INVITATION TO BID
PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS
BGJWSC PROJECT NO. 505
TO THE
BRUNSWICK-GLYNN COUNTY
JOINT WATER AND SEWER COMMISSION

Mandatory Pre-Bid Meeting:

Wednesday, November 2, 2016 – 10:00 a.m.
JWSC Commissioner Chambers
1703 Gloucester Street
Brunswick, Georgia 31520

Bids Due by 12:00 NOON, EST on Wednesday, November 30, 2016 to:

Office of Procurement
Joint Water and Sewer Commission
1703 Gloucester Street
Brunswick, Georgia 31520
(912) 261-7100

Complete RFP Document and Specifications may be accessed electronically at

http://www.bgjwsc.org/about-the-bgjwsc/bid-opportunities-and-rfps/

Please Label Submission with Firm's Name, Address and Project Title:
"Sealed Bid –Pump Station 2032 Regional Force Main Improvements –
BGJWSC Project No. 505"

INVITATION FOR BIDS

PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS – BGJWSC PROJECT NO. 505

Sealed bids will be received by the Brunswick-Glynn County Joint Water and Sewer Commission (BGJWSC) at the JWSC's Office of the Procurement Director, 1703 Gloucester Street, Brunswick, Georgia 31520 until ***12:00 NOON EST, WEDNESDAY NOVEMBER 30, 2016,*** at which time and place they will be publicly opened and read aloud***.***

Plans, specifications and bidding documents are on file at the JWSC Main Office, 1703 Gloucester Street, Brunswick, GA 31520. Copies may be obtained at the same address by contacting Janice Meridith at the BGJWSC Phone: 912-261-7136; E-mail: jmeridith@bgjwsc.org upon payment of a non-refundable one hundred fifty dollars **($150.00)** for each set of documents requested. The documents are also available electronically at http://www.bgjwsc.org/about-the-bgjwsc/bid-opportunities-and-rfps/ or (CD) free of charge. All addenda will be available electronically on the BGJWSC website. Interested bidders are advised to review these postings frequently throughout the solicitation process and prior to all bid submissions being finalized to ensure the most accurate information is being taken into consideration.

SCOPE OF WORK

The work to be performed under this contract consists of furnishing all skill, labor, materials (unless noted otherwise), tools, equipment and incidentals required to construct complete, in place, and ready to operate a new 16-inch forcemain along a portion of Frederica Road, Palmetto Street, and the entrance and headworks to the Dunbar Creek WPCP in St. Simons Island, Glynn County, Georgia. More specifically, the work includes, but is not limited to:

- Tree removal (as noted) within the project limits.
- Installation & Maintenance of erosion and sedimentation control BMPs.
- Installation of approximately 10,450 linear feet of 16-inch HDPE (DR11) forcemain by horizontal directional drill, stub-out for future connection, and all necessary appurtenances. 11,000 linear feet of 16-inch HDPE (DR11) forcemain piping has been pre-purchased by JWSC for the project and will be delivered to the Contractor at the project site by the supplier.
- Installation of approximately 760 linear feet of 16-inch PVC (DR18) forcemain by open cut construction and all necessary appurtenances.
- Installation of Additive Alternate of approximately 1,100 linear feet of 16-inch HDPE (DR11) forcemain via horizontal drill, 15 LF of 16-inch PVC (DR18) forcemain by open cut construction, stub-out for future connection, and all necessary appurtenances.
- Connection of 16-inch forcemain to the existing Pump Station 2032 (LS2032) discharge piping on site.
- Connection of 16-inch forcemain to existing Junction Box at Dunbar Creek.
- Rehabilitation of approximately 90 linear feet of 30-inch Ductile Iron Gravity Sewer piping at Dunbar Creek WPCP.
- Preparation and recoating of existing Junction Box and rehabilitation, preparation, and recoating of Manual Screen Box at Dunbar Creek WPCP.
- Temporary bypassing operations at the Dunbar Creek WPCP.
- All Maintenance of Traffic (vehicular, bicycle/pedestrian) as noted in construction documents and required for project by Glynn County including temporary pathway and protective netting.
- All restoration including but not limited to sidewalk, curbing, asphalt paving, seed, sod, fencing, and all other areas disturbed by construction as per construction documents to equal or better than existing condition.

The Bidder is ***encouraged*** to examine the location of the work and inform themselves fully as to the conditions present along the proposed route. Except for the work at the LS2032 and Dunbar Creek WPCP sites, the majority of the project improvements are located within the public rights of way, and site visits

can be performed at the bidder's convenience. A ***mandatory pre-bid meeting*** will be held in the JWSC Commission Chambers, 1703 Gloucester Street, Brunswick, Georgia 31520, **November 2, 2016, at 10:00 a.m.**, followed by a site visit to Lift Station 2032 and Dunbar Creek WPCP for anyone interested in attending.

Pre-qualification will be required in order to submit a bid for this project. The application and process are included for reference. **The deadline for questions and submission for pre-qualification is 5:00 P.M. EST, WEDNESDAY, NOVEMBER 9, 2016.** The list of pre-qualified contractors able to submit a bid for this project will be posted no later than **5:00 P.M. EST, THURSDAY, NOVEMBER 17, 2016**.

A bid guarantee in an amount not less than five percent (5%) of the amount bid must accompany each bid. Acceptable forms of bid guarantees are: a bid bond, certified check or cashier's check made payable to the Brunswick-Glynn County Joint Water and Sewer Commission. Performance and Payment bonds, each in an amount equal to hundred percent (100%) of the contract amount will be required of the successful Bidder.

The Brunswick-Glynn County Joint Water and Sewer Commission provides equal opportunity for all businesses and does not discriminate against any person or business because of race, color, religion, sex, national origin, disability or veteran status. This policy ensures all segments of the business community have access to supplying the goods and services needed by the JWSC.

The JWSC reserves the right to reject any and all bids, waive technicalities and make an award in the best interest of the JWSC.

Brunswick - Glynn County
Joint Water and Sewer Commission

BIDDING DOCUMENTS
AND
TECHNICAL SPECIFICATIONS

PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS – BGJWSC PROJECT NO. 505

Thursday, October 13, 2016

BIDDING DOCUMENTS
AND
TECHNICAL SPECIFICATIONS

PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS
BGJWSC PROJECT NO. 505

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Construction Plans: Brunswick-Glynn JWSC Lift Station 2032 Regional Forcemain Improvements, St. Simons Island, Georgia prepared by Four Waters Engineering, Inc. dated October 2016.

Geotechnical Report: **Report of Geotechnical Exploration Brunswick-Glynn County JWSC Forcemain**, St. Simons Island, Georgia, E&A Project No. 35-24198, September 12, 2016, prepared by Ellis & Associates, Inc.

Test Hole Data: JWSC LS2032 Regional Forcemain Improvements Project Test Holes 1 – 49, September 10, 2016, prepared by RHD Services, Inc.

