations shall include connection of pipe to the manhole.

4.02.2 Products

A. Pipe Material - The Contractor shall use Class 52 ductile iron pipe conforming to the standard requirements of the County for Ductile Iron Pipe and Fittings contained in Section 2480 herein.

B. Elastomeric Couplings - Elastomeric couplings for connecting replacement pipe to existing pipe shall be Fernco, or equal approved by the Construction Manager. Elastomeric couplings shall be fastened by two stainless steel adjustable clamps, type C-305 or approved equal, to form a watertight seal.

C. Concrete Collars - Concrete and reinforcing steel for concrete collars shall conform to the requirements of the County for Cast-In-Place Concrete.

4.02.3 Execution

A. Preparation

1. The Contractor shall establish the locations of existing utilities prior to excavation. All protection required to prevent damage to existing utilities shall be provided.

2 Site preparation shall be performed as required. When the repairs are to be made on sewers or facilities lying under paved surfaces; those surfaces shall be removed to the minimal limits needed to facilitate the work (trench width plus two feet for concrete surfaces) unless otherwise acceptable to the Construction Manager.

3. The Contractor shall provide all the material and equipment necessary to divert wastewater flow.

4. The Contractor shall dewater, sheet, and/or brace all excavations.

5. The Contractor shall note all service connections and maintain a record of them.

6. Traffic control shall be provided by the Contractor where required.

7. All activities shall be performed in accordance with the manufacturer's recommendations and regulations established by OSHA. Particular attention shall be drawn to those safety requirements involving working with scaffolding and entering confined spaces.

B. Method of Repair

1. The Contractor shall replace a sufficient number of entire pipe joints to ensure that defective pipe is removed and replaced up to a length, per repair, of 15 feet.

2. If the length of the required replacement segment is not adequate to locate sufficient competent pipe for connection with the new section, the Contractor, at the Construction Manager's instruction, may be directed to replace additional sections of pipe such that an appropriate connection is possible.

3. The Contractor shall provide service tees, wyes, or taps to replace those encountered within the point repair using the material specified by Fulton County Specifications.

4. Any service line or competent main line pipe broken by the Contractor shall be replaced at the Contractor's expense.

5. The Contractor shall remove any fences, base materials, storm sewer, etc. that

may interfere with the repair made at each specified point. The Contractor is responsible for the replacement of said fences, base materials, storm sewer etc., in the same or better condition than found.

6. The bottom of the trench shall be reshaped so that the grade of the pipe replaced will match that required for the existing sewer line. The point repair shall be backfilled in accordance with Fulton County Standards. If the material in the bottom of the trench is of such consistency that it is not stable, then the Contractor shall stabilize the bottom of the trench by placing suitable materials at the direction of the Construction Manager.

7. The Contractor shall use elastomeric couplings, fastened by two stainless steel clamps to connect replacement pipe with existing pipe.

8. The Contractor shall install concrete collars around all couplings in accordance with Fulton County Standards for Cast-in Place Concrete.

9. Prior to backfilling, point repairs shall be inspected by the Construction Manager. After backfilling, point repairs shall be internally televised by the Contractor for final approval by the Construction Manager.

C. Cleanup

1. After the installation work has been completed, the Contractor shall cleanup the entire project area. All excess material and debris not incorporated into the permanent installation shall be disposed of by the Contractor. The work area shall be left in a condition equal to or better than it was prior to the performance of the Work. Disturbed areas shall be seeded and landscaped as directed by the Construction Manager. Site restoration shall be performed in accordance to all applicable Fulton County Standards.

D. Warranty

1. The Contractor shall guarantee his work for warranty period of one (1) year from the date of acceptance. If, at anytime during the warranty period, any leakage, cracking, loss of bond, or other discontinuity is identified, the Contractor shall make repairs acceptable and at no additional cost to the Owner.

4.03 Manhole Height Adjustment

4.03.1 Products

A. Brick

1. Brick shall conform to ASTM C-32 for grade SM. Bricks shall conform to the following dimensions, unless otherwise approved by the Construction Manager:

	Depth (inches)	Width (inches)	Length (inches)
Standard Size	2-1/4	3-3/4	8

Allowable Variation	±¼	±¼	±½

2. All Brick shall be new and whole, or uniform standard size and with substantially straight and parallel edges and square corners. Bricks shall be of compact textures, burned hard entirely through, tough and strong, free from injurious cracks and flaws, and shall have a clear ring when struck together. No soft or salmon brick shall be used except at such places, to such extent, and under such conditions as may be approved by the Construction Manager.

B. Mortar

1. The Contractor shall use mortar meeting the requirements of ASTM C-270 Type S unless directed otherwise by the Construction Manager.

2. The Contractor shall prepare mortar only in quantities needed for immediate use. Mortar which has been mixed for more than 30 minutes, which has set, or which has been retempered shall not be used.

4.03.2 Execution

A. Procedures for Manhole Height Adjustment

1. The Contractor shall utilize maps, surveys, sounding instruments, or information from local residents to determine approximate location 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 to facilitate adjustments.

2. The Contractor shall adjust the top elevation of the manhole frame to grade where indicated on the Plans or directed by the Construction Manager using brick and mortar conforming to the requirements of this section. A maximum adjustment of 16 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 greater than 16 inches must be made by removing the cone section and adding the appropriate precast riser section.

4.04 Manhole Interior Rehabilitation

4.04.1 Products

A. General

1. It is the intent that these specifications be non-preferential and not restrict rehabilitation methodology or materials to a single vendor or sole source.

2. All materials used for manhole rehabilitation shall be approved by the Construction Manager.

3. The installer shall warrant and save harmless the Owner and the Parsons PM Team against all claims for patent infringement and any loss thereof.

4. The Contractor shall handle and store all materials and shall dispose of all wastes in accordance with applicable regulations.
5. Each lining system shall be designed for application over wet (but not active running water) surfaces without degradation of the final product and the bond between the product and the manhole surfaces.

6. Fiberglass manhole inserts shall be used only as directed by the Construction Manager. Fiberglass manhole inserts shall not be used as in-kind substitution for a different, directed, method of manhole rehabilitation.
7. All Work shall be performed in strict observance of OSHA regulation, especially those related to confined space entry.

8. The contractor shall notify the Water Department and obtain approval and water meter, if required, before using fire hydrants.

B. Equipment

1. The required equipment shall consist of chemical pumps, chemical grout containers, injection packers, hoses, valves, and any other miscellaneous equipment required to seal the manhole. The chemical injection pumps shall be equipped with pressure meters to provide for monitoring pressure during the chemical sealant injection process. If necessary, fluid by-pass lines equipped with pressure regulated by-pass valves will be incorporated into the system.

C. Materials for Patching, Repainting, Filling, and Repairing non-leaking holes, cracks, and spills in concrete and masonry manholes.

1. The Contractor shall use 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, gypsum, plasters, iron particles, aluminum powder, or gas-forming agents or promote the corrosion of steel it may come into contact with. Set time (ASTM C-191) shall be less than 30 minutes. One-hour compressive strength (ASTM C-109) shall be a minimum of 200 psi and the ultimate compressive strength (ASTM C-109) shall be a minimum of 5000 psi. Bond strengths (ASTM C-882 Modified) shall be a minimum of 1700 psi.

D. Spray Applied Urethane Resin System

1. Urethane resin liner shall be Spraywall as manufactured by Sprayroq or approved equal.

2. The urethane resin based liner material shall be used to form the sprayed on/structural enhanced monolithic liner covering all interior surfaces of the manhole including benches and inverts. The finished liner shall conform to the minimum requirements listed below.

PROPERTY	TEST METHOD	RESULTS
Compressive strength	ASTM D-695	10,500 psi
Tensile strength	ASTM D-638	5,000 psi
Shrinkage	ASTM D-2566	½ of 1%
Flexural strength	ASTM D-790	10,000 psi
Bond		shall exceed tensile strength of substrate
Flexural modulus	ASTM D-790	550,000 psi
Density		81 +/- pcf

3. The finished manholes shall be corrosion resistant to: Hydrogen Sulfide; 20% Sulfuric Acid; 17 % Nitric Acid; 5% Sodium Hydroxide as well as other common ingredients of the sanitary wastewater environment. Other material may be used as approved by the Construction Manager.

E. Cured-In-Place Epoxy Resin Liner System

1. Cured-in-Place Epoxy Resin Liner shall be Poly-TriPlex Liner System by SunCoast Environmental International, Inc. or approved equal.

2. The Cured-In-Place Epoxy resin based liner material shall be used to form a structural enhanced monolithic liner covering all interior surfaces of the manhole including benches and inverts. The finished liner shall conform to the minimum requirements listed below.

PROPERTY	TEST METHOD	RESULTS
Hardness	ASTM D-2240-75	82 Shore D
Tensile strength	ASTM D-63860	12,900 psi
Compressive strength	ASTM D-69554	18,600 psi
Flexural strength	ASTM D-79058T	17,400 psi
Ultimate Elongation	ASTM D-63860	6.0%
Bond		Shall exceed tensile strength of substrate
Flexural modulus	ASTM D-790	550,000 psi

3. The finished manholes shall be corrosion resistant to: Hydrogen Sulfide; 20% Sulfuric Acid; 17 % Nitric Acid; 5% Sodium Hydroxide as well as other common ingredients of the sanitary wastewater environment. Other material may be used as approved by the Construction Manager.

G. Fiberglass Manhole Insert

1. Fiberglass manhole inserts shall be as those manufactured by L.F. Manufacturing, Inc., or approved equal.

2. The fiberglass manhole insert shall be used as directed by the Construction Manager where manhole rehabilitation methods are inadequate. The final insert shall conform to the minimum requirements listed below.

PROPERTY	TRANSVERSE	LONGITUDINAL
Compressive strength	18,000 psi	10,000 psi
Tensile strength	18,000 psi	5,000 psi
Tensile strength	26,000 psi	4,500 psi
Flexural strength	1.4×10^6 psi	$.7 \times 10^6$ psi
Flexural modulus	$.6 \times 10^6$ psi	$.7 \times 10^6$ psi

4.04.2 Execution

A. Manhole Preparation

1. Cleaning: All concrete and masonry surface to be rehabilitated shall be cleaned prior to applying any lining system. All grease, oil, laitance, coatings, loose bricks, mortar, unsound brick or concrete and other foreign materials shall be completely removed. Cleaning shall include an acid wash using a 1:2 solution of muriatic acid followed by hydro blasting unless directed otherwise by the Construction Manager. Other methods such as wet or dry sandblasting, concrete cleaners, degreasers, or mechanical means may be required to properly clean surface. All surfaces on which these methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products. Debris resulting from cleaning shall be removed from the manhole and not allowed to be carried downstream.

2. Flow Control: The Contractor shall be responsible for plugging or diverting the flow of wastewater as needed for manhole rehabilitation or fiberglass insert Patching: Loose material shall be removed from the area to be patched exposing a sound sub-base. Holes or voids around steps, joints or pipes, spilled areas, and cavities caused by missing or broken brick shall be patched and missing mortar repaired using a non-shrink patching mortar conforming to the requirements of this section. Cracks not subject to movement and greater than 1/16 inch in width shall be routed out to a minimum width and depth of ½ inch and patched with non-shrink patching mortar conforming to the requirements of this section. Bench repair and patching of walls is considered incidental to manhole preparation for liner application.

3. All manholes which have exposed cured-in-place or deformed/reformed pipe segments in the manhole invert channel shall require the use of a concrete bonding adhesive prior to the spray application of the cementitious manhole liner. The bonding agent shall be any synthetic emulsion specifically formulated for bonding new concrete to existing surfaces. The bonding agent shall be mixed and applied in accordance with manufacturer's recommendations.

4. All incoming or outgoing pipes shall be plugged or otherwise protected during liner application to prevent clogging. Manhole steps shall be

protected during spraying or all laitance removed and steps thoroughly cleaned after spraying. If manhole steps must be removed during liner installation, the Contractor shall replace the steps.

B. Stopping Infiltration

1. The contractor shall use hydraulic cement to stop infiltration at each identified point of leakage into the manhole.

2. If the flow of water into the manhole is too great for stoppage utilizing hydraulic cement, the Contractor shall drill holes at each point of leakage that shall extend through the manhole wall. Chemical sealant injection devices shall be placed into the drilled holes in a manner to provide a watertight seal between the holes and the injection device.

3. Hoses shall be attached to the injection devices from an injection pump. A mixture of manhole chemical sealants shall then be pumped until material refusal is recorded on the pressure gauge of the pumping unit. The Contractor shall ensure that excessive pumping pressures do not develop that may cause damage to the manhole walls.

4. Once the injection of the chemical sealants have been completed, the injection packers shall be removed and the holes shall be filled and toweled flush with the surface of the manhole wall using a fast-set non-shrinking grout.

5. Excessively leaking manholes will be considered additional manhole preparation. The Contractor must notify and receive approval from the Construction Manager before additional preparation begins. Additional manhole preparation without approval from the Construction Manager will be considered incidental to the Work.

C. Spray Applied Urethane Resin System

1. Prior to entering manholes, an evaluation of the atmosphere will be conducted to determine the presence of toxic, flammable vapors or possible lack of oxygen. The evaluation shall be in accordance with local, state, or federal safety regulations.

2. No application of liner shall be made unless the temperature inside the manhole is 50^0F or higher.

3. After blocking flow through the manhole and thorough cleaning/preparatory work has been achieved, the spray-on urethane shall be applied to the invert, bench, and wall areas to produce a smooth coating and yield the required structural integrity and corrosion resistance. The spray shall be applied such that the entire manhole is a structurally enhanced monolithic liner. The invert and bench liner thickness shall be the same as that required at the bottom of the manhole walls as determined by the manufacturer's standard engineering calculations for groundwater pressure.

The minimum thickness of the liner shall be as specified in the following table:

MINIMUM URETHANE RESIN LINER THICKNESSES	
Depth	Liner Thickness
≤ 10’	1/4 inch
>10’	3/8 inch

4. The finished invert surfaces shall be smooth, free of ridges, and will be sloped in the direction of flow. Special care shall be used to ensure a smooth transition between the new manhole invert and intersecting pipeline inverts such that flow will not be impaired.

5. The flow through the manhole shall be re-established as soon as practical and following the liner manufacturer’s recommendation for appropriate curing.

6. The urethane shall be manually sprayed onto all surfaces by a trained technician who is experienced in the application of a spray applied urethane resin and has been certified by the manufacturer. Appropriate personal protection equipment shall be utilized.

7. A minimum of 30 minutes curing time after the completion of spraying shall be allowed before subjection the manhole to active flow. In extremely cool weather, the manhole shall be protected while curing is in process to maintain the temperatures specified by the manufacturer.

D. Cured-In-Place Epoxy Resin Liner

1. Prior to entering manholes, an evaluation of the atmosphere will be conducted to determine the presence of toxic, flammable vapors or possible lack of oxygen. The evaluation shall be in accordance with local, state, and federal safety regulations.

2. The installation of the cured-in-place epoxy resin liner shall be in strict accordance with the manufacturer’s written instructions.

3. Once the liner is fully saturated with resin at the job site, it shall be lowered into the structure to the pre-marked position at the cover seat of the manhole entrance ring. The liner shall form a monolithic structure permanently connecting the ring and cover seat to the chimney, corbel, walls, benches, and invert. The liner shall be pressurized at a minimum of 500 lbs. per sq. ft., and heated by a temperature inversion system of pressurization with steam injection into the high velocity hot air column, creating a steam/convection oven atmosphere to create a liner temperature of approximately 200°F for at least two hours curing time.

4. Upon completion of the liner curing process, the inflation bladder shall be removed and all lines reopened and the liner cut off at the manhole cover

seat.

5. The finished invert surfaces shall be smooth, free of ridges, and will be sloped in the direction of flow. Special care shall be used to ensure a smooth transition between the new manhole invert and intersecting pipeline inverts such that flow will not be impaired.

6. The flow through the manhole shall be re-established as soon as practical and following the liner manufacturer's recommendation for appropriate curing.

7. The liner shall be installed by a trained experienced technician who has been certified by the manufacturer. Appropriate personal protection equipment shall be utilized.

E. Spray Applied Epoxy Liner

1. Application procedures shall conform to the recommendations of the monolithic surfacing system manufacturer, including material handling, mixing, environmental controls during application, safety, and equipment.

2. The equipment shall be specially designed to accurately mix and apply the specified materials and shall be regularly maintained and in proper working order.

3. The specified materials must be applied by an approved installer of the monolithic surfacing system.

4. All specified surfaces will be lined with the monolithic surfacing system to provide the minimum total thicknesses shown in the following table. The cured surface shall be monolithic with proper sealing connections to all unsurfaced areas and shall be placed and cured in three applications in conformance with the recommendations of the monolithic surfacing system manufacturer. The layers shall be applied with a 1 to 2 hour set time not to exceed 48 hours.

MINIMUM EPOXY LINER THICKNESSES	
Depth	Liner Thickness
≤ 10'	1/4 inch
>10'	3/8 inch

5. Specially designed spray and/or spin cast application equipment shall be used to apply each coat of the system.

6. During application a wet film thickness gage meeting ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness of Organic Coatings by Notched Gages, shall be used to ensure a monolithic coating and uniform thickness during application.

F. Fiberglass Manhole Insert

1. Prior to entering manholes, an evaluation of the atmosphere will be conducted to determine the presence of toxic, flammable vapors or possible lack of oxygen. The evaluation shall be in accordance with local, state, and federal safety regulations.

2. The installation of fiberglass manhole inserts shall be in strict accordance with the manufacturer's written instructions.

3. Once the frame, cover, and cone section of the existing manhole has been removed, the fiberglass insert shall be lowered into the structure. At this time, the contour of the existing bench shall be marked on the fiberglass insert. The insert shall then be removed and cut along the contour mark. Set the liner into the existing manhole in a concentric manner. Fiberglass is then installed between the bottom of the inset and the existing manhole with concrete grout poured and compacted evenly in one-foot lifts. Finally, install frame and cover to grade and backfill.

G. Cleanup

1. After the installation work has been completed, the Contractor shall cleanup the entire project area. All excess material and debris not incorporated into the permanent installation shall be disposed of by the Contractor. The work area shall be left in a condition equal to or better than it was prior to the performance of the Work. Disturbed grassed areas shall be seeded and or landscaped as directed by the Construction Manager at no additional cost to the Owner. Site restoration shall be performed in accordance to all applicable Fulton County Standards.

H. Warranty

1. The Contractor shall guarantee his work in Section 4.04 for warranty period of five (5) years from the date of acceptance. If, at anytime during the warranty period, any leakage, cracking, loss of bond, or other discontinuity is identified, the Contractor shall make repairs acceptable and at no additional cost to the Owner.

PART 5 SUBMITTALS

5.01 Not Used

5.02 Manufacture's Brochures

A. The Contractor is required to submit four (4) copies of the manufacturer's brochures giving a complete description of the product proposed, its physical and chemical composition, the same for the thermo-setting resin or epoxy hardener, the recommended range of curing temperature, period of cure, cool-down procedures and method of installation. Three (3) copies are to be sealed in an envelope addressed:

Parsons PM Team
141 Pryor Street, Suite 3077

Atlanta, GA 30303
Attention: Assigned Construction Manager

5.03 Pre-Installation Television Tapes and Logs

A. To be submitted during the course of the work. 2 copies of each - Required for project close-out.

5.04 Traffic Control Plan and Permits

A. Signed and sealed by a professional engineer licensed to practice in the State of Georgia. To be submitted during the course of the work for each phase of the work.

5.05 Proposal to Temporarily Interrupt Sewer Service

A. During the course of and for each segment of the work, for the review and approval of the Construction Manager, provide contractor's evaluation of property usage and impacts because of proposed interruption of service.

5.06 Notification of Intention to Interrupt Sewer Service.

A. During the course of and for each segment of the work, draft for the review and approval of the Construction Manager, copies of notifications mailed, receipts for certified mail, logs and records of personal and telephone contacts, related correspondence and inquiries by the public and replies.

5.07 Contractor's Proposal to Bypass Sewage and Sewer Flows.

A. During the course of and for each segment of the work, for the review and approval of the Construction Manager.

5.08 Post-Installation Television Tapes and Logs

A. Prior to acceptance of, during the course of and for each segment of the work, for the review and approval of the Construction Manager. 2 copies each. Required for close-out.

5.09 Certification of Supplier/Manufacturer of Liner System Employed

A. That the materials furnished entering the work met the requirements of the industry, the standards of good practice, and these specifications. Required as part of submittal.

5.10 Certification of the Contractor

A. Letter of Certification that the lining system used was installed in full accordance with the manufacturer's recommendations and these specifications.

5.11 Submittals for Ancillary Work Items

A. The awarded vendor will be required to submit four (4) copies of the manufacturer's brochures giving a complete description of the product proposed its physical and

chemical composition and manufacturer's recommendations. Three (3) copies are to be sealed in an envelope addressed:

Parsons PM Team
141 Pryor Street, Suite 3077
Atlanta, GA 30303
Attention: **Joe Reynolds, Project Manager**

A. Submittals (10 copies) shall be specifically required for:

4.01.1 Remote Reconnection Device – Manufacturer's Brochure

4.01.2 Remote Packer-Grouting Device – Manufacturer's Brochure

4.01.3 a) Manhole Interior Rehabilitation – Fiberglass Liner System

b) Manhole Interior Rehabilitation – Contractor selected Spray Applied or Cured-in- Place System

C. Submittals for Ancillary Work shall include all information necessary to demonstrate that the recommended product meets or exceeds the requirements of these Specifications (10 copies of each).

5.12 Other Submittals

A. As may be required elsewhere, that are necessary to accomplish the plan intent and as may be required by the Construction Manager**.**

5.13 Compensation for Submittals

A. Submittals are considered as incidental to the other items of work in the bid proposal and no additional compensation will be paid the contractor therefore.

5.14 Testing Results

A. The Contractor shall submit all test results to the Construction Manager within two weeks of performing any test described in this Section 00 900. If a test fails, the Contractor shall submit a corrective plan within two weeks of performing any test described in this Section 00900.

SECTION 01 025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE

A. The Proposal – Schedule A payment items have been identified in Section 1.0, Item 1.24. Schedule B 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 Proposal.

B. Notwithstanding any limits which may be implied by the wording of the individual items and the explanations in this Section, the rates must include for all incidental and contingent expenses and risks of every kind necessary to complete the works in every respect and maintain them, all in accordance with the Contract Documents. The rates for items for units of composite work of construction involving several classes of materials and workmanship shall provide for the completion of all component parts, although they may not be specifically described in the Contract Documents.

C. The quantities of work and materials stated are not to be considered as limiting or extending the amount of work to be done or material to be supplied by the Contractor.

D. That rates and prices shall include for the cost of carrying out work adjacent to, over, or in water and the rates and prices shall be deemed to include for such conditions whether or not specifically mentioned in the Specification or elsewhere in the Contract Documents.

E. The rates and prices shall cover all site costs, site supervision and overhead charges and all cost, charges and expenditures whatsoever including but not by the way of limitation, for all plant, labor, materials, transport, duties, tax erection, wastage of materials, storage, packing, carriage and cartage, hoisting, scaffolding, planks trestles, battens, insurance, bonds and maintenance, together with any allowance for profit thereon.

F. The contractor will be deemed to have ascertained for himself, at the time of tendering, details of the extent of the work which will have to be carried out under flow conditions and his rates and prices shall be deemed to include for all costs and charges whatsoever arising out of such conditions whether or not specifically mentioned in the Specification or elsewhere in the Contract Documents.

G. Required items of work and incidentals necessary for the satisfactory completion of the work which are not specifically listed in the Proposal, and which are not specified in this Section to be measured or to be included in one of the items listed in the Proposal, 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 proposed for the various Proposal items. The Contractor shall prepare the Proposal accordingly.

H. Work includes furnishing all plant, labor, equipment, tools and materials, which are not furnished by the Owner and performing all operations required to complete the work satisfactorily, in place, as specified and as indicated on the Drawings.

I. All measurements shall be as specified or made by conventional means with accuracy consistent with field conditions and common practice.

J. Should a discrepancy in measurement exist which is greater than 10 percent, the item in question shall be re-measured by both the Contractor and the Owner's representative for verification.

K. The quantities are the net quantities and in pricing them, the Contractor must allow for any increase in quantity and for additional materials and for use of materials and plant which may be required in actual construction of the work anywhere on the works to meet the requirements of the Specification and Drawings. Where payments are based on weight, theoretical weights will be taken. All rates shall represent the total cost of the finished work complete and all as specified.

L. The unit rates listed on Schedule B and Schedule C shall include costs for tests as required by the specifications contained herein.

1.02 DESCRIPTIONS

A. Measurement of an item of work will be by the unit indicated in the Proposal/Bid.

B. The precision of final payment quantities shall match the precision shown for that item in the Proposal.

C. Payment will include all necessary and incidental related work not specified to be included in any other item of work listed in the Proposal.

D. Unless otherwise stated in individual sections of the Specifications or in the Proposal, 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 proposed for item of which it is a part.

E. Payment will be made by extending unit prices multiplied by quantities provided and then summing the extended prices to reflect actual work. Such price and payment shall constitute full compensation to the Contractor for furnishing all 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 ENGINEERING AND INVESTIGATIVE SERVICES

- Task A Research of Records: This item will be paid by hour at the Not-To-Exceed price listed in SCHEDULE A.
- Task B Field Investigation and Analysis: This item will be paid by the Not-To-Exceed unit rates listed on the rate sheet submitted with the Cost Proposal. CCTV will be paid by foot, Dye testing will be paid by each, manholes assessments will be paid by each, and smoke testing will be paid by foot at the unit rates listed on the rate sheet submitted with the Cost Proposal. Engineering and hydraulic analysis will be paid by hour. The contractor will install and remove a minimum of 5 piezometers. Piezometers will be paid by each installed at the unit rate listed on the rate sheet.

- Task C Work Order Development: The Contractor shall create 30 work orders. Each work order that's accepted by the County will be paid at the unit rate 1/30 of the cost listed on Task C "Work Order Development" of SCHEDULE A.
- Task D Sewer Repairs: This item will be paid as listed on SCHEDULE B as described below.
- Task E Prioritization Report: This item will be paid in full at the price listed on Task F "Prioritization Report" of SCHEDULE A once the County has received a draft and final Prioritization Report. No partial payment will be made.
- Task F Final I&I Reduction Report: This item will be paid in full at the price listed on Task H "Final I&I Reduction Report" of SCHEDULE A once the draft and final submittals of the Final I&I Reduction Report is made to the County. No partial payments will be made.
- Task G Progress Meetings and Meeting Minutes: Meetings, biweekly reports, and meeting minutes will be paid by each biweekly meeting held and attended at the Not-To-Exceed price listed in SCHEDULE A at 1/41 of the Task G line Item. The Contractor should plan to attend 39 biweekly progress meetings and 2 project close out meetings. If no biweekly meeting is held the Contractor will submit a biweekly report and will be paid for one hour of the Projects Manager's billing rate. The report must be faxed and emailed to the Construction Manager on the date of the canceled meeting with a hard copy sent by US Mail.

1.04 SEWER EASEMENT CLEARING

A. Payment for sewer easement clearing shall be made at the unit prices proposed according to the schedule below. No payment shall be made for areas which proper erosion control devices are not constructed and maintained. The Contractor must clearly submit a drawing where clearing will occur. The drawing must be included in the work order. Clearing must be performed in accordance with Specification 02110.

1. Light Clearing: This area requires "bush hog" equipment for tree and shrub removal.
2. Medium Clearing: This area requires "bush hog" and "chipper" equipment for tree and shrub removal.
3. Heavy Clearing: This area requires "timbering" equipment for tree and shrub material.

1.05 SEWER PRECONDITIONING

A. Payment for sewer preconditioning shall be made at the unit price rate per linear foot of each pipe size. Measurement of the actual number of feet of sewer preconditioned shall be made from the center of the manholes. Manhole preconditioning must be performed in accordance with Specification 02706 contained herein.

1.06 MANHOLE PRECONDITIONING

A. Payment for manhole preconditioning shall be made per manhole at the unit price rate per manhole vertical foot and diameter and shall include cleaning all surfaces or appurtenances in manholes, including walls, cones, slabs (both intermediate and roof slabs), rungs and benching to a general level of service. Manhole preconditioning shall also include removal and disposal of all roots, corroded concrete, corroded rungs, corroded ladders and intruding laterals which shall be cut flush with the interior surface. The unit rate for preconditioning shall include disposal of all material arising. Sewer preconditioning must be performed in accordance with Specification 02706 contained herein.

1.07 EROSION AND SEDIMENTATION CONTROL

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 proposal 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.

A. Construction Exits: All costs for construction exits, including installation, maintenance, repair, and removal, shall be included in the unit price proposal for Construction Exits.

B. Earth Fill (for Sink Holes and Washout Areas): All costs for excavation, hauling, backfilling and placement including compaction of earth fill shall be included in the unit price proposal for the Earth Fill.

C. Sediment Barriers: All costs for sediment barriers, whether specifically hay bales, specifically silt fences, or Contractor's choice of bales or silt fence, including installation, maintenance, repair, replacement, and removal, shall be included in the unit price proposal for Sediment Barriers.

D. Reinforced Rock Filter Dams: All costs for rock filter dams, including stone, necessary earthwork, wire and fabric, periodic maintenance and repair, and removal of sediment and stone following establishment of permanent erosion control measures shall be included in the unit price proposal for Reinforced Rock Filter Dams.

E. Rock Filter Dams: All costs for rock filter 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 proposal for Rock Filter Dams.

F. Sediment Traps: All costs for sediment traps, including installation, maintenance, repair and removal, shall be included in the unit price proposal for Sediment Traps.

G. Organic Material Fiber Blanket: All costs for organic material fiber blanket, including material, installation, maintenance, and repair, shall be included in the unit price proposal for Organic Material Fiber Blanket.

H. Tree Protection Fencing: All costs for tree protection fencing, including material, installation, maintenance, repair and removal, shall be included in the unit price proposal for Tree Protection Fencing.

I. Rip Rap: All costs for rip rap is to be measured by square yard and paid by the unit rate listed in Schedule B.

J. Grassing

1. No separate payment will be made for temporary grassing.

2. Payment shall be made only for the final permanent perennial grassing. All costs for grassing, including seeding, fertilizing, mulching as well as temporary measures, shall be included in the price proposed for Grassing.

K. Temporary Stream Crossings: All costs for constructing temporary stream crossings, including temporary culverts, stone, necessary earthwork, periodic maintenance and repair, and removal of sediment and all materials placed by the Contractor, following the end of the usefulness of the temporary crossing, shall be included in the unit price proposal for Temporary Stream Crossings.

L. Reinforced Silt Fence: All costs for reinforced silt fence, where ordered by the Engineer, including installation, maintenance, repair, replacement, and removal, shall be included in the unit price proposal for Reinforced Silt Fence.

M. Sod Placement: Placement of sod, where ordered by the Engineer, shall be provided and installed, complete in place, at the unit price proposal for Sod Placement.

1.08 BEAVER DAM REMOVAL/ RELOCATION

A. Payment shall be made at the unit price proposal for each beaver dam removal and disposal or relocation and per the specifications.

1.09 SEWER REHABILITATION

A. Payment for the various types of joint sealing, spot sealing, spot repair, direct burial pipe, pipe bursting and pipe lining shall be made at the unit price proposal for each pipe size of each item listed.

B. Unit rates for all of the various sewer rehabilitation methods shall include all materials, labor, equipment, supplies, site clean up, ventilation, safety, and testing as necessary for a complete and acceptable installation.

C. Rehabilitation work shall include the following (paid from Schedule B):

- Payment for external point repair shall be per repair at the unit price rate. External point repair shall be in accordance with Section 00900.
- Payment for cured-in-place structural spot repair shall be per repair at the unit price rate. Cured-in-place pipe (CIPP) spot repair must be performed in accordance with Specification 02714 contained herein.
- Payment for cured-in-place structural pipe lining shall be per lineal foot at the unit price rate. Cured-in–place pipe (CIPP) lining shall be performed in accordance with 00900. The liner must be installed such that storm water or groundwater is not allowed to enter the sewer segment.

1.10 REHABILITATE MANHOLES

General

A. Payment for manhole rehabilitation shall be made per the items of work listed at the unit price rate. The Contractor shall provide a means acceptable to the Owner for determining the total quantities of solutions used. Payment for Cement Plug, Liquid Accelerator, Polyurethane Resin and Chemical Grout shall be included in the unit price for manhole rehabilitation.

B. Payment for manhole lining process shall be according to the depth of the manhole at the unit price rate. Manhole lining shall be Polytriplex or Approved Equal. Proposed Equals shall be submitted to the County before Nov. 1, 2004.

C. Payment for the insertion of manhole dishes shall be per dish at the unit price rate.

D. Payment for replacing manhole covers shall be made per manhole at the unit price rate. Manhole cover types shall be as identified in the specifications.

E. Payment for installing corbel seals shall be made per manhole at the unit price rate.

F. Payment for installing embedment sealant shall be made per manhole at the unit price rate.

G. Payment for raising manholes shall include all materials, labor, equipment, supplies, manhole risers, steps, cleaning, ventilation and safety control measures, testing, excavation, earthwork and paving necessary to complete the work according to the height to be raised per manhole at the unit price rate.