Wetland Evaluation Letter: Field Inspections for Wetlands on Proposed JWSC LS2032 Forcemain Project on St. Simons Island, Glynn County, Georgia, August 24, 2016, prepared by Southeastern Environmental Associates, LLC

Permits:

- Georgia Environmental Protection Division LS2032 Regional FM Improvements Project NPDES Permit No. GA0021521

- GSWCC Erosion Control & Sedimentation Control Permit – Pending

- Glynn County Tree Advisory Board Tree Removal Approval – Pending Written Approval

- Glynn County Land Disturbing Activity – Pending (will be transferred to contractor)

- Georgia Department of Natural Resources NOI to Discharge Storm Water Associated with Construction Activity – Pending (will be transferred to contractor)

BIDDING DOCUMENTS

Office of the Director of Procurement

Brunswick-Glynn County
Joint Water and Sewer Commission
1703 Gloucester Street
Brunswick, Georgia 31520

Advertisement for Bids
Instructions to Bidders
Bid Form
Oath
Bid Bond
Representation
Legal and Character Qualifications
Affidavit
E-Verify Affidavit Contractor
E-Verify Affidavit Subcontractor

Instructions to Bidders

1. Intent and Timeline

It is intended that the Instructions to Bidders, General Conditions, Construction Plans and Technical Specifications shall define and describe the complete work to which they relate. Requests for clarification and all questions during the bidding period must be submitted in writing via e-mail to the Director of Procurement, Pam Crosby at pcrosby@bgjwsc.org on or before ***5:00 p.m. EST on Wednesday, November 9, 2016***. Requests for clarification received after this date will not be considered. Responses to requests for clarification and questions will be issued by addendum to all qualified bidders and will also be posted on the JWSC website (www.bgjwsc.org). Additionally, pre-qualification will be required in order to submit a bid on this project. The deadline for the pre-qualification application is ***5:00 p.m. EST Wednesday, November 9, 2016.*** A list of pre-qualified contractors will be published on the BGJWSC website no later than ***5:00 p.m. EST on Thursday, November 17, 2016.*** Only contractors who are pre-qualified will be allowed to submit a bid for this project. The bid due date is ***NOON EST on Wednesday, November 30, 2016.***

Timeline

Date	Event
Thursday, 10/13/2016 - 5:00 p.m.	IFB Released - First Newspaper Advertisement appears
Wednesday, 11/2/2016 - 10:00 a.m.	**Mandatory Pre-Bid Meeting Held; Optional Site Visit**
Friday, 11/4/2016 - NOON	Issue any addenda that is a result of pre-bid feedback
Wednesday, 11/9/2016 - 5:00 p.m.	**Deadline for Questions & Pre-Qualification Application**
Thursday, 11/17/2016 - 5:00 p.m.	Issue Addenda for responses to final questions & Release list of Pre-Qualified Bidders
Wednesday, 11/30/2016 - NOON	**Bids Due**
Wednesday, 11/30/2016	Bid Tabulation; Memo Update for Full Commission approval
Thursday, 12/1/2016 - 2:00 p.m.	**Full Commission Approval**
Monday, 12/12/2016	Pre-Construction Meeting & Public Meeting for Project Submittal process Begins
Wednesday, 12/28/2016	Pipe Delivery to Construction Staging Area
Week of 1/3/2017	**Issue Notice To Proceed - Physical Construction Begins**

2. Work to be Done

The work to be performed under this contract consists of furnishing all skill, labor, materials (unless noted otherwise), tools, equipment and incidentals required to construct complete, in place, and ready to operate a new 16-inch forcemain along a portion of Frederica Road, Palmetto Street, and the entrance and headworks to the Dunbar Creek WPCP in St. Simons Island, Glynn County, Georgia. More specifically, the work includes, but is not limited to:

- Tree removal (as noted) within the project limits.
- Installation & Maintenance of erosion and sedimentation control BMPs.
- Installation of approximately 10,510 linear feet of 16-inch HDPE (DR11) forcemain by horizontal directional drill, stub-out for future connection, and all necessary appurtenances. 11,000 linear feet of 16-inch HDPE (DR11) forcemain piping will be pre-purchased by JWSC for the project.
- Installation of approximately 760 linear feet of 16-inch PVC (DR18) forcemain by open cut construction and all necessary appurtenances.
- Installation of Additive Alternate of approximately 1,100 linear feet of 16-inch HDPE (DR11) forcemain via horizontal drill, stub-out for future connection, and all necessary appurtenances.
- Connection of 16-inch forcemain to the existing Pump Station 2032 (LS2032) discharge piping on site.
- Connection of 16-inch forcemain to existing Junction Box at Dunbar Creek.
- Rehabilitation of approximately 90 linear feet of 30-inch Ductile Iron Gravity Sewer piping at Dunbar Creek WPCP.
- Preparation and recoating of existing Junction Box and Manual Screen Box at Dunbar Creek WPCP.
- Temporary bypassing operations at the Dunbar Creek WPCP.
- All Maintenance of Traffic as noted in construction documents and required for project by Glynn County including temporary pathway and protective netting.
- All restoration including but not limited to sidewalk, curbing, asphalt paving, seed, sod, fencing, and all other areas disturbed by construction as per construction documents to equal or better than existing condition.

3. Site Examination

The Bidder is ***encouraged*** to examine the location of the work and inform himself fully as to the conditions present along the proposed route. Except for the work at the LS2032 and Dunbar Creek WPCP sites, the majority of the project improvements are located within the public rights of way, and site visits can be performed at the bidder's convenience. A ***mandatory pre-bid meeting*** will be held in the JWSC Commission Chambers, 1703 Gloucester Street, Brunswick, Georgia 31520 on **Wednesday, November 2, 2016, at 10:00 a.m.** followed by an optional site visit to Lift Station 2032 and Dunbar Creek WPCP for anyone interested in attending.

4. Bid and Contract Security

A bid guarantee in an amount not less than five percent (5%) of the amount bid must accompany each bid. Acceptable forms of bid guarantees are: a bid bond, certified check or cashier's check made payable to the Brunswick-Glynn County Joint Water and Sewer Commission. The JWSC will return bid guarantees, other than bid bonds, to unsuccessful bidders as soon as practicable, but not sooner than the execution of a contract with the successful bidder. If for any reason whatsoever the successful Bidder withdraws from the competition after opening the bids, or refuses to execute the Contract, the Owner will proceed on the Bid Bond or deposit the certified check or cashier's check as damages for the Bidder's failure to enter into a contract for the work.

Performance and Payment bonds, each in an amount equal to one hundred percent (100%) of the contract amount will be required of the successful Bidder.

The Surety of the Bid Bond, Performance Bond, and Payment Bond shall be 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 one hundred percent (100%) of the bid amount. The Bonds and Surety shall be subject to approval by the JWSC legal counsel.

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

5. Determination of Successful Bidder

The contract will be awarded to the lowest responsive, responsible Bidder; if awarded.

The determination of the Bidder's ***responsibility*** will be made by the JWSC based on whether the Bidder:

1. has been pre-qualified by JWSC to submit a bid for the project,
2. maintains a permanent place of business,
3. has the appropriate technical experience,
4. has adequate plant and equipment to do the work properly and expeditiously,
5. has suitable financial means to meet obligations incidental to this work, and
6. is appropriately licensed for the described work in the State of Georgia.

The Bidder shall furnish, to the JWSC, all such information and data for this purpose as the JWSC may request. The JWSC reserves the right to reject any bid if the evidence submitted by, or investigation of, the Bidder fails to satisfy the JWSC that he is properly qualified to carry out the obligations of the Contract.

The determination of ***responsiveness*** will by made by the JWSC based on a consideration of whether the Bidder has submitted a complete Bid Form without irregularities, excisions, special conditions, or alternative bids for any item unless specifically requested in the Bid Form.

6. Bid Alternates

Bidders are requested to review bid alternates, if any, as outlined on the Bid Form.

7. Contract Time

Contract time shall consist of two hundred (200) consecutive calendar days for the completion of work, to be computed from the date of the Notice to Proceed. Time is of the essence and is an essential element of this Agreement, and the Contractor shall pay to the JWSC, not as a penalty, but as liquidated damages, the sum of **Two Thousand Dollars ($2,000.00)** for each calendar day that he shall be in default of completing the work within the time limit named herein.

8. Bid Form

Bids shall be submitted on the Bid Form included. Bids shall be based upon lump sum prices as indicated by the Bid Form. Where errors or omissions result in discrepancies in proposal totals, prices per unit as submitted will be binding. Final payment will be based upon completion and acceptance of the work by the JWSC.

9. Submission of Bids

Bids shall be submitted at the time and place designated in the Invitation for Bids. On the outside of the envelope containing the Bid shall be noted the following:

SEALED BID

PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS

JWSC PROJECT NO. 505

The Bidder shall submit ***one (1) original Bid, five (5) duplicates (hardcopies) and one (1) electronic copy (USB or CD)*** in an opaque sealed envelope at the time and place indicated in the Invitation. The outside of the envelope containing the Bid also shall be marked with the Bidder's name, address and Georgia Utility Contractor's License Number. If there is a discrepancy between the electronic copy and the hard copy, the hard copy will prevail.

All blanks in the Bid must be completed and written or printed in ink.

Bids by corporations must be executed in the corporate name by the president or vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested to by the secretary or an assistant secretary of the corporation. The corporate address and state of incorporation must be shown on the Bid Form.

Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership

must be shown on the Bid Form.

The address, telephone number, facsimile number and email address for communications regarding the Bid must be shown on the Bid Form.

All names and titles must be typed or printed in ink below the signature.

The Bid shall contain an acknowledgement of receipt of all Addenda, if any. The numbers of each Addendum must be filled in on the Bid Form.

The ***Oath, Bid Bond, Representation, Legal and Character Qualifications, Affidavit, E-Verify Affidavit Contractor and E-verify Affidavit Subcontractor (if applicable)*** forms in this IFB shall be submitted with the Bid, and be executed in proper form.

IN ACCORDANCE WITH O.C.G.A. § 13-10-91, NO PROPOSAL FOR THE PHYSICAL PERFORMANCE OF SERVICES WILL BE CONSIDERED UNLESS THE BID INCLUDES A SIGNED, NOTARIZED E-VERIFY AFFIDAVIT AS SET FORTH HEREIN.

The submission of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of the IFB, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance of the Project and furnishing of the Work.

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
APPLICATION FOR PREQUALIFICATION
LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

Instructions

A. General

Contractors who desire to be considered for inclusion on the Brunswick-Glynn County Joint Water and Sewer Commission (BJWSC) *List of Prequalified Contractors for LIFT Station 2032 Regional Forcemain Improvements, Project No. 505* must complete and submit an Application for Prequalification. This application process must be followed even if the firm has been previously prequalified by the BJWSC for similar work.

All information submitted for the prequalification process shall become the property of the Brunswick-Glynn County Joint Water and Sewer Commission. To the extent allowed by law, financial information will be considered confidential by the Brunswick-Glynn County Joint Water and Sewer Commission. The BGJWSC reserves the right, but does not have the obligation, to request the submittal of additional information.

The prequalification status of all contractors will be evaluated and list of qualified bidders for the above referenced project will be published by **5:00 p.m. EST on Thursday, November 17, 2016.**

B. Completeness

Prequalification Application packages which have not been completed properly or do not include the necessary attachments will be returned to the Applicant without a complete review. The enclosed *Applicant's Checklist* is intended to serve as a reminder of the required information to be included in the submittal. This checklist form must be included with the application.
The Prequalification Application packages must be organized in five sections, each section delimited by tabbed dividers. The information to be included in each section is identified in the *Applicant's Checklist*.

C. Submittal

The information requested must be submitted on the forms provided within the attached *Contractor's Qualification Statement* and must be organized as indicated on the Applicant's Checklist. Any additional pages attached to the form must include the Applicant's name and cross references to item numbers on the application form. The submittal of Letters of Reference from owners and engineers regarding the Applicant's performance on previous projects is encouraged; however, the project experience forms *(Form for Similar Projects and References-Prequalification Lift Station 2032 Regional Forcemain Improverments Project No. 505* must be completed and included with the application.

The Contractor's Qualification Statement shall be filled out in full by typing or legible hand lettering in ink. All pages may be copied as needed.

An original and one copy of the Prequalification Application package must be submitted no later than **5:00 p.m. on Wednesday, November 9, 2016** to:

Ms. Pamela Drury-Crosby, Director
Procurement Division
Brunswick-Glynn County Joint Water and Sewer Commission
Administrative Services Building
1703 Gloucester Street
Brunswick, Georgia 31520

Electronic submissions will be accepted via email, pcrosby@bgjwsc.org but must be submitted in one (1) combined file.

D. Criteria for Qualification

The work specified in this project requires significant previous experience and expertise in similar work to avoid negative impacts to public safety and the environment. Therefore, the Contractor performing the work shall be qualified, in JWSC's judgment, to complete the horizontal directional drilling work specified herein. **The Contractor shall submit substantiating evidence of qualifications, in accordance with the provisions of this Section and the Instructions to Bidders, for pre-qualification approval.** Failure to submit the required documentation may cause the Contractor to be declared unqualified to perform the scope of work and submit a bid for the project. **All horizontal directional drilling operations including pipe joining/fusing shall be performed by the Contractor.** Subcontracting of the horizontal directional drilling operations will not be approved by JWSC for this project. In order to qualify to perform work specified in this Section the Contractor must provide evidence satisfactory to JWSC, including the following:

1. Contractor to have self-performed work comparable in nature to the scope of work required by this project for a minimum of five (5) years.

2. Contractor to have successfully self-performed at least three (3) horizontal directional drilling projects to install product pipe of a similar nominal diameter and length to the proposed project within the past five (5) years.

   (JWSC shall have sole authority to determine the adequacy of representative projects.)