H. The unit price rate for new manholes shall include all materials, labor, equipment, supplies, manhole, cleaning, ventilation and safety control measures, testing, excavation, earthwork and paving necessary to completely install one new manhole per Fulton County – Department of Public Works Sewer Standard Specifications. Manholes shall be precast concrete manholes as described in Section 02480 "Sewers and Accessories" part 2.05.

I. Vacuum testing will be paid by each for the labor, material, and equipment necessary to provide an air tight seal per Section 02480 , paragraph 3.08, part H. contained herein. Each test will be paid at the unit rate listed on Schedule B for Vacuum Testing.

J. The unit price rate for Flex-Seal Utility Sealant shall include all materials, labor, mobilization, equipment, supplies, and testing as necessary to completely install the Flex-Seal product (or approved equal) from the manhole frame thru the grade adjustment area ending 2 inches on the cone top section of the manhole. The Flex-Seal product (or approved equal) must be installed in strict accordance with the manufactures instructions. Flex-Seal requires a certified contractor to install the manhole sealant. Flex-Seal is a hand applied liner product manufactured by Sealing Systems, Inc.

1.11 FLOW BYPASS AND DIVERSION PUMPING

A. Payment will be made at the unit price rate for diverting pumping for the specific pipe size which is being bypassed to facilitate sewer line rehabilitation, pipe installation, or manhole work.

B. Payment will be for each line segment (manhole to manhole) bypassed where flow is stopped, diverted and actually pumped around the line segment(s) being worked on.

C. Payment will only be made once for a particular line segment, regardless of how many times pumps are used, set-up or demobilized, and how many pumps or pipes are utilized.

D. Sewer flow control shall be paid for at the unit price rate per set-up plus the unit price per hour of operation stated.

E. Flow bypass and diversion pumping must be performed in accordance with Specification 01511.

1.12 PIPELINE REPAIR

A. Payment for sewer line replacement will be made at the unit price rate per lineal foot of each pipe size listed. The sewer replacement unit rate shall include costs for removing existing sewer pipe and replacing the pipe with ductile iron pipe as required by Section 02480 "Sewer and Accessories". Unit Rates shall include all materials, labor, equipment, supplies, cleaning, ventilation and safety control measures, testing, excavation and backfilling necessary for a complete and acceptable installation.

B. Pipe Bursting will be paid at the unit rate by linear footage according to the depths listed on Schedule B. Pipe bursting must be performed in accordance with Specification 02720 contained herein.

1.13 LATERALS

A. Payment for lateral reconnection shall be made at the unit price rate per each. The unit rate includes excavation and restoration of earth material, lateral replacement and removal and disposal of previous lateral remains. The unit costs shall only reflect costs to excavate, restore , and reconnect the lateral. Pipe bursting costs may be negotiated as needed at the Construction Manager's approval. Laterals shall be restored in accordance to Fulton County's – Department of Public Works – Sewer Standard Specifications. The Construction Manager will confirm in writing the numbers of laterals to be opened and reconnected as part of the work. An initial CCTV survey performed by the Contractor will form the basis for the determination of total lateral connections. The Contractor will submit details and drawings depicting all lateral locations in the Work Order for approval prior to performing any lateral work.

1.14 CCTV

A. Payment for CCTV shall be made at the unit price rate per linear foot. The unit price rate shall include all labor, materials, equipment, and safety precautions necessary to CCTV the sewer system and record and submit the video via CD. This unit price rate shall include costs for the use of tripods and any other equipment for confined space entry. This unit price rate shall also include the review of the CCTV by the Contractor and reports generated from the review.

B. Payment for Reviewing CCTV shall be made at the unit price rate per linear foot. The contractor will be furnished video of the entire sewer system in the BIG CREEK I&I PHASE I Focus Area. The unit price rate shall include all costs for the video review and reports generated from the review.

PART 2 OTHER WORK

2.01 EARTHWORK

A. Earth Excavation

1. Earth Fills will be paid by cubic yards at the unit rate listed on SCHEDULE B
2. No separate payment will be made for earth excavation except for Earth Fill (for sink holes and washout areas). The cost of earth excavation and all costs incidental thereto shall be included in the unit rate for the item to which the work pertains.
3. No separate payment will be made for providing sheeting, bracing and timbering. Costs for sheeting, bracing, and timbering is incidental to the work to which it pertains.

B. Dewatering: No separate payment will be made for dewatering required to accomplish the work.

C. Backfilling: No separate payment will be made for backfilling or excavation, hauling and placement of borrow material except for Earth Fill (for sink holes and washout areas) as noted in Section 1.10 above. The cost of all such work and all costs incidental thereto shall be included in the unit price proposal for the item to which the work pertains.

2.02 REMOVING AND REPLACING PAVEMENT, SIDEWALKS, AND CURB & GUTTER

A. Payment will be made for removing and replacing pavement, sidewalks, and curb and gutter. The cost of removing and replacing pavement, sidewalks, and curb and gutter including providing select backfill if necessary will be submitted to the Construction Manager for acceptance and will be approved via the work order approval process. Costs for traffic control and temporary measures for maintaining traffic and all costs incidental thereto are considered incidental to the work being performed and will not be presented for payment, negotiated or paid.

B. No payment shall be made for tests which fail to verify required results.

C. No additional payment will be made for removing and replacing damaged adjacent pavement.

D. No separate payment shall be made for pavement removal and replacement associated with abandonment of existing water mains or installation of water services. Costs for water meters and the use of water are considered incidental to the work being performed and will not be presented for payment, negotiated or paid.

2.03 REGULATORY REQUIREMENTS

No separate payment will be made for complying with regulatory requirements. The cost of all such work incidental thereto shall be included in the unit price proposal for the various items of work.

2.04 TESTING

A. Vacuum testing will be paid by each for the labor, material, and equipment necessary to provide an air tight seal per Section 02480 , paragraph 3.08, part H. contained herein. Each test will be paid at the unit rate listed on Schedule B for Vacuum Testing.

B. The Contractor shall allow for the cost of tests of materials or structures or equipment described in the Contract or as instructed by the Construction Manager and shall include those costs in the items where allowed for in the Proposal. **The absence of any such item will be deemed not to be an omission.**

C. Any items for testing specified materials shall be deemed to include for the provision of all plant labor and materials for satisfactorily carrying out the tests.

2.05 TRAFFIC

"Routine Traffic Regulation" is deemed to include the provision and erection of all necessary standard roadway signs and cones sufficient for blocking off one lane. Unit Rates listed on Schedule A, Schedule B, and Schedule C shall also account where necessary for the control of traffic by the use of temporary traffic lights, and minor diversion signing. Unit Rates shall also account where necessary for the control of traffic through certified waivers. The Contractor shall contact the local and state government for coordination with traffic control for issues such as lane closures.

2.06 ADDITIONAL ITEMS

1. The unit rate for #57 Stone includes all labor, materials, and equipment necessary to spread #57 Stone on dry and swampy terrain. This item will be paid at the unit cost rate listed on Schedule B.

2. The Contractor must furnish additional items such as computer software, computer hardware, additional services, equipment, or materials as requested by the County for the sole purpose of reducing Inflow and Infiltration. The cost of such additional items will be negotiated and approved through the work order process. The additional items will be paid from the $3,000,000 "Sewer Repair Cost" budget.

3.0 FLOW METERS

3.01 FLOW METERS

The ADS flow meter Model 4000 or pre-approved equal shall be furnished under the Flow Meter line item. The unit rate for flow meters shall include meter cost, installation cost, data collection costs, and meter maintenance costs for each flow meter. The unit rate for flow meters shall also include the cost of connecting the flow meter with telephone service via a permanent phone line. All costs associated with installing the phone line to the flow meter and making the connection are to be included in the unit rate on Schedule C. All mounting materials, installation equipment, safety equipment and electric power are incidental to the installation of each flow meter. The ownership of all flow meters purchased under this line item will be transferred to the County at the conclusion of the contract.

In the event that the County wants to purchase additional maintenance and data collection services beyond the term of this contract, the County may request and approve a work order for such additional services to be paid from Schedule B.

SECTION 01 060

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 Scope

A. Permits and Responsibilities: The Contractor shall, without additional expense to the Owner, comply with any applicable federal, state, county and municipal laws, codes and regulations, in connection with the prosecution of the Work.

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, except for any completed unit of construction thereof which may heretofore have been accepted.

D. Business Licenses: The Contractor shall provide the County, on the proper form, proof of being licensed to do business within Fulton County; proof of proper business licenses shall also be provided by the Contractor for any and all subcontractors coming under the jurisdiction of this Contract.

1.02 ACOE Permits for Dredge and Fill Activities

A. Section 404 of the Clean Water Act requires that all dredge and fill activities that affect the Nation's waters, including wetlands and other special aquatic sites, must be permitted by a Nationwide Permit, Regional Permit, or Individual Permit unless otherwise exempted.

B. All Department of Army Corps of Engineers (ACOE) Permits shall be obtained by the Owner. The Contractor shall be responsible for complying with all required permits and shall perform restoration activities where temporary dewatering of areas is required.

C. The ACOE has the authority to review project work within the Nation's water and to issue individual permits or approve the use of Nationwide and Regional Permits. The Environmental Protection Agency, Georgia EPD and other natural resource agencies provide a key role in the review and establishing conditions of the permits.

D. Work in jurisdictional waters, jurisdictional wetlands and bank stabilization activities shall not commence until all permits have been issued.

1.03 Quality Assurance

A. 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, the more stringent provisions shall govern.

B. The Contractor shall allow access to ACOE, EPA and other enforcing personnel should they wish to visit the work sites. This includes assisting with transportation as may be required along easements, if necessary.

PART 2 PRODUCTS

2.01 Materials

A. Materials required to comply with these regulations shall include bank stabilization materials, materials for construction of temporary roads, sandbags and rebar for reconstruction of beaver dams, mats for temporary road access.

B. Mats consist of wooden, rubber or metal structures capable of distributing the weight of heavy equipment to prevent soil displacement in wetland conditions.

PART 3 EXECUTION

3.01 General

Provide all materials and promptly take actions necessary to achieve effective compliance with regulations in accordance with Section 404 of the Clean Water Act, the enforcing agency (ACOE) and these Specifications.

3.02 Permit Conditions

A. General: Nationwide Permits (NWP) 3, 2, 13, 18 and 33 apply to activities anticipated on this project. Each permit contains specific criteria that must be satisfied to be in compliance with the permit. In addition, 15 general permit conditions cover all Nationwide Permits. Both specific criteria and general permit conditions are applicable to this project.

B. NWP 3 (Maintenance)

1. Application: For all serviceable structures of fill requiring rehabilitation and/or replacement, including raising manholes.

2. Permit Conditions: Use best management practices such as construction mats, proper erosion and sedimentation control and high-flotation tires on heavy equipment.

C. NWP 12 (Utility Line Discharges)

1. Application: For all rehabilitation/replacement activities, including land clearing.

2. Permit Conditions:

a. Material resulting from trench excavation may be temporarily (up to 3 months) side cast in the Nation's waters, provided the materials are not dispersed by current or other forces.

b. In wetlands, the top 6 to 12 inches of the trench should be backfilled with topsoil from the trench.

c. Excess materials must be moved to uplands immediately following completion of construction.
d. Any exposed slopes or stream banks must be stabilized immediately following completion of construction.
e. All grades within a wetland or water of the United States must be returned to pre-existing contours.
f. The area within the waters of the United States to be disturbed must be limited to the minimum necessary to construct the utility line.
g. Best management practices should be utilized. This includes, but is not limited to, erosion and sedimentation controls and proper maintenance.

D. NWP 13 (Bank Stabilization)

1. Application: For all rehabilitation/replacement activities along stream banks and other areas.

2. Permit Conditions:

a. No material is placed in excess of the minimum needed for erosion protection.
b. The bank stabilization activity is less than 500 feet in length without approval by the ACOE.
c. The activity will not exceed an average of 1 cubic yard per running foot placed along the bank below the plane of the ordinary high water mark or the high tide line.
d. No material is placed in any special aquatic site, including wetlands.
e. No material is of the type, or is placed in any location, or in any manner, so as to impair surface water flow into or out of any wetland area.
f. No material is placed in a manner that will be eroded by normal or expected high flows.

E. NWP 14 (Road Crossings)

1. Application: For all rehabilitation/replacement activities requiring road crossings of wetlands and streams.
2. Permit Conditions

a. The width of fill is limited to the minimum necessary for the actual crossing.
b. The crossing is culverted, bridged, or otherwise designed to prevent the restriction of, and to withstand, expected high flows, and to prevent the restriction of low flows and the movement of aquatic organisms. The width of the fill is limited to the minimum necessary for the actual crossing.
c. The fill placed in the waters of the United States is limited to a filled area of no more than 1/3 acre. Furthermore, no more than a total of 200 linear feet of the fill for the roadway can occur in special aquatic sties, including wetlands.
d. The crossing, including all attendance features, both temporary and permanent, is part of a single and complete project for crossing a water of the United States.

F. NWP 18 (Minor Discharges)

1. Application: For vehicular access activities requiring the discharge of up to 24 cubic yards of fill material, including rip-rap, into waters of the United States.

2. Permit Conditions

a. The quantity of discharged material and the volume of excavated area does not exceed 25 cubic yards below the plane of the ordinary high water mark or the high tide line.

b. The discharge, including any excavated area, will not cause the loss of more than 1/10 acre of a special aquatic site, including wetlands. For the purpose of this nationwide permit, the acreage limitation includes the filled area and excavated area plus special aquatic sites that they would no longer be a water of the United States as a result of the project.

c. The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project and is not placed for the purpose of stream diversion.

G. NWP 26 (Headwater and Isolated Waters Discharges)

1. Application: For access road construction activities requiring the placement of fill materials within isolated and above headwaters.

2. Permit Conditions

a. The discharge does not cause the loss of more than 3 acres of waters of the United States (including wetlands) nor cause the loss of greater than 500 linear feet of streambed.

b. For discharges causing the loss of greater than 0.33 acre of waters of the United States, the permitee notifies the ACOE District Engineer in accordance with the notification General Conditions. Impacts between 0.33 acre and 1.0 acre would require an ACOE-only notification; whereas, impacts between 1.0 and 3.0 acres would require full resource agency notification.

c. For discharges causing a loss of 0.33 acre or less of water of the United States, the permitee must submit a report within 30 days of completion of the work.

d. For discharges in special aquatic sites, including wetlands, the notification also must include a delineation of affected special aquatic sites.

e. The discharge, including all attendant features, both temporary and permanent, is part of a single and complete project.

f. Whenever any other NWP is used in conjunction with this NWP, the total acreage of impacts cannot exceed 3 acres.

H. NWP 33 (Temporary Construction, Access and Dewatering)

1. Application: For temporary dewatering and access road construction activities.

2. Permit Conditions

   a. Temporary fill must be entirely removed to upland areas, or dredged material returned to its original location, following completion of the construction activity, and the affected areas must be returned to pre-construction conditions.

   b. Cofferdams or other structures cannot be used to dewater wetlands or other aquatic sites so as to change their use.

   c. The permitee has notified the ACOE District Engineer prior to use of this permit. The notification must include a restoration plan.

3.03 Restoration

A. All wetland areas where temporary dewatering is required to accomplish the specified work shall be restored as specified below:

1. Beaver Dam Removal and Replacement: The approved permitted activity may include breaching of a beaver dam at locations provided in the permit application. The location of the prescribed breach much not be changed without prior coordination with the Construction Manager or appointed liaison. Explosives are prohibited for beaver dam removal. If beaver dams are required to be breached, all beaver dams removed shall be restored as specified herein.

   a. Restoration shall be done with sandbags filled ¾ full with materials from the site; preferably sandy soils.
   b. Sandbags shall be placed in a staggered fashion to prevent a common seam from developing.
   c. Number 4 steel reinforcement bar shall be used to fortify sandbag dams.
   d. Reinforcement bar shall be driven a minimum of 2 feet below substrate and spaced per construction detail.
   e. Bottom row of sandbags shall be embedded a minimum of 6 inches below ground surface, or until resting on compacted substrate, whichever is deeper.
   f. Top elevation of sandbags should be determined by surveying the water elevation prior to removal of the dam.
   g. All excavation and fill activities should be conducted by non-mechanical means. Bobcat-type tractors may be used to transfer construction supplies.
   h. Dam shall be designed to allow flow over its middle section with the downstream channel lined with a row of sandbags.
   i. Quality Assurance: After construction, the restored dam will be inspected by the Construction Manager or an appointed liaison to ensure that proper restoration techniques were employed. Afterwards, the beaver dam will be monitored for one growing season to ensure success. The Contractor will be responsible for reconstruction of any failed dam.

2. Drainage Canals for Dewatering: Restoration for drainage canals consists of backfill of the canals with materials originally removed from the channel. In most cases, a sand bag check dam should be constructed in addition to the backfill to provide additional protection against washout.

3. Cofferdams for Dewatering: All cofferdams should be removed following construction. All grades should be returned to existing conditions.

4. Temporary Access Roads

   a. Temporary construction roads may be constructed by earthen fill or crushed rock, or a combination of the two, for wetland crossings.
   b. Temporary construction roads for stream crossings must be constructed with materials that would withstand expected high flows.
   d. Prior to placing fill within a wetland or stream, filter fabric should be placed beneath the fill area. The fabric will facilitate removal of the temporary fill materials.
   e. All materials placed in a wetland or stream must be removed to an upland area following construction.
   f. If culverts are required for a crossing, they must be designed to withstand and to prevent the restriction of expected high flows, and also to prevent the restriction of low flows and movement of aquatic organisms. Culverts must be removed and stream banks stabilized following the construction.

END OF SECTION

SECTION 01 070

ABBREVIATIONS AND SYMBOLS

PART 1 - GENERAL

1.01 DESCRIPTION

Whenever reference is made to the furnishing of materials or testing thereof to conform to the standards of any technical society, organization, or body, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the time of advertisement for Bids. Such standards are made a part hereof to the extent which is indicated or intended.

1.02 ABBREVIATIONS

AA ..... Aluminum Association
AAMA ..... Architectural Aluminum Manufacturer's Association
AASHTO.....American Association of State Highway and Transportation Officials
ACI.....American Concrete Institute
ACPA ..... American Concrete Pipe Association
AEIC ..... Association of Edison Illuminating Companies
AFBMA ..... Anti-Friction Bearing Manufacturers Association
AGA .....American Gas Association
AGMA .....American Gear Manufacturers Association
AIA.....American Institute of Architects
AIEE.....American Institute of Electrical Engineers
AISC.....American Institute of Steel Construction
AISI .....American Iron and Steel Institute
AITC .....American Institute of Timber Construction
ANSI .....American National Standards Institute
AMCA.....Air Moving and Conditioning Association
APA..... American Plywood Association
APHA .....American Public Health Association
API ..... American Petroleum Institute
APWA .....American Public Works Association
ARC .....Appalachian Regional Commission
AREA .....American Railway Engineering Association
ASA.....American Standards Association
ASCE ..... American Society of Civil Engineers
ASHRAE..... American Society of Heating, Refrigeration, and Air Conditioning Engineers:
ASME.....American Society of Mechanical Engineers
ASTM..... American Society for Testing and Materials
AWPA.....American Wood Preservers Association
AWS.....American Welding Society
AWWA ..... American Water Works Association
CFR ..... Code of Federal Regulations
CMAA.....Crane Manufacturers Association of America
CRSI.....Concrete Reinforcing Steel Institute

CSI ..... Construction Specifications Institute
CTI ..... Cooling Tower Institute
DEMA ..... Diesel Engine Manufacturers Association
EDA ..... Economic Development Administration
EIA ..... Electronic Industries Association
EPA ..... Environmental Protection Agency
Eus……..……..Electronic Industries Association
FCC……...Federal Communications Commission
FmHA..... Farmers Home Administration
FS ..... Federal Specifications
HEI ..... Heat Exchange Institute
IEEE ..... Institute of Electronic and Electrical Engineers
IES..... Illuminating Engineering Society
IPCEA ..... Insulated Power Cable Engineers Association
IPC ..... Institute of Printed Circuits
ISA ..... Instrument Society of America
MBMA ..... Metal Building Manufacturers Association
MMA..... Monorail Manufacturers Association
MSS…….Manufacturers Standardization Society of the Valve and Fitting Industry
NAAMM……..….National Association of Architectural Metal Manufacturers
NACE..... National Association of Corrosion Engineers
NBFU ..... National Board of Fire Underwriters
NBS ..... National Bureau of Standards
NCPI..... National Clay Pipe Institute
NEC..... National Electric Code
NEMA ..... National Electrical Manufacturers Association
NFPA ..... National Fire Protection Association
NRMA..... National Ready-Mix Association
OSHA..... Occupational Safety and Health Administration
PCA ..... Portland Cement Association
PCI ..... Prestressed Concrete Institute
SBC ..... Southern Building Code
SMACNA……Sheet Metal and Air Conditioning Contractors National Association
SSPC ..... Steel Structures Painting Council
TCA..... Tile Council of America
TEMA ..... Tubular Exchangers Manufacturers Association
UBC ..... Uniform Building Code
UL ..... Underwriters Laboratories
USDC ..... United States Department of Commerce
WPCF..... Water Pollution Control Federation

1.03 SYMBOLS

Symbols and material legends shall be as scheduled on the Contract Drawings.

END OF SECTION

SECTION 01 091

APPLICABLE 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 (i.e., the Fulton County standard specifications for sanitary sewer construction).

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 a UL Standard, an AGA or 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 other-wise 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.

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. ELECTRICAL AND INSTRUMENTATION

AEIC	Association of Edison Illuminating Companies
AIEE	American Institute of Electrical Engineers
EIA	Electronic Industries Association
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
TIA	Telecommunications Industries Association
UL	Underwriter's Laboratories
VRCI	Variable Resistive Components Institute

E. ALUMINUM

AA	Aluminum Association
AAMA	American Architectural Manufacturers Association

F. 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

G. WELDING

ASME	American Society of Mechanical Engineers
AWS	American Welding Society

H. 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

I. 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

J. ROADWAYS

AREA	American Railway Engineering Association
DOT	Department of Transportation
SSRBC	Standard Specifications for Road and Bridge Construction, Georgia Department of Transportation

K. PLUMBING

AGA	American Gas Association
NSF	National Sanitation Foundation
PDI	Plumbing Drainage Institute
SPC	SBCC Standard Plumbing Code

L. REFRIGERATION, HEATING, AND AIR CONDITIONING

AMCA	Air Movement and Control Association
ARI	American Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration, &Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
CGA	Compressed Gas Association
CTI	Cooling Tower Institute
HEI	Heat Exchange Institute
IIAR	International Institute of Ammonia Refrigeration
NB	National Board of Boilers and Pressure Vessel Inspectors
PFMA	Power Fan Manufacturers Association
SAE	Society of Automotive Engineers
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
TEMA	Tubular Exchangers Manufacturers Association

M. EQUIPMENT

AFBMA	Anti-Friction Bearing Manufacturers Association, Inc.
AGMA	American Gear Manufacturers Association
ALI	Automotive Lift Institute

CEMA	Conveyor Equipment Manufacturers Association
CMAA	Crane Manufacturers Association of America
DEMA	Diesel Engine Manufacturers Association
MMA	Monorail Manufacturers Association
OPEI	Outdoor Power Equipment Institute, Inc.
PTI	Power Tool Institute, Inc.
RIA	Robotic Industries Association
SAMA	Scientific Apparatus Makers Association

1.03 SYMBOLS

Symbols and material legends shall be as scheduled on the Contract Drawings.

END OF SECTION

SECTION 01 200

PROJECT MEETINGS

1.01 GENERAL

A. The Construction Manager will determine the agenda for and chair the meetings described below; and also shall prescribe the format for the documentation of the meetings to be produced by the Contractor.

B. Periodic progress meetings and specially called progress meetings throughout the progress of the Work shall be held at times to be determined by the Construction Manager.

C. The Construction Manager shall schedule and administer project meetings throughout progress of Work where specified or required

D. The Contractor shall have the following specific responsibilities:

1. Distribute Construction Manager's agenda for meetings
2. Distribute written notice of each meeting a minimum of seven days in advance of meeting date to all parties involved
3. Make physical arrangements for meetings
4. Record minutes, in the format to be provided by the Construction Manager, to include significant proceedings, decisions and action items
5. Provide and record a sign-in sheet for all attendees
6. Reproduce and submit word-processed minutes, within two working days after each meeting, to the Construction Manager for approval before further distribution. After approval, distribute copies as follows:
   a. to all participants in the meeting
   b. to all parties affected by decisions made at meeting
   c. to all other parties as may be designated by the County or Construction Manager
7. Tape record all meetings. The original of the audio cassette tape is to be submitted to the Construction Manager along with the draft of the meeting minutes for approval. A copy of the audio cassette-tapes is to be kept on-site at the Contractor's job site office.

C. Representatives of contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.

D. The Engineer shall attend progress meetings to ascertain that work is expedited consistent with the Contract Documents and the construction schedules.

E. Related Requirements:

1. Section 01010: Summary of Work

2. Section 01310: Construction Schedules

3. Section 01340: Shop drawings, Product Data, and Samples

1.02 PRECONSTRUCTION MEETING

A. The Construction Manager will schedule this meeting within 5 days of the issuance of the Notice to Proceed.

B. The location of the meeting will be designated by the Construction Manager.

C. The following parties shall attend the meeting:

1. Owner's Representative
2. Program Manager
3. Resident Project Representative
4. Contractor's Superintendent and Engineers
5. Major Subcontractors
6. Major Suppliers
7. Others as Appropriate

D. Suggested Agenda:

1. Distribution and discussion of:
   a. List of major subcontractors and suppliers.
   b. Projected Construction Schedules.

2. Critical work sequencing.

3. Major equipment deliveries and priorities.

4. Project Coordination.
   a. Designation of responsible personnel.

5. Procedures and processing of:
   a. Field decisions.
   b. Proposal requests.
   c. Submittals.
   d. Change Orders.
   e. Applications for Payment.

6. Adequacy of distribution of Contract Documents.

7. Procedures for maintaining Record Documents.

8. Use of premises:
   a. Office work and storage areas.
   b. Owner's requirements.

9. Construction facilities, controls and construction aids.

10. Temporary utilities.

11. Safety and first aid procedures.

12. Security procedures.

1.03 CONSTRUCTION PROGRESS MEETINGS

A. SCHEDULING: Meetings shall be conducted at least bi-weekly throughout the construction phase.

B. LOCATION OF THE MEETINGS: Project field office of Contractor or other location designated by Construction Manager.

C. ATTENDANCE:

1. Owner/user group representative(s), as appropriate
2. Program Manager's representative (at its option)
3. Construction Manager's representative
4. Contractor's Project Manager, Superintendent, and other representative(s) as appropriate
5. Subcontractors and suppliers as appropriate to the agenda
6. Others as appropriate

D. SUGGESTED MINIMUM AGENDA:

1. Review and approval of minutes of previous meeting
2. Actual vs. scheduled progress since previous meeting
3. Planned construction activities for the next four weeks
4. Problems with and revisions to construction schedule
5. Review of off-site fabrication and delivery schedules
6. Corrective measures and procedures to regain projected schedule
7. Submittal schedules and expediting
8. Construction Document clarifications
9. Field observations, problems, and conflicts
10. Quality control
11. Actual and potential changes and their impacts
12. Review proposed changes for:
    a. Effect on Construction Schedule and on completion date.
    b. Effect on other components of the Project.
13. Safety issues

1.04 PRE-INSTALLATION MEETINGS

A. SCHEDULING: Schedule pre-installation meetings for installation of various aspects of the Work prior to the start of installation, or as otherwise specified in this contract. Do not schedule pre-installation meetings until required submittals have been approved.

B. LOCATION: At jobsite.

C. MEETING REQUIREMENTS:

1. Prior to installation of work, conduct pre-installation meeting at project site with Contractor's superintendent and foreman, primary materials installer, installer of each component of associated work, representative(s) of materials manufacturer(s), inspection and testing agency representative (if any), installers of other work requiring coordination, Construction Manager, and Owner's representative for the purpose of reviewing job mock-up (if any), job conditions, project requirements and procedures to be followed in performing work.

2. At pre-installation meeting, examine areas and conditions under which work is to be performed. Report in writing; of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected. Commencement of work shall constitute acceptance of substrate conditions.

3. At pre-installation meeting, the manufacturer's authorized representative shall inspect storage of job site materials, establish scheduling of initial and final installation of products, and establish the method of preparing written progress reports to Contractor (with copy to Construction Manager) of job conditions and installation.

4. At pre-installation meeting, review manufacturer's product data publications and other published instructions for material installation compliance including shop drawings. Shop drawings and submittals shall be reviewed and approved prior to pre-installation meetings. Contractor shall provide a set of approved shop drawings and submittals for meeting use.

5. Where manufacturer's representative offers recommendations on material use, such recommendations shall be submitted in writing and substantiated by dated, printed, published product data or material use statement which is complete, definite, and clear, and signed by authorized company official.

6. Meeting Report: Submit copy of pre-installation job meeting report. Include copy of manufacturer's inspection report, manufacturer's recommendations, and any statement of non-compliance as applicable.

7. Pre-Installation meetings shall include, but not be exclusive of the following portions of the Work:

   a. Odor Control System Components
   b. Roof System
   c. Brick/Masonry
   d. Hollow Metal & Hardware
   e. Applied Wall Systems & Products
   f. Equipment & Systems
   g. Fire/Security Systems
   h. Pump Systems

i. Chemical Feed Systems
j. Electrical Systems
k. Combined Mechanical/Plumbing & Control Systems

1.05 INSPECTION TOURS

A. Formal inspection tours shall be made of the job progress for the Owner and any other officials as the occasion warrants and as scheduled by the Construction Manager.

B. If requested by the Construction Manager, the Contractor shall be prepared to show and explain work completed and in progress throughout the Project to the inspection parties.

END OF SECTION 01 200

SECTION 01 310

SCHEDULING OF THE WORK

GENERAL

1.01 INTRODUCTION

A. This Section describes the scheduling and progress reporting requirements of the Contract. The primary objectives of the requirements of this Section are:

1. to insure adequate planning and execution of the Work by the Contractor;
2. to assist the County and Construction Manager in evaluating the progress of the Work;
3. to provide for optimum coordination by Contractor of its subcontractors, and of its Work with the work or services provided by the County or any separate contractors; and
4. to permit the timely prediction or detection of events or occurrences which may affect the timely prosecution of the Work.

1.02 DEFINITIONS

A. Critical Path Method (CPM) – A planning and scheduling technique involving the charting of all events and operations to be encountered in completing a given process, rendered in a form permitting determination of the relative significance of each event and establishing the optimum sequence and duration of operations.

B. Schedule of Record – The Schedule of Record will be the Official Project Schedule for this Contract. All updates and/or revisions relating to coordinating the Work, scheduling the Work, monitoring the Work, reviewing the progress payment requests, evaluating time extension requests, and all other objectives shall be made to this Schedule. No other Schedule will be recognized for this Contract.

C. Float - Float or slack time associated with one chain of activities is defined as the amount of time between earliest start date and latest start date or between earliest finish date and latest finish date for such activities, as calculated as part of the accepted Schedule Submittal.

1.03 GENERAL SCHEDULING REQUIREMENTS

A. The Work of this Contract shall be planned, scheduled, executed, and reported using the critical path method (CPM). The Contractor shall use one of the following software programs to develop its Schedule Submittal:

1. Microsoft Project, latest version (MPX File)

B. The Schedule Submittal, as defined herein, shall represent the Contractor's commitment and intended plan for completion of the Work in compliance with the Contract completion date and interim milestone dates specified. The Schedule Submittal shall take into account all foreseeable activities to be accomplished by any separate contractors or the County, and interface dates with utility companies, the County's operations, and others. The Schedule Submittal shall anticipate all necessary manpower and resources to complete the Work within the dates set forth.

C. Once reviewed and accepted by the Construction Manager, the Schedule Submittal will become the Schedule of Record.

D. The Contractor is responsible for determining the sequence of activities, the time estimates of the detailed design activities and the means, methods, techniques and procedures to be employed. The Schedule of Record shall represent the Contractor's best judgment of how it will execute the Work in compliance with the Contract requirements. The Contractor shall ensure that Schedule of Record is current and accurate and is properly and timely monitored, updated and revised as Project conditions and the Contract Documents may require.

1.04 SCHEDULE SUBMITTAL

A. Within two (2) weeks after the Notice to Proceed, the Contractor shall submit its Project Schedule Submittal according to the requirements established herein.

B. The Schedule Submittal shall include, but not be limited to, the following information:

1. Project name
2. Distinct, logical and identifiable subdivisions of Work (Phases)
3. Activities for all aspects of the Work, with durations not exceeding fourteen (14) calendar days for all activities for which the Contractor will perform actual design work. Submittals and other similar activities may exceed fourteen (14) calendar days if approved by the Construction Manager. Related activities, each of a duration of five (5) calendar days or less, may be shown as one activity together, if not on the critical path of timely job completion.
4. All start dates, milestones, float and completion dates
5. Responsibility for activity
6. Cost loaded values for each activity for which payment is required. The cost breakdown shall have a direct correlation to the Schedule of Values to be used as the basis for Applications for Payment.
7. Labor resources
8. Identify whether it proposes the Work to be performed on single, double or triple shifts, and whether it is to be done on a 5, 6 or 7 day work week basis
9. A tabular report listing all predecessor and successor activities for each activity
10. A legible time scaled network diagram
11. A listing of the project calendar, indicating the anticipated days of work performance
12. A floppy computer disk, in a form and format acceptable to the Construction Manager, of the Schedule Submittal including all required submission information resident in the computer system and containing all of the files associated with the schedule.