3. In order to qualify to perform work specified in this Section the Contractor must provide evidence satisfactory to JWSC of the following personnel qualifications:

   a. The Contractor's proposed project manager, superintendent, drill operator, and guidance system operator assigned to horizontal directional drilling of this project shall be experienced in work of this nature and shall have successfully completed similar projects using horizontal directional drilling.

b. All drilling, drill guidance, and pipe joining equipment operators shall be experienced in comparable horizontal directional drilling work, and shall have been fully trained in the use of the proposed equipment by an authorized representative of the equipment manufacturer(s) or their authorized training agents.

c. All HDPE fusion equipment operators shall be qualified to perform pipe joining using the means, methods and equipment employed by the Contractor. Fusion equipment operators shall have current, formal training on all fusion equipment utilized for the project. Training received more than two (2) years prior to operation of the fusion equipment for this project shall not be considered current. The Contractor shall submit written certification of training provided by the fusion equipment manufacturer.

In determining the Applicant's qualifications, the following factors will be considered:

- company experience
- individual staff experience and qualifications
- references on completed projects
- financial stability (including bonding capacity and insurance coverage)
- safety record

Contractors must be licensed as a Utility Contractor by the State of Georgia to perform work for the Brunswick-Glynn County Joint Water and Sewer Commission.

E. Financial Information

Applicants are required to submit financial information to enable the BJWSC to adjudge the firm's financial stability. The financial information required for the prequalification review process may be submitted in one of the following two formats:

1. Copies of financial statements included as an attachment to the Application for Prequalification; or

2. Submittal of the attached ***Financial Information Form***, completed by an independent certified public accountant, using data extracted from the Applicant's financial statements.

All financial statements will be returned to the Applicant or will be destroyed upon completion of the review of the submitted information. If the Applicant desires for the statements to be returned, a self-addressed, stamped envelope or a delivery service account number for return shipment must be included with the application.

Note that whether submitting copies of financial statements or information extracted from these statements, the statements must be audited or reviewed. Compiled or self-prepared financial statements are not acceptable for the BJWSC prequalification review process.

F. Bonds and Insurance

The BGJWSC requires performance and payment bonds in the full amount of the bid on each project, in addition to appropriate insurance coverage for the Contractor. A copy of the Insurance Requirements for Contractors for Brunswick-Glynn County Joint Water and Sewer Commission is attached. The BGJWSC will require current certificates of insurance indicating full coverage prior to executing contracts.

G. Georgia Security & Immigration Compliance Act

Applicants are advised that all Contractors performing work for Brunswick-Glynn County Joint Water and Sewer Commission must comply with the requirements of O.C.G.A. Sec. 13-10-91 (the "Georgia Security & Immigration Compliance Act") and Rule 300-10-1-.02 of the Rules of the Georgia Department of Labor. The procedures and requirements of the Brunswick-Glynn County Joint Water and Sewer Commission Government related to the Georgia Security & Immigration Compliance Act, along with the affidavits and a compliance certification form are included in the bid documents of all Brunswick-Glynn County Joint Water and Sewer Commission projects. Completed affidavits and forms are to be submitted with the bid on a project or at the time of contract execution for an awarded project, as indicated in the specific bid documents. Bids submitted without the required affidavits will be considered non-responsive and will be disqualified from further consideration.

H. Significant changes; obligation to communicate

During the course of the project, prequalified firms must submit revised information to the BJWSC at any time any of the following changes occur.

1. Acquisition of contractor or name change;
2. Change in financial status that could adversely affect the ability of the contractor to perform the work;
3. Changes that adversely affect the Contractor's ability to obtain Bonds and/or insurance required to perform work;
4. Material changes in staffing, experience, or equipment;
5. Any other changes that could alter the Contractor's prequalification standing with the BJWSC.

I. Other

The prequalification of a Contractor will not deprive the Brunswick-Glynn County Joint Water and Sewer Commission of the right to reject any bid, where other circumstances and developments have, in the opinion of the County, changed the qualification or responsibility of the Contractor.

The prequalification of a Contractor through this process shall not be construed as approval for that Contractor to bid on any Brunswick-Glynn County Joint Water and Sewer Commission project; rather, only on the above referenced project so indicated in the project's Advertisement for Bids.

This form, its completion by the Applicant, and its use by the BJWSC, shall not give rise to

any liability on the part of Brunswick-Glynn County Joint Water and Sewer Commission to the Applicant or any third party or person. This is not a solicitation for bid. No guarantees are made or implied that a project will be constructed, either in part or whole. The Applicant accepts all risks and cost associated with the completion of the prequalification package without financial guarantee.

K. Attachments

1. Certification of Prequalification Application Content
2. Contractor's Qualification Statement Forms
3. Financial Information Form
4. Similar Projects and References Form (need minimum of (3) submitted)
5. Insurance Requirements for Contractors

THE REMAINDER OF THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY

ATTACHMENT NO. 1

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
APPLICATION FOR PREQUALIFICATION
LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

Affidavit for Contractor

Certification of Prequalification Application Content

I, the undersigned, _____ (typed name) as the authorized representative for _____(typed company name), a contractor interested in becoming prequalified for bidding on Brunswick-Glynn County Joint Water and Sewer Commission projects, do hereby attest that all statements and representations made herein are true and correct to the best of my knowledge. These statements are made openly and freely without intent to influence or embellish actual conditions or circumstances that occurred.

I understand that the Brunswick-Glynn County Joint Water and Sewer Commission will investigate any and all statements and representations in this application made by my firm and me and we freely give our permission for them to do so. Should releases be required by any of our professional, financial, or bonding institutions to release verification of the enclosed data, I have provided them in the application package. I agree to waive any claims against the Brunswick-Glynn County Joint Water and Sewer Commission for the release of the information necessary to evaluate this application.

I am hereto sworn _____ (signature)

_____ (title)

_____ (firm name)

This date _____, ____

County of _____ State of _____

The foregoing instrument was acknowledged before me this _____ day of _____

_____ (Notary signature)

_____ (typed Notary name)

My commission expires _____

(Notary Seal)

ATTACHMENT NO. 2

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
APPLICATION FOR LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

Contractor's Qualification Statement

1. Name of Contractor: _____

(AS REGISTERED WITH THE SECRETARY OF STATE)

2. Contact Information:

a. Mailing Address: _____

_____

b. Business Address: _____

_____

c. Telephone number: (____) _____

d. Fax number: (____) _____

a. Primary Contact Person:

Name: _____

Email Address: _____

3. Licensing Information:

a. State of Georgia Utility Contractor License Number: _____

b. Business License Number: _____ County of Issue: _____

4. Type of Organization (check appropriate block):

☐Corporation ☐ Partnership ☐ Sole Proprietorship

a. If corporation, indicate:

State of incorporation:_____ Date: _____

b. If partnership, indicate date of organization: _____

c. If sole proprietorship, indicate number of years in continuous business: _____

d. List names of officers or partners and their length of time with the firm.