C. Activities and milestones to appear on the Schedule Submittal shall include, but not be limited to, Preliminary and Final Design activities, Work Progress Meetings, Submittals, County Reviews that impact the Work, Sitework, structure erection, roof close-in, exterior wall systems, paving, major material fabrication and delivery, shop drawings submittals, progress meetings, furniture delivery and installation, equipment delivery and installation, coordination requirements, mock-up installations and inspections, dates of Substantial and Final Completion, Certificate of Occupancy inspection, systems testing and instruction.

D. The Construction Manager shall have the right to require the Contractor to modify any portion of the Contractor's Schedule Submittal, or Recovery Schedule, as herein required, (including cost loading) with the Contractor bearing the expense thereof, which the Construction Manager reasonably determines to be:

1. impractical or unreasonable ;
2. based upon erroneous calculations or estimates;
3. not in compliance with other provisions of the Contract Documents;
4. required in order to ensure proper coordination by the Contractor of the Work of its subcontractors and with the work or services being provided by any separate contractors;
5. necessary to avoid undue interference with the County's operations;
6. necessary to ensure completion of the Work by the milestone and completion dates set forth in the Contract Documents;
7. required in order for the Contractor to comply with the requirements of this Section or any other requirements of the Contract Documents; or
8. not in accordance with the Contractor's actual operations.

1.05 UPDATING OF DESIGN SCHEDULE/PROGRESS REPORTS

A. The Construction Manager shall review the Contractor's report of actual progress at each progress meeting. Prepared by the Contractor, said report shall set forth up-to-date and accurate progress. Said report shall be prepared by the Contractor in consultation with all principal subcontractors.

B. The Schedule Report of the Contractor shall show the activities, or portions of activities, completed during the reporting period, the actual start and finish dates for these activities, remaining duration and estimated completion dates for activities currently in progress, and shall be provided in both hard copy and electronic format.

C. At the progress meeting a total review of the Project will take place including but not limited to, the following:

1. Current update of the Schedule of Record
2. Anticipated detailed design activities for the subsequent report period
3. Critical items pending
4. Contractor requested changes to the Schedule of Record.

D. The Contractor shall submit a narrative with the progress report which shall include, but not be limited to, a narrative describing actual Work accomplished during the reporting period, a description of problem areas, current and anticipated delaying factors and their impact, explanations of corrective actions taken or planned, any proposed newly planned activities or changes in sequence, and proposed logic for a Recovery Schedule, if required, as further described herein.

E. No invoice for payment shall be submitted and no payment whatsoever will be made to the Contractor until the Schedule of Record, and narrative reports as defined herein, are updated and provided to the Construction Manager in both hard copy and electronic format.

1.06 SCHEDULE REVISIONS

A. Should the Contractor desire to or be otherwise required under the Contract Documents to make modifications or changes in its method of operation, its sequence of Work or the

duration of the activities in the Schedule of Record, it shall do so in accordance with the requirements of this Paragraph and the Contract Documents. The approved Schedule of Record may only be revised by written approval of the Construction Manager as provided herein.

B. The Contractor shall submit requests for revisions to the Schedule of Record to the Construction Manager using the Schedule Revision Form provide by the Construction Manager. The Contractor shall identify revisions and description of logic for rescheduling work and substantiate that the milestone and completion dates will be met as listed in the Contract Documents. Proposed revisions acceptable to the Construction Manager and County will be approved in writing and incorporated into the Schedule of Record.

C. Requests for revision will be accompanied by evidence acceptable to the Construction Manager that the Contractor's subcontractors, are in agreement with the proposed revisions.

D. If there are separate contractors on the Project, the approval of the separate contractors shall be obtained to make the proposed schedule revisions. If accepted by the Construction Manager and County, the revisions shall be binding upon the Contractor and all separate contractors on the Project.

E. The impact of all change orders to this Contract shall be included in the project schedule.

1.07 RECOVERY SCHEDULE

A. Should the updated Schedule of Record, at any time during the Contractor’s performance, show, in the sole opinion of the Construction Manager, that the Contractor is behind schedule for any milestone or completion date for any location or category of work, the Contractor, at the request of the Construction Manager, shall prepare a Schedule Revision for the purpose of displaying recovery. The revision shall identify how the Contractor intends to reschedule its Work in order to regain compliance with the Schedule of Record within thirty (30) calendar days, and shall be provided to the Construction Manager in both hard copy and electronic format.

B. The Contractor shall prepare and submit to the Construction Manager, in both hard copy and electronic format, a one month maximum duration Recovery Schedule, incorporating the best available information from subcontractors and others which will permit a return to the Schedule of Record at the earliest possible time. The Contractor shall prepare a Recovery Schedule to the same level of detail as the Schedule of Record. The Recovery Schedule shall be prepared in coordination with other separate contractors on the Project.

C. Within two (2) calendar days after submission of the Recovery Schedule to the Construction Manager, the Contractor shall participate in a conference with the Construction Manager to review and evaluate the Recovery Schedule. Within two (2) calendar days of the conference, the Contractor shall submit the revisions necessitated by the review for the Construction Manager’s review and acceptance. The Contractor shall use the accepted Recovery Schedule as its plan for returning to the Schedule of Record.

D. The Contractor shall confer continuously with the Construction Manager to assess the effectiveness of the Recovery Schedule. As a result of these conferences, the Construction Manager will direct the Contractor as follows:

1. If the Construction Manager determines the Contractor continues behind schedule, the Construction Manager will direct the Contractor to prepare a Schedule Revision and comply with all of the requirements of a Schedule Revision as stated herein and the other requirements of the Contract Documents; provided, however, that nothing herein shall limit in any way the rights and remedies of the County and Construction Manager as provided elsewhere in the Contract Documents; or

2. If the Construction Manager determines the Contractor has successfully complied with provisions of the Recovery Schedule, the Construction Manager will direct the Contractor to return to the use of the approved Schedule of Record.

1.08 FLOAT TIME

A. Float or slack time shown on the currently approved Schedule of Record is not for exclusive use or benefit of either the County or the Contractor and is available for use by either of them according to whichever first needs the benefit of the float to facilitate the effective use of available resources and to minimize the impact of Project problems, delays, impact, acceleration or changes in the Work which may arise during performance. The Contractor specifically agrees that float time may be used by the County in conjunction with their review activities or to resolve Project problems. The Contractor agrees that there will be no basis for any modification of the milestone or completion dates or an extension of the Contract Time, or a claim for additional compensation as a result of any Project problem, delay, impact, acceleration, or change order which only results in the loss of available float on the currently approved Schedule of Record.

B. Float time shown on the Schedule of Record shall not be used arbitrarily by the Contractor in a manner which, in the opinion of the Construction Manager, unnecessarily delays separate contractors from proceeding with their work in a way which is detrimental to the interests of the County.

END OF SECTION 01310

SECTION 01 320

PROGRESS REPORTS, VIDEOS AND PHOTOGRAPHS

1.01 REPORTS

A. The Contractor's Superintendent shall prepare and submit Daily Reports throughout the project, from Notice to Proceed to Final Acceptance. Daily Reports shall be kept in an orderly manner at the site, available for inspection or review when requested by the Owner, engineers and the Construction Manager. Copies of Daily Reports shall be accumulated and submitted to the Construction Manager on a weekly basis, on a regular day and time to be determined by the Construction Manager. Failure to submit Daily Reports or to comply with the format requirements below is cause for the Construction Manager to retain additional monies due the Contractor from the monthly Application(s) for Payment until such time as the reports have been brought up to date by the Contractor.

B. Each Daily Report shall include the following information at a minimum:

1. Manpower by subcontractor, trade, and skill level
2. Weather and temperatures (AM and PM)
3. List of visitors to the jobsite
4. Specific work performed with locations
5. Digital Pictures of the work performed, with descriptions of each picture
6. Situations or circumstances which could delay the Work or give cause for a time extension or additional cost
7. Instructions requested (and of whom)
8. Materials received
9. Major equipment arrival/departure
10. Total days accrued under the terms of the Contract Documents
11. Accidents and incidents
12. Safety issues
13. Meetings
14. A copy of a delivery receipt of all deliveries, to the project on that day, of equipment or materials
15. A copy of all field reports, from testing companies, that were performed
16. Other significant events at the jobsite

C. The Contractor shall take the necessary action required to specifically alert the Construction Manager to items which could result in impacts to the progress of the Work. Such items shall be clearly highlighted in the report.

D. All Daily Reports shall be clearly handwritten or typed. Poor copies, reports in sloppy or illegible handwriting or on wrinkled paper will not be accepted.

1.02 VIDEOS

A. Accompanying each pipeline rehabilitation work order and prior to the beginning of any work, the Contractor shall take a pre-construction video of the work area to record existing conditions. Video shall show all conditions which might later be subject to disagreement shall be shown in sufficient detail to provide a basis for decisions. The Construction Manager shall be notified of the day and time of when the video is to be made and given an opportunity to be

present during the making of the video. Video shall be submitted, in duplicate, with a log of the items taped within 10 calendar days of the Notice to Proceed. No request for payments will be processed until the pre-construction video has been submitted and approved by the Construction Manager. 3 copies each. Required for close-out.

B. Following completion of the work, another recording shall be made showing the same area and features as in the pre-construction video. The Construction Manager shall be notified of the day and time of when the video is to be made and given an opportunity to be present during the making of the video. Post-Construction video shall be made prior to final acceptance and before submitting a request for final payment. Video shall be submitted, in duplicate, with a log of the items tapped, with the final payment application. 3 copies each. Required for close-out.

C. At the Conclusion of the Project, the Contractor shall have all Videos generated for the project consolidated and copied onto a Compact Disk and prepare a Table of Contents for the Disk. A copy of the Compact Disk and Table of Contents for the CD shall be transmitted, in duplicate, to the Construction Manager with the request for final payment. 3 copies each. Required for close-out.

1.03 PHOTOGRAPHS

A. Accompanying each work order and prior to the beginning of any work, the Contractor shall take project photographs of the work area to record existing conditions. The Pre-construction Photos shall show all conditions which might later be subject to disagreement shall be shown in sufficient detail to provide a basis for decisions. The pre-construction photographs shall be submitted to the Construction Manager within 15 calendar days after the date of the Notice to Proceed. No request for payments will be processed until the pre-construction photos have been submitted and approved by the Construction Manager. 3 copies each. Required for close-out.

B. Post-construction photographs shall be provided prior to final acceptance and completion of each work order. Following completion of the work, another recording shall be made showing the same area and features as in the pre-construction photographs. 3 copies each. Required for close-out.

C. Pre- and Post-Construction Photos shall consist of three (3) 8” x 10” color prints of each photographic shot, for a total of thirty (30) shots, including digital copy, shall be submitted for the Pre-Construction and Post-Construction Phases. 3 copies each. Required for close-out.

D. As the work progresses, the Contractor shall provide record photographs of all major components of the construction. The photographs shall be taken at least monthly, or more frequently as necessary to provide an appropriate record of the work. A minimum of three (3) 8” x 10” color prints of each photographic shot, for a total of ten (10) shots shall be submitted monthly with each pay request. The photographs shall be representative of the primary work being claimed for during the period under consideration. The view selection will be agreed to with the Construction Manager prior to submission.

E. All photographs (Pre-construction, Post-construction, Progress, etc.) shall be submitted with pertinent information provided at the bottom front left corner of each photograph (with an adhesive label), including: project name, Contractor’s name, description of subject, orientation, and date and time of exposure. Photographs submitted shall be enclosed back to back in a

double face plastic sleeve punched to fit a standard three-ring binder. Digital copies of all photos are to be submitted on CD in JPEG format. 3 copies each. Required for close-out.

END OF SECTION 01 320

SECTION 01 340

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

1.01 GENERAL

A. This Section covers provisions for the submittal of shop drawings, product data, and samples prior to construction by the Contractor, in accordance with the Contract Documents.

B. Provisions in this Section are mandatory procedures for preparing and submitting shop drawings, product data, and samples.

C. Required shop drawings, product data, and samples shall be coordinated, prepared, and submitted so as not to impact the project schedule. 6 copies of each are required. Submittals for interfacing units of work, and different categories of submittals for the same work, shall be coordinated and sequenced so that one will not be delayed by another. Adequate time shall be allowed for review by the Engineer(s), the Construction Manager, the Program Manager, and/or the County, and for possible re-submittal. Contractor shall plan his submittal such that there is a minimum of 30 days available for review of each submittal and/or re-submittal. Delays or impacts due to the Contractor's failure to make or process submittals in a timely fashion are solely the responsibility of the Contractor. The Contractor has an obligation to notify the Construction Manager in a timely manner if the submittal review process, with respect to reviews by the County, Program Manager, and/or Construction Manager, might cause a schedule impact on the required delivery of any materials or fabricated assemblies required to execute the Work.

D. Project delays or delays in the purchasing of materials or equipment occasioned by the requirement for resubmission of shop drawings, product data, and samples initially rejected by the Engineer(s), the Construction Manager, the Program Manager, and/or the County, or that are not originally in accordance with the Contract Documents upon review by the Engineer(s), the Construction Manager, Program Manager, or County, are the Contractor's sole responsibility and will not be considered valid justification for time extensions.

E. No portion of the Work requiring the submittal of shop drawings, product data, or samples shall be commenced until each such submittal has been reviewed by the appropriate Contractor's architect or engineer, and, if required, the Construction Manager, Program Manager, and/or County, and the action required on the returned submittal does not require a correction and re-submittal (i.e., "No Exceptions Taken" or "Make Corrections Noted," or similar notation); and further, each installer shall have possession of such final reviewed submittal prior to commencing its portion of the Work.

F. Submittals shall be delivered to the Construction Manager's office, unless directed otherwise by the Construction Manager.

G. Keep at least one set of approved and reviewed shop drawings on the job site at all times.

H. At the time of Submission the Contractor shall clearly delineate any deviations in the submittals from the requirements of the Contract Documents in order that, if the deviations are deemed acceptable, suitable action may be taken for proper adjustment. Otherwise, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Drawings and Specifications even though such shop drawings have been reviewed by the Construction Manager.

1.02 DEFINITIONS

A. "Shop Drawings" are drawings, diagrams, illustrations, schedules, performance charts, manufacturer's data sheets, brochures and other data which are prepared and submitted by the Contractor and its subcontractors to illustrate in detail some portion of the Work. The Contractor's architect's and engineer's drawings are not acceptable as shop drawings.

B. "Product Data" are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor and its subcontractors to illustrate a material, product, or system for some portion of the Work.

C. "Samples" are physical examples prepared for submission by the Contractor and its subcontractors to illustrate materials, equipment, or workmanship, and to establish standards by which the work will be judged as complying with the Contract Documents. Mock-ups are a special form of samples, too large or otherwise inconvenient for transmittal in the manner specified. Mock-up requirements are specified elsewhere in the Contract Documents.

1.03 SUBMISSION REQUIREMENTS

A. Number of submittal copies required = 10

1. Shop drawings and product data: The Contractor shall submit ten copies, plus the number of copies the contractor wants returned (Minimum of 10 copies) of shop drawings and product data to the Construction Manager for review.

2. Samples: The Contractor shall submit four samples, with tags and properly identified, for each item requiring samples.

B. Each submission must be accompanied by a consecutively numbered letter of transmittal, listing the contents of the submission and identifying each item by reference to Specification Section or Drawing number.

C. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and the County's Project Number.
3. Contract identification.
4. The names of:
   a. Contractor.
   b. Supplier.
   c. Manufacturer.
5. Identification of the product, with the Specification Section number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
9. Identification of deviations from Contract Documents.
10. Identification of revisions on re-submittals.
11. An 8 inch by 3 inch blank space for Contractor and Construction Manager stamp.
12. Contractor's stamp shall be initialed or signed, certifying approval of the submittal, to the verification of products, field measurements and field construction criteria, and to the coordination of the information within the submittal with the requirements of the work and of Contract Documents.

D. Catalog plates and other similar materials that cannot be conveniently labeled shall be bound in suitable covers bearing the identifying data.

E. Shop drawings shall be accompanied by all required certifications and other such supporting materials, and shall be submitted in such sequence or in such groups that all related items may be reviewed together. When shop drawings cannot be reviewed because the submission is not complete, or because related shop drawings or items have not been received, such shop drawings will be returned without action or will be held until the lacking materials are received. Any delay to the project resulting from the submission of incomplete shop drawing data shall be the responsibility of the Contractor and shall not constitute grounds for a project time extension.

F. Other special requirements may be listed in the Technical Specifications and/or given to the Contractor by the Construction Manager.

1.04 RESUBMISSION REQUIREMENTS

A. Make any corrections or changes to the submittals required by the Construction Manager and resubmit for review. Contractor shall resubmit using the same procedures as used for the original submittal.

B. Shop drawings and product data:
1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
2. Indicate any changes which have been made other than those requested by the Construction Manager.

C. Samples: Submit new samples as required for initial submittal.

1.05 SHOP DRAWINGS AND PRODUCT DATA

A. Submit shop drawings, product data, and/or samples covering the following, but not limited to, items of work:

1. Paving and surfacing materials
2. Concrete mix design
3. Sewer pipe material
4. Ductile iron pipe
5. Precast concrete structures
6. Manhole frames, covers and flexible joints
7. Pumps
8. Pump motors
9. Pump controls
10. Electrical equipment
11. Building specialties
12. Valves
13. Chemical Feed and Storage Equipment
14. Structural steel
15. Miscellaneous metals
16. Paints, waterproofing

17. Hoisting Equipment
18. Instrumentation and SCADA Equipment
19. Flow measurement equipment
20. Piping layouts
21. Electrical Duct Bank Layouts
22. Wiring Diagrams
23. Manhole Frame and Covers
24. Pumps
25. Pump motors
26. Pump controls

B. Submit 6 copies of shop drawings and 10 copies of product data for any additional items of work as necessary for the successful completion of the project.

C. Shop drawings for any structure shall consist of such detailed plans as may be required for the prosecution of the work but not included in the Drawings. All necessary shop drawings shall be furnished by and through the Contractor. They shall include shop details, erection plans, and bending diagrams for reinforcing steel. Review by the Construction Manager must be obtained before any work involving these plans may be performed. Plans for falsework, centering and form work may also be required, and such cases shall be likewise subject to review by the Construction Manager.

1.06 DISTRIBUTION

A. Distribute shop drawings and product data which have been reviewed by the Construction Manager to:

1. Job site file.

2. Subcontractors.

3. Supplier or Manufacturer.

4. As requested by Construction Manager.

1.07 CONSTRUCTION MANAGER'S DUTIES

A. Review submittals with reasonable promptness and in accordance with the shop drawing schedule.

B. Affix stamp and initials or signature, and indicate whether the review is complete, or re-submittal is required.

C. Return submittals for distribution or for resubmission.

1.08 REVIEW OF DRAWINGS

A. Review of shop drawings will be general, for conformance with the design concept of the project and compliance with the information given in the Contract Documents, and will not include verification of quantities, detailed dimensions, nor adjustments of dimensions to actual field conditions. Review shall not be construed as permitting any departure from the Contract

requirements, as authorization of any increase in price, or as relieving the Contractor of the responsibility for any error in details, dimensions or otherwise that may exist.

B. Review by the Construction Manager of Contractor's shop drawings does not relieve the Contractor of any responsibility for accuracy of dimensions and details. The Contractor shall be responsible for agreement and conformity of his shop drawings with the Drawings and Specifications.

C. Allow a minimum of 30 days for the Construction Manager's processing of each submittal and/or each re-submittal.

1.09 PAYMENT

A. The contract price shall include the cost of furnishing all shop drawings, product data and samples. No extra payment will be made for such drawings, data, and samples.

END OF SECTION 01 340

SECTION 01 420

INSPECTION OF WORK

1.01 CONSTRUCTION MANAGER'S INSPECTION

A. The Construction Manager shall have the right of access to and inspection of the work at all times. Materials, equipment and products shall be subject to the Construction Manager's review as specified herein.

B. The Construction Manager is responsible for general surveillance of the work on behalf of the Owner. The Construction Manager is not responsible for construction means, methods, sequences, or procedures or for safety precautions and programs in connection with the work. The Construction Manager is not responsible for supervision of the work and shall not give instruction to the Contractor's personnel as to methods of execution of the work. The Construction Manager is not responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.

1.02 CONTRACTOR'S DUTIES

A. The Contractor is responsible for all materials, equipment, methods, and procedures in execution of the work.

B. The Contractor shall correct to the satisfaction of the Construction Manager any work or material found to be defective or of deficient quality. Such corrections shall be made by the Contractor at no additional expense to the Owner.

1.03 RIGHT OF ENTRY

A. Representatives of Fulton County, the Environmental Protection Division of the Georgia Department of Natural Resources, and the U.S. Department of Agriculture, Soil Conservation Services and others as may be identified by the Owner shall have access to the work wherever it is in preparation or progress. The Contractor shall provide proper facilities for such access and inspection.

END OF SECTION 01 420

SECTION 01 510

TEMPORARY FACILITIES

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.
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 activity is conducted on site. The other facilities shall be provided as the schedule of the Project warrants.
B. Maintenance: 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: Remove all such temporary facilities and controls as rapidly as progress of Work will permit.

1.03 TEMPORARY FACILITIES

A. GENERAL

1. Provide and pay all costs for all electricity and other utilities required for the performance of the Work.
2. Pay all costs for temporary utilities until Project completion.
3. Costs for temporary utilities shall include all power, water and the like necessary for testing equipment as required by the Contract Documents.

B. TEMPORARY WATER: Provide all necessary temporary piping, and upon completion of the Work, remove all such temporary piping. Provide and remove water meters.

C. TEMPORARY ELECTRICITY

1. Provide all necessary wiring for the Contractor's use.
2. 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

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

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 County's review and maintenance of same must be satisfactory to the County at all times.

1.06 POTABLE WATER

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

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 regulations.

1.08 PARKING FACILITIES

Parking facilities for the Contractor's and Contractor's subcontractor's 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.

1.09 TEMPORARY SIGNAGE

A. Project Signs: The Contractor shall construct, erect and maintain two (2) 4 foot by 8 foot project signs of ¾ inch (minimum) exterior grade plywood, given two coats of paint and mounted securely on two 4 inch by 4 inch posts set 30 inches (minimum) into the ground. The signs shall be clearly lettered by one skilled in the sign trade with facility name, address, County Logo, names of County Commissioners, the County Manager and other County representative, Contractor name, major subcontractors' names, and the jobsite telephone number. Locate the project signs as designated by the Construction Manager. Avoid placement that may inhibit safe entry or exit from the site. Verify each sign's content with County, through the Construction Manager, prior to procuring and erecting the sign.

B. No other signs or advertising shall be displayed on the premises without approval of the Construction Manager, other than the posting of required notices and cautionary signage by the Contractor, and signage on equipment and trailers to designate ownership.

END OF SECTION

SECTION 01 511

SPECIFICATION FOR FLOW BYPASS AND/OR DIVERSION PUMPING

PART 1 GENERAL

1.01 SCOPE

The objective of flow bypass and/or diversion pumping is to:

maintain an efficient and uninterrupted level of service to wastewater collection system users whilst maintenance or construction operations (including rehabilitation, repair or replacement) are facilitated on the segment or segments being bypassed and/or from which flow is being diverted, within the wastewater collection system ensure all levels of sewage flow are continuously and effectively handled around the segment or segments of sewer being bypassed and/or from which flow is being diverted by:

- ensuring that bypass and diversion pumps are adequately fueled, lubricated and maintained
- ensuring backup spare parts are expeditiously applied to the flow bypass and/or diversion pumping system in the event of component breakdown
- ensure an emergency backup plan is smoothly implemented in the event of system failure
- preventing backup, spillage, flooding or overflow onto streets, yards and unpaved areas or into buildings, adjacent ditches, storm sewers, and waterways, whilst flow bypass or diversion pumping takes place and ensure that installation, startup and subsequent disassembly of the flow bypass and diversion pumping system is smoothly transitioned:

When pumps are operating, an experienced bypass/diversion pump maintenance operator/mechanic and/or deputy shall continuously be on site to monitor the operation of the entire bypass/diversion system. The operator/mechanic and/or deputy shall comprehensively, methodically and continuously:

- adjust pump speed as appropriate so as not to adversely impact upstream or downstream flow condition levels
- check that the effectiveness and security of bulkheads, dams, diaphragms, plugs, valves, weirs, and all other flow control devices are working effectively and according to plan
- check the integrity of hoses and couplings along the entire bypass/diversion system
- monitor fuel tanks and top up as appropriate
- monitor lubrication levels and top up as necessary
- facilitate minor repairs as required, and
- report on problems arising.

1.02 DEFINITIONS

A. Flow bypass and diversion pumping is the efficient and effective installation and operation of bulkheads, plugs, hoses, piping, and pumps to maintain sewage flow and prevent backup, spillage, flooding or overflow.

1.03 SUBMITTALS

A. The Contractor shall submit ten copies of the flow bypass and/or diversion pumping plan for all sewers with diameter greater than 36" with sufficient detail to show:

- the location, number and size of pumps,
- the number, location size and type of piping or hoses,
- the number, location, size and type of plugs

Any proposal to implement flow control arrangements on sewers including plugging and/or blocking, high-velocity nozzles, and/or bypass and/or diversion pumping as well as any sewer rehabilitation, repair or replacement construction, shall be outlined in writing and submitted to the Construction Manager at least 14 days prior to the implementation of the flow control system.or sewer rehabilitation, repair or replacement. For sewers greater than 36" diameter two copies of a plan as described above together with all necessary details shall be submitted to the Construction Manager.

B. All proposed flow control arrangements, including flow bypass and/or diversion plans, shall indicate or show the location and position, in detail if necessary, any special features where pipes or hoses cross roadways, including intersections, such as temporary trenches, support bridges, ramp-overs etc.

C. All proposed flow control arrangements, including flow bypass and/or diversion pumping plans for sewers greater than 36" diameter, shall also include an emergency response plan to be followed in the event of a failure of the bypass pumping and/or diversion system.

D. The Contractor shall notify the Construction Manager 24 hours prior to commencing actual flow bypass and/or diversion pumping operations. The Contractor's flow control proposal shall be agreed to by the Construction Manager before the Contractor shall be allowed to commence sewerage bypass pumping and/or diversion.

1.04 RELATED SECTIONS

A. The Work of the following sections apply to the Work of this section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of Work.

1. Section 02720 – Pipe bursting Method
2. Section 02480 – Sewers and Accessories

PART 2 PRODUCTS

2.01 PUMPING EQUIPMENT

A. The Contractor shall design all piping, joints, and accessories to withstand twice the maximum system pressure or 50 psi, whichever is greater. A spare pump, appropriate

piping, fuel, lubrication and spare parts shall be at the site, ready for use in case of breakdown.

B. No more than three (3) pump discharge hoses shall be used for the bypass/diversion over the length of the line of segment(s). If the flow exceeds the capacity of 3 "hoses" then rigid piping shall be used. The rigid piping shall consist of HDPE, PVC or steel pipes with suitably pressure rated couplings to withstand twice the maximum system pressure or 50 psi, whichever is greater.

C. Pumps shall be self-priming type or submersible electric, in good working order, with a working pressure gauge on the discharge. Pumps shall meet all the requirements of the Specification in relation to noise levels.

PART 3 EXECUTION

3.01 PLANNING

A. The Contractor shall be solely responsible for planning and executing sewer flow control, bypass and diversion pumping operations. The Contractor shall be entirely liable for damages to private or public property that may result from his operations and for all cleanup, disinfection, damages, and resultant fines in the event of a spillage, flooding or overflow.

3.02 GENERAL

A. If, during normal rehabilitation works on manholes and sewers, where flow control devices, including flow bypass and diversion pumping, has not been deployed, and wastewater flow depth exceeds the workable levels, rehabilitation works shall be immediately discontinued. Rehabilitation works shall only re-continue, at no extra cost to the Owner when minimum flow levels prevail– normally between 2.00 am to 5.30 a.m. Under these circumstances one or more of the following flow control systems shall be deployed, which ever is appropriate for the levels of flow encountered:

- plugging or blocking
- high-velocity jet nozzles
- bypass and/or diversion pumping

Normally 14 days notice shall be given of any such planned activity on any sewer. For sewers greater than 36" diameter a flow bypass and/or diversion plan shall be submitted.

Before any flow control arrangement is installed the Contractor shall arrange to de-silt the segment of sewer to be bypassed whilst still under flow. Subsequent jetting and final cleaning before rehabilitation or repair shall be undertaken while the segment of sewer is bypassed.

3.03 PLUGGING OR BLOCKING

A. Insert sewer line plug into the line at a manhole upstream from the manhole or sewer that is to be rehabilitated and tested. For manhole rehabilitation the plug shall be designed so that a portion of the sewage can be released downstream. During this portion of the operation, shut

off or substantially reduce flows so that the manhole can be properly cleaned, prepared and rehabilitated. Flow shall be shut off as required, to properly rehabilitate the manhole or sewer.

3.04 FLOW BYPASS AND/OR DIVERSION PUMPING SCHEDULING

A. If the Owner is operating or maintaining conventional pumping facilities and/or flow bypass and/or diversion pumping in the construction area of the present Contract, the Contractor shall coordinate with the Construction Manager as necessary to determine and effect optimum working arrangements.

B. The Contractor shall immediately cease bypass and/or diversion pumping when so ordered by the Construction Manager or Owner.

3.05 FIELD QUALITY CONTROL

A. During flow bypass and/or diversion pumping, the Contractor is prohibited from allowing any sewage to be dumped, or spilled in or onto the ground or any area outside of the existing wastewater collection system. In addition due care and attention shall be given to prevent vehicular or pump fuel or lubrication oil to be leaked.

3.06 CLEANING

A. When flow bypass and diversion pumping operations are complete, the residual contents of sewage in piping shall be drained into the existing sewer prior to disassembly.

3.07 BACKUP, SPILLAGE, FLOODING OR OVERFLOW

A. In the event of accidental overflow or spillage the Contractor shall immediately stop the overflow and take action to clean up and disinfect the spillage. The Construction Manager shall be notified immediately and in any event not less than twenty-four hours following the occurrence.

B. Should fines be subsequently imposed as a direct result of the overflow or spillage and the Contractor is deemed to be partially or entirely responsible, the Contractor shall pay such fines as are imposed by the authorities in accordance with the General Terms of the Contract. No fine shall be paid by the Owner where it is shown that the Contractor was entirely responsible for any overflow or spillage.

C. Flow bypass and diversion pumping shall be done in such a manner so as not to damage private or public property, or create a nuisance or public menace. The pumped sewage shall be in an enclosed hose or pipe that is adequately protected from traffic, and shall be redirected into the wastewater collection system. After the work is completed, flow shall be returned to the sewer and all temporary equipment removed.

END OF SECTION 01 511

SECTION 01 562

DUST CONTROL

PART 1 - GENERAL

1.01 SCOPE

A. Limit blowing dust caused by construction by applying water or employing other appropriate means or methods to maintain dust control subject to the approval of the Owner and/or Construction Manager. As a minimum, this may require the use of a water wagon twice a 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. Protect all existing facilities (indoors and out) from damage by dust, spray or spills (indoors or out). 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.

END OF SECTION 01 562

SECTION 01 610

TRANSPORTATION AND HANDLING

PART 1 - GENERAL

1.01 SCOPE

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 and storage, unloading, handling and re-handling, short-term storage, extended storage, 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.

1.02 TRANSPORTATION

A. All equipment shall be suitably boxed, crated or otherwise protected during transportation.

B. All equipment shall be shipped and delivered in the largest assembled sections practical or permitted by carrier regulations to minimize the number of field connections.

C. The Contractor shall be responsible for ensuring that the equipment is assembled and transported in such a manner as to clear buildings, power lines, bridges and similar structures encountered during shipment or delivery to the Work site.

D. 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.

E. 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, packaged and shipped separately. All openings shall be plugged or sealed to prevent the entrance of water or dirt.

F. Temporary shipping braces and supports shall be painted orange or yellow for easy identification.

1.03 HANDLING

A. All equipment, materials and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation. 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.

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. Slings and chains shall be padded as required to prevent damage to protective coatings and finishes.

C. Under no circumstances shall equipment or products such as pipe, structural steel, casting, reinforcement, lumber, piles, poles, etc., be thrown or rolled off of trucks onto the ground.

D. Items such as nonmetallic pipe, nonmetallic conduit, flagpoles, and lighting poles shall be handled using nonmetallic slings or straps.

END OF SECTION

SECTION 01 630

STORAGE AND PROTECTION

PART 1 - GENERAL

1.01 SCOPE

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.

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 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 weather tight 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 which 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, particle board, resilient flooring, acoustical tile, paneling, finish lumber, insulation, wiring, etc., 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

In the event that certain items of major equipment have to be stored for an extended period of time, the Contractor shall provide satisfactory long-tern storage facilities which 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. A equipment maintenance log shall be prepared and maintained for all equipment received and stored on site, and shall include copies of manufacturers' recommendations and requirements for such maintenance. This log shall be transmitted to the Construction Manager upon Final Completion as part of Project close-out.

END OF SECTION

SECTION 01 700

PROJECT CLOSEOUT

1. GENERAL REQUIREMENTS

A. Comply with requirements for administrative procedures stated in this and other sections of the Project Manual in closing out the Work. Closeout procedures are summarized in this Section.

B. Contract requirements shall be met when design and construction activities have successfully produced, in order, completion of these three closeout stages:

1. Substantial Completion

2. Final Completion

3. Final Payment

C. The Contractor shall provide all written notices and supporting documentation as described in Paragraphs 2 and 3 below when requesting Substantial Completion and Final Completion, respectively. Partial submittals of the required documents shall not represent a valid request, and the County and Construction Manager shall not be liable for any delays in the Substantial and Final Completion dates arising there from.

2. SUBSTANTIAL COMPLETION

A. Reference the DEFINITIONS, regarding Substantial Completion.

B. When the Work is substantially complete, the Contractor shall submit to the Construction Manager:

1. a written notice that the Work, or designated portion thereof, is substantially complete.

2. an original Certificate of Occupancy for the Project (as applicable).

3. a list of items to be completed or corrected (hereinafter referred to as a "Punch List").

4. all executed work orders signed and accepted by The Parsons PM Team and the County representative..

5. Project record documents, operation & maintenance manuals, warranties, and certificates for review and approval.

C. Within 5 business days of such notice, the Construction Manager, the Contractor, and at its option, the County, will make an inspection to determine the status of completion.

D. The Punch List submitted by the Contractor will be reviewed in detail, with items added or deleted to indicate Work to be corrected or completed.

1. The Construction Manager reserves the right to issue a revised Punch List based on Contract Documents.

2. The Construction Manager will reproduce and distribute all necessary copies of any revised Punch List to the Contractor and see that the items requiring correction or completion are given prompt attention by the Contractor.

3. The Construction Manager may withhold the issuance of the Certificate of Substantial Completion until corrections required by said Punch List are made or all parties are satisfied that they will be made.

E. Should the Construction Manager determine that the Work is not substantially complete:

1. The Construction Manager will promptly notify the Contractor in writing, giving the reasons therefore.

2. The Contractor shall remedy the deficiencies in the Work, and then send a second written notice of Substantial Completion to the Construction Manager.

F. Paragraphs 2.B through 2.D will be repeated.

G. When the Construction Manager concurs that the Work is substantially complete, the Construction Manager will:

1. prepare a Certificate of Substantial Completion accompanied by the Contractor's Punch List of items to be completed or corrected, as verified and amended by the Construction Manager and the County. (Note: Contract responsibilities are not altered by inclusion or omission of required Work for the Punch List.)

2. sign the Certificate of Substantial Completion and submit it to the County and the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

3. FINAL COMPLETION

A. Reference the Definitions, regarding Final Completion.

B. To attain Final Completion, the Contractor shall complete the activities pertaining to Substantial Completion Certificate and complete work on all Punch List items. Only then shall a written request to the Construction Manager for final inspection be submitted.

C. When the Work is complete, the Contractor shall submit to the Construction Manager written certification, signed jointly with its Architect and Engineers of Record (as required), that:

1. the Contract Documents have been complied with in their entirety.

2. the Work has been inspected for compliance with Contract Documents.

3. the Work has been completed in accordance with Contract Documents.

4. the Work is completed and ready for final inspection.

D. The Construction Manager, Contractor and County will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

E. Should the Construction Manager determine that the Work is incomplete or defective:

1. The Construction Manager will promptly notify the Contractor in writing, listing the incomplete or defective Work.

2. The Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the Construction Manager that the Work is complete.

F. Paragraphs 3.B through 3.D will be repeated.

G. When the Construction Manager finds that the Work is acceptable under the Contract Documents, the Contractor will be requested to make a final closeout submittal.

4. CONTRACTOR'S CLOSEOUT SUBMITTALS

The Contractor shall provide to the Construction Manager the following documents in the quantity of one original and one copy unless otherwise noted. Note that with the exception of Subparagraphs 4.G, 4.H, 4.J, and 4.K below, submittal for approval shall have already been made prior to Substantial Completion. Submittal under this Paragraph would be for a final submittal should revisions or additional copies be required of previously submitted documentation.

A. Evidence of Compliance with all requirements of governing authorities:

1. Certificate(s) of Occupancy (as applicable)

2. Certificates of Inspection, for Mechanical, Electrical, Plumbing, Fire Protection, and others as may be required.

B. Project Record Documents: Final Prioritization Report.

C. Operation & Maintenance Manuals.

D. Subcontractor List: A complete listing of all subcontractors and their suppliers, indicating business addresses, telephone numbers, contact names, and items supplied by each.

E. Manufacturer List: A listing of manufacturers of major materials, equipment and systems installed in the Work, and local contact addresses and phone numbers.

F. Warranties: All warranties transferred to the County.

G. Payment of Debts and Claims and Consent of Surety: The Contractor shall submit adequate evidence that the Contractor has paid all obligations to date arising out of the Contract. Contractor shall also submit written consent of its Surety to final payment.

H. Release of Claims and Liens: The Contractor and each subcontractor shall also submit a certified Release of Claims and Liens, indicating that the releases for waivers submitted are complete to the best of its knowledge and information upon receipt of final payment. Example form attached.

I. No partial submittals of the above items are to be made to the Construction Manager. All items of each category are to be collected by the Contractor and delivered at one time to the Construction Manager, together with a letter of transmittal listing all items. Where items are to be delivered to the County's representative, the Contractor shall include a copy of the transmittal letter listing all enclosures, signed by the County's representative acknowledging receipt.

END OF SECTION

UNCONDITIONAL WAIVER AND RELEASE
UPON FINAL PAYMENT

STATE OF GEORGIA
COUNTY OF _____

The undersigned mechanic and/or materialman has been employed by _____ (name of contractor) to furnish _____ (describe materials and/or labor) for the construction of improvements known as _____ (title of the project or building) which is located in the City of
_____, County of _____, and is owned by_____ (name of owner) and more particularly described as follows:

(DESCRIBE THE PROPERTY UPON WHICH THE IMPROVEMENTS WERE MADE BY USING EITHER A METES AND BOUNDS DESCRIPTION, THE LAND LOT DISTRICT, BLOCK AND LOT NUMBER, OR STREET ADDRESS OF THE PROJECT.)

Upon the receipt of the sum of $_____, the mechanic and/or materialman waives and releases any and all liens or claims of liens or any right against any labor and/or material bond it has upon the foregoing described property.

Given under hand and seal this _____ day of _____, 19__.

_____(Seal)

_____

_____
(Witness)

_____

SECTION 01 710

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, conduct inspections verifying that requirements of cleanliness are being met.

B. In addition to the standards described in this Section, comply with all pertinent requirements of governmental agencies having jurisdiction.

1.03 HAZARDOUS MATERIAL AND WASTE

A. The Contractor shall handle hazardous waste and materials in accordance with applicable local, state, and federal regulations. Waste shall also be disposed of in USEPA approved landfills as applicable.

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 hazardous wastes or materials 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 legally dispose off the site all surplus materials and equipment from demolition and shall provide suitable off-site disposal site, or utilize a site designated by the Owner.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide all required personnel, equipment and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

A. Use only the cleaning materials, methods and equipment which are compatible with the surface

being cleaned, as recommended by the manufacturer of the material or as approved by the Construction Manager.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING

A. GENERAL

1. Do not allow the accumulation of scrap, debris, waste material and other items not required for construction of this Work.

2. At least each week, and more often if necessary, completely remove all scrap, debris and waste material from the job site.

3. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the environment.

B. SITE

1. Daily and more often if necessary, inspect the site and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.

2. Re-stack materials stored on site weekly.

3. At all times maintain the site in a neat and orderly condition which meets the approval of the Construction Manager.

C. STRUCTURES

1. Weekly and more often if necessary, inspect the structures and pick up all scrap, debris and waste material. Remove all such items to the place designated for their storage.

2. Weekly and more often if necessary, sweep all interior spaces clean. "Clean", for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by using a hand-held broom.

3. As required preparatory to installation of successive materials, clean the structures or pertinent portions as recommended by the manufacturer of the successive material.

4. Following the installation of finish floor materials, clean the finish floor daily. "Clean", for the purpose of this paragraph, shall be interpreted as meaning free from all foreign material which, in the opinion of the Construction Manager, may be injurious to the finish floor material.

5. Schedule cleaning operation so that dust and other contaminants resulting from cleaning operations will not fall on wet, recently painted surfaces.

3.02 FINAL CLEANING

A. Definitions: Unless otherwise specifically specified, "clean" for the purpose of this Article shall be interpreted as 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, remove from the job site all tools, surplus materials, equipment, scrap, debris and waste. Conduct final progress cleaning as described in 3.01 above.

C. Site: Unless otherwise specifically directed by the Construction Manager, hose down all paved areas on the site and all sidewalks; rake clean other surfaces of the grounds. Completely remove all resultant debris.

D. Structures

1. Remove all traces of soil, waste material, splashed material, and other foreign matter to provide a uniform degree of exterior cleanliness. Visually inspect all exterior surfaces and remove all traces of soil, waste material, and other foreign matter. Remove all traces of splashed materials from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure. In the event of stubborn stains not removable with water, the Construction Manager may require light sandblasting or other cleaning at no additional cost to the Owner.

2. Visually inspect all interior surfaces and remove all traces of soil, waste material, smudges and other foreign matter. Remove all paint droppings, spots, stains and dirt from finished surfaces.

3. Clean all glass inside and outside.

4. Polish all surfaces requiring the routine application of buffed polish. Provide and apply polish as recommended by the manufacturer of the material being polished.

E. Post-Construction Cleanup: All evidence of temporary construction facilities. haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other evidence of construction, as directed by the Construction Manager.

F. Restoration of Landscape Damage: Any landscape feature damaged by the Contractor shall be restored as nearly as possible to its original condition at the Contractor's expense. The Construction Manager will decide what method of restoration shall be used.

G. Timing: Schedule final cleaning as approved by the Construction Manager to enable the Owner to accept the 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 Construction Manager in accordance with the Supplementary Conditions of the Contract Documents.

END OF SECTION 01710

SECTION 01 720

PROJECT RECORD DOCUMENTS

1.01 GENERAL

A. The Contractor shall maintain at the site for the Owner at least one record copy of:

1. Complete Work Orders.
2. Specifications.
3. Addenda.
4. Change orders and other modifications to the Contract.
5. Construction Manager's field orders or written instructions.
6. Approved shop drawings, product data, and samples.
7. Field test records.

B. Related Requirements:

1. Section 01200: Project Meetings
2. Section 01340: Shop Drawings, Product Data, and Samples

3 complete copies of all Project Record Documents shall be furnished to the Construction Manager as a requirement for Project close-out and Final Completion.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. The Contractor shall store record documents and samples in the field office apart from documents used for construction.

1. Provide files and racks for storage of documents.
2. Provide locked cabinet or secure storage space for storage of samples.

B. Documents and samples shall be filed in accordance with Data Filing Format of the Uniform Construction Index.

C. Documents shall be maintained in a clean, dry, legible condition and in good order. Record documents shall not be used for construction purposes.

D. Documents and samples shall be available at all times for inspection by the Construction Manager.

1.03 MARKING DEVICES

A. The Contractor shall provide felt tip marking pens for recording information in the color code designated by the Construction Manager.

1.04 RECORDING

A. Each document shall be labeled "PROJECT RECORD" in large printed letters.

B. Record information shall be kept current with construction progress.

C. Record Drawings:

1. The Contractor shall keep an accurate record of variations between the work actually provided and that shown on the Contract Drawings. The representation of such variations shall conform to standard drafting practice and shall include such supplementary notes, legends and details as may be necessary for legibility and clear portrayal of the construction.

2. Do not conceal any work until required information is recorded.

3. Following the construction of the project, Contractor shall provide a Record Survey performed by a Registered Professional Land Surveyor. Survey shall accurately reflect installed location, depth, pipe size and other pertinent details. Cost for the survey shall be included in the price bid for pipe and no separate payment will be made for this survey.

1.05 SUBMITTAL

Each submittal shall be accompanied by 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.
5. Signature of the Contractor or his authorized representative.

END OF SECTION 01 720

SECTION 02 110

SEWER EASEMENT CLEARING

PART 1 - GENERAL

Definitions:

1. Light Clearing: This area requires "bush hog" equipment for tree and shrub removal.
2. Medium Clearing: This area requires "bush hog" and "chipper" equipment for tree and shrub removal.
3. Heavy Clearing: This area requires "timbering" equipment for tree and shrub material.

1.01 SCOPE

A. Sewer Easement Clearing includes, but is not limited to removal from the project site of 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 to prevent damage to existing features to remain is considered part of the work.

B. Sewer Easement Clearing 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 shall be obtained for construction operations by the Contractor.

B. Open burning will not be permitted.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. The Contractor shall furnish equipment with operators 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 SEWER EASEMENT CLEARING

A. Clear and grub the permanent easement, but not to exceed 10 feet on each side of the pipeline before initiating other items of work. Remove all trees, growth, debris, stumps and other objectionable matter, except as directed by the County.

B. Materials to be cleared, grubbed and removed from the construction area include, but are not limited to the following: trees, stumps, roots, brush, trash, organic matter, paving, miscellaneous structures, 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 two feet below the limits of excavation for structures, trenches and roadways or two feet below finished grade, whichever is lower.

E. Landscaping features shall include, but are not necessarily limited to, fences, cultivated trees, cultivated shrubbery, property corners, man-made improvements, subdivision and other signs, and shall be moved off or removed from the easement. The Contractor shall take extreme care in moving landscape features and shall re-establish these features as directed by the County.

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 in close proximity to utility wires, the tree shall be taken down in sections to eliminate the possibility of damage to the utility.

H. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.

I. All fences adjoining any excavation or embankment that, in the Contractor's opinion, may be damaged or buried, shall be carefully removed, stored and replaced. Any fencing that, in the County's opinion, is significantly damaged shall be replaced with new fence material.

J. Stumps and roots shall be grubbed and removed to a depth not less than 2 feet below grade. All holes or cavities which extend below the subgrade elevation of the proposed work shall be filled with crushed rock or other suitable material, compacted to the same density as surrounding material.

K. The Contractor shall exercise special precautions for the protection and preservation of trees, cultivated shrubs, sod, fences, etc. situated within limits of the construction area but not directly within excavation and/or fill limits. The Contractor shall be held liable for any damage his operations have inflicted on such property.

L. The Contractor shall be responsible for all damages to existing improvements outside the permanent easement resulting from Contractor's operations.

M. Burying of residual materials will not be allowed.

3.02 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, shoved onto abutting private properties or buried on the Project.

B. Open burning will not be permitted.

END OF SECTION

SECTION 02 115

TEMPORARY EROSION CONTROL

PART 1 - GENERAL

1.01 SCOPE OF THE WORK

A. Erosion control shall be employed during the construction period and shall include all necessary temporary measures required to prevent soil erosion from the site until permanent erosion control and finished surfaces are installed.

B. Erosion control measures shall be considered incidental to all construction involving land disturbing activities.

1.02 QUALITY ASSURANCE

A. The Contractor shall comply with applicable codes, rules, ordinances, regulations, and laws of local, municipal, state or federal authorities having jurisdiction over the project.

B. Work on public streets rights-of-way shall comply with the Georgia DOT Standard Specifications for Construction of Roads and Bridges.

C. Erosion control measures for construction shall conform to Project Drawings, these Specifications, and the "Manual for Erosion and Sediment Control of Georgia," published by the State Soil and Water Conservation Committee of Georgia.

PART 2 - PRODUCTS

2.01 SLOPE DRAINS

Slope drains shall be flexible plastic pipe of a manufacture for the intended purpose.

2.02 FILTER CLOTH

A. Filter cloth for silt fences shall be a pervious sheet of synthetic polymer filaments forming a stable network so that fibers retain their relative positions. Filter cloth shall be of the type recommended by its manufacturer for the intended application. The filter cloth shall meet the following requirements:

1. Minimum Average Thickness: 30 mils (by ASTM D1777).
2. Air Permeability: 250 to 550 CFM/Sq. Ft.
3. Minimum Grab Strength: 110 lbs. (by ASTM D1682).

PART 3 - EXECUTION

3.01 GENERAL

A. Temporary erosion control shall be directed toward and have the purpose of controlling soil erosion at its potential source. Downstream sediment entrapment measures shall be employed, but only as a backup to primary control at the source.

B. A continuing program of installation and maintenance of sediment control shall be employed during the construction period.

3.02 TEMPORARY EROSION CONTROL DURING CONSTRUCTION

A. Temporary erosion control during construction shall be employed until such time as permanent paving, planting, and restoration of natural areas is effective in control of erosion from the site.

See also Section 02270- Slope Protection and Erosion Control.

B. SILT FENCES

1. Temporary silt fences shall be located at all points where surface water can leave the construction area if the source area is subject to soil erosion.

2. Silt fences shall be constructed to remove sediments from flowing water through filtration and sedimentation. Silt fences shall be constructed in accordance with the details shown on the drawings.

3. Silt fences shall be arranged to create ponding behind them. Provision shall be made for removing accumulated sediments and maintaining ponding capacity.

4. Silt fences shall be removed and the area restored when permanent erosion control is effective.

C. GRADING OPERATIONS

1. Grading operations shall be scheduled so that the ground surface will be disturbed for the shortest possible time before permanent construction is installed. Large areas shall be maintained as flat as possible to minimize soil transport through surface flow.

2. Wherever steeper slopes or abrupt changes in grade are required, a diversion or berm shall be constructed at the top of the slope to cause the surface water to flow along the diversion to a control point to be transported downslope in a slope drain. In no case shall surface water be allowed to flow uncontrolled down slopes.

D. SLOPE DRAINS

Temporary slope drains shall be provided to convey surface water down slopes. Slope drains shall be provided with an apron at their tops to anchor them and properly direct water into them. Stone or rubble shall be placed at slope drain outlets to prevent scour at these points.

E. STORM DRAINAGE SYSTEM

1. As much of the permanent storm drainage system as is practicable shall be initially installed and surface water diverted into the system. The remainder of the storm drainage system shall be installed as soon as conditions will allow.

2. Temporary sediment barriers shall be maintained around drainage structures until final subgrade preparation is begun.

F. GROUND COVER

1. All exposed soils sloping 5 percent or greater shall be protected by application of ground cover.

2. Ground cover may consist of any effective erosion preventative treatment such as straw or other mulches, temporary seeding, etc.

3. All grassing or planting operations shall include mulching as stabilization until ground cover by planting is effective.

3.03 CLEANUP AND REMOVAL

At the time that permanent erosion control is effective, temporary devices and their accumulated sediments shall be removed.

END OF SECTION

SECTION 02 126

STREAM CROSSING & CONSTRUCTION EXITS

PART 1 GENERAL

1.01 SCOPE

A. The section shall apply to all temporary road construction, including stream crossings and access roads.

B. Temporary road construction includes, but is not limited to, providing all construction exits, rip-rap, traffic control, and excavation work necessary to create vehicular access throughout the entire length of the project.

1.02 DEFINITIONS

A. A "construction exit" is defined as a stone-stabilized pad located at any point where traffic will be leaving a construction site to a public right-of-way, street, alley, sidewalk, or parking area.

B. A "stream crossing" is defined as a temporary structure installed across a flowing stream or watercourse for use by construction equipment.

1.03 JOB CONDITIONS

Location of the Work: The area to be constructed as shown schematically on the Drawings or specified below.

1.04 RELATED SECTIONS

A. Section 02115: Temporary Erosion Control
B. Section 02270: Slope Protection and Erosion Control

PART 2 PRODUCTS

2.01 EQUIPMENT

The Contractor shall furnish equipment of the type normally used in temporary road construction operations, including, but not limited to, tractors, trucks, loaders, graders, bulldozers, and cranes.

PART 3 EXECUTION

3.01 CONSTRUCTION EXIT

Provide temporary stone exit/entrance pad located at points of vehicular ingress and egress to the site and maintain in service until instructed otherwise by the Construction Manager. Minimum pad thickness shall be 6 inches; minimum length shall be 50 feet. Maintain in a condition that will prevent tracking or flow of mud onto public road. Construction Exits shall conform with the requirements set forth in the Manual for Erosion and Sediment Control in Georgia Fifth Edition (2000), Georgia Soil

and Water Conservation Commission. Excerpts from the manual are included in this Specification.

3.02 STREAM CROSSINGS

Provide temporary stream crossings located at points of vehicular crossings and maintain in service until instructed otherwise by the Construction Manager. Structures shall be protected from washout during periods of peak discharges by diverting water around the structures. Structures shall be designed to withstand flows from a 10-year, 24 hour frequency storm or the storm specified in Title 12-7-1 of the Official Code of the Georgia Annotated. *Contractor shall obtain the services of a licensed Georgia Professional Engineer (P.E.) to size these structures and certify that the design has met the above referenced criteria.* Excerpts from the Manual for Erosion and Sediment Control in Georgia Fifth Edition (2000) are included in this specification for reference.

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Construction Exit

Co

DEFINITION

A stone stabilized pad located at any point where traffic will be leaving a construction site to a public right-of-way, street, alley, sidewalk or parking area or any other area where there is a transition from bare soil to a paved area.

PURPOSE

To reduce or eliminate the transport of mud from the construction area onto public rights-of-way by motor vehicles or by runoff.

CONDITIONS

This practice is applied at appropriate points of construction egress. Geotextile underliners are required to stabilize and support the pad aggregates.

DESIGN CRITERIA

Formal design is not required. The following standards shall be used:

Aggregate Size

Stone will be in accordance with National Stone Association R-2 (1.5 to 3.5 inch stone).

Pad Thickness

The gravel pad shall have a minimum thickness of 6 inches.

Pad Width

At a minimum, the width should equal full width of all points of vehicular egress, but not less than 20 feet wide.

Washing

If the action of the vehicle travelling over the gravel pad does not sufficiently remove the mud, the tires should be washed prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with crushed stone and provisions that intercept the sediment-laden runoff and direct it into an approved sediment trap or sediment basin.

Location

The exit shall be located or protected to prevent sediment from leaving the site.

CONSTRUCTION SPECIFICATIONS

It is recommended that the entrance area be excavated to a depth of 3 inches and be cleared of all vegetation and roots.

Diversion Ridge

On sites where the grade toward the paved area is greater than 2%, a diversion ridge 6 to 8 inches high with 3:1 side slopes shall be constructed across the foundation approximately 15 feet above the road.

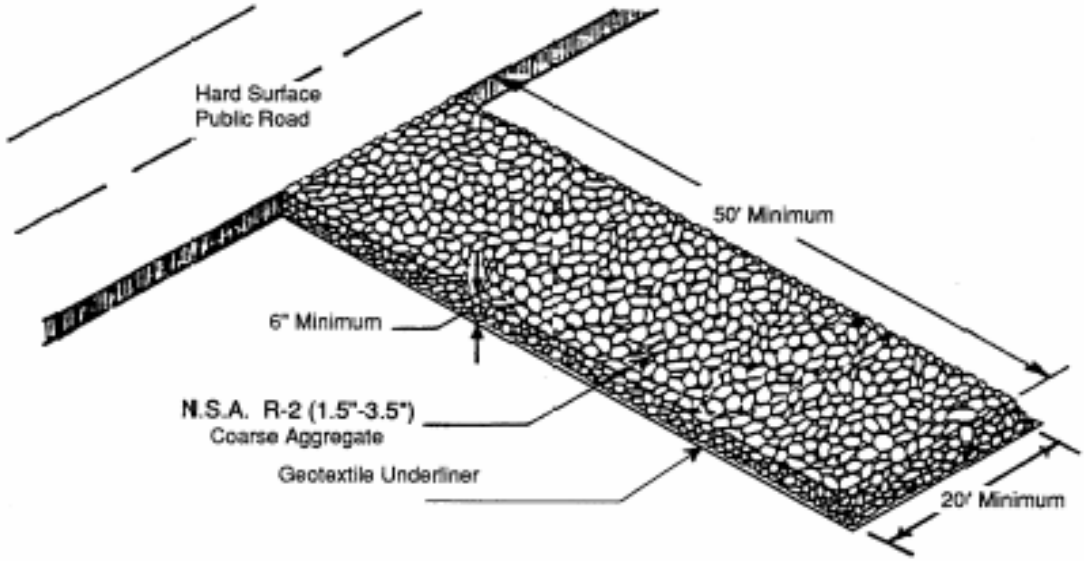
Geotextile

The geotextile underliner must be placed the full length and width of the entrance. Geotextile selection shall be based on AASHTO M288-98 specification:

1. For subgrades with a CBR greater than or equal to 3 or shear strength greater than 90 kPa, geotextile must meet requirements of section AASHTO M288-96 Section 7.3, *Separation Requirements*.
2. For subgrades with a CBR between 1 and 3 or sheer strength between 30 and 90 kPa, geotextile must meet requirements of section AASHTO M288-96 Section 7.4, *Stabilization Requirements*.

MAINTENANCE

The exit shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with 1.5 -3.5 inch stone, as conditions demand, and repair and/or cleanout of any structures to trap sediment. All materials spilled, dropped, washed, or tracked from vehicles or site onto roadways or into storm drains must be removed immediately.



CRUSHED STONE CONSTRUCTION EXIT

Figure 6-11.1

Temporary Stream Crossing

Sr

DEFINITION

A *temporary* structure installed across a flowing stream or watercourse for use by construction equipment.

PURPOSE

This standard provides a means for construction vehicles to cross streams or watercourses without moving sediment into streams, damaging the streambed or channel, or causing flooding.

CONDITIONS

Temporary stream crossings shall not be used on streams with drainage areas greater than one square mile. Structures may include bridges, round pipes or pipe arches.

Temporary stream crossings should be in place for less than one year and should not be used by the general public.

DESIGN CRITERIA

Size

The structure shall be large enough to convey the full bank flow of the stream, typically flows produced by a 2-year, 24-hour frequency storm, without appreciably altering the stream flow characteristic.

Location

The temporary stream crossing shall be perpendicular to the stream. Where approach conditions dictate, the crossing may vary 15% from the perpendicular.

Overflow Protection

Structures shall be protected from washout during periods of peak discharges by diverting water around the structures. Methods to be considered for washout protection may include elevation of bridges above adjacent flood plain lands, crowning of fills over pipes, or by the use of diversions, dikes or island type structures. Two types of stream crossings that may be used are bridges and culverts. Frequency and intended use, stream channel conditions, overflow areas, potential flood damage, and surface runoff control should be considered when selecting the type of temporary stream crossing to be used.

Temporary Bridge Crossing (Sr-B)

A temporary access bridge causes the least erosion of the stream channel crossing when the bridge is installed and removed. It also provides the least obstruction to flow and fish migration. Provided that the bridge is properly designed and appropriate materials are used, a temporary access bridge will be long-lasting and will require little maintenance. However, it is generally the most expensive crossing to design and construct; creating the greatest safety hazard if not adequately designed, installed and maintained.

Temporary Culvert Crossing (Sr-C)

A temporary access culvert can control erosion effectiviely, but can cause eosion when it is installed and removed. It is the most common stream crossing. A temorary culvert can be easily constructed and enables heavy equipment loads to be used. However, culverts create the greatest obstruction to flood flows and are subject to blockage and washout.

Table 6-23.1 shall be used to determine the culvert size necessary to safely convey streamflow. *Please note that the required pipe size is based on cross-sectional area of the pipe; e.g. if a 24 inch pipe is prescribed by Table 23.1, two 12 inch pipes could not be substitued because less flow area is provided.*

CORRUGATED METAL PIPE (CMP) DIAMETERS FOR TEMPORARY STREAM CROSSINGS *

Drainage Area	Average Slope of Watershed			
(Acres)	1%	4%	8%	16%
1-25	24	24	30	30
26-50	24	30	36	36
51-100	30	36	42	48
101-150	30	42	48	48
151-200	36	42	48	54
201-250	36	48	54	54
251-300	36	48	54	60
301-350	42	48	60	60
351-400	42	54	60	60
401-450	42	54	60	72
451-500	42	54	60	72
501-550	48	60	60	72
551-600	48	60	60	72
601-640	48	60	72	72

Table 6-23.1

* Assumptions for determining the table: USDA-NRCS Peak Discharge Method; CN = 65; Rainfall depth (average for Georgia) = 3.7" for 2-year frequency. Pipe diameters shown in the table are in inches.

CONSTRUCTION SPECIFICATIONS

All Crossings

1. Clearing of the stream bed and banks shall be kept to a minimum.
2. All surface water from the construction site shall be diverted onto undisturbed areas adjoining the stream. Line unstable stream banks with riprap or otherwise appropriately stabilize them.
3. The structure shall be removed as soon as it is no longer necessary for project construction.
4. Upon removal of the structure, the stream shall immediately be restored to its original cross-section and properly stabilized.

Temporary Bridge Crossing (Sr-B)

1. The temporary bridge shall be constructed at or above bank elevation to prevent the entrapment of floating materials and debris.
2. Abutments shall be placed parallel to and on stable banks.
3. Bridges shall be constructed to span the entire channel. If the channel width exceeds eight feet (as measured from the tops of the banks), a footing, pier or bridge support may be constructed within the waterway.
4. Bridges shall be securely anchored at only one end using steel cable or chain. This will prevent channel obstruction in the event that floodwaters float the bridge. Large trees, large boulders, or driven steel anchors can serve as anchors.

Temporary Culvert Crossing (Sr-C)

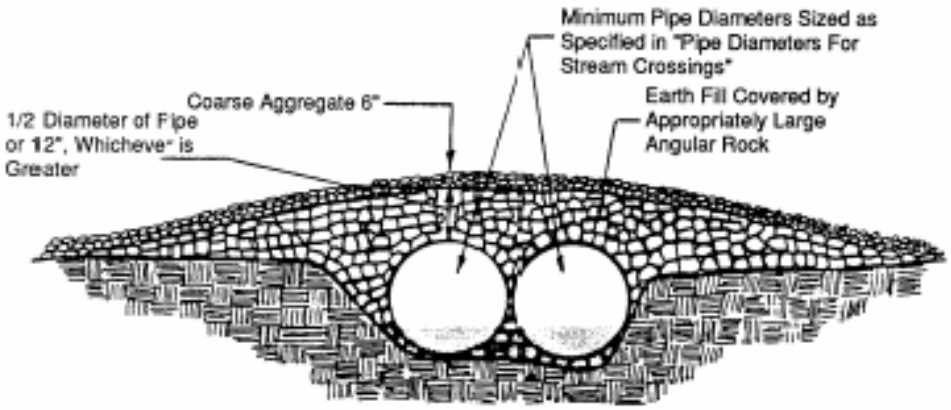
1. The invert elevation of the culvert shall be installed on the natural streambed grade.
2. The culvert(s) shall extend a minimum of one foot beyond the upstream and downstream toe of the aggregate placed around the culvert. In no case shall the culvert exceed 40 feet in length.
3. The culvert(s) shall be covered with a minimum of one foot of aggregate. If multiple culverts are used, they shall be separated by a minimum of 12 inches of compacted aggregate fill.

MAINTENANCE

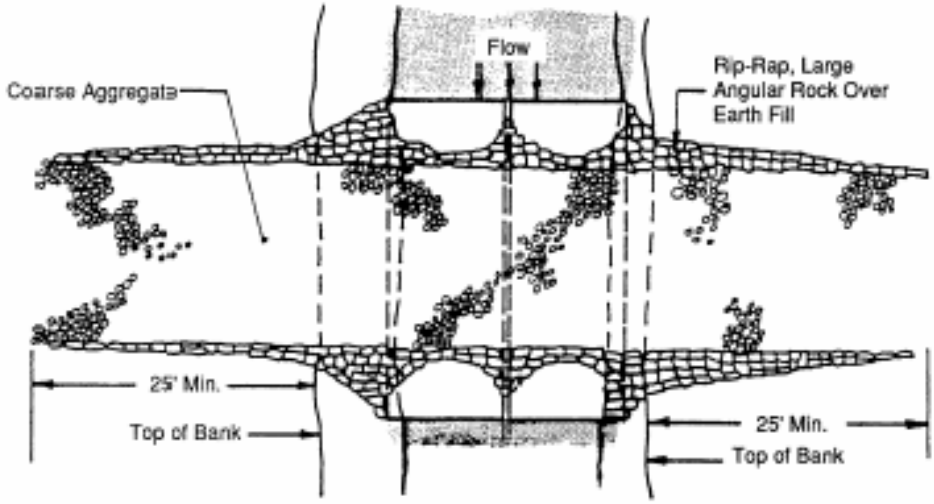
The structure shall be inspected after every rainfall and at least once a week, whether it has rained or not, and all damages repaired immediately. The structure shall be removed immediately after construction is fininshed, and the streambed and banks must be stabilized. Refer to specification **Bf - Buffer Zone**.

TO BE SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN

1. Drainage area (ac), average slope of watershed (%), and stream flow rate at bankfull flow (cfs).
2. Detailed dimensions of components for the type of crossing to be used.



ELEVATION



PLAN

GENERAL NOTES:

1. Not to scale.
2. This type of crossing can be installed in both a wet or dry weather stream condition where the drainage area exceeds 10 acres.
3. Remove during cleanup.