_____ _____ years

_____ _____ years

_____ _____ years

5. How many persons does your company permanently employ? _____

6. How many years of experience in the proposed type and size of construction work has your organization had as a general contractor? _____

7. List all names previously used by your firm:

_____

_____

8. List all companies, firms, or organizations that own any part of your organization:

_____

_____

9. Is your firm currently prequalified for similar work with other municipalities or public utilities?

Yes: _____ No: _____

If yes, list names of municipalities or public utilities:

_____

_____

10. Provide a summary of the background and experience of the members of your organization who perform key functions on horizontal directional drilling projects. The summary must include:
    - the individual's name
    - position
    - number of years with the firm
    - details regarding work experience with project names and dates
    - information about education
    - specialized training and/or certifications
    - any other pertinent information.

At a minimum, the following positions on your project team shall be identified in this submittal.

Office Management	Jobsite Management
Project Manager	Field Supervisor
Safety Manager	Applicator
Certified Utility Manager	Safety Representative
	Drill Operator
	Guidance System Operator
	HDPE Fusion Equipment Operator

- ➢ *Attach personnel summaries to demonstrate that personnel have the minimum experience and expertise described in the Instructions section of this application package.*

11. Submit an audited or reviewed financial statement for each of the past three years, including the most recent fiscal year activity. The statements must be prepared by an independent, licensed certified public accountant. Financial statements must include balance sheets, income statements, and a statement of retained earnings, supporting schedules, and notes. All copies of financial statements will be returned to the Applicant following completion of the prequalification review process or will be destroyed, as indicated below.

    Indicate desired disposition of copies of financial statements:

    ☐ Return to Applicant ☐ Destroy

As an alternate to the submittal of Financial Forms, submit a completed ***Financial Information Form*** prepared by an independent, licensed certified public accountant. The ***Form*** must include information for each of the past three years, including the most recent fiscal year activity.

- ➢ Submit Financial Statements for the last three years, including the most recent fiscal year.
- ➢ As an alternate, submit a completed and certified Financial Information Form.
- ➢ Include SASE or delivery service account number for return shipment of financial statements, if return is desired.

12. What is your approximate bonding capacity?

    a. Single Project Capacity: $ _____

    b. Total Aggregate Capacity: $ _____

    c. Remaining Capacity: $ _____

- Provide a current dated letter from your surety company agent that certifies the bonding limits stated above.

13. What is the name and AM Best rating of your bonding company? List the name and telephone number of your bonding company agent.

    Bonding Company: _____ AM Best Rating: _____

    Agent Name: _____ Telephone No.: _____

14. Liability Insurance: Provide the following information regarding your insurance coverage.

    a. Name of Primary Agent or Broker: _____

    b. Telephone No.: _____ Fax No.: _____

- Provide a copy of a current Certificate of Liability Insurance. Note that insurance certificates confirming that your firm carries the minimum coverage outlined in “Section 00750 – Insurance Requirements for Contractors” (included in the Instructions section of this Application package) must be provided when a contract is executed for a particular project.

15. Have you ever been refused surety, bond, or liability insurance?

    Yes: _____ No: _____

- If yes, attach an explanation.

16. Safety Information:

a. Does your firm have a written Safety, Health, and Environmental Program?

Yes: _____ No: _____

b. Obtain from your insurance agent/broker/carrier your Experience Modification Rate (EMR) for the past three years and list these Rates in the spaces provided below.

Year	**Experience Modification Rate**
20__	
20__	
20__	

- Provide a copy of your workers compensation insurance carrier's documentation (e.g., NCCI *Workers Compensation Experience Rating* form) showing calculation of your EMR for the most current year.

c. Has your firm received any OSHA violations (citations) in the past three years?

Yes: _____ No: _____

- If yes, attach a separate page describing the citations, including information about the dates of the citations, the nature of the violation, the project on which the citation was issued, the amount of penalty paid, if any. This question must be answered "Yes" and information provided if citations have been appealed or contested, but have not yet been resolved. If the citation was appealed and a decision has been issued, state the case number and the date of the decision.

17. Do Applicant's business policies conform with government regulations regarding nondiscrimination of employment and employment practices on the basis of sex, race, color, national origin, ancestry, age, religious conviction, veteran status, handicap status, political beliefs or non-job related criteria?

Yes: _____ No: _____

18. Is your firm classified as a Disadvantaged Business Enterprise (DBE)?

Yes: _____ No: _____

If yes, indicate:

DBE Certification Number: _____

Name of Certifying Organization: _____

19. Has your firm ever failed to complete any work awarded to you?

Yes: _____ No: _____

- If yes, attach a detailed explanation.

20. Has your firm been assessed liquidated damages on any project in the past five years?

Yes: _____ No: _____

- If yes, attach a detailed explanation.

21. Has your firm been involved in claims, arbitration, mediation, and lawsuits on public works projects, either a plaintiff or defendant, in the last five years?

Yes: _____ No: _____

- If yes, attach a separate sheet listing:
  - the style of the case
  - when filed
  - name of the claim
  - the nature of the claim
  - parties to the litigation
  - court in which litigation was filed
  - civil action number
  - whether the case is pending or resolved
  - if resolved:
    - the date of and manner in which it was resolved (e.g., relief granted by court, settlement by or among parties, dispositive motion, trial verdict
    - the name and location of the project involved

22. Does your firm (including any member, officer, partner, subsidiary or affiliate thereof) have a pending citation for violating any provision of The Official Code of City of Brunswick or Glynn County, Georgia at the current time?

Yes: _____ No: _____

- If yes, attach a separate sheet with a detailed explanation of the Code violation and the status of the resolution of the citation.

23. Provide a list of the major items of equipment that are available for horizontal directional drilling construction, including testing equipment. Indicate any equipment items that are leased.

- Attach a detailed equipment list with specific notation whether items are owned or leased.

24. Submit information regarding your "Company Experience" on the attached ***Form for Similar Projects and References*** to demonstrate that your firm meets the criteria described in the Instructions section. Include detailed information on:

    - Contractor to have self-performed work comparable in nature to the scope of work required by this project for a minimum of five (5) years.
    - a minimum of three (3) horizontal directional drilling projects to install product pipe of a similar nominal diameter and length to the proposed project within the past five (5) years.
    - The names, addresses, location of the jobs performed
    - contract amounts and dates
    - reference contact names with telephone numbers and e-mail must be indicated on the form. Please be complete and ensure that all reference contact information is accurate and current.

The submittal of Letters of Reference is desired and encouraged; but only in addition to the current reference contact information.

Submit one ***Form for Similar Projects and References*** for each project, using the blank form attached. Supplemental information in other formats may also be attached to the Form if desired; however, a completed ***Form*** must be submitted for each project.

- ➢ Provide a ***Form for Similar Projects and References*** for at least three completed horizontal directional drilling construction projects completed within the past five years.
- ➢ Provide Letters of Reference or additional project data to supplement information presented on ***Form.***

25. Forms: The forms to be completed and submitted with the Application follow.

- ➢ Affidavit for Contractor – Certification of Prequalification Application Content
- ➢ Financial Statements or Financial Information Form (alternate to submittal of financial statements)
- ➢ Form for Similar Projects and References – Prequalification Lift Station 2032 Regional Forcemain Improvements Project No. 505 (copy as needed)
- ➢ Applicant's Checklist

Note: This following symbol indicates required attachments.