Figure 6-23.2

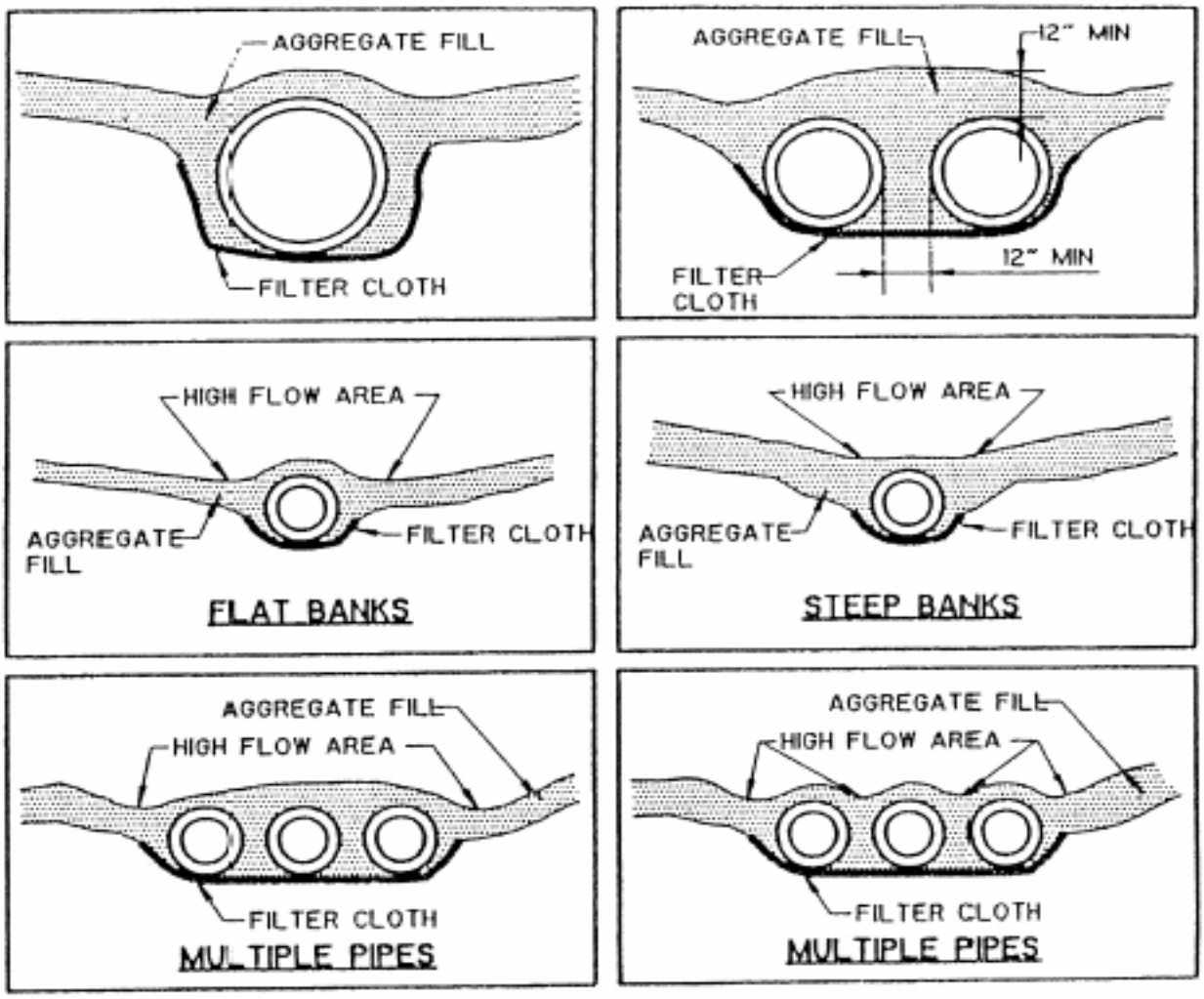


Figure 6-23.3 - Configuration of temporary culvert crossing.

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END OF SECTION 02126

SECTION 02 225

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 Work Order.

B. Excavation shall include the removal of any trees, stumps, brush, debris or other obstacles which remain 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 Work Order.

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 referenced 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.

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 D 698, except that for cohesionless, free draining soils "maximum dry density" shall mean the maximum index density as determined by ASTM D 4253. Determination of the density of foundation, bedding, haunching, or backfill materials in place shall meet with the requirements of ASTM D 1556, ASTM D 2922 or ASTM D 2937.

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

Perform all trench excavation and backfilling activities in accordance with the Occupational Safety and Health Act of 1970 (PL 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 OSHA publication 2226.

PART 2 - PRODUCTS

2.01 TRENCH FOUNDATION MATERIALS

Crushed stone shall be utilized 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 crushed stone as specified below.

B. Crushed stone utilized 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.

C. Filter Fabric - Non-Woven Type

1. Filter fabric associated with bedding shall be a UV stabilized, spunbonded, continuous filament, needlepunched, polypropylene, non-woven geotextile.

2. The fabric shall have an equivalent open size (EOS or AOS) of 120 - 70. The fabric shall also conform to the minimum property values listed in the following table:

Fabric Property	**Unit**	**Test Procedure**	**Average Value**	
			Typical	**Minimum**
Weight	oz/yd^2	ASTM D 3776	8.3	
Thickness	mils	ASTM D 1777	105	

Grab Strength	lbs.	ASTM D 4632	240	210
Grab Elongation	%	ASTM D 4632	>50	50
Tear Strength	lbs.	ASTM D 4533	100	85
Mullen Burst	psi	ASTM D 3786	350	320
Puncture Resistance	lbs.	ASTM D 4833	115	100
Permittivity	sec^{-1}	ASTM D 4491	1.7	
Water Permeability	cm/sec	ASTM D 4491	0.4	
Water Flow Rate	gpm/ft^2	ASTM D 4491	120	
UV Resistance (500 hrs)	%	ASTM D 4355	>85	
pH			2 - 13	

3. If ordered by the Engineer, the filter fabric manufacturer shall furnish the services of a competent factory representative to supervise and/or inspect the installation of pipe. This service will be furnished for a minimum of 10 days during initial pipe installation.

4. Filter fabric shall be equal to Polyfelt TS 700, Trevira 1125 or SuPac 7-MP.

2.03 INITIAL BACKFILL

A. Initial backfill material shall be crushed stone or earth materials as specified for bedding and haunching materials.

B. Earth materials utilized 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 it 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

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

Select backfill shall be materials that meet the requirements as specified for bedding, haunching, initial backfill or final backfill materials, including compaction requirements.

2.06 CONCRETE

Concrete for bedding, haunching, initial backfill or encasement shall have a compressive strength of not less than 3,000 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 C 94. Reinforcing steel shall conform to the requirements of ASTM A 615, Grade 60.

2.07 FLOWABLE FILL

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

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 Work Order 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 one foot above the top of the pipe. Unless otherwise indicated on the Work Order, the maximum trench width shall be equal to the sum of the outside diameter of the pipe plus two 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 Work Order 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 County.

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 Work Order.

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 manholes. Remove boulders and stones to provide a minimum of 6-inches clearance between the rock and any part of the pipe, manhole or accessory.

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 and free of large or loose knots and in good, serviceable condition. Size and spacing shall be in accordance with OSHA regulations.

D. Steel Sheeting 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 Contractor it cannot be safely removed or is within three feet of an existing structure, utility, or pipeline. Cut off any sheeting left in place at least two feet below the surface.

G. Sheet piling within three feet of an existing structure or pipeline shall remain in place, unless otherwise directed by the Contractor.

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 one cubic yard.

B. Blasting: Exhaust other practical means of excavating prior to utilizing 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 DESIGN/BUILDER to supervise the preparation for each blast and approve the quantity of each charge.

C. Removal of Rock: Dispose of rock off site 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.

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 two 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 two 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 two 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 two 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 Contractor shall then order trench stabilization by directing the Contractor to over excavate 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 two 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 Work Order. 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. Gravity Sewers and Accessories: Lay PVC pipe with minimum Class "B" bedding. Lay all other pipe with Class "C" bedding, unless shown or specified otherwise.

1. Class "A": Excavate the bottom of the trench flat at a minimum depth as shown on the Work Order, below the bottom of the pipe barrel. Lay pipe to line and grade on concrete block. Place concrete to the full width of the trench and to a height of one-fourth of the outside diameter of the pipe above the invert.

2. Class "B": Excavate the bottom of the trench flat at a minimum depth as shown on the Work Order, below the bottom of the pipe barrel. Place and compact bedding material to the proper grade. Haunching material shall then be carefully placed by hand and compacted to provide full support under and up to the centerline of the pipe.

3. Class "C": Excavate the bottom of the trench flat at a minimum depth as shown on the Work Order, below the bottom of the pipe barrel. Place and compact bedding material to the proper grade. Haunching material shall then be carefully placed by hand and compacted to provide full support under and up to a height of one-fourth the outside diameter of the pipe above the bottom of the pipe barrel.

4. Type 5: Excavate the bottom of the trench flat at a minimum depth as shown on the Work Order, below the bottom of the pipe barrel. Place and compact bedding material to the proper grade before installing pipe. After the pipe has been brought to the proper grade, haunching material shall be carefully placed by hand and compacted to the top of the pipe.

F. MANHOLES: Excavate to a minimum of 12-inches below the planned elevation of the base of the manhole. Place and compact crushed stone bedding material to the required grade before constructing the manhole.

G. EXCESSIVE WIDTH AND DEPTH

1. Gravity Sewers: If the trench is excavated to excess width, provide the bedding class with the next higher bedding factor. Type 5 Bedding may be used in lieu of Class "A" bedding, where Class "A" bedding is necessitated by excessive trench width.

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. 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 90 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

Where concrete encasement is shown on the Work Order for pipelines, 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 "Trench Excavation" of this Section.

C. Excavated material which is unsuitable for backfilling, and excess material, shall be disposed of in a manner approved by the Contractor. Surplus soil may be neatly distributed and spread over the site, if approved by the Contractor, except that surplus soil shall not be distributed and spread over the site in areas under Corps of Engineers 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, 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 trench settles, re-fill, compact and grade the surface to conform to the adjacent surfaces.

G. Final backfill shall be compacted to a minimum 90 percent of the maximum dry density, unless specified otherwise.

3.10 ADDITIONAL MATERIAL

Where final grades above the pre-construction grades are required to maintain minimum cover, additional fill material will be as shown on the Work Order. Utilize 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 RIGHT-OF-WAYS

Compact backfill underlying pavement and sidewalks, and backfill under dirt and gravel roads to a minimum 95 percent of the maximum dry density.

3.12 BACKFILL WITHIN GEORGIA DOT RIGHT-OF-WAY

Backfill within the Georgia DOT right-of-way shall meet the requirements stipulated in the "Utility Accommodation Policy and Standards", published by the Georgia Department of Transportation.

3.13 FLOWABLE FILL

A. Where flowable fill is required, excavate the trench to provide a minimum of 6-inches clearance on either side 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.

3.14 COMPACTED GRANULAR MATERIAL

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.

3.15 TESTING AND INSPECTION

A. THE SOILS TESTING LABORATORY IS RESPONSIBLE FOR THE FOLLOWING:

1. Compaction tests in accordance with Article 1.02 of this Section.

2. Field density tests for each two feet of lift, one test site between each manhole, every 100 feet within road rights-of-way, or more frequently if ordered by the Engineer. The County 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 is subject to inspection by the Contractor.

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 02 270

SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SCOPE

A. This section shall consist of temporary control measures as shown in the plans or directed by the Engineer during the life of the Contract to control erosion and water pollution, through the use of berms, dikes, darns, sediment basins, fiber mats, netting, mulches, grasses, slope drains, temporary silt fences, and other control devices.

B. The temporary pollution control provisions contained herein shall be coordinated with the permanent erosion control features, to assure economical, effective, and continuous erosion control throughout the construction and post-construction period.

C. See also Section 02115- Temporary Erosion Control.

1.02 DEFINITIONS

A. Throughout Section 02270, Engineer refers to the Contractor.

PART 2 - PRODUCTS

2.01 TEMPORARY BERMS

A. A temporary berm is constructed of compacted soil, with or without a shallow ditch, at the top of fill slopes or transverse to centerline on fills.

B. These berms are used temporarily at the top of newly constructed slopes to prevent excessive erosion until permanent erosion controls are installed or slopes stabilized.

2.02 TEMPORARY SLOPE DRAINS

A. A temporary slope drain is a facility consisting of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half-round pipe, metal pipe, plastic pipe, sod or other material acceptable to the Engineer that may be used to carry water down slopes to reduce erosion.

2.03 SEDIMENT STRUCTURES

A. Sediment basins, ponds, and traps are prepared storage areas constructed to trap and store sediment from erodible areas in order to protect properties and stream channels below the construction areas from excessive siltation.

2.04 CHECK DAMS

A. Check dams are barriers composed of logs and poles, large stones or other materials placed across a natural or constructed drainage way.

B. Stone check dams shall not be utilized where the drainage area exceeds fifty acres. Log and pole structures shall not be used where the drainage area exceeds five acres.

2.05 TEMPORARY SEEDING AND MULCHING

A. Temporary seeding and mulching are measures consisting of seeding, mulching, fertilizing, and matting utilized to reduce erosion. All cut and fill slopes including waste sites and borrow pits shall be seeded when and where necessary to eliminate erosion.

2.06 BRUSH BARRIERS

A. Bush barriers shall consist of brush, tree trimmings, shrubs, plant, and other approved refuse from the clearing and grubbing operation.

B. Brush barriers are placed on natural ground at the bottom of fill slopes, where the most likely erodible areas are located to restrain sedimentation particles.

2.07 BALED HAY OR STRAW CHECKS

A. Baled hay or straw erosion checks are temporary measures to control erosion and prevent siltation. Bales shall be either hay or straw containing five cubic feet or more of materials.

B. Baled hay or straw checks shall be used where the existing ground slopes toward or away from the embankment along the toe of slopes, in ditches, or other areas where siltation erosion or water run-off is a problem.

2.08 TEMPORARY SILT FENCES

A. Silt fences are temporary measures utilizing woven wire or other approved material attached to posts with filter cloth composed of burlap, plastic filter fabric, etc., attached to the upstream side of the fence to retain the suspended silt particles in the run-off water.

PART 3 - EXECUTION

3.01 PROJECT REVIEW

A. Prior to the preconstruction conference the Contractor shall meet with the Engineer and go over in detail the expected problem areas in regard to the erosion control work. Different solutions should be discussed so that the best method might be determined. It is the basic responsibility of the Contractor to develop an erosion control plan acceptable to the Engineer.

3.02 PRECONSTRUCTION CONFERENCE

A. At the preconstruction conference the Contractor shall submit for acceptance his schedule for accomplishment of temporary and permanent erosion control work, as are applicable for clearing and grubbing, grading, bridges and other structures at watercourses, construction, and paving. He shall also submit for acceptance his proposed method of erosion control on haul roads and borrow pits and his plan for disposal of waste materials. No work shall be started until the erosion control schedules and methods of operations have been accepted by

the Engineer.

3.03 CONSTRUCTION REQUIREMENTS

A. The Engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams or other watercourses, lakes, ponds, or other water impoundment. Such work may involve the construction of temporary berms, dikes, dams, coffer dams, sediment basins, slope drains, and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion. Cut and fill slopes shall be seeded and mulched as the excavation proceeds to the extent directed by the Engineer.

B. The Contractor shall be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in his accepted schedule. Temporary pollution control measures shall be used to correct conditions that develop during construction that were not foreseen during the design stage or that are needed prior to installation or develops during normal construction practices, but are not associated with permanent control features on the project.

C. Where erosion is likely to be a problem, clearing and grubbing operations should be so scheduled and performed that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise erosion control measures may be required between successive construction stages.

D. The Engineer may limit the areas of excavation, borrow, and embankment operations in progress commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent pollution control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified.

E. The Engineer may increase or decrease the amount of surface area of erodible earth material to be exposed at one time by clearing and grubbing, excavation, borrow and fill operations as determined by his analysis of project conditions.

F. In the event of conflict between these requirements and pollution control laws, rules, or regulations or other Federal or State or local agencies, the more restrictive laws, rules, or regulations shall apply.

3.04 CONSTRUCTION OF STRUCTURES

A. TEMPORARY BERMS

1. A temporary berm shall be constructed of compacted soil and covered with at least 6" of crushed stones, with a minimum width of 24 inches at the top and a minimum height of 12 inches with or without a shallow ditch constructed at the top of fill slopes or transverse to centerline on fills or as shown in the plans. Temporary berms shall be graded so as to drain to a compacted outlet at a slope drain. The area adjacent to the temporary berm in the vicinity of the slope drain must be properly

graded to enable this inlet to function efficiently and with minimum ponding in this area. All transverse berms required on the downstream side of a slope drain shall extend across the grade to the highest point to approximately a 10-degree angle with a perpendicular to centerline. The top width of these berms may be wider and the side slope flatter on transverse berms to allow equipment to pass over the berms with minimal disruptions. When practical and until final roadway elevations are approached, embankments should be constructed with a gradual slope to one side of the embankment to permit the placement of temporary berms and slope drains on only one side of the embankment.

B. TEMPORARY SLOPE DRAINS

1. Temporary slope drains shall consist of stone gutters, fiber mats, plastic sheets, concrete or asphalt gutters, half-round pipe, metal pipe, plastic pipe, flexible rubber, or other materials which can be used at temporary measures to carry water accumulating in the cuts and on the fills down the slopes prior to installation of permanent facilities or growth of adequate ground cover on the slopes.

2. Fiber mating and plastic sheeting shall not be used on slopes steeper than 4:1 except for short distances of 20 feet or less.

3. All temporary slope drains shall be adequately anchored to the slope to prevent disruption by the force of the water flowing in the drains. The base for temporary slope drains shall be compacted and concavely formed to channel the water or hold the slope drain in place. The inlet end shall be properly constructed to channel water into the temporary slope drain. Energy dissipators, sediment basins, or other approved devices shall be constructed at the outlet end of the slope drains to reduce erosion downstream. An ideal dissipator would be dumped rock or a small sediment basin, which would slow the water as well as pick up some sediment. All temporary slope drains shall be removed when no longer necessary and the site restored to match the surroundings.

C. SEDIMENT STRUCTURES

1. Sediment structures shall be utilized to control sediment at the foot of embankments where slope drains outlet; at the bottom as well as in the ditch lines atop waste sites; in the ditch lines or borrow pits. Sediment structures may be used in most drainage situations to prevent excessive siltation of pipe structures. All sediment structures shall be at least twice as long as they are wide.

2. Where use of temporary sediment structures is to be discontinued, all sediment accumulation shall be removed, and all excavation backfilled and properly compacted. The existing ground shall be restored to its natural or intended condition.

D. CHECK DAMS

1. Check dams shall be utilized to retard stream flow and catch small sediment loads. Materials utilized to construct check dams are varied and should be clearly illustrated or explained in the Contractor's erosion control plan.

2. All check dams shall be keyed into the sides and bottom of the channel a minimum depth of 2 feet. A design is not needed for check dams but some typical designs are shown in the standard plans of erosion control details.

3. Stone check dams should generally not be utilized where the drainage area exceeds fifty (50) acres. Log and pole structures should generally not be used where the drainage area exceeds five acres.

E. TEMPORARY SEEDING AND MULCHING

1. Seeding and mulching shall be performed in accordance with Section 02485, Seeding, of these Specifications.

F. BRUSH BARRIERS

1. Brush barriers shall consist of brush, tree trimmings, shrubs, plants and other approved refuse from the clearing and grubbing operation. The brush barriers shall be constructed approximately parallel to original ground contour. The brush barrier shall be compressed to an approximately height of 3 to 5 feet and approximately width of 5 to 10 feet. The embankment shall not be supported by the construction of brush barriers.

G. BALED HAY OR STRAW EROSION CHECKS

1. Hay or straw erosion checks shall be embedded in the ground 4 to 6 inches to prevent water flowing under them. The bales shall be anchored securely to the ground by wooden stakes driven through the bales into the ground. Bales can remain in place until they rot, or be removed after they have served their purpose, as determined by the Engineer. The Contractor shall keep the checks in good condition by replacing broken or damaged bales immediately after damage occurs. Normal debris cleanout will be considered routine maintenance.

H. TEMPORARY SILT FENCES

1. Temporary silt fences shall be placed on the natural ground, at the bottom of fill slopes, in ditches, or other areas where siltation is a problem. Silt fences are constructed of wire mesh fence with a covering of burlap or some other suitable material on the upper grade side of the fence and anchored into the soil.

2. The Contractor shall be required to maintain the silt fence in a satisfactory condition for the duration of the project or until it is removed. The silt accumulation at the fence may be left in place and seeded, removed, etc., as directed by the Engineer. The silt fence becomes the property of the Contractor whenever the fence is removed.

3.05 MAINTENANCE

A. The temporary erosion control features installed by the Contractor shall be acceptably maintained by the Contractor until no longer needed or permanent erosion control methods are installed. Any materials removed shall become the property of the Contractor.

B. In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of work as scheduled, and are ordered by the Engineer, such work shall be performed by the

Contractor at his own expense.

C. Where the work to be performed is not attributed to the Contractor's negligence, carelessness, or failure to install permanent controls and falls within the specifications for a work item that has a contract unit price, the units of work shall be paid for at the proper contract unit prices.

3.06 EROSION CONTROL OUTSIDE PROJECT AREA

A. Temporary pollution control shall include construction work outside the project area where such work is necessary as a result of construction such as: borrow pit operations, haul roads and equipment storage sites. Bid price in such cases shall include all necessary clearing and grubbing, construction incidentals, maintenance, and site restoration when no longer needed.

END OF SECTION

SECTION 02 485

SEEDING

PART 1 - GENERAL

1.01 SCOPE

A. The work covered by this section consists of furnishing all labor, equipment, and material required to place topsoil, seed, commercial fertilizer, agricultural limestone, and mulch material, including seedbed preparation, harrowing, compacting, and other placement operations on graded earthen areas as described herein and/or shown on the Drawings. In general, seeding operations shall be conducted on all newly graded earthen areas not covered by structures, pavement, or sidewalks; all cleared or grubbed areas which are to remain as finish grade surfaces; and on all existing turf areas which are disturbed by construction operations and which are to remain as finish grade surfaces. Areas disturbed by borrow activities shall also be seeded according to these Specifications.

B. The work shall include temporary seeding operations to stabilize earthen surfaces during construction or inclement weather and to minimize stream siltation and erosion. Temporary seeding shall be performed at times and locations as directed by the Engineer.

1.02 QUALITY ASSURANCE

A. Prior to seeding operations, the Contractor shall furnish to the Engineer labels or certified laboratory reports from an accredited commercial seed laboratory or a state seed laboratory showing the analysis and germination of the seed to be furnished. Acceptance of the seed test reports shall not relieve the Contractor of any responsibility or liability for furnishing seed meeting the requirements of this Section.

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

PART 2 - PRODUCTS

2.01 TOPSOIL

A. Utilizing designated stockpiles or borrow areas on site, if any, the Contractor shall place a minimum of 4 inches of topsoil over all graded earthen areas and over any other areas to be seeded. Sources of topsoil shall be approved by the Engineer prior to disturbance. Importing topsoil from offsite sources shall be at the discretion of the Engineer and shall be justification for additional compensation to the Contractor. A Change Order properly authorized by the Owner shall be agreed upon prior to importing offsite topsoil. No additional compensation will be allowed for spreading of topsoil.

B. Topsoil shall be a friable loam containing a large amount of humus and shall be original surface soil of good, rich, uniform quality, free from any material such as hard clods, stiff clay, hardpan, partially disintegrated stone, pebbles larger than ½ inch in diameter, lime,

cement, bricks, ashes, cinders, slag, concrete, bitumen or its residue, boards, sticks, chips, or other undesirable material harmful or unnecessary to plant growth. Topsoil shall be reasonably free from perennial weeds and perennial weed seeds, and shall not contain objectionable plant material, toxic amounts of either acid or alkaline elements or vegetable debris undesirable or harmful to plant life.

C. Topsoil shall be natural topsoil without admixture of subsoil material, and shall be classifiable as loam, silt loam, clay loam, sandy loam, or a combination thereof. The pH shall range from 5.5 to 7.0. Topsoil shall contain not less than 5 percent nor more than 20 percent, by weight, of organic matter as determined by loss on ignition of oven-dried samples to 65 °C.

2.02 SEED

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

B. All seed shall be from the last crop available at time of purchase and shall not be moldy, wet, or otherwise damaged in transit or storage.

C. Seed shall bear the growers analysis testing to 98 percent for purity and 90 percent for germination. At the discretion of the Engineer samples of seed may be taken for check against the growers analysis.

D. Species, rate of seeding, fertilization, and other requirements are shown in the Seeding Requirements Table.

2.03 FERTILIZER AND LIMING MATERIALS

A. Fertilizer and liming materials shall comply with applicable state, local, and federal laws concerned with their production and use.

B. Commercial fertilizer shall be a ready mixed material and shall be equivalent to the grade or grades specified in the Seeding Requirements Table. Container bags shall have the name and address of the manufacturer, the brand name, net weight, and chemical composition.

C. Agricultural limestone shall be a pulverized limestone having a calcium carbonate content of not less than 85 percent by weight. Agricultural limestone shall be crushed so that at least 85 percent of the material will pass a No. 10 mesh screen and 50 percent will pass a No. 40 mesh screen.

2.04 MULCH MATERIAL

A. All mulch materials shall be air dried and reasonably free of noxious weeds and weed seeds or other materials detrimental to plant growth.

B. Mulch shall be composed of wood cellulose fiber, straw, or stalks, as specified herein. Mulch shall be suitable for spreading with standard mulch blowing equipment.

C. Wood-cellulose fiber mulch shall be as manufactured by Weyerhauser Company, Conway Corporation, or equal.

D. Straw mulch shall be partially decomposed stalks of wheat, rye, oats, or other approved grain crops.

E. Stalks shall be the partially decomposed, shredded residue of corn, cane, sorghum, or other approved standing field crops.

2.05 MULCH BINDER

A. Mulch on slopes exceeding 3 to 1 ratio shall be held in place by the use of an approved mulch binder. The mulch binder shall be non-toxic to plant life and shall be acceptable to the Engineer.

B. Emulsified asphalt binder shall be Grade SS-1, ASTM D 977. Cutback asphalt binder shall be Grade RC 70 or RC 250.

2.06 INNOCULANTS FOR LEGUMES

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

2.07 WATER

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

PART 3 - EXECUTION

3.01 SECURING AND PLACING TOPSOIL

A. Topsoil shall be secured from areas from which topsoil has not been previously removed, either by erosion or mechanical methods. Topsoil shall not be removed to a depth in excess of the depth approved by the Engineer.

B. The area or areas from which topsoil is secured shall possess such uniformity of soil depth, color, texture, drainage, and other characteristics as to offer assurance that, when removed the product will be homogeneous in nature and will conform to the requirements of these Specifications.

C. All areas from which topsoil is to be secured, shall be cleaned of all sticks, boards, stones, lime, cement, ashes, cinders, slag, concrete, bitumen, or its residue, and any other refuse which will hinder or prevent growth.

D. In securing topsoil from a designated pit, or elsewhere, should strata or seams of material occur which do not come under the requirements for topsoil, such material shall be removed from the topsoil, or if required by the Engineer, the pit shall be abandoned.

E. Before placing or depositing topsoil upon any areas, all improvement within the area shall be completed, unless otherwise approved by the Engineer.

F. The areas in which topsoil is to be placed or incorporated shall be prepared before securing topsoil for use.

3.02 SEEDBED PREPARATION

A. Before fertilizing and seeding, the topsoil surfaces shall be trimmed and worked to true line free from unsightly variation, bumps, ridges and depressions, and all detrimental material, roots, and stones larger than 3 inches in any dimension shall be removed from the soil.

B. Not earlier than 24 hours before the seed is to be sown, the soil surface to be seeded shall be thoroughly cultivated to a depth of not less than 2 inches with a weighted disc, tiller, pulvimixer, or other equipment, until the surface is smooth and in a condition acceptable to the Engineer.

C. If the prepared surface becomes eroded as a result of rain or for any other reason, or becomes crusted before the seed is sown, the surface shall again be placed in a condition suitable for seeding.

D. Ground preparation operations shall be performed only when the ground is in a tillable and workable condition, as determined by the Engineer.

3.03 FERTILIZATION AND LIMING

A. Following seedbed preparation, fertilizer shall be applied to all areas to be seeded so as to achieve the application rates shown in the Seeding Requirements Table.

B. Fertilizer shall be spread evenly over the seedbed and shall be lightly harrowed, raked, or otherwise incorporated into the soil for a depth of ½ inch.

C. Fertilizer need not be incorporated in the soil as specified above when mixed with seed in water and applied with power sprayer equipment. The seed shall not remain in water containing fertilizer for more than 30 minutes when a hydraulic seeder is used.

D. Agricultural limestone shall be thoroughly mixed into the soil according to the rates in the Seeding Requirements Table. The specified rate of application of limestone may be reduced by the Engineer if pH tests indicate this to be desirable. It is the responsibility of the Contractor to obtain such tests and submit the results to the Engineer for adjustment in rates.

E. It is the responsibility of the Contractor to make one application of maintenance fertilizer according to the recommendations listed in the Seeding Requirements Table.

3.04 SEEDING

A. Seed of the specified group shall be sown as soon as preparation of the seedbed has been completed. No seed shall be sown during high winds, nor until the surface is suitable for working and is in a proper condition. Seeding shall be performed during the dates shown in the Seeding Requirements table unless otherwise approved by the Engineer. Seed mixtures may be sown together provided they are kept in a thoroughly mixed condition during the seeding operation.

B. Seeds shall be uniformly sown by any approved mechanical method to suit the slope and size of the areas to be seeded, preferably with a broadcast type seeder, windmill hand seeder, or approved mechanical power drawn seed drills. Hydro-seeding and hydromulching may be used on steep embankments, provided full coverage is obtained. Care shall be taken to adjust the seeder for seedings at the proper rate before seeding operations are started and to maintain their adjustment during seeding. Seed in hoppers shall be agitated to present segregation of the various seeds in a seeding mixture.

C. Immediately after sowing, the seeds shall be covered and compacted to a depth of ¼ to 1/2 inch by a cultipacker or suitable roller.

D. Leguminous seeds shall be innoculated prior to seeding with an approved and compatible nitrogen-fixing innoculant in accordance with the manufacturer's mixing instructions.

3.05 MULCHING

A. All seeded areas shall be uniformly mulched in a continuous blanket immediately after seeding. The mulch shall be applied so as to permit some sunlight to penetrate and the air to circulate and at the same time shade the ground, reduce erosion, and conserve soil moisture. Approximately 25 percent of the ground shall be visible through the mulch blanket.

B. One of the following mulches shall be spread evenly over the seeded areas at the following application rates:

1. Wood Cellulose Fiber	1,400 pounds/acre
2. Straw	4,000 pounds/acre
3. Stalks	4,000 pounds/acre

These rates may be adjusted at the discretion of the Engineer at no additional cost to the Owner, depending on the texture and condition of the mulch material and the characteristics of the seeded area.

C. Mulch on slopes greater than 3 to 1 ratio shall be held in place by the use of an approved mulch binder. Binder shall be thoroughly mixed and applied with the mulch. Emulsified asphalt or cutback asphalt shall be applied at the approximate rate of 5 gallons per 1,000 square feet as required to hold the mulch in place.

D. The Contractor shall cover structures, poles, fence, and appurtenances if the mulch binder is applied in such a way that it would come in contact with or discolor the structures.

E. Mulch and binder shall be applied by suitable blowing equipment at closely controlled application rates in a manner acceptable to the Engineer.

3.06 WATERING

A. Contractor shall be responsible for maintaining the proper moisture content of the soil to insure adequate plant growth until a satisfactory stand is obtained. If necessary, watering shall be performed to maintain an adequate water content in the soil.

B. Watering shall be accomplished by hoses, tank truck, or sprinklers in such a way to prevent erosion, excessive runoff, and overwatered spots.

3.07 MAINTENANCE

A. Upon completion of seeding operations, the Contractor shall clear the area of all equipment, debris, and excess material and the premises shall be left in a neat and orderly condition.

B. The Contractor shall maintain all seeded areas without additional payment until final acceptance of the work by the Owner, and any regrading, refertilizing, reliming, reseeding, or remulching shall be done at his own expense. Seeding work shall be repeated on defective areas until a satisfactory uniform stand is accomplished. Damage resulting from erosion, gullies, washouts, or other causes shall be repaired by filling with topsoil, compacting, and repeating the seeding work at his expense.

SEEDING REQUIREMENTS TABLE

					Rates per 1,000 Square Feet	
Area	Sowing Season	Species	Seed	Fertilizer	Limestone	Maintenance**
Flat to rolling terrain with slopes less than 3:1	3/1 to 6/1	Kentucky 31 Fescue Ladino White Clover*	4 lbs. 1/4 lb.	30lbs. 6-12-12	200 lbs.	15 lbs. 10-10-10
	8/1 to 11/1	Kentucky 31 Fescue Ladino White Clover* Annual Ryegrass	4 lbs. 1/4 lb. 2 lbs.	30lbs. 6-12-12	200 lbs.	15 lbs. 10-10-10
Embankments with slopes greater than 3:1	3/1 to 6/1	Crownvetch* Kentucky 31 Fescue Weeping Lovegrass	1 lb. 2 lbs. 1/4 lb.	30 lbs. 6-12-12	200 lbs.	10 lbs. 0-20-20
	8/1 to 11/1	Crownvetch* Kentucky 31 Fescue Annual Ryegrass	1 lb. 2 lbs. 2 lbs.	30 lbs. 6-12-12	200 lbs.	10 lbs. 0-20-20

*Requires inoculation.
**Maintenance fertilizer shall be applied in early spring following initial establishment of cover.