➢

ATTACHMENT NO. 3

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
APPLICATION FOR PREQUALIFICATION
LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

Financial Information Form

All Applicants must provide an audited or reviewed Financial Statement or must submit this ***Financial Information Form***, completed by an independent certified public accountant. The ratios and other information listed hereon must be calculated from data included in audited or reviewed Financial Statements prepared for the Applicant by an independent certified public accountant. The use of compiled or self-prepared financial statements in the preparation of this ***Form*** is not acceptable.

Name of Applicant: _____

Address:_____

_____

Item	Value by Year		
	20____	20____	20____
Current Ratio[1]			
Quick Ratio[2]			
Solvency Ratio[3]			
Total Debt Ratio[4]			
Debt to Equity Ratio[5]			
Profitability[6]			
Stockholder's Equity[7]			

1 = Current Ratio = Current Assets / Current Liabilities
2 = Quick Ratio = Cash + Cash Equivalents + Accounts Receivable / Current Liabilities
3 = Solvency Ratio = Shareholder's Equity / Total Assets
4 = Total Debt Ratio = Current Liabilities + Long-term Liabilities / Total Assets
5 = Debt to Equity Ratio = Current Liabilities + Long-term Liabilities / Shareholder's Equity
6 = Profitability = Profit before Taxes x 100 / Total Assets
7 = Stockholder's Equity – indicate range of value based on the following categories:
Less than $500K = 1; $500K to $1M = 2; $1M to $2M = 3; $2M to $4M = 4; Greater than $4M = 5

Accountant's Certification

I (we) have examined this ***Financial Information Form*** and the Applicant's original audited or reviewed financial statements, and find that the all information presented hereon is based on data extracted from those financial statements. I understand that this form is intended solely for use by the Brunswick-Glynn County Joint Water and Sewer Commission Water System during review of the Application for Prequalification submitted by the Contractor. In addition, I have no personal financial interest or affiliation with this organization or individual.

Firm Signature:_____

Date: _____

Independent Certified Public Accountant: _____

Firm Name: _____

Address: _____

Telephone Number: _____

Email Address: _____

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
ATTACHMENT NO. 4
APPLICATION FOR PREQUALIFICATION
LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

FORM FOR SIMILAR PROJECTS AND REFERENCES – PREQUALIFICATION
LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

Name of Contractor: _____

Project Name: _____

Location: _____

Project Owner: _____

Contact Person: _____

Telephone Number: _____

Email Address: _____

Project Engineer: _____

Contact Person: _____

Telephone Number: _____

Email Address: _____

Contract Dates:

Date of Notice to Proceed:_____ Date of Final Completion:_____

Contract Amount: Original: $ _____ Final: $ _____

Brief Description of Project:

_____

_____

_____

Length, depth (typical and greatest), and diameter of each completed bore(s) :

_____

_____

_____

_____

Description of Pipes:

_____

_____

Type and manufacturer of drilling and installation equipment:

_____

_____

Ground Conditions Encountered:

_____

_____

Are your HDPE fusion equipment operators certified? Yes ____ No ____

(Please provide copies of written certification of training provided by the fusion equipment manufacturer).

HDPE pressure testing procedure required:

_____

Project MOT and pedestrian coordination required (describe if applicable):

_____

Special conditions of project, e.g. night work required (describe if applicable):

_____

_____

Name of Field Supervisor: _____

Type of Project (check appropriate box): ☐ Public Works ☐ Private Owner

Contractual Status on Project (check appropriate box): ☐ Prime Contractor

If subcontractor, provide name of Prime Contractor: _____

Did you provide performance and/or payment bonds on this project? Yes ____ No ____

Was this project completed within the original contract period? Yes ____ No ____

Did this project require traffic control and/or traffic diversion? Yes ____ No ____

Was this project located in an established neighborhood? Yes ____ No ____

Did this project include the restoration of landscaped yards? Yes ____ No ____

Did this project include sewage bypassing or other flow diversion? Yes ____ No ____

Is a letter of reference from the project owner included with this application? Yes ____ No ____

ATTACHMENT NO. 5

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
APPLICATION FOR PREQUALIFICATION
LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

Applicant's Checklist

Applicant Name: _____ Date Submitted: _____

Instructions: Organize application package as outlined on this form with each section separated under a numbered tab. Submit this form with your application package. Note that incomplete submittals will be returned to the Applicant without review.

GENERAL
An original and one copy of forms and attachments submitted?
Signed and notarized *Affidavit for Contractor* attached?

Applicant's Checklist included with submittal?

SECTION 1
Contractor's Qualification Statement form filled out in its entirety?

SECTION 2
Background and experience summaries for key personnel attached? (reference Section 10 of Contractor's Qualification form)

Equipment list attached? (reference Section 23 of Contractor's Qualification form)

Copies of written certification of training for HDPE fusion equipment operators (reference Section 24 of Contractor's Qualification form)

SECTION 3
Form for Similar Projects and References completed in entirely and attached?

Letters of Reference attached?

SECTION 4
Financial statements or *Financial Information Form* attached?

SASE or delivery service account number included for return shipment of financial statements, if return option is selected?
Letter from bonding company agent attached?

Certificate of Liability Insurance form attached?

Information regarding inability to obtain surety, bond, or liability insurance attached (if applicable)?

Workers Compensation Experience Modification Rate form for most current year attached?

SECTION 5

OSHA citation information attached (if applicable)?

Information regarding failure to complete work attached (if applicable)?

Liquidated damages assessment information attached (if applicable)?

Information regarding claims, arbitration, mediation, and lawsuits attached (if applicable)?

Information regarding pending County Code violation citations attached (if applicable)?

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ATTACHMENT NO. 6

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
APPLICATION FOR PREQUALIFICATION
LIFT STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
PROJECT NO. 505

The following requirements are included in each construction contract issued by the Brunswick-Glynn County Joint Water and Sewer Commission Water System. The Applicant must provide evidence of coverage and applicable endorsements at the time the contract is executed. Note that the need for Builder's Risk coverage will be assessed by the Owner on a project-by-project basis.

INSURANCE REQUIREMENTS FOR CONTRACTORS

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

Attention: The Contractor is advised that certain provisions contained herein require specific endorsements of your insurance policy. Do not assume that your standard policy will be suitable to meet the requirements of Brunswick-Glynn County Joint Water and Sewer Commission. The submittal of incomplete or non-conforming documents will delay the execution of the Contract/Agreement and the issuance of the Notice-to-Proceed for the Project.

1. MINIMUM LIMITS OF INSURANCE

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

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

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

B. Commercial General Liability Insurance. The Contractor shall procure and maintain a Commercial General Liability Insurance Policy covering bodily injury, property damage liability and personal injury. The policy or policies must be on an "occurrence" basis ("Claims Made" coverage is not acceptable) insuring personal injury and property damage against the hazards of premises and operations, products and completed operations, blasting and explosion, collapse, underground

damage, independent contractor's and contractual liability (specifically covering the indemnity) and have the minimum limits of liability listed below. The Commercial General Liability policy shall also include contractual liability coverage. The Commercial General Liability policy must include separate aggregate limits per project. Excess liability coverage may be used in combination with the base policy to obtain the following limits.

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

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

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

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

$2,000,000 Combined Single Limits per Occurrence

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

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

2. OTHER INSURANCE PROVISIONS

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

A. Additional Insured Endorsement – General Liability, Automobile Liability, and Umbrella Liability

    1. The “Owner, Construction Manager, Engineer and their respective officers, officials, employees, and volunteers” are to be covered as Additional Named Insureds as respects all liabilities to be insured against by the policies described in Subsections 1.B, 1.C, and 1.D above.

    2. The coverage shall contain no special limitation on the scope of protection afforded to the Owner, Construction Manager, Engineer and their respective officers, officials, employees, or volunteers. Nothing in this paragraph shall be construed to require the Contractor to provide liability insurance coverage to the Owner, Construction Manager, or Engineer for claims asserted against the Owner, Construction Manager, or Engineer for their sole negligence.

    3. The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

    4. Provide a separate endorsement for each policy, signed by the authorized agent and citing individual policy numbers.

    5. The coverage shall be primary and shall contain no special limitations on the scope of protection afforded to the Certificate Holder/Additional Insured.

    6. Coverage shall be provided on a “pay on behalf” basis, with defense costs payable in addition to policy limits. There shall be no cross-liability exclusion.

    7. In lieu of a separate endorsement, a copy of the declaration page for the Umbrella Liability Policy may be provided, listing the policy numbers for each type of insurance covered by the Umbrella.

B. Waiver of Subrogation Endorsement – Workers' Compensation and Employers' Liability Coverage

    1. The insurer shall agree to waive all rights of subrogation against the Owner, Construction Manager, Engineer and their respective officers, officials, employees, and volunteers for losses arising from work performed by the Contractor for the Owner under the Contract.

    2. Provide a separate endorsement for the policy, signed by the authorized agent and citing individual policy number.

C. Notice of Cancellation Endorsements – General Liability, Automobile Liability,

Umbrella Liability, and Workers' Compensation

1. Each insurance policy shall be endorsed to state that should any coverage be suspended, voided, cancelled or reduced in coverage or in limits, thirty days prior written notice will be given to the Certificate Holder. Notice of cancellation for non-payment of premium shall be not less than ten days.

2. Provide a separate endorsement for each policy, signed by the authorized agent and citing individual policy numbers.

3. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the Owner, Construction Manager, Engineer and their respective officers, officials, employees, or volunteers.

D. Deductibles and Self-insured Retentions

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

All deductibles shall be paid by the Contractor.

E. Failure of Insurers

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

F. Contractor's Property and Equipment

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

3. ACCEPTABILITY

A. The insurance purchased by the Contractor must be issued by a company licensed by the Insurance Commissioner to transact business in the State of Georgia or by a company acceptable to the State if the company is an alien insurer.

B. Insurance is to be placed with insurers with a Best Policyholders Rating of "A" or better and with a financial size rating of Class VII or greater, or be otherwise acceptable to the Owner.

4. VERIFICATION OF COVERAGE

A. The Contractor shall furnish the Owner with four original Certificates of Insurance, each with endorsements effecting coverage required by this Section of the Contract Documents. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.

B. The insurance certificate must provide the following:

1. Name and address of authorized agent.

2. Name and address of insured. Name of insured must appear exactly as shown on Contractor's seal on Contract with Owner

3. Name of insurance company(ies).

4. Description of policies.

5. Policy number(s).

6. Policy period(s).

7. Name and address of Owner as Certificate Holder (see Subsection D below).

8. Brunswick-Glynn County Joint Water and Sewer Commission Program Name and Number.

9. Signature of authorized agent.

10. Telephone number of authorized agent.

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

ENDORSEMENT SUMMARY TABLE

Type of Insurance	**Endorsement**
General Liability	Owner, etc. as Additional Insured
General Liability	Notice of Cancellation
Automobile Liability	Owner, etc. as Additional Insured
Automobile Liability	Notice of Cancellation
Umbrella Liability	Owner, etc. as Additional Insured[1]
Umbrella Liability	Notice of Cancellation
Workers' Compensation	Waiver of Subrogation
Workers' Compensation	Notice of Cancellation

[1]Declarations pages may be submitted for Umbrella policies

D. The Certificate Holder must be shown as:

Brunswick-Glynn County Joint Water and Sewer Commission
Attention: Office of the Director
Procurement Division
1703 Gloucester Street
Brunswick, GA 31520

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

5. SUBCONTRACTORS

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

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PUMP STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS (BASE BID)

REFER TO SECTION 01025 OF THE TECHNICAL SPECIFICATIONS FOR ADDITIONAL INFORMATION

BASE BID ITEM 1 (Reference Section 01025 of the Technical Specifications for Scope of Each Item)

Item	Description	QTY	Unit	Unit Price	Total
1	Mobilization/Demobilization	1	LS		$
2	Maintenance of Traffic (Vehicular, Pedestrian/Bicycle)	1	LS		$
3	Soil Erosion & Sediment Control	1	LS		$
4	Restoration - Phase 1 (Frederica Road and LS2032 Site)	1	LS		$
5	Restoration - Phase 2 (Palmetto Street, Dunbar Creek WPCP Entrance Road and Site)	1	LS		$
6	16-Inch HDPE (DR11) Forcemain by HDD (11,000 LF Pre-purchased Pipe)	10,450	LF		$
7	16-inch PVC (DR18) Forcemain by Open Cut	760	LF		$
8	10-inch PVC (DR18) Forcemain by Open Cut	15	LF		$
9	10-Inch Discharge Bypass Assembly at LS2032 Site	1	LS		$
10	16" MJt Adapter (HDPE)	19	EA		$
11	16" DI MJt 11.25˚ Bends	20	EA		$
12	16" DI MJt 45˚ Bends	18	EA		$
13	16" x 16" DI MJt Tee	2	EA		$
14	16" x 16" DI MJt Wye	3	EA		$
15	16" DI MJt Plug	1	EA		$
16	16" x 10" DI MJt Reducer	2	EA		$
17	16" Plug Valve with Box and Cover	9	EA		$
18	10" Plug Valve with Box and Cover	1	EA		$
19	2" Air Release Valve Assembly (Pedestal)	8	EA		$
20	2" Air Release Valve Assembly (HDPE Manhole)	1	EA		$
21	Tie-In to 10-Inch Existing Forcemain at LS2032 Site	1	LS		$
22	16-Inch Forcemain Connection to Existing Junction Box at Dunbar Creek WPCP	1	LS		$
23	Recoat Existing Junction Box at Dunbar Creek WPCP with SewperCoat by Bio-Nomic Services	1	LS		$
24	Rehabilitate Existing Manual Screen Structure at Dunbar Creek WPCP Including Recoating with SewperCoat by Bio-Nomic Services	1	LS		$
25	30" Ductile Iron Gravity Sewer Rehabiltiation by CIPP	87	LF		$
26	16-Inch Bypass Assembly at Dunbar Creek WPCP	1	LS		$
27	Temporary Bypass Pumping Operations at Dunbar Creek WPCP	1	LS		$
28	Tree Removal	1	LS		$
29	Disposal and Replacement (with A-3 Sand) of Unsuitable Soils	1,275	CY		$
30	Water Service Repair	5	EA		$
31	As-Built Documents and Drawings	1	LS		$
	Sub-Total Base Bid Item 1			$	