END OF SECTION

SECTION 02706

PRECONDITIONING MANHOLES AND SEWERS

PART 1 GENERAL

1.01 SCOPE

A. The objective of preconditioning is to maximize sewer and manhole service efficiency and effectiveness. Preconditioning involves removal of silt comprising any and all solid or semi-solid materials including fine and granular material, such as sand, grit gravel and rock as well as debris, grease, oil, sludge, slime or any other loose material or encrustation lodged in the manhole or sewer. Preconditioning also involves removal of invading roots, corroded concrete, corroded rungs, corroded ladders, intruding laterals and any other extraneous debris.

B. Two levels of performance concerning preconditioning of manholes and sewers shall be adhered to in this contract, as directed:

1. Preconditioning as a general level of service; which requires that manholes and sewers shall be considered preconditioning if:

   a. not more than a nominal amount of 10% of the through flow channel depth in manholes, or sewer depth between manholes is obscured by silt, where the through flow channel or sewer has an equivalent diameter up to an including 2- feet, and
   b. not more than a nominal amount of 5% of the through flow channel depth in manholes or sewer depth between manholes is obscured by silt, where the through flow channel or sewer has an equivalent diameter greater than 2-feet.
   c. No surface or appurtenance in manholes including walls, cones, slabs, rungs and benchings and drop shafts shall have any remnant of silt, coating, loose bricks, unsound concrete or mortar or loose material.
   d. All roots, corroded concrete, corroded rungs, corroded ladders, intruding laterals and any other extraneous debris are removed.
   e. Fulfillment of the requirements (e.g., depth of silt or cleanliness of surface) is to be determined by internal manhole and sewer condition survey or inspection of each manhole and sewer length preconditioned as directed.

2. Preconditioning prior to rehabilitation and repair; which requires that manholes and sewers shall be considered precondition if in addition to the requirements of 1) above, all silt has been removed from a minimum of 95% of the through flow channel and sewer cross section. Additionally, in the case of manholes, all surfaces shall be free of cleaning agents and their reactant products.

3. Fulfillment of these requirements is to be established by internal manhole and sewer condition survey or inspection of each manhole and sewer length preconditioned as directed.

C. The Contractor shall precondition the manholes and sewers listed on the plans so as to remove all silt, debris, roots, corroded concrete, corroded rungs and ladders, intruding laterals etc. and dispose of such arisings to an approved dumpsite.

D. The manholes and lengths of sewers listed in the Bill of Quantities provide the Contractor with a basis for estimating the lengths and quantities of silt to be removed and preconditioning to be carried out. The Contractor must satisfy himself from a reconnaissance of the manholes and sewers as well as inspection of all or any relevant archival information in order to estimate quantities and types of silt to be removed as well as all preconditioning Work.

E. During preconditioning work and all other operations associated with these works, sewer services to the consumer shall be maintained at all times (this requirement may be relaxed at the discretion of the Construction Manager).

F. The manholes and sewers to be preconditioned convey foul, surface or combined flows. In some instances such sewers are subject to high flows either continuously or in a periodically varying cycle or due to rainfall, pumping operations. The Contractor shall include in his rates for dealing with such variations and where necessary, program the work to suit.

G. The Contractor shall submit a comprehensive equipment list to the Construction Manager before commencement of the work. The complete list, which shall include all backup and standby equipment, shall be broken down in to component parts at least in relation to:

1. Safety equipment
2. Manhole preconditioning equipment
3. Sewer preconditioning equipment
4. Flow diversion and flow control equipment
5. Traffic control equipment
6. All other equipment necessary for the completion of the work.

1.02 DEFINITIONS

A. Silt: For the purposes of this specification silt shall be defined as any and all solid or semi-solid materials, including fine and granular material such as sand, grit, gravel and rock as well as grease, sludge slime, debris or any other loose material or encrustation lodged in the manhole or sewer.

B. Manhole Structure: Reference to and all activities relevant to manhole structures throughout the text shall also be taken to include junction boxes, inspection chambers, drop shafts, sumps, CSO/Es and all other ancillary structures appurtenant to the sewerage system.

1.03 RELATED SECTIONS

A. The work of the following Sections apply to the work of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of work.

1. Internal Sewer Condition Assessment
2. Safety Requirements
3. Standard Specifications

B. Except as otherwise indicated in this Section of the Specifications, the Contractor shall comply with the latest edition of all relevant local, state and federal Standard Specifications for Public Works Construction

1.04 REGULATORY REQUIREMENTS

A. The work of this Section shall comply with the current versions, with revisions, of OSHA 29 CFR 1910.146 (permit-required confined-space regulations).

B. All work and testing shall comply with the applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and applicable state and local codes and standards; and to the extent applicable with the requirements of the Underwriters Laboratories, Inc. and the National Electric Code.

PART 2 EXECUTION OF THE WORK

2.01 GENERAL

Preconditioning works shall be carried out from the downstream access manhole or chamber to the upstream access manhole or chamber and shall entirely comply with the performance requirements defined in the relevant sub-clause of clause 1.01 above.

2.02 WORKING AREA

A. The working area in which machinery and equipment operates is to be kept to a minimum. Equipment not in use is to be removed from the works so as to minimize disruption to traffic and general public.

B. The working area is to be free from silt and debris when the Contractor leaves the site at the end of each visit.

C. Open manholes, machinery and standing equipment shall be protected at all times.

2.03 LOCATION

The location of sewers to be cleaned are detailed in the attached Tables and Drawings.

2.04 PROGRAMMING OF WORKS

The Contractor shall, after discussion with the Construction Manager, submit a program of work that will meet the requirements of the Owner. The Construction Manager will assist with the works program, to ensure, where practicable, a continuity of labor and plant utilization, and the Contractor shall undertake to adhere to the agreed program in a manner set out in the General Conditions of Contract.

2.05 PROLONGED ABSENCE FROM SITE

If it is apparent that the Contractor will be absent from the site, or part of the site, for a prolonged period, he shall inform the Construction Manager, replace manhole covers and clear any highways of his equipment and materials including temporary traffic control measures he may be using.

2.06 OPERATIONAL REQUIREMENTS

A. Each preconditioning unit and each CCTV/sonar unit shall carry sufficient numbers of guides and rollers such that, when cleaning and inspecting or surveying, all bonds are supported away from sewer and manhole structures.

B. Each preconditioning and cleaning unit shall carry a range of flow control equipment, as opposed to overpumping equipment, for use in controlling the flow during the works. A minimum of one item of each size of equipment ranging from 6-inch to 42-inch diameter inclusive shall be carried.

C. Equipment used to precondition manholes and sewers shall be operated in a manner to prevent overflows and result in spillage. Where flows in sewers are such that the overflow or spillage will occur during preconditioning and cleaning operations, the Contractor shall make arrangements to prevent the premature overflow of spillage or shall stop operations until such flows are reduced to allow cleaning to continue.

D. In the event of accidental overflow or spill, the Contractor shall immediately stop the overflow and take action to clean up and disinfect spillage. The Construction Manager shall be notified immediately and in any event not less than 24 hours following the occurrence.

E. Should fines be subsequently imposed as a direct result of the overflow or spillage and the Contractor is deemed to be partially or entirely responsible, the Contractor shall pay such fines in accordance with the General Terms of the Contract. No fine shall be paid by the Owner where it is shown that the Contractor was entirely responsible for any overflow or spillage.

F. The system of silt and debris removal shall be capable of operating in such a way as to minimize the obstruction to sewer flows and preconditioning operations.

G. Basement, homes and all other vulnerable property shall be prevented from being flooded where hydraulic preconditioning and cleaning methods are used to precondition manholes and sewers. The Construction Manager shall be notified of all vulnerable property before hydraulic preconditioning works commence.

H. The Contractor shall make his own arrangements for the off-road overnight parking of his vehicles and plant and shall comply with all relevant statutory traffic regulations and local bylaws.

2.07 ARISINGS

A. The Contractor shall remove all silt, debris, detritus, etc. resulting from all manhole and sewer preconditioning and cleaning activities at least once each working day. Such material

shall be caught and collected in a suitable trap or weir or dam within the manhole or chamber being preconditioned and cleansed and/or at the downstream manhole from where the sewer is being preconditioned. The Contractor shall ensure that the capture method or methods adopted shall be wholly effective in the prevention of silt migration downstream. Such methods including details of the equipment used shall be provided to the Construction Manager on request.

B. Arisings shall be deposited into suitable closed watertight containers such that the total amount removed can be easily measured if required. The Contractor is to give the Construction Manager such assistance as may be necessary in carrying out this measurement work.

C. The type and capacity of containers to be employed for the holding and transport of the arising shall be stated by the Contractor. The Contractor shall not be allowed to accumulate debris silt and/or liquid waste, sludge on site and under no circumstances shall sewage, silt or solids be dumped on the ground surface, ditches, catch basins or storm drains.

D. The method of working shall be such that sewer preconditioning work is not held up through a lack of an empty container in which to deposit the arisings.

E. The Contractor shall bear in mind that it may not always be possible for the container to be sited immediately adjacent to the manhole from which arisings are being raised and should allow for the fact that double handling of the arising may be necessary. The Contractor shall provide for such double handling to be carried out safely and efficiently.

F. The Contractor must make his own arrangements for the dumping of materials removed from the sewer. The dump must be licensed and approved by the Construction Manager prior to commencement of the works.

G. All costs associated with dumping must be included in the Contractor's rates.

H. The containers for the disposal of arisings shall be routed via an approved weighbridge and a copy of each weighbridge ticket submitted to the Construction Manager. Such tickets shall be used to assess the quantities of materials removed for payment.

2.08 PRECAUTION AGAINST ADVERSE EFFECT ON FABRIC OF MANHOLE OR SEWER

The Contractor shall take satisfactory precautions against improper use of the preconditioning equipment. The Contractor shall also take satisfactory precautions against adversely affecting the fabric and structural condition of the manhole or sewer being preconditioned. If in the Construction Manager's opinion damage was found to have been inflicted on the manhole or sewer being preconditioned by the Contractor then the Contractor shall repair the sewer at no additional cost to the Owner and to the complete satisfaction of the Construction Manager.

PART 3 EXECUTION

3.01 SEWERS

A. GENERAL

1. The Contractor shall certify that sufficient cleaning units can be provided, including standby units in the event of breakdown, in order to complete the work within the contract period. Further, the Contractor, shall certify that standby or back-up equipment can be delivered to the site within 48 hours in the event of equipment breakdown.

2. The cleaning unit(s) provided for cleaning purposes shall be capable of operating up to a minimum of 500-feet from the point of access to the sewer.

3. Each cleaning unit shall carry a mobile telephone to facilitate communication with the Construction Manager and to comply with safety requirements defined in the safe working procedures approved by the Construction Manager for the execution of the works.

B. CCTV and Sonar Inspection/Survey Units: All CCTV and sonar survey units shall comply with the specification set down elsewhere in the current edition of the "Specification for Internal Sewer Condition Assessment" unless otherwise determined.

C. WINCHING EQUIPMENT

1. The winching equipment used shall be sufficient for the purposes of attaining the degree of cleanliness specified in the relevant sub-clause of clause 1.01.

2. The Contractor shall provide conventional power winching equipment together with ancillary equipment, winching buckets, balls, breakers, kites, scooters, scrapers, tires, etc. tools and safety apparatus. Complete and full details of equipment proposed shall be provided to the Construction Manager before work commences.

3. Dredging of sewer shall be undertaken by passing various sized buckets, balls, breakers, kites, scooters, scrapers, tires, etc, through the sewers to physically remove accumulated silt, sludge and other debris. Where conditions dictate, power boring equipment and/or winching equipment shall be used to loosen the silt prior to its removal. All necessary equipment including cables, lines, props, tools must be available at all times as required.

4. The equipment shall be capable of operating efficiently and effectively in the sizes of sewers and depth stated and in sewers up to minimum distances of 500- feet between adjacent manholes.

5. The sewers convey storm water, foul or combined sewage flows. Certain sections of sewer may be flowing entirely full or in a surcharged condition and the Contractor should be prepared at all times to use manual pushing rods, mechanical boring equipment or other methods to pass a leading line through the sewer prior to commencing dredging operations with winching.

6. Any item of plant or equipment associated with the work which may cause obstruction to the flow in the sewer shall be removed from the sewer at the close of work each day. It shall be permitted to leave a line or winching cable through the sewer during breaks in the work.

7. Dredging operations in a particular section of sewer will generally proceed in a downstream direction, working between consecutive manholes using winch buckets of sizes stated below.

8. The size of winch bucket used in sewers from 12” to 48” shall be 90% of the sewer bore up to a maximum of 24”. It is anticipated that for sewers greater than 48” that scooters, kites and other alternative means of silt removal will be pursued.

9. It is anticipated that buckets of smaller sizes than those stated will need to be winched through sections of sewer prior to the use of the maximum sizes. The maximum size bucket as stated may be varied at the discretion of the Construction Manager but on no account shall buckets larger than these maximum sizes be used without the approval of the Construction Manager.

10. The Contractor’s attention is drawn to sizes of manhole covers and access restrictions. It should be noted that the maximum sizes of buckets listed above may not be practical due to restricted access. The Contractor shall ensure that his working procedure will not be unduly affected by such restrictions and shall include for all such restrictions in his rates.

11. The winches used to draw buckets, balls, breakers, scooters, scrapers or tires shall be power driven. They shall incorporate a torque limiting device so as to prevent the breaking of winching lines in the event of the line becoming jammed by obstructions.

12. Where the operational equipment is towed by winch and bond through the sewer, all winches shall be stable with either lockable or ratcheted drums. All bonds shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the equipment. All winches shall be inherently stable under loaded conditions.

D. PRESSURE JETTING EQUIPMENT

1. The pressure jetting equipment used shall be sufficient for the purposes of attaining the degree of cleanliness specified in the relevant sub-clause of clause 1.01.

2. The jetting unit must be capable of jetting a minimum distance of 500-feet either upstream or downstream from a manhole. Minimum nominal hose size shall be one-inch diameter.

3. The cost of jetting shall be included in the unit rates for Sewer Preconditioning and shall be for jetting both upstream and downstream.

4. Successive passes using the pressure jetting technique shall be used with the silt removed at manholes until such time that the sewer is cleaned to the level specified. No silt shall be allowed to pass beyond the section of sewer being cleaned.

5. Pass rates (rewind speed) for the jetting head shall be at a consistent speed avoiding jerking and excessive variations, typical pass rates being 4-inch to 8-inch per second. The hose reel shall be power driven in the rewind direction.

6. The Construction Manager shall be notified in the bid documents of the jetting equipment proposed by the Contractor. The proposed equipment shall be categorized from the table below:

Category	Machine Type	Min. & Max. Capacity (gal/min)	Man. & Max. Pressure (Bar)
Manholes			
1	High Pressure/Low Volume – Trailers	1-35	200-700
2	High Pressure/Low Volume – Mini	9-35	200-700
3	High Pressure/Low Volume – Non HGV/HGV Jetter/ Combination	9-35	200-350
Sewers			
4	Low Pressure/High Volume – HGV	30 mins. – 50	100 – 140
5	Low Pressure/High Volume – Combination	30 min.- 75	100 – 200
6	Low Pressure/High Volume – Super Combination	75 – 175	140 – 175
7	Low Pressure/High Volume – Separate Jumbo Jetter/ Suction Units	75 – 200	140 – 175

Note: The categories listed are typical only of the equipment for use in the present contract. Exceptions to the duty and equipment shown above will be allowed subject to appropriate notification approval. The Contractor is required to complete the table with details of any other equipment proposed.

7. Where a jetting is fitted with an airflow suction unit for removal of detritus from the sewer, it shall be capable of removing materials such as sludge, silt and brick from depths up to 32-feet with minimum suction of 2500-cfm. A tank with a minimum capacity of 175-cf shall be provided and be capable of decanting off collecting liquors back to the sewer. The suction hose of such a system shall have a minimum internal diameter of 6-inches.

8. Jetting equipment shall be calibrated on an annual basis for an approved body and calibration certificates made available for inspection by the Construction Manager as requested. Such equipment shall also be maintained on a regular basis in accordance with the manufacturer's specification. The Contractor shall make available to the Construction Manager, copies of his maintenance certificates and/or schedules as required.

9. An automatic pressure relief valve shall be incorporated on the pump discharge chamber to prevent the pressure exceeding the safe maximum for the whole system. This may take the form of a pressure relief valve of bursting disc type in holder; or an automatic pressure regulating valve (unloading valve). The maximum working pressure is the lowest value of the maximum working pressure ratings of all individual components of the system.

E. Air Driven, Electromechanical and/or Mechanical Precondition Tools: Where necessary, and additional to winching and pressure cleaning equipment, appropriate air driven, electrically driven and/or mechanical tools may be used to needle hammer or scrape or grind of corroded concrete, scarify and remove compacted silt, chip-off spilt grout, detach encrustations, trim and cut laterals and roots, etc., with prior notification being given to the Construction Manager.

F. Ventilation of Confined Spaces: The Contractor shall provide, operate, maintain and subsequently remove on completion, adequate ventilation apparatus in the form of blowers and/or fans. The ventilation apparatus shall introduce a fresh air supply to support a safe

environment for work in sewers, manholes, and all other confined spaces which shall be kept free from dangerous, toxic and/or explosive gases whether generated from sewage, soil strata or otherwise.

3.02 MANHOLES

A. PRECONDITIONING AS A GENERAL LEVEL OF SERVICE

1. With the exception of the through flow channel, all surfaces shall be thoroughly preconditioned using high pressure water with sufficient pressure (minimum force of 3500 psi (240 bar)) to achieve the specified level of preparation. Preconditioning shall include the removal of all roots, corroded concrete, corroded rungs, intruding laterals and any other extraneous, loose material, debris or foreign matter using air driven, electrically driven or mechanical equipment as specified.

2. Silt, sand and debris traps shall be installed at the entrance to the downstream sewer to retain all silt and debris material before preconditioning work commences.

B. PRECONDITIONING PRIOR TO REHABILITATION AND REPAIR

1. All concrete and masonry surfaces to be rehabilitated or repaired shall be meticulously preconditioned by water blasting utilizing a 210 ° F steam unit and appropriate nozzles to provide a contamination-free and sound surface. Other methods such as wet or dry sand blasting, acid wash, concrete cleansers, degreasers or mechanical means may be required to completely clean the manhole surface prior to rehabilitation or repair.

2. All surfaces on which preconditioning methods outlined in 3.02A above have been used, shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products before rehabilitation commences. Concrete surfaces shall be declared satisfactory for the purpose of rehabilitation when they are sound, surface dry, porous and free from dust, dirt, oil, grease, fat efflorescence, concrete hardening or sealing chemicals, previous coatings, rush, form-release agents, laitance, other penetrating contaminants, fins, surface projections, thin crusts, bridging voids, and loosely adhering concrete and dirt particles.

3. All manhole infiltration type leaks, including gushers and runners, shall be sealed in areas where linings are to be installed. The Contractor will not be allowed to commence rehabilitation work until leaks have been satisfactorily sealed.

4. Where required by the relevant manhole rehabilitation system manhole surfaces to be rehabilitated shall have a pH of 7 to 10. Accordingly surfaces shall be tested in accordance with ASTM D4262.

5. Where instructed by the Construction Manager the Contractor shall test prepared surfaces by Swiss impact hammer or other physical method to determine soundness,

3.03 QUALITY CONTROL/PRECONDITIONING REPORT

A. GENERAL

1. A quality control inspection or survey of preconditioned sewers shall be carried out as directed, immediately following completion of preconditioning work. If a sewer or pipe line has not been preconditioned as specified (by visual inspection, tape review of field analysis) in the sole opinion of the Construction Manager, the sewer shall be re-preconditioned and cleaned in accordance with the specification at no cost to the Owner.

2. The Contractor shall supply one copy of survey/inspection CD for each reach of sewer completed. No more than five surveys/inspections segments will be allowed on each video cassette.

3. When required by the Construction Manager, the Contractor shall supply one copy of the full internal sewer condition assessment report, completed in accordance with the requirements of the "Specification for Internal Sewer Condition Assessment". This specification includes a sample report sheet also reproduced at the end of this specification. The sample report sheet shall be accurately and fully adopted in format and in detail and submitted by the Contractor immediately following the QA/AC inspection.

B. DAILY LOG

1. On daily completion of the works the Contractor shall provide a report. The report shall be submitted to the Construction Manager no later than 24 hours following completion of the work. The report shall comprise separate sheet for each manhole and sewer reach preconditioned. Blank report sheets shall be provided by the Construction Manager or his representative on site.

2. The Contractor shall immediately draw the Construction Manager's attention to any material such as brickwork, concrete or clayware appearing in the arisings from preconditioning and cleaning activities.

END OF SECTION

SECTION 02711

SEALS UTILIZING HYDRAULIC EXPANDERS

PART 1 GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this section includes repairing joint seals of the interior of existing pipelines conveying wastewater. Seals repairs shall be conducted at locations indicated on the Drawings or as otherwise directed. Repairs of joints shall employ a seal made from ethylene propylene diene monomer (EPDM) rubber and utilizing hydraulic expanders.

1.02 RELATED SECTIONS

A. The WORK of the following Sections apply to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of WORK.

1. Internal Sewer Condition Assessment
2. Preconditioning Manholes and Sewers

1.03 STANDARD SPECIFICATIONS

A. Except as otherwise indicated in this section of the Specifications, the CONTRACTOR shall comply with the latest adopted edition of the Standard Specifications for Public Works Construction together with the latest adopted editions of Regional and Fulton County Supplement Amendments.

1.04 REGULATORY REQUIREMENTS

A. The WORK of this Section shall comply with the current versions, with revisions, of the following:

1. OSHA 29 CFR 1910.146 (permit-required confined-space regulations)

B. All work and testing shall comply with the applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and applicable state and local codes and standards; and to the extent applicable with the requirements of the Underwriter's Laboratories, Inc. and the National Electric Code.

1.05 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. ASTM-D3568: Standard Test Method for Rubber Evaluation for EPDM including mixtures with oils.

2. ASTM-D2000: Standard Classification System for Rubber Products in Automotive Application.

3. ASTM-D412: Standard Test Method for Rubber Properties in Tension

4. FDA Section 177.2600 Food and Drug Admin., Rubber articles Intended for Repeated Use, Title 21 Code of Federal Regulations

5. ASTM-D395: Standard Test Method of Rubber Compression Set

6. ASTM- D2240: Standard Test Method for Rubber Property Durometer Harness

7. ASTM-D573: Standard Test Method for Rubber Deterioration in Air Oven

8. ASTM-D1171: Standard Test Method for Rubber Deterioration Surface Ozone Cracking Outdoors or Chamber (triangular specimens)

9. ANSI/NSF Standard 61 "Drinking Water System Components - Health Effects"

1.06 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted:

In addition to the shop drawings, the following shall be submitted.

1. A written verification at least 2 days before installation of seal systems that the sewer is free of obstructions and debris, and is in suitable condition for repair.

2. Manufacturer's technical literature on the proposed repair system, including an affidavit attesting to the previous successful use of the material for sealing joints. 10 copies.

3. Written certification from the manufacturer that the CONTRACTOR is an approved applicator of the repair materials. 10 copies.

4. Manufacturer's application instructions, including details of seams and terminations, Material Safety Data Sheets, maximum storage life and storage condition requirements, mixing and proportioning requirements, environmental conditions for worker safety such as ventilation, humidity, and temperature, thickness of materials applied to the joints, and curing time requirements. 10 copies.

5. Drawings and design calculations demonstrating adequacy of the proposed temporary working platforms. For the purpose of calculations, assume a wastewater velocity of 6 feet per second and the pipe is flowing full. 10 copies.

6. Describe the means and time required to remove a platform system in an emergency.

1.07 INSTALLER QUALIFICATIONS

A. The CONTRACTOR performing the work of this section shall be licensed by the repair system manufacturer.

B. The CONTRACTOR shall comply with the following conditions before a local repair technique becomes accepted as a viable option on a repeat basis:

1. A successful demonstration trial length of sewer pipeline requiring local repair or repairs shall be carried out including type and quality control tests as recommended by the manufacturer and in compliance with third party specification.

2. The trial shall be carried out at the measured rate prior to approval for adoption by the CONSTRUCTION MANAGER of the local in-situ pipe repair system to prove that the equipment, materials and installation methodology are fully acceptable to meet local conditions.

3. The CONTRACTOR shall allow in his rates for the continuous inspection by pan, tilt CCTV of the local repair installation by the CONTRACTOR.

4. All local repair elements shall be sealed against any form of infiltration.

5. The CONTRACTOR shall allow for any further requirement of the CONSTRUCTION MANAGER 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.

6. The CONSTRUCTION MANAGER shall certify the CONTRACTOR as having successfully completed the trial stage should this be the case.

7. The CONTRACTOR shall be registered on the CONSTRUCTION MANAGERS specialist listing for future work should five further local repair installations within the present CONTRACT be successful. The CONSTRUCTION MANAGERS decision to withhold a CONTRACTORS registration or otherwise shall be final.

PART 2 PRODUCTS

2.01 GENERAL

A. The seal system shall be made with a non-toxic EPDM rubber compound designed for internal sealing of joints in ductile iron, cast iron, steel, reinforced concrete, fiberglass, PVC, polyethylene, and cement-lined or unlined pipelines. The seal system shall be permanent, non-corrodible, tight-fitting, and able to withstand, without loss of operational effectiveness, internal operating pressures of 300 psi and external hydrostatic pressures in excess of 100 feet. The joint seal system shall also be sufficiently stiff to withstand, without loss of operational effectiveness, the above stresses and yet flexible to be able to accommodate:

1. existing host pipe deflection up to 10%
2. host pipe deflection of 6% subsequent to installation

3. host pipe joint opening with up to 5° articulation
4. thermal expansion, with ambient sewage temperature up to 85°F; though isolated discharges of sewage may be up to 212°F
5. contraction, with ambient temperature around 85°F, though temperature of inflow and infiltration into the sewer may be as low as +32°F
6. vibration resulting from the direct connection of a force main to the sewer or transmitted vehicular impact loading

B. All material specifications must be certified.

C. Notwithstanding the specific requirements of clause 2.2D below the seal system shall have proven resistance to the municipal wastewater environment which may comprise, as a minimum, any one or more of the following factors:

1. Immersion in septic sewage at temperatures up to 85˚F;

2. Exposure in hydrogen sulfide gas from septic sewage at temperatures up to 85˚F;

3. Exposure to ultra-violet light (sunlight) at any stage prior to installation

4. The chemical resistance of the seal system shall have been tested by the manufacturer to withstand the following chemical solution in particular:

CHEMICAL SOLUTION	CONCENTRATION, %
Tap Water (pH 6-9)	100
Nitric Acid	5
Phosphoric Acid	10
Sulfuric Acid	10
Gasoline	100
Vegetable Oil	100
Detergent	0.1
Soap	0.1

2.02 MATERIALS

A. Seals shall be made with a non-toxic EPDM rubber compound designed for internal sealing of joints in ductile iron, cast iron, steel, reinforced concrete, fiberglass, PVC, polyethylene, and cement-lined or unlined pipelines with operating pressures up to 300 psi. The seal retaining bands shall be made from stainless steel of the appropriate alloy or any other metals required for the application.

B. Extrusion process shall be employed for belt material.

C. All joints to be transfer molded.

D. Stainless steel bands, spacers, shims, and set screws for securing rubber membrane across piping joints shall be Type 303, 304, 316, or Maunell as manufactured in accordance with ASTM-A240-83 standard specifications for heat-resisting chromium and chromium-nickel stainless steel plate, sheet, and strip for pressure vessels, Table 1 Chemical Requirements, and Table 2 Mechanical Requirements. The minimum tensile stress shall be as dictated for the specific alloy. The dimensions of the bands, spacers, shims, and set screws shall be as shown on the shop drawings.

E. Cement mortar for pipe joint sealing and preparation shall be the fast-setting type suitable for sea water, wet/dry conditions. Cement mortar shall be Type 5 or approved equal as specified in ASTM C-150.

F. Liquid joint lubricant to assist in installation of the seals and bands shall be a non-toxic vegetable-based lubricating gel.

G. Thread sealing compound shall be paste type with Teflon.

H. Hydraulic expander for installation of steel and stainless steel expansion bands shall be capable of hydraulic expansion pressures of 6,000 psi.

2.03 MANUFACTURER

A. Amex-10/WEKO-Seal and associated materials shall be as manufactured by Miller Pipeline Corp., Indianapolis, Indiana or approved equal.

PART 3 EXECUTION

3.01 PRODUCT, DELIVERY, STORAGE, AND HANDLING

A. Seals shall be individually sealed in plastic bags and packed in a manner that will not damage or deform them. This care must be maintained until the seal is fitted within the pipe.

B. Seals must be stored in a cool, dry environment and should not be removed from their plastic bags until required for use and should not be allowed to remain in direct sunlight.

C. Prior to fitting, seals should be given a thorough visual examination by the operator, paying particular attention to the ribbed (lip seals) sections of the seal. Damaged seals shall not be used.

3.02 WORKING CONDITIONS

A. Wastewater may continue to flow through the sewer during repair, and the CONTRACTOR shall be prepared to perform repair during prevailing flow conditions in the sewer or to divert the sewage as indicated below. Repair operations shall not be performed if weather conditions are such that anticipated flows can exceed diversion pumping capacity or depths that permit proper and safe work within the sewer. Repair operations shall be conducted only when the wastewater level is 12 inches or less above the invert of the pipe.

B. The CONTRACTOR shall employ means and methods which prevent blockage and minimize surcharge of wastewater in upstream manholes and tributary pipelines.

3.03 DIVERSION PUMPING

A. Install and operate diversion pumping equipment to maintain sewage flow and to prevent backup or overflow.

B. Design all piping, joints, and accessories to withstand twice the maximum system pressure or 50 psi, whichever is greater. A spare pump and piping shall be at the site, ready for use in case of a breakdown.

C. In the event of an accidental spill or overflow, immediately stop the overflow and take action to clean up and disinfect spillage. The CONSTRUCTION MANAGER shall be notified immediately and in any event not less than twenty four hours following the occurrence

D. Should fines be subsequently imposed as a direct result of the spillage and the CONTRACTOR is deemed to be entirely responsible, the CONTRACTOR shall pay all such fines in accordance with the terms outlined in the General Terms of Contract and NONE shall be paid by the OWNER.

3.04 WORKING PLATFORMS

A. The CONTRACTOR shall provide temporary working platforms for repairs located above the springline of the pipe. Platforms shall be designed to withstand the hydraulic forces created by sewage flow. Platforms shall be sized and located to retain debris larger then 0.5-inch from cleaning and hydro-blasting operations.

B. Platforms may be anchored to the pipeline, but all holes and penetrations of any existing pipe liner shall be repaired and the repair methodology shall be pre-approved by the CONSTRUCTION MANAGER.

3.05 CLEANING AND SURFACE PREPARATION

A. PIPELINE PREPARATION

1. The CONTRACTOR shall high pressure flush and vacuum every sewer segment incorporating the section to be repaired, including pertinent manholes, and remove any root or grease buildup that may obstruct the spot repair operations.

2. The CONTRACTOR will remove, within the section of pipe to be spot repaired, any encrustation's, including calcite accumulations, or protruding (intruding) laterals. Power tools may be used to remove deposits and stubborn or hard scale lamination in the joint area

3. The CONTRACTOR shall perform a detailed closed circuit TV inspection including logging and measurement of all defects and laterals immediately before installation of the repair system. Further, the CONTRACTOR shall verify that the sewer is 95% clean and pipe conditions are as necessary for installation of the repair system. A pan and tilt camera shall be used as specified to inspect the final installation of the repair system. A copy of the resulting CD-rom shall be submitted to the

CONSTRUCTION MANAGER for review and approval before liner installation begins.

4. All debris removed from the sewer during cleaning shall be transported in watertight containers to the OWNER'S treatment plant, or other designated dumpsite, and discharged as directed by authorized personnel

B. JOINT FILLING

During pipe cleaning operations the gaps between the joints must be cleared of dust and debris, leaving a clean area for "joint filling". The joints are filled to the full depth of the gap and rendered flush with the internal surface of the pipe. The filling material is a quick-setting plaster/cement mortar which is mixed as required in the pipe. All surplus material spillage should be removed from the joint area prior to the surface preparation of the seal area.

C. SURFACE PREPARATION OF JOINT AREA

1. The area of pipe on either side of the joint where the actual "lip seals" make contact with the pipe shall be prepared to a finish which will allow the "lip seals" to interface consistently, and so provide a permanent seal.

2. All high/low surface imperfections running axially through or part way through the sealing surface shall be removed by scraping or grinding. Deep imperfections that grinding will not remove must be properly filled with approved non-toxic joint filler. This material must be rendered smooth and ground if necessary to suit the prepared surface of the joint area.

3. The pipe should be pre-marked with grease chalk or similar to allow the preparation areas and seal position to be clearly defined.

4. When the pipe is concrete or reinforced concrete, it is sometimes necessary to apply a coat of approved epoxy to the preparation area where the seal will be placed. This epoxy will control pipe porosity and irregularities and provide for an effective bubble test on the completed seal.

D. SURFACE PREPARATION

Immediately prior to fitting the seal, the area must be cleaned with a dry brush and coated with "Tyton Joint" lubricant (non-toxic vegetable soap) or equal lubricant compatible with the composition of the seal. The lubricant shall be hand-applied (using a brush) over the prepared area. Care must be taken not to pick up dust deposits from the unprepared surface into the lubricant and thereby onto the prepared surface. The lubricant is purely an aid to fitting the seal, and in no way contributes to its sealing capabilities. "Tyton Joint" is a brand name and other approved non-toxic vegetable soap is acceptable.

3.06 REPAIR

A. Prior to installation the seal system shall be checked to confirm that it is undamaged and that the test unit is tight before fitting the seal in place. The seal shall be placed in position

bridging the joint gap, guided by the chalk marks previously referred to. The seal shall be positioned accurately on the prepared areas. The test unit in the seal must be located at either 9 o'clock or 3 o'clock positions. The seal must be positioned parallel to the joint gap.

B. Before the stainless steel bands are placed in the grooves provided in the seal, two stainless steel radiused shims, 6 inches long by 18-22 gauge, shall be placed underneath the wedge area in the grooves to provide a bridge that will transmit the radial load evenly to the seal as the bands are expanded. When two or three piece bands are used, the bands shall be temporarily locked in position by means of a special overlap locking device over the wedge area. Band dimensions vary depending on diameter. The stainless steel bands have a minimum tensile strength of 75,000 pounds per square inch.

C. EXPANDING THE SEAL INTO POSITION

1. When positioning the hydraulic expander in line with the retaining band, care shall be taken to ensure that the band remains in the groove of the seal, and does not become moved or dislodged. Care shall also be taken to ensure the expander is positioned correctly on the band.

2. A hydraulic expander shall be used to apply a set pressure to the retaining bands of the seal. A radiused locking piece called a "wedge" shall then be fitted between the exposed gap of the expanded band ends. A size of wedge having a slight interference fit between the bad ends if selected, the wedge (leading edge first) is tapped into position, locking in the compression of the seal. The radius of the wedge shall be equal to the radius of the pipe.

3. Pressure shall be released from the expander and the procedure shall be repeated on the second retaining band of the seal.

4. The entire operation (i.e. re-expansion) shall be repeated within 30 minutes of the first expansion. This allows for any seal relaxation that may take place and usually a slightly larger wedge may be fitted. The load forces transmitted by the seal expander shall not be altered.

5. Once the expanding procedure is completed, the overlap locking device, if required, for the wedge shall be tightened down to a torque of 15 inch-pounds.

3.07 TESTING

A. The first test shall be applied after each section has been completed and not before 30 minutes have elapsed after final fitting of the seal. A restraining device called a "test band" shall be fitted over the seal. This is to prevent excessive ballooning that would otherwise occur during the test. The seal shall then be pressurized to 10 psig through the test valve and maintained with a regulated air supply, while a soap and water solution is applied to the outer edge of the seal to detect any leak.

B. In the second test, 5 psig is introduced through the "valve" in the seal. This pressure shall be sustained while a soap and water test is applied to the outer edge and entire body of the seal.

C. After the final test of 5 psig, the test "valve" of the seal is sealed with a counter-sunk hex-head completion plug using a non-toxic thread sealing compound on the threads.

3.08 POST-TELEVISING OF COMPLETED WORK

A. Submit to the Project MANAGER a color CD-ROM showing completed WORK.

B. Correction of failed CIPP or CIPP deemed defective from post-installation television inspection or test reports for structural values, thickness, etc., shall be repaired at no extra cost to the County. Method of repair, which may require field or workshop demonstration, shall be approved by the Project Manager.

C. An internal condition survey shall be allowed for in the CONTRACTORS installation rates to be carried out one year following the installation of the repair. Should any fault be found with the repair the fault shall be rectified as specified by the Project Manager. Rectification may include complete removal and renewal of the previously installed repair and re-inspection one year later. Correction of failed seal defective from mid-warranty internal condition inspection or test reports shall be repaired or replaced at no extra cost to the County

PART 4 WARRANTY

4.01 MATERIAL WARRANTY

A. A guarantee of 5 years shall be provided by the CONTRACTOR against any breakdown of the material effectiveness of the structural repair elements.

4.02 WORKMANSHIP WARRANTY

A. A guarantee of 2 years minimum shall be provided by the CONTRACTOR against any shortcoming in workmanship.

- END OF SECTION -

SECTION 02 713

CURED IN PLACE SEWER REPAIR
CARBON FIBER MATERIAL

PART 1 GENERAL

1.01 WORK OF THIS SECTION

A. The WORK of this Section includes providing mechanical repairs to structurally damaged sewers using carbon laminate materials and heat-cured into place. Only damaged parts of the sewer need be repaired. Repairs will be implemented using trenchless methods.

1.02 RELATED SECTIONS

A. The WORK of the following Sections apply to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of WORK.

1. Internal Sewer Condition Assessment
2. Preconditioning Manholes and Sewers
3. Temporary Flow Bypass and Diversion Pumping

1.03 STANDARD SPECIFICATIONS

A. Except as otherwise indicated in this section of the Specifications, the CONTRACTOR shall comply with the latest adopted edition of the Standard Specifications for Public Works Construction.

1.04 REGULATORY REQUIREMENTS

A. The WORK of this Section shall comply with the current versions, with revisions, of the following:

1. OSHA 29 CFR 1910.146 (permit-required confined-space regulations)

B. All work and testing shall comply with the applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and applicable state and local codes and standards; and to the extent applicable with the requirements of the Underwriter's Laboratories, Inc. and the National Electric Code.

1.05 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

ASTM-D638M Standard Test Method for Tensile Properties of Plastics

ASTM-D790 Standard Test Method for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials

1.06 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted.

A written verification; at least 2 days before commencing sealing, that the sewer is free of obstructions and debris and is in suitable condition for repairs. The Manufacturer's technical literature on the proposed repair system, including an affidavit attesting to the previous successful use of the material for repairing sewers.

B. Written certification from the manufacturer that the CONTRACTOR is an approved applicator of the repair materials.

C. Manufacturer's application instructions, including details of seams and terminations, Material Safety Data Sheets, maximum storage life and storage condition requirements, mixing and proportioning requirements, environmental conditions for worker safety such as ventilation, humidity, and temperature, thickness and strength of materials, and curing time requirements.

D. Drawings and design calculations demonstrating adequacy of the proposed temporary working platforms. For the purpose of calculations, assume a wastewater velocity of 6 feet per second and the pipe is flowing full.

E. Describe the means and time required to remove a platform system in an emergency.

1.07 INSTALLER QUALIFICATIONS

A. The CONTRACTOR performing the work of this section shall be licensed by the repair system manufacturer. Each individual installing the repair material shall be licensed by the repair system manufacturer.

PART 2 PRODUCTS

2.01 GENERAL

A. The carbon fiber liner material shall be a composite material consisting of fiber laminate and carbon.

2.02 MATERIALS

A. Liner material shall be a composite material consisting of fiber laminate and carbon, in thicknesses of either 2 mm (0.08 inch) or 6 mm (0.25 inch), depending on the application. The properties of the liner shall be in accordance with the following data:

Property	2 mm (0.08 inch) Liner	6 mm (0.25 inch) Liner
Tensile Stress	19,700 psi	34,800 psi
Flexural Stress	30,000 psi	50,500 psi
Modulus of Elasticity	1,500,000 psi	4,300,000 psi

B. A two-part epoxy resin system, together with pre-mixed additives, shall be used with the

carbon fiber liner.

2.03 MANUFACTURER

A. Magnaline and associated materials shall be as manufactured by Martindale & Associates, Edmonton, Alberta, Canada or equivalent.

PART 3 EXECUTION

3.01 PRODUCT, DELIVERY, STORAGE, AND HANDLING

A. The materials shall be supplied to the work site in kit form and shall not require any measuring.

B. Materials shall not be exposed to direct sunlight.

C. During installation, the wet cloth shall be protected from damage.

3.02 WORKING CONDITIONS

A. Wastewater will continue to flow through the sewer during repair, and the CONTRACTOR shall be prepared to perform repair during prevailing flow conditions in the sewer or to divert the sewage as indicated below. Repair operations shall not be performed if weather conditions are such that anticipated flows can exceed diversion pumping capacity or depths that permit proper and safe work within the sewer.

B. The CONTRACTOR shall employ means and methods which prevent blockage and minimize surcharge of wastewater in upstream manholes and tributary pipelines.

C. Should fines be subsequently imposed as a direct result of the spillage and the CONTRACTOR is deemed to be entirely responsible, the CONTRACTOR shall pay all such fines and NONE shall be paid by the OWNER, in accordance with the terms of Section 00700-General Conditions of this same specification.

3.03 DIVERSION PUMPING (See Flow Bypass and/or Diversion Pumping)

3.04 WORKING PLATFORMS

A. The CONTRACTOR shall provide temporary working platforms for repairs located above the springline of the pipe. Platforms shall be designed to withstand the hydraulic forces created by sewage flow. Platforms shall be sized and located to retain debris larger than 1/2-inch from cleaning and hydroblasting operations.

B. Platforms may be anchored to the pipeline, but all holes and penetrations of any existing pipe liner shall be repaired in accordance with a methodology submitted by the CONTRACTOR for the ENGINEERS approval.

3.05 PRELIMINARY INVESTIGATION

A. Enclosed with the Contract Documents are existing closed-circuit television inspection reports of the sewers to be repaired; videos are also available to the CONTRACTOR, and may be viewed upon request. Before any repair is attempted, the CONTRACTOR shall conduct a closed-circuit television inspection to verify the condition of the sewers, and location of all active lateral connections that are to be cut open after the repair. It is

important to ensure that no active laterals remain plugged from a spot repair.

3.06 CLEANING AND SURFACE PREPARATION

A. The CONTRACTOR will high-pressure flush and vacuum every sewer section to be repaired, and remove any root or grease buildup that may obstruct the spot repair operations.

B. The CONTRACTOR will remove, within the section of pipe to be spot repaired, any calcite accumulations or protruding laterals.

3.07 SPOT REPAIR INSTALLATION

A. The repair work shall be performed in accordance with the following procedure.

Prepare the resin and cloth.

Reinforcing materials of carbon or carbon fiber laminates are wetted on site with resins, all supplied from Martindale & Associates, Edmonton, Alberta, Canada. The liquid materials are mixed together and worked into the cloth to “wet-out” the fibers. The wetted cloth is wrapped around an inflatable packer, secured in place with ties, and drawn through the sewer on a sled.

Position packer, inflate, and cure.

After wrapping the wetted cloth around the packer, the assembly is winched into the repair area, and inflated. This forms the resin-impregnated cloth to the inside pipe wall, where it is heat-cured by the injection of steam for approximately one hour.
Perform cooling cycle.

When the resin has cured, the heat is turned off and cold water is injected into the packer to cool the pipe and repair sleeve. When the required temperature is reached, the water is turned off, the packer is deflated, and removed.

Reinstate Laterals.

The CONTRACTOR shall reinstate all active laterals immediately after each individual spot repair, and will not proceed with further work unless the lateral is fully open and functional. It is permissible to cut the lateral open with a robotic cutter. No excavation is permitted.

Perform Inspection.

Following the repairs, the repaired sewer segment shall be inspected by a closed-circuit television camera, from manhole to manhole. Inspection shall be in accordance with the relevant specification.

END OF SECTION

SECTION 02714

CURED-IN-PLACE PATCH OR LOCAL REPAIR

PART 1 GENERAL

1.01 WORK OF THIS SECTION

A. The Work of this Section includes providing a cured-in-place pipe (CIPP) liner for the local repair of an isolated structural defect in a sanitary sewer pipeline. The liner shall be a smooth, hard, strong, and chemically inert. Additionally, the interior surface shall closely follow the contours of the host pipe.

1.02 RELATED SECTIONS

A. The Work of the following Sections apply to the Work of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of the Work.

1. Internal Sewer Condition Assessment
2. Preconditioning Manholes and Sewers
3. Flow Bypass and/or Diversion Pumping

1.03 STANDARD SPECIFICATIONS

A. Except as otherwise indicated in this Section of the Specifications, the Contractor shall comply with the latest edition of the Standard Specifications for Public Works Construction together with the latest adopted editions of the Regional and Fulton County Supplement Amendments.

1.04 REGULATORY REQUIREMENTS

A. The Work of this Section shall comply with the current versions, with revisions, of the following:

1. OSHA 29 CFR 1910.146 (permit-required confined-space regulations)

B. All work and testing shall comply with the applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and applicable state and local codes and standards; and to the extent applicable with the requirements of the Underwriter's Laboratories, Inc. and the National Electric Code.

1.05 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

ASTM C 581 Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass-fiber-reinforced Structures Intended for Liquid Service.

ASTM D 790 Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.

ASTM D 903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds

ASTM D 5813 Cured-In-Place Thermosetting Resin Sewer Pipe

ASTM F 1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

1.06 SHOP DRAWINGS AND SAMPLES

A. TEN COPIES OF EACH OF THE FOLLOWING SHALL BE SUBMITTED:

1. Certified copies of test reports on physical properties and chemical resistance of the proposed resin.

2. Information from the resin manufacturer including specifications: characteristics, properties, and methods of application, including a written certification that the resin material is appropriate for the intended application.

3. Certified copies of test reports on CIPP coupons obtained during actual installation in the present CONTRACT.

4. Analysis of design criteria and calculations for CIPP thickness. The Contractor shall submit complete design calculations for each local repair together with an installation method statement to the Construction Manager for approval at least 14 (fourteen) days prior to installation. The installation method statement shall also include details concerning repairing sewer defects in conjunction with manholes, joints, laterals and infiltration. The installation method statement shall also include all requirements concerning quality control/quality assurance including testing of the material of which the local repair is made. Approval of the calculations shall not relieve the Contractor of any contractual obligations.

5. The Contractor shall include a typical schedule for "wet out" of the flexible tube in the method statement together with a typical insertion and (ambient) curing schedule/plan at the outset of the CONTRACT. For each and every local repair subsequently proposed the Contractor shall submit a schedule for “wet out” of the flexible tube together with the specific insertion and (ambient) curing schedule/plan at least 24 hours in advance of installation.

6. a. A written verification; at least 2 days before commencing sealing that the sewer is free of obstructions and debris and is in suitable condition for repairs.

   b. Manufacturer’s technical literature on the proposed repair system, including an affidavit attesting to the previous successful use of the material for

repairing sewers.

7. Written certification from the manufacturer that the Contractor is an approved applicator of the repair materials.

8. Drawings and design calculations demonstrating adequacy of any proposed temporary working platforms. For the purpose of calculations, assume a wastewater velocity of 6 feet per second and the pipe to be treated is flowing full.

9. Describe the means and time required to remove a temporary platform system in the event of an emergency.

1.07 INSTALLER QUALIFICATIONS

A. The Contractor or subcontractor performing the Work of this section shall be employees of the company manufacturing the CIPP system components or shall be licensed by the repair system manufacturer. Notwithstanding these requirements each and every individual installing the repair material shall be licensed by the repair system manufacturer.

B. The Contractor shall comply with the following conditions before a local repair technique becomes accepted as a viable option on a repeat basis:

1. A successful demonstration trial length of sewer pipeline requiring local repair or repairs shall be carried out including type and quality control tests as recommended by the manufacturer and in compliance with third party specification.

2. The trial shall be carried out at the measured rate prior to approval for adoption by the Construction Manager of the local in-situ pipe repair system to prove that the equipment, materials and installation methodology are fully acceptable to meet local conditions.

3. The Contractor shall allow in his rates for the continuous inspection, using pan, tilt CCTV of the local repair installation by the Construction Manager.

4. All local repair elements shall be sealed against any form of infiltration.

5. The Contractor shall allow for any further requirement of the Construction Manager 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.

6. The Construction Manager shall formally accept the Contractor as having successfully completed the trial stage should this be the case.

7. The Contractor shall be registered on the Construction Manager's specialist listing for future work should five further local repair installations within the present CONTRACT be successful. The Construction Manager's decision to withhold a Contractor's registration or otherwise shall be final.

PART 2 PRODUCTS

2.01 MATERIALS

A. FLEXIBLE TUBE

1. The flexible tube shall be one or more layers of needled felt or equivalent woven or non-woven material manufactured under quality controlled conditions set by the manufacturer. Tube shall be sized so that, when installed, it will fit snugly inside the existing sewer and produce the required thickness after the resin is cured.

2. The minimum length diameter ratio of the flexible tube shall be three to one. The tube shall effectively and fully span the repair area identified by the Construction Manager, with allowance for proper stretching or shrinkage due to pressure or expansion.

3. The tube shall contain no intermediate layers that shall delaminate after resin curing. It shall not be possible to separate any layers with a probe or knife blade such that the layers separate cleanly or the probe or knife blade moves freely between the layers.

4. Wall thickness of the local repair system shall be pre-tapered at the upstream and downstream edges to mitigate siltation and blockage problems. Alternative means of tapering local repairs will be considered.

B. RESIN

1. The resin used to impregnate the tube shall produce a cured tube that shall be resistant to shrinkage, shall not corrode or oxidize, and shall also be resistant to abrasion from solids, grit, and sand in wastewater. The resin shall have proven resistance to the municipal wastewater environment that may comprise, as a minimum, any one or more of the following factors:

   (a) Immersion in septic sewage at temperatures up to 85˚F;

   (b) Exposure in hydrogen sulfide gas from septic sewage at temperatures up to 85˚F;

   (c) Exposure to ultra-violet light (sunlight) at any stage prior to installation.

2. The internal wall color of the cured liner shall be white or light brown.

3. The chemical resistance of the resin system selected shall have been tested by the resin manufacturer in accordance with ASTM C 581. Exposure to the chemical solution listed below shall result in a loss of not more than twenty percent of the initial physical properties when tested in accordance with ASTM C 581 for a period of not less than one year.

CHEMICAL SOLUTION	CONCENTRATION, %
Tap Water (pH 6-9)	100
Nitric Acid	5
Phosphoric Acid	10
Sulfuric Acid	10
Gasoline	100
Vegetable Oil	100
Detergent or Soap	0.1

4. The resin system shall be manufactured by a company selected by the CIPP supplier. Only polyester and vinyl ester resins complying with the following requirements shall be used.

5. Polyester Resin. A resin created by reaction products between isophthalic/terathalic acid, maleic anhydride, and a glycol characterized by reactive unsaturation located along the molecular chain. This resin is compounded with a reactive styrene monomer and reacted together with initiators/promoters to produce cross-linked copolymer matrices.

6. Vinyl Ester Resin. A resin created by reaction products of epoxy resins with methacrylic acid and characterized by reactive unsaturation located in terminal positions of the molecular chain. This resin is compounded with a reactive styrene monomer and reacted together with initiators/promoters to produce cross-linked copolymer matrices.

C. CIPP PROPERTIES

1. The CIPP after curing shall meet the minimum structural properties listed below:

PROPERTY	REFERENCE	MINIMUM VALUE
Flexural Strength	ASTM D 790	4,500 psi
Flexural Modulus of Elasticity	ASTM D 790	250,000 psi

D. CIPP THICKNESS

1. The minimum CIPP lining thickness after curing shall be as follows:

Nominal Sewer Diameter (inches)	Minimum thickness of lining (mm)
6	3.0
9	6.0
12	6.0
15	6.0
18	9.0
21	9.0
24	12.0
27	12.0
30	12.0
33	12.0
36	15.0
42	15.0
48	15.0

2. The contractor shall submit a table of minimum CIPP thicknesses (after curing) based on the approved manufacturer selected. The table shall be in the format below:

MINIMUM CIPP THICKNESS				
NOMINAL SEWER DIAMETER (INCHES)	PIPE INVERT DEPTH			
	Up to 10 feet (in)	10 - 15 feet (in)	15 – 20 feet (in)	20-25 feet (in)
12				
15				
18				
21				
24				
30				
36				
42				
48				
54				

3. The minimum thickness for the CIPP after curing shall be calculated based on the following design conditions:

   a. No vehicular loading if more than four feet below constructed pavement level, unless otherwise specified.

   b. The existing sewer is considered to have an ovality of not greater than 10 percent in circumference.

   c. The CIPP is subjected to a full soil load of 120 pounds per cubic foot.

   d. The CIPP is subjected to traffic live loads as calculated by AASHTO Standard Specifications for Highway Bridges, HS-20-44 Highway Loading.

   e. The modulus of soil reaction for pipe zone backfill material is 1000 psi.

   f. The CIPP is subject to a groundwater elevation at ground surface].

   g. The long-term flexural strength and long-term flexural modulus of elasticity for CIPP is equivalent to 50 percent of the initial flexural strength and initial flexural modulus of elasticity, respectively, as measured in accordance with ASTM D 790.

   h. The minimum overall factor of safety is 2.0.

   i. The design life of the CIPP repair shall be 50 years.

4. The thickness of the CIPP shall be within minus 5 percent and plus 10 percent of the minimum thickness. Thickness greater than required shall not be allowed if hydraulic capacity of the pipe is reduced. The required thickness shall be measured accurately using properly calibrated calipers.

2.02 MANUFACTURER

A. All materials shall be as manufactured by Insituform Technologies, Inc., Inliner U.S.A., Inc. or equivalent.

PART 3 EXECUTION

3.01 DELIVERY, STORAGE, AND HANDLING

A. If the flexible tube is impregnated with resin at the factory, it shall be transported, installed, and cured before expiration of the shelf life.

B. Impregnated tube shall be stored and transported under refrigerated, ultraviolet light-free conditions.

C. No cuts, tears, or abrasions shall occur during handling. The Construction Manager may inspect the tube before it is placed into the host pipe.

3.02 TEMPORARY FLOW BYPASS AND DIVERSION PUMPING

A. Temporary Flow Bypass and Diversion Pumping shall be carried out in accordance with the specification

3.03 PRE-INSTALLATION CLEANING AND INSPECTION

A. Preconditioning and Cleaning shall be carried out in accordance with the specification for preconditioning and cleaning. In addition to the requirements of preconditioning and Cleaning the Contractor shall, immediately prior to installation of the local repair, high pressure flush and vacuum every sewer section to be rehabilitated and repaired including pertinent manholes, and remove any root or grease buildup that may obstruct the spot repair operations.

B. All debris removed from the sewer during cleaning shall be transported in watertight containers to the Owner's treatment plant as directed, unless directed otherwise, and discharged as directed by authorized personnel.

3.04 GENERAL INSTALLATION PROCEDURES

A. WET OUT

1. Thoroughly saturate flexible tube prior to installation. Catalyst system or additives compatible with the resin and flexible tube shall be as recommended by the manufacturer.

2. Handle the resin impregnated flexible tube to retard or prevent resin setting until it is ready for insertion.

B. INSERTION

1. Insert flexible tube through an existing manhole by means of procedure approved by the manufacturer.

2. The addition of water, air, or steam pressure shall be adjusted to cause the impregnated flexible tube to invert from manhole to manhole, holding the tube tight against the host sewer pipe.

C. CURING

1. Unless instructed otherwise the local repair installation shall be monitored by CCTV and resulting VHS video presented to the Construction Manager. The video shall incorporate all other video footage of the rehabilitated pipeline.

2. If feasible gauges shall be placed between impregnated tube and invert of the original pipe to monitor outside liner temperatures during resin curing process.

3. The Contractor shall complete a process control sheet for each and every local repair completed. The form of the process control sheet shall be as directed by the Construction Manager. Initial cure may be considered completed when exposed

portions of the flexible tube pipe take a hard set and temperatures are adequate, as recommended by the manufacturer.

D. LATERAL INTRODUCTION: Any lateral introduced into the sewer being treated at the location of the local repair shall be introduced into the patch with at least one lateral-connection-pipe-diameter local repair material outside the lateral;

E. FINISHED PIPE: The finished CIPP shall be continuous and free from visual defects such as foreign inclusions, dry spots, pinholes, delamination, and wrinkles larger than 2 percent of the diameter. Any section of lining with such defects shall be removed and replaced at no additional cost to the Owner.

3.05 MANHOLES

A. Where the local repair impinges on an adjacent manhole, the local repair shall make a tight seal at the manhole opening with no annular gaps. Under these circumstances, a ¼ (below18" diameter) to 1/2-inch-diameter (above 18" diameter) activated Oakum band soaked in sealant shall be applied circumferentially.

B. Use an approved epoxy mortar or similar material to form a smooth transition to eliminate sharp edges of CIPP, within the host pipe and in manholes at the concrete bench, and channel invert. Build up and smooth invert of manhole to match flow line of new CIPP.

3.06 FIELD TESTING

A. Obtain corresponding sample of cured local repair material according to ASTM F 1216 for flexural properties and analyze according to ASTM D 790 and as directed by the Construction Manager. Analysis shall be performed by an independent laboratory acceptable to the Owner. Submit the report to the Construction Manager.

B. A corresponding sample of local repair material from the testing above shall be subject to delamination tests by aggressively prying and separation into layers with a knife or sharp-edged instrument. No separation shall be possible. Results shall be included in the report above.

C. After curing, perform leakage or any other such test as required by the Construction Manager. Repair if necessary and retest.

3.07 POST-TELEVISING OF COMPLETED WORK

A. Submit to the Construction Manager a color VHS video tape showing completed Work.

B. Correction of failed CIPP or CIPP deemed defective from post-installation television inspection or test reports for structural values, thickness, etc., shall be repaired at no extra cost to the Owner. Method of repair, which may require field or workshop demonstration, shall be approved by the Construction Manager.

C. An internal condition survey shall be allowed for in the Contractor's installation rates to be carried out one year following the installation of the repair. Should any fault be found with the repair the fault shall be rectified as specified by the Owner. Rectification may include complete removal and renewal of the previously installed repair and re-inspection one year

later. Correction of failed CIPP or CIPP deemed defective from mid-warranty internal condition inspection or test reports for structural values, thickness, etc., shall be repaired or replaced at no extra cost to the Owner.

PART 4 WARRANTY

4.01 MATERIAL WARRANTY

A. A written guarantee of 5 years shall be provided by the Manufacturer against any breakdown of the material effectiveness of the structural repair elements.

4.02 WORKMANSHIP WARRANTY

A. A written guarantee of 2 years minimum shall be provided by the Contractor against any shortcoming in workmanship.

END OF SECTION 02714

SECTION 02720

PIPEBURSTING METHOD

PART 1 -- GENERAL

1.01 DESCRIPTION

A. This specification shall cover the rehabilitation of existing gravity sanitary sewers. Pipebursting is a system by which the burster unit splits the existing pipe while simultaneously installing a new polyethylene pipe. The new pipe may be of the same size or larger size. The work also involves the reconnection of the existing sewer service house connections, television inspection of the polyethylene pipe and completion of the installation in accordance with the contract documents.

B. Only pneumatically operated equipment with either front or rear expanders for the proper connection to the polyethylene pipe will be allowed for use. Exception to this requirement will only be considered where a static burster unit is proposed for use on isolated segments of pipeline that are to be burst closely adjacent to building foundations or other sensitive structures and where pneumatic bursting might be detrimental. The pneumatic burster must be used in conjunction with a constant tension hydraulic twin capstain winch of either 20, 10 or 5 tons, the size of the winch depends on the diameter of the pipe to be replaced. In no case is the constant tension on the winch to exceed 20 tons.

1.02 QUALIFICATIONS

A. The CONTRACTOR shall be certified by the pipe bursting system patent owner, Britishgas – PLC, U.S. Patent 4738565, which such a company is a fully trained and licensed user of the pipe bursting system.

B. Polyethylene pipe jointing shall be performed by personnel trained in the use of butt-fusion equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by a qualified representative.

C. CONTRACTOR shall hold the County and Engineer harmless in any legal action resulting from patent infringements.

D. CONTRACTOR or Pipebursting subcontractor shall have:

1. Minimum experience of 150, 000 L.F. of pipe bursting existing gravity sanitary sewer pipe and replacing with polyethylene pipe within the last three years, AND

2. Minimum experience of 10, 000 L.F. of pipe bursting replacement experience with polyethylene pipe two sizes greater than the host pipe, e.g. 10-inch to 15-inch diameter, 12-inch to 18-inch diameter, etc, in the last three years.

1.03 STANDARD SPECIFICATIONS

A. Except as otherwise indicated in this Section of the Specifications, the CONTRACTOR shall comply with the latest edition of the Standard Specifications for Fulton County Public Works Construction together with the latest adopted editions of the Regional and Fulton County

Supplement Amendments, especially concerning the reconstruction of manholes and cleanouts.

B. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. ASTM D 1248 Polyethylene Plastics Molding and Extrusion Materials

1.04 REGULATORY REQUIREMENTS

A. The WORK of this Section shall comply with the current versions, with revisions, of the following:

1. OSHA 29 CFR 1910.146 (permit-required confined-space regulations)

B. All work and testing shall comply with the applicable Federal codes, including Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and applicable state and local codes and standards; and to the extent applicable with the requirements of the Underwriter's Laboratories, Inc. and the National Electric Code.

1.05 RESPONSIBILITY FOR OVERFLOWS OR SPILLS

A. It shall be the responsibility of the CONTRACTOR to schedule and perform his work in a manner that does not cause or contribute to incidence of overflows or spills of sewage from the sewer system.

B. In the event that the CONTRACTOR's work activities contribute to overflows or spills, the CONTRACTOR shall immediately take appropriate action to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify the designated CONSTRUCTION MANAGER in a timely manner.

C. CONTRACTOR will indemnify and hold harmless the County for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the CONTRACTOR, including the legal, engineering and administrative expenses of the County in defending such fines and claims.

1.06 SUBMITTALS

A. Submit 10 copies each of the following:

1. Detail drawings and written descriptions of the entire construction procedure to install pipe, bypass sewerage flow and reconnection of sewer service connections, restoration of manhole base and provision for facilitating watertight junction of new pipe to existing and reconstructed manholes.

2. Certification of workmen trained for welding and installing pipe.

3. Written certification that the CONTRACTOR is an approved BG-PLC licensee of the pneumatic bursting system from approved vendor

4. Pre and post repair CCTV inspection reports and CD-ROMs. Post repair reports and CDs shall be made after pipe installation and re-connection of all laterals.

5. An <u>initial schedule</u> shall be submitted to the Project Manager prior to the work beginning at the work site for each repair assigned. Thereafter at the end of each

week until the project is complete, the CONTRACTOR shall submit a report in writing comprising:

(a) a list of those activities shown on the current schedule which were begun during the week stating their remaining duration's and their anticipated completion times

(b) a list of those activities begun previously upon which work continued during the week and their anticipated completion times

(c) a list of those activities begun previously but upon which no work was carried out during week stating their remaining duration's in weeks and their anticipated completion times

(d) a list of activities completed during the week

B. If the anticipated completion time of any activity reported is later than that previously reported or where not previously reported later than the completion time shown on the current schedule the circumstances which in the opinion of the CONTRACTOR have caused the anticipated delay shall be stated. Any other matters not previously reported which in the opinion of the CONTRACTOR may cause delay to the current schedule shall be described. The current schedule is the revised schedule last produced and submitted to the Project Manager or where no revised schedule has been submitted the latest revision of the initial schedule submitted.

PART 2 -- PRODUCTS

2.01 MATERIALS

A. Polyethylene Plastic Pipe shall be high density solid wall polyethylene pipe and meet the applicable requirements of ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter, ASTM1248, ASTM D3550.

1. Sizes of the insertions to be used shall be such to renew the sewer to greater flow capacity.

2. All pipes shall be made of virgin material. No reworked material shall be used except that obtained from the manufacturer's own production of the same formulation.

3. The pipe shall be homogenous throughout and shall be free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.

4. Dimensions Ratios: The minimum wall thickness of the polyethylene pipe shall be SDR 17 throughout. Where required by Engineer, pipes may be tested at ground surface for circularity before installation and welding commences. Circularity will be checked by pulling a closed cylindrical mandrel through the polyethylene pipe. The mandrel shall be at least three times the diameter of the pipe in length and not greater than inside diameter of pipe minus 2 millimeters. Pipes will be rejected which have greater than 5% deformation due to thermal softening.

5. Material color shall be black. Interior of pipe shall have a light reflective color to allow easier/better viewing for television inspection.

6. Manufacturer shall be Chevron, Phillips 66 Driscopipe or equal.

2.02 DELIVERY, STORAGE, AND HANDLING

A. Transportation, handling, and storage of the polyethylene pipe and fittings shall be as recommended by manufacturer.

B. If new pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Project Manager at the CONTRACTOR's expense, before proceeding further.

C. Deliver, store and handle other materials as required to prevent damage.

2.03 MATERIAL TESTS

A. Contractor shall be furnish samples and material tests for compliance with this specification from an independent laboratory to verify the required physical properties and characteristics of supplied materials in accordance with the applicable ASTM Specification. A certificate shall be furnished by the manufacturer, upon request, for all material furnished under this specification. Polyethylene plastic pipe and fittings may be rejected that does not meet any requirements of this specification. The OWNER shall pay for tests on pipe material which meets specification requirements. CONTRACTOR shall pay for failed tests and re-testing of failed materials

2.04 EQUIPMENT

A. The pipe bursting tool shall be designed and manufactured to force its way through existing pipe materials by fragmenting the pipe and compressing the old pipe sections into the surrounding soil as it progresses. The bursting unit shall be pneumatic and shall generate sufficient force to burst and compact the existing pipe line. See manufacturer's specifications for what size tool should be used in what diameter of pipe, as well as parameters of what size tool for percentage of upsize allowed.

B. The pipe bursting tool shall be pulled through the sewer by a winch located at the upstream manhole. The bursting unit shall pull the polyethylene pipe with it as it moves forward. The bursting head shall incorporate a shield/expander to prevent collapse of the hole ahead of the PE pipe insertion. The pipe bursting unit shall be remotely controlled.

C. The pipe bursting tool shall be pneumatic. The bursting action of the tool shall increase the external dimensions sufficiently, causing breakage of the pipe at the same time expanding the surrounding ground. This action shall not only break the pipe but also create the void into which the burster can be winched and enables forward progress to be made. At the same time the polyethylene pipe, directly attached to the sleeve on the rear of the burster, shall also move forward.

D. The burster shall have its own forward momentum while being assisted by winching. A hydraulic winch shall give the burster friction by which it can be move forward. To form a complete operating system, the burster must be matched to a constant tension hydraulic winching system.

2.05 WINCH UNIT

A. A winch shall be attached to the front of the bursting unit. The winch shall provide a constant tension to the burster in order that it may operate in an efficient manner. The winch shall ensure directional stability in keeping the unit on line.

B. The winch shall be of the constant tension type but shall be fitted with a direct reading load gauge to measure the winching load which must automatically be maintained at a constant tension at a set tonnage reading. The winch, which shall be hydraulically operated to provide the constant tension throughout the bursting operation, shall supply sufficient cable in one continuous length so that the pull may be continuous between approved winching points.

C. The winch, cable and cable drum must be provided with safety cage and supports so that it may be operated safely without injury to persons or property.

D. The CONTRACTOR shall provide a system of guide pulleys and bracing at each manhole to minimize cable contact with the existing sewer between manholes.

E. The supports to the trench shoring in the insertion pit shall remain completely separate from the winch boom support system and shall be so designed that neither the pipe nor the winch cable shall be in contact with them.

PART 3 -- EXECUTION

3.01 SEWER SERVICE CONNECTIONS

A. All sewer service connections shall be identified and located prior to pipe insertion. The complete list of service laterals, included relevant footage and diameter of lateral, shall be submitted prior to pipe bursting to the CONSTRUCTION MANAGER for information. Upon commencement, pipe insertion shall be continuous and without interruption from one manhole to another, except as approved by the engineer and/or his representative. Upon completion of insertion of the new pipe, the CONTRACTOR shall complete the reconnection of all service laterals on the segment within 24 hours of commencing pipe bursting, to minimize any inconvenience to customers.

B. The preferred method of saddle connection to the main line shall be either by A.) Inserter Tee, Fowler Manufacturing, Oregon, or B.) fusion of saddle connection with one of the following approved systems.

1. Electrofusion saddles as manufactured by Central Plastics shall be installed in accordance with the manufacturers recommended procedures.

2. Conventional Fusion saddles as manufactured by Central Plastics, Phillips Driscopipe, or Plexco shall be installed in accordance with the manufacturers recommended procedures.

C. Saddle material shall be compatible with that of the main pipe.

3.02 EXISTING FLOW

A. The CONTRACTOR shall provide bypass pumping during the pipe bursting/replacement process. The pumps and by-pass lines shall be of adequate capacity and size to handle all flows including peak wet weather flow. All costs for by-pass pumping, required during installation of the pipe shall be included in the rate for pipe replacement by pipe bursting.

B. The CONTRACTOR shall be responsible for maintaining continuous sanitary sewer service to each and every property connected to the segment of sewer subject to pipe bursting operations. The cost of dealing with tanking, by pass pumping and all other private service flow management shall be included in the rate for pipe replacement.

C. If sewage backup occurs and enters buildings, the CONTRACTOR shall be responsible for clean-up, dis-infection, repair, property damage as well as all resultant costs and claims.

3.03 PRE-INSTALLATION CCTV SURVEY

A. Pipelines that will be upgraded by pipe bursting and open cut shall be televised (CCTV) in conformance with the Section for Internal Sewer Preconditioning.

B. CCTV inspection conditions shall include the following:

1. Preconstruction CDs shall be available for viewing by the Construction Manager before construction begins and throughout the project.

2. CD of the video of the sewer pipe to remain property of the County. CONTRACTOR to retain second copy for his use.

3. All flows tributary to reach of sewer being inspected are to be completely by-passed around the reach during preconstruction inspection if necessary and required by the County.

4. Should any portion of the inspection tapes be of inadequate quality or coverage, as determined by the COUNTY or CONTRACTOR, The CONTRACTOR will have the portion re-inspected and video taped at no additional expense to the COUNTY.

3.04 CONSTRUCTION METHOD

A. Equipment used to perform the work shall be located away from buildings in order to minimize noise impact which under all circumstances shall be less than 70 dB unless otherwise allowed by the Construction Manager due to circumstances beyond the Contractor of pipebursting subcontractor. A silent engine compartment with the winch shall be provided to reduce machine noise.

B. The CONTRACTOR shall install all pulleys, rollers, bumpers, alignment control devices and other equipment required to protect existing manholes, and to protect the polyethylene 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. The winch line must be centered in the existing pipe to be burst with an adjustable boom.

C. The installed polyethylene pipe shall be allowed to relax and cool following installation in accordance with the manufacturer's recommended time, but not less than four (4) hours, prior to any reconnection of service lines, scaling of the annulus or backfilling of the insertion pit. Sufficient excess length of new pipe, but not less than four (4) inches, shall be allowed to protrude into the manhole to provide for further length reduction. End restraint of pipe ends shall be achieved by means of Central Plastics Electrofusion couplings . The

Electrofusion couplings shall be slipped over pipe ends against manhole wall and fused in place. Installation of all electrofusion couplings shall be carried out in accordance with the manufacturers recommended procedures.

D. Following the relaxation period, the annular space may be sealed. Sealing shall be made with materials approved by the Engineer and/or his representative and shall extend a minimum of eight (8) inches into the manhole wall in such a manner as to form a smooth, uniform, watertight joint. The terminating pipe ends in manholes shall be connected by Central Plastics Electrofusion couplings to eliminate ground water infiltration. Installations of electrofusion couplings shall be installed in accordance with the manufacturers recommended procedures.

3.05 POST-INSTALLATION CCTV SURVEY

A. Following installation of new pipelines between manholes where bursting has occurred, CCTV inspection shall be carried out in accordance with the requirements of this Contract of Internal Sewer Condition Assessment. The finished tape shall be continuous over the entire length of the sewer between two manholes and shall be completely free from visual defects.

B. Defects which may affect 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.

C. Post construction video tape upon completion of reconstruction of each reach of sewer as appropriate with stationing of services indicated. Data and stationing to be on video.

D. Video tapes to remain property of the county. CONTRACTOR to retain second copy for his use.

E. Post construction CDroms shall be available to view within one month after project is completed. Post construction CDs shall be submitted to Fulton County before final invoices and any retainage is released.

F. Should any portion of the inspection tapes be of inadequate quality or coverage, as determined by the COUNTY of CONTRACTOR will have the portion re-inspected and video taped at no additional expense to the COUNTY.

3.06 PIPE JOINING

A. The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak proof joint in strict accordance with the manufacturer's instructions and ASTM D 2657. Threaded or solvent-cement joints and connections are not permitted.

B. All equipment and procedures used shall be used in strict compliance with the manufacturer's instructions and recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.

C. The butt-fused joint shall be true alignment and shall have uniform roll-back beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile

strength equal to that of the pipe.

D. All joints shall be subject to acceptance by the engineer and/or his representative prior to insertion. All defective joints shall be cut out and replaced at no cost to the COUNTY. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above.

E. Any section of the pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable wall thickness or any other defect of manufacturing or handling as determined by the Engineer and/or his representative shall be discarded and not used.

F. Terminal sections of pipe that are joined within the insertion pit shall be connected with Central Plastics Electrofusion Couplings or connectors with tensile strength equivalent to that of the pipe being joined.

PART 4 -- WARRANTY

4.01 MATERIAL WARRANTY

A. A written guarantee of 10 years submitted to Fulton County for the specific project shall be provided by the MANUFACTURER against any breakdown of the polyethylene pipe material effectiveness.

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- END OF SECTION -

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. General: Supply all products and perform all work in accordance with applicable American Society for Testing and Material (ASTM), American Water Works Association (AWWA), American National Standards Institute (ANSI), or other recognized standards. Latest revisions of all standards are applicable.

1.02 QUALIFICATIONS

If requested by the Construction Manager, submit evidence that manufacturers have consistently produced products of satisfactory quality and performance for a period of at least two years.

1.03 SUBMITTALS

If required by the Construction Manager, Complete product data and engineering data, including shop drawings, shall be submitted to the County in accordance with the requirements of Section 01340 of the Contract Documents.

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.

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.

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 pipe 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.

1.06 QUALITY ASSURANCE

A. Product manufacturers shall provide the Construction Manager with written certification that all products furnished comply with all applicable provisions of these Specifications.

B. If ordered by the Construction Manager, each pipe manufacturer shall furnish the services of a competent factory representative to supervise and/or inspect the installation of pipe. This service will be furnished for a minimum of five days during initial pipe installation.

PART 2- PRODUCTS

2.01 DUCTILE IRON PIPE (DIP)

A. Ductile iron pipe shall be utilized where shown on the Drawings.

B. Ductile iron pipe shall be manufactured in accordance with AWWA C151. All pipe, except specials, shall be furnished in nominal lengths of 18 to 20 feet. Sizes will be as shown on the Drawings. 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. Pipe wall thickness shall be determined based on dead loads indicated on the Drawings and the anticipated live loads, assuming a minimum HS 20 live load.

Pipe Sizes (inches)	Pressure Class (psi)
4 - 12	350
14 - 20	250
24	200
30 - 60	150

C. FITTINGS AND ACCESSORIES

1. 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 psi.

2. Flanged elbow fittings shall be ANSI pattern using short radius elbows except where noted differently on the Drawings. Special fittings, ductile iron wall pipes and sleeves shall conform to the dimensions and details as shown on the Drawings.

D. JOINTS FOR DUCTILE IRON PIPE AND FITTINGS

1. General

a. Joints for ductile iron pipe and fittings shall be mechanical joint, flanged 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. All bolts and nuts shall be made in the U.S.A.

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 A 242 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.

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 ACIPCO "Fastite", McWane (Clow) "Bell-Tite", or U.S. Pipe "Tyton" joints.

E. PROTECTO 401 LININGS: Ductile iron pipe shall conform to ANSI A21.51 and AWWA C-151. Pipe interior shall be lined with Protecto 401. Whenever Protecto 401 lined ductile iron pipe is field cut or tapped, the damaged lining shall be repaired in strict accordance with the manufacturer’s recommendation. The County’s representative shall be notified in writing when repairs are to be made and shall have the option of being present during repairs.

F. POLYETHYLENE ENCASEMENT: Polyethylene film shall meet the requirements of AWWA C 105.

G. WALL SLEEVES AND WALL PIPES

1. Where piping passes through concrete structures, furnish and install wall sleeves unless wall pipes or other provisions are specifically shown on the Drawings. Wall sleeves shall be accurately located and securely fastened into position before concrete is poured.

2. Wall Sleeves

a. For pipe sizes smaller than 3-inches, wall sleeves shall be steel oversize sleeves furnished with a full circle, integral, or continuously welded waterstop collar. The sleeve seal shall be the mechanically expanded, synthetic rubber type. Provide all associated bolts, seals and seal fittings, pressure clamps, or plates necessary to achieve a watertight installation. Sleeves shall extend the full thickness of the concrete. Sleeves and seal shall be Link Seal.

b. For larger pipe sizes, wall sleeves shall be ductile iron mechanical joint wall sleeves. Unless specified or shown otherwise for a specific situation, wall sleeves shall be mechanical joint bell-plain end type with waterstop/thrust collar. The collar shall be capable of withstanding a thrust force caused by a 250 psi dead end load from either direction on that size pipe. Sleeves shall be constructed with studs and mechanical joint retainer gland on the air side of --- the concrete structure. Provide retainer gland where shown on the Drawings. Where the concrete structure is exposed to dirt on one side and is wet on the other side, construct with studs and glands on the dirt side. Wall sleeves shall be equal to ACIPCO A-10771.

3. Wall Pipes

a. Wall pipes shall be either ductile iron with integral waterstop/thrust collar or centrifugally cast ductile iron with a continuously welded waterstop/thrust collar. The welded on collar shall be attached to the pipe by the manufacturer. The collar shall be capable of withstanding a thrust force caused by a 250 psi dead end load from either direction on that size pipe. Wall pipes shall be furnished uncoated on the outside and cement lined on the inside. Unless specified or shown otherwise, wall pipes shall be flange end type.

b. Wall pipes shall be cast and/or fabricated and lined in one manufacturer's facilities and delivered to the job site ready for use.

2.02 VITRIFIED CLAY PIPE (VCP)

A. PIPE: All vitrified clay pipe shall be extra strength pipe conforming to ASTM C 700. Acceptance shall be on the basis of crushing strength, absorption, hydrostatic, and acid resistance requirements as described in Paragraph 4 of ASTM C 700, and inspection for compliance with design and freedom from defects. Vitrified clay pipe shall be furnished in minimum lengths of four feet.

B. JOINTS: Pipe joints shall be sleeve type joints and shall conform to the applicable provisions of ASTM C 425. Sleeve type joints of PVC or similar materials shall be handled and jointed in strict conformance with the pipe manufacturer's recommendations.

C. ACCEPTANCE

1. Acceptance shall be on the basis of plant load-bearing tests, material tests, and inspection of manufactured pipe for visual defects and imperfections.

2. Provide results of tests on pipe, joint material, and made-up joints performed by an independent testing laboratory approved by the Construction Manager. Include materials, absorption, crushing, and hydrostatic leakage tests on pipe of each size in accordance with applicable specifications.

3. Inspect pipe after delivery for shape, cracks, uniformity, blisters and imperfect surfaces, hammer test, damaged ends, and gasket grooves. Do not accept or use repaired or patched pipe or pipe with repaired or patched gasket grooves or shoulders.

2.03 REINFORCED CONCRETE PIPE (RCP)

A. PIPE

1. Pipe shall be bell and spigot reinforced concrete conforming to ASTM C 76 for Class III, IV and V pipe as shown on the Drawings. Wall thickness design shall correspond to Wall C.

2. In addition, the pipe and materials shall meet the following requirements:

   a. Concrete shall have a minimum compressive strength of 5,000 psi for Class III and IV and 6,000 psi for Class V;

   b. Cement shall meet the requirements of ASTM C 150, Type II;

   c. Absorption shall not exceed six percent when tested in accordance with ASTM C 497.

3. Reinforced concrete pipe shall be supplied in lengths of at least eight feet, except for specials.

B. JOINTS: Pipe shall have concrete and rubber O-ring gasket type joints conforming to ASTM C 361. A rectangular groove shall be supplied in the spigot end to receive the rubber O-ring gasket, and it shall be so formed that when the joint is complete the gasket will be deformed to a rectangular shape and confined on all four sides. Bell and spigot surfaces shall be accurately formed and smooth to provide a close sliding fit with a nominal clearance of 1/16-inch.

C. FITTINGS AND SPECIALS: Reinforced concrete pipe fittings and specials shall meet all requirements for reinforced concrete pipe, including materials of construction, structural strength, linings, and joints. Provide special adapters or transition pieces for connection to pipe of different materials where shown on the Drawings.

D. ACCEPTANCE

1. Acceptance of pipe shall be on the basis of plant load-bearing tests for the load to produce 0.01-inch crack, material tests, and inspection of manufactured pipe for visual defects and imperfections as described in Paragraph 5.1.1 of ASTM C 76.

2. Provide results of tests on pipe, pipe materials, joint material, and made-up joints performed by an independent testing laboratory approved by the Construction Manager. Include materials, absorption, crushing, and hydrostatic leakage tests on pipe of each size in accordance with applicable specifications.

3. Each length of pipe shall be stamped by a regular employee of the approved testing laboratory.

4. Provide results of tests on pipe, pipe materials, joint material, and made-up joints performed by an independent testing laboratory approved by the Construction Manager. Include materials, absorption, crushing, and hydrostatic leakage tests on pipe of each size in accordance with applicable specifications.

5. Each length of pipe shall be stamped by a regular employee of the approved testing laboratory.

6. Inspect pipe after delivery for laboratory stamp, shape, cracks, uniformity, blisters and imperfect surfaces, hammer test, damaged ends, and gasket grooves. Do not accept or use pipe with repaired or patched gasket grooves or shoulders. Any pipe repaired or patched is subject to rejection if such repairs or patches, in the opinion of the Construction Manager or County, are not sound and properly finished.

7. The County shall, at its own discretion, select another independent testing laboratory to confirm those tests performed by the manufacturer's testing laboratory. This testing laboratory shall observe the tests conducted by the laboratory selected by the manufacturer, or, as necessary, conduct its own tests. The manufacturer shall provide the necessary facilities for the performance of these tests at the plant site. These test specimens shall be provided in accordance with paragraph 11 of ASTM C 76.

8. No pipe shall be shipped before it has been cured for a minimum of 14 days.

2.04 POLYVINYL CHLORIDE (PVC) GRAVITY SEWER PIPE

A. Acceptability of PVC pipe for gravity sewers is indicated in the following table:

Standard Minimum Thickness Type PVC[1]	**Wall**	**Acceptable Manufacturers**	**≤ 6**	**8 to 15**	**18**	**21**	**24**
ASTM D 3034 SDR 35 12454B	Solid Wall	Open	Yes	Yes	No	No	No

[1] As specified in ASTM D 1784

B. All pipes shall have a minimum pipe stiffness of 46 psi at five percent deflection as determined by ASTM D 2412.

C. PVC gravity sewer pipe shall be supplied in lengths not longer than 13 feet.

D. FITTINGS

1. Fittings 15 inches in diameter and less shall be manufactured in accordance with ASTM D 3034. PVC compound shall be 12454B or 12454C as specified in ASTM D 1784.

a. For sizes 8-inches and less in diameter, fittings shall be molded in one-piece with no solvent welded joints. Minimum socket depths shall be as specified in ASTM D 3034, Table 2.

b. For sizes 10-inches and larger in diameter, fittings shall be fabricated from pipe conforming to ASTM D 3034 using solvent welding. No field fabrication of fittings will be allowed. All such fabrication shall be performed at the factory and the fittings shall be delivered ready for use.

2. Fittings 18 inches in diameter and larger shall be fabricated from pipe conforming to ASTM F 679 using solvent welding. No field fabrication of fittings will be allowed. All such fabrication shall be performed at the factory and the fittings shall be delivered ready for use.

E. JOINTS: Joints for pipe and fittings shall be of the integral bell and spigot type with a confined elastomeric gasket having the capability of absorbing expansion and contraction without leakage, when tested in accordance with ASTM D 3212. Gaskets shall meet the requirements of ASTM F 477. The joint system shall be subject to the approval of the Construction Manager and shall be identical for pipe and fittings.

F. MANHOLE CONNECTIONS - SOLID WALL PIPE: The sewer shall be connected to manholes utilizing a boot connection.

G. ACCEPTANCE: Acceptance will be on the basis of the Construction Manager's inspection and the manufacturer's written certification that the pipe and fittings were manufactured and tested in accordance with the applicable standards.

2.05 MANHOLES AND PRECAST CONCRETE PRODUCTS

A. PRECAST CONCRETE SECTIONS

1. Precast concrete sections shall meet the requirements of ASTM C 478 or ASTM C 913. The minimum compressive strength of the concrete in precast sections shall be 4,000 psi.

2. Wall thickness shall be as shown on the Drawings.

3. Transition slabs or cones which convert bases larger than four feet in diameter to four 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 AASHTO M-198. Sealant shall be pre-formed type with a minimum nominal diameter of 1-inch. Butyl rubber sealant shall be equal to Kent Seal No. 2 or Concrete Sealants CS202.

B. BRICK AND MORTAR: Brick shall be whole and hardburned, conforming to ASTM C 32 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 C 150. Sand shall meet ASTM C 144.

C. IRON CASTINGS

1. Cast iron manhole frames and covers shall meet the requirements of ASTM A 48 for Class 30 gray iron and all applicable local standards. All castings shall be tough, close grained, smooth and free from blow holes, blisters, shrinkage, strains, cracks, cold shots, and other imperfections. 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.

2. Manhole frames and covers shall be as shown on the Standard Details.

3. All frames and covers shall have machined horizontal bearing surfaces.

4. All manholes shall have standard frames and covers except where specifically shown otherwise on the Drawings.

5. Watertight covers shall be bolt-down type and shall be equipped with four 1/2-inch stainless steel bolts and a 1/8-inch red rubber or rubber O-ring gasket. Covers shall be rotatable and interchangeable. Bolt holes shall be bored through so that debris entering the bolt hole will fall into the manhole. Bolt holes shall have the full 360 degree circle within the cover's radius when bored through the cover.

D. STEPS: Manhole steps shall be polypropylene molded around a steel rod as detailed on the Drawings and shall be equal to products of M.A. Industries.

E. BOOTS: Provide preformed rubber boots and fasteners equal to those manufactured by Kor-N-Seal or Press Seal Gasket Corporation. Boots may be mechanically attached to the manhole or cast into the walls of the manhole.

2.06 MISCELLANEOUS ACCESSORIES

A. FLEXIBLE ADAPTER COUPLINGS

1. Couplings for pipe sizes 15-inches in diameter and less shall be elastomeric plastic sleeves designed to connect pipes of dissimilar materials. Adapters shall provide a positive seal against infiltration and exfiltration and remain leakproof and rootproof up to 4.3 psi. The adapter manufacturer shall provide all stainless steel clamps and required accessories.

2. Couplings shall be products of Fernco and shall be installed in accordance with the manufacturer's recommendations.

PART 3 - EXECUTION

3.01 EXISTING UTILITIES AND OBSTRUCTIONS

A. The Drawings indicate utilities or obstructions that are known to exist according to the best information available to the County. The Contractor shall call the Utilities Protection Center (UPC) (1-800-282-7411) as required by Georgia law (O.C.G.A. §§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 (three 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 ten 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. The Contractor shall provide the Construction Manager an updated copy of the log bi-weekly, or more frequently if required.

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 water main does not permit safe installation of the sewer by the use of sheeting, shoring, tieing-back, supporting, or temporarily suspending service of the parallel or crossing facility. The Contractor may change the proposed alignment of the 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 Construction Manager. Where such relocation of the sewer is not approved by the Construction Manager, the Contractor shall arrange to have the utility, main, or service 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 agencies requirements, after written request to and subsequent approval by the Construction Manager. Where such relocation of the sewer is not approved by the Construction Manager, the Contractor shall arrange to have the utility, main, or service relocated.

D. ELECTRONIC LOCATOR: Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. WATER AND SEWER SEPARATION

1. Sewers should maintain a minimum 10 foot horizontal 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 joint of sewer pipe shall be centered over the water main. Any deviation shall be requested in writing to the Construction Manager.

2. 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 pipe lines and appurtenances along highways, streets and roadways in accordance with the applicable regulations of, and permits issued by, the Department of Transportation and Fulton 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; take all necessary precautions for the protection of the work and the safety of the public. Flagmen shall be certified by a Georgia DOT approved flagman 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 Fulton 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 time 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 Department of Transportation and Fulton 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 insure that they are maintained in the proper position throughout their period of use.

C. CONSTRUCTION OPERATIONS

1. Perform all work along highways, streets and roadways to minimize interference with traffic.

2. Stripping: Where the pipe line 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 include 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; 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 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.

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 County. The County 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 to the 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 five feet from the roadway pavement, as measured edge-to-edge.

3.04 LOCATION AND GRADE

A. The Drawings show the alignment and grade of the sewer and the position of manholes and other appurtenances. The slope shown on the profile and/or called for in the Specifications is the slope of the invert of the pipe.

B. Prior to clearing and grubbing, construction staking shall be performed.

C. Construction shall begin at the low end of the sewer and proceed upstream without interruption. Multiple construction sites shall not be permitted without written authorization from the Construction Manager for each site. As a minimum, cut sheets between construction sites shall be submitted and approved before multiple construction sites will be permitted.

D. The Contractor shall be responsible for any damage done to reference points, base lines, center lines and temporary bench marks, and shall be responsible for the cost of re-establishment of reference points, base lines, center lines and temporary bench marks as a result of the operations.

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 Construction Manager.

B. PIPE INSTALLATION

1. Proper implements, tools and facilities shall be provided for the safe performance of the Work. All pipe, fittings and valves 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 appurtenances shall be examined carefully for damage and other defects immediately before installation. Defective materials shall be marked and held for inspection by the Construction Manager, 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 which 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. It is common practice to lay pipe with the bells facing the direction in which work is progressing, however, it is not mandatory.

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 Construction Manager.

C. ALIGNMENT AND GRADIENT

1. Lay pipe straight in alignment and gradient or follow true curves, where shown on the Drawings, as nearly as practicable. Do not deflect any joint more than the maximum deflection recommended by the manufacturer.

2. Maintain a transit, level and accessories on the job to lay out angles and ensure that deflection allowances are not exceeded.

3. The Contractor shall check the invert elevation at each manhole and the pipe 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 pipe is being constructed at minimum slope.

4. The Contractor shall check the horizontal alignment of the sewer at the same schedule as for invert elevations.

D. EXPEDITING OF WORK: Excavate, lay the pipe, and backfill as closely together as possible, as determined by the Construction Manager. 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 Construction Manager.

E. JOINT ASSEMBLY

1. Joints shall be assembled in accordance with the manufacturer's recommendations.

2. The Contractor shall internally inspect each pipe joint to insure proper assembly for pipe 30-inches in diameter and larger after the pipe has been brought to final alignment.

3. On reinforced concrete pipe, diameters 30-inches and larger, the Contractor shall fill the voids, on the pipe joint interior, with grout.

F. 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.

G. HOUSE CONNECTIONS: Install wyes or tees in locations designated by the Construction Manager for future connection of service lines. Plug the branch of the wye or tee. Record the location of fittings installed on a copy of the Contract Drawings to be submitted as Record Drawings, and on the report form supplied by the County.

3.06 MANHOLE AND PRECAST CONCRETE PRODUCT CONSTRUCTION

A. CONSTRUCT MANHOLES AS SHOWN ON THE 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. PIPE CONNECTIONS: Seal the connection between the pipe and the manhole as follows:

1. Pipe 36-Inch Diameter and Less: Connect pipe to manhole utilizing rubber boots.

2. Pipe 42-Inch Diameter and Larger: Construct manhole collars as shown on the Drawings after the pipe has been sealed into the manhole.

3. If rubber boots are damaged, replace Type I boots with a new boot and repair Type II boots by constructing a manhole collar.

4. If preformed openings must be enlarged or altered, or if new openings must be made in the field, minimize the amount of material removed to provide closely matched surfaces for grouting.

E. INVERTS: Form channels as shown on the Drawings, rounded, and troweled smooth with brick faces exposed. Maintain consistent grade through the invert.

F. TOP ELEVATIONS: Build manholes outside of paved areas to 18-inches above finished grade unless otherwise shown on the Drawings or directed by the Construction Manager. Build manholes in paved areas to existing grades.

G. DROP CONNECTIONS: Manholes requiring drop connections are shown on the Drawings. Construct drop connections of the same materials as the upstream sewer and in accordance with the details shown on the Drawings.

H. FRAMES AND COVERS: Unless frame and cover is at grade, the frame shall be cast into the cone section.

I. Seal all manhole joints and lift holes, both inside and out, with grout. Between precast sections, this is in addition to joint sealant.

3.07 CONCRETE COLLARS

Construct collars per manufacturer specification.

3.08 INSPECTION AND TESTING

A. Clean and test lines before requesting final acceptance. Where any obstruction is met, clean the sewers by means of rods, swabs, or other instruments. When requested by the Construction Manager, flush out lines and manholes before final inspection.

B. ALIGNMENT: Pipe lines shall be straight and show a uniform grade between manholes. Correct any discrepancies discovered during inspection.

C. WATERTIGHTNESS: All sewers constructed shall be tested for watertightness to the maximum extent feasible. Infiltration tests and exfiltration tests shall 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 less than or equal to 24-inches shall be based on a visual inspection, and for sewers 30-inches and larger based on the individual joint test as specified below. All visible leaks, including those found via television inspection, shall be repaired.

D. INFILTRATION TESTS

1. Install suitable weirs in manholes selected by the Construction Manager to determine the leakage of ground water into the sewer. The maximum length of line for each infiltration test shall be 5,000 feet. Install weir for a minimum of four hours before measuring flow. If leakage in any section of the sewer line exceeds 100 gpd/inch diameter/mile, locate and repair leaks. Repair methods must be approved by the Construction Manager. After repairs are completed, re-test for leakage.

2. Furnish, install, and remove the necessary weirs, plugs, and bulkheads required to perform the leakage tests.

3. Weirs shall be V-notch type equal to Pollard (800/437-1146).

E. EXFILTRATION TESTS

1. Low-Pressure Air Test: Sewer diameters less than or equal to 24-inches.

a. 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 allowed to stabilize (approximately two to five 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 is as follows:

Nominal Pipe Size, inches	**Time (Min/100 feet)**	
	VCP, RCP	**DIP, PVC**
6	0.7	5.7
8	1.2	7.6
10	1.5	9.4
12	1.8	11.3
15	2.1	14.2
18	2.4	17.0
21	3.0	19.8
24	3.6	22.8

b. 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 + two percent, shall be provided by the Contractor. Testing equipment shall be equal to Cherne Air-Loc Testing Systems.

c. The Contractor shall keep records of all tests made. Copy of such records will be given to the Construction Manager or the County. Such records shall show date, line number and stations, operator, and such other pertinent information as required by the Construction Manager.

d. The Contractor is cautioned to observe proper safety precautions in performance of the air testing. It is imperative that plugs be properly secured and that care be exercised in their removal. Every precaution shall be taken to avoid the possibility of over-pressurizing the sewer line.

2. Individual Joint Test: Pipe joints for sewers 30-inches in diameter and larger shall be air tested individually. The joint tester assembly shall be placed over the joint and shall pressurize the joint area to 4 psi. The pressure shall not drop more than 2 psi in 10 seconds. The joint tester assembly shall be equal to Cherne Industries, Inc.

F. DEFLECTION TEST: All polyvinyl chloride pipe gravity sewers.

1. Test PVC gravity sewer for excessive deflection by passing a mandrel through the pipe. Deflection of the pipe shall not exceed five percent.

2. The mandrel size shall be based upon the maximum possible inside diameter for the type of pipe being tested, taking into account the allowable manufacturing tolerances of the pipe. 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 Construction Manager, 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 Construction Manager before use by the Contractor.

3. Excavate and install properly any section of pipe not passing this test. Re-test until results are satisfactory.

4. This test shall be performed twice:

   a. Once within the first 30 days of installation, and

   b. Once during final inspection, but no sooner than 30 days after pavement backfill done, at the completion of this contract.

G. CLOSED CIRCUIT TELEVISION: The interior of the gravity sewers shall be subjected to a televised inspection. The audio/video tape shall provide an audio description of what is being viewed; provide a continuous running footage indicator between manholes; and be prepared in the presence of the County's Inspector. Prior to Final Acceptance the County shall be provided with one copy of the TV inspection report and video cassette showing the entire length of gravity sewer being tested. The report shall contain the condition of pipe, type of pipe, depth, location of services, length, type joint, roundness, and distance between manholes. Any pipe found to be cracked, leaking, misaligned, bellied or otherwise defective shall be removed and replaced.

H. MANHOLES

1. Prior to testing manholes for watertightness, all liftholes 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 affect 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 as manufactured by P.A. Glazier, Inc. Minimum test times listed in the below chart are in minutes.

MINIMUM TEST TIMES FOR VARIOUS MANHOLE DIAMETERS AND DEPTHS			
Depth (feet)	**Diameter, feet**		
	4	**5**	**6**
8	20	28	33
10	25	33	41
12	30	39	49
14	35	48	57
18	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

3.09 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 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.

3. Handwork, including raking and smoothing, shall be required to ensure that the removal of roots, sticks, rocks, and other debris is removed in order to provide a neat and pleasing appearance.

4. The Department of Transportation's engineer shall be authorized to stop all work by the Contractor when restoration and cleanup are unsatisfactory and to require appropriate remedial measures.

B. MAN-MADE IMPROVEMENTS: Protect, or remove and replace with the Construction Manager'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. Fences crossing the easement shall be gated.

C. CULTIVATED GROWTH: Do not disturb cultivated trees or shrubbery unless approved by the Construction Manager. 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. The Contractor may chip and grind vegetation and spread over the disturbed area if approved by the County.

E. 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 appropriate county, state, and federal regulatory agencies.

F. 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 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.

END OF SECTION 02730