ADDITIVE ALTERNATE ITEM 1 - Forcemain from LS2032 to Harrington Road

(Reference Section 01025 of the Technical Specifications for Scope of Each Item)

Item	Description	QTY	Unit	Unit Price	Total
1	Maintenance of Traffic (Vehicular, Pedestrian/Bicycle)	1	LS		$
2	Soil Erosion & Sediment Control	1	LS		$
3	Restoration	1	LS		$
4	16-Inch HDPE (DR11) Forcemain by HDD	1,100	LF		$
5	16-inch PVC (DR18) Forcemain by Open Cut	15	LF		$
6	16" MJt Adapter (HDPE)	1	EA		$
7	16" DI MJt 11.25˚ Bends	1	EA		$
8	16" x 16" DI MJt Tee	1	EA		$
9	16" DI MJt Plug	1	EA		$
10	16" Plug Valve with Box and Cover	1	EA		$
11	As-Built Documents and Drawings	1	LS		$
	Sub-Total Additive Alternate Item 1			$	

Oath

State of Georgia
City of Brunswick
County of Glynn

I, _____ (name of individual), solemnly swear that in the procurement of the contract for

PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS

PROJECT NO. 505

that I, nor any other person associated with me or my business, corporation or partnership, has prevented or attempted to prevent competition in the bidding or Bids of said project or from submitting a bid for this project by any means whatever.

Lastly, I swear that neither I, nor any other person associated with me or my business, Corporation or partnership has caused or induced any other bidder to withdraw his/her bid from consideration for this project. Said oath is filed in accordance with the requirements set forth in O.C.G.A. § 36-91-21 (e).

This the _____ day of _____ 2016.

Name of Party: _____

Corporate or Partnership Name: _____

Sworn to and subscribed before me this the ____ day of _____ 2016.

NOTARY PUBLIC:

Name: _____

My Commission Expires: _____

(SEAL)

BID BOND

State of Georgia
City of Brunswick
County of Glynn

KNOW ALL MEN BY THESE PRESENT, that we, _____

_____, as Principal, and

_____, as Surety, are held and firmly bound

unto the Brunswick-Glynn County Joint Water and Sewer Commission (JWSC) in the not to

exceed sum of _____ Dollars

($_____) lawful money of the United states, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, personal representatives, successors and assign, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted to the JWSC a Bid for:

PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS

JWSC PROJECT NO. 505

NOW THEREFORE, the conditions of this obligation are such that if the Bid be accepted, the Principal shall, within fifteen days (15) days after receipt of conformed Contract Documents, execute a contract in accordance with the Bid upon the terms, conditions and prices set forth therein, and in the form and manner required by the JWSC and execute a sufficient and satisfactory Performance Bond and Payment bond payable to the JWSC, each in an amount of one hundred percent (100%) of the total contract price, in form and with security satisfactory to the JWSC, then this obligation shall be void; otherwise, it shall 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 to the foregoing requirements within the time specified above, immediately pay to the aforesaid JWSC, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

This bond is given pursuant to and in accordance with the provisions of O.C.G.A. § 36-91-50 *et seq*., as amended from time to time, and all the provisions of the law referring to this character of bond as set forth in said sections or as may be hereinafter enacted and these are hereby made a part hereof to the same extent as if set out herein in full.

(Continued on Next Page)

IN WITNESS WHEREOF, the said Principal has hereunder affixed its signature and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on

This the _____ day of _____, 2016.

PRINCIPAL: _____

Signed and sealed in the
Presence of:

By: _____

Title: _____

(Seal)

1. _____

2. _____

SURETY: _____

Signed and sealed in the
Presence of:

By: _____

Title: _____

(Seal)

1. _____

2. _____

REPRESENTATION

EQUAL EMPLOYMENT OPPORTUNITY (EEO) PRACTICE:

EEO Plan: The successful Bidder will develop and implement an EEO policy that, as a minimum, will recruit, hire, train, and promote, at all levels, without regard to race, color, religion, national origin, sex, or age, except where sex or age is a bona fide occupational qualification.

EEO For Veterans/Handicapped: The successful Bidder will also provide equal employment opportunities for qualified disabled veterans, handicapped persons and veterans of the Vietnam Era.

EEO For Successful Bidder Programs: The successful Bidder, will ensure equal employment opportunity applies to all terms and conditions of employment, personnel actions, and successful Bidder-sponsored programs. Every effort shall be made to ensure that employment decisions, programs and personnel actions are non-discriminatory. That these decisions are administered on the basis of an evaluation of an employee's eligibility, performance, ability, skill and experience.

EEO Acquisitions: The successful Bidder will develop and implement a policy that will give equal opportunity to the purchase of various goods and services from small businesses and minority-owned businesses.

a. Does the Bidder have the above EEO policy in place?

[ ] Yes [ ] No

b. If the answer to a. above is no, will the Bidder have such a policy in place for the project?

[ ] Yes [ ] No

Statement of Assurance: The Bidder herein assures the JWSC that it is in compliance with Title VI & VII of the 1964 Civil Rights Act, as amended, in that it does not on the grounds of race, color, national origin, sex, age, disability, or veteran status, discriminate in any form or manner against employees or employers or applicants for employment and is in full compliance with A.D.A.

_____

(*Firm's Name*)

_____

(*Authorized Signature*)

_____/_____

(*Title*) **(*Date*)**

LEGAL AND CHARACTER QUALIFICATIONS

Convictions: Has the Bidder (including parent corporation, if applicable) or any principal ever been convicted in a criminal proceeding (felonies or misdemeanors) in which any of the following offenses were charged?

	Yes	No		Yes	No
a. Fraud	[ ]	[ ]	h. Obstruction of justice (or any other misconduct affecting public or judicial officers' performance of their official duties)	[ ]	[ ]
b. Embezzlement	[ ]	[ ]			
c. Tax Evasion	[ ]	[ ]			
d. Bribery	[ ]	[ ]	i. False/misleading advertising	[ ]	[ ]
e. Extortion	[ ]	[ ]	j. Perjury	[ ]	[ ]
f. Jury Tampering	[ ]	[ ]	k. Conspiracy to commit any of the Foregoing offenses	[ ]	[ ]
g. Anti-Trust Violations	[ ]	[ ]			

Civil Proceedings: Has the Bidder or any principal ever been a party, or is now a party, to a civil proceeding in which it was held liable for any of the following?

	Yes	No		Yes	No
a. Unfair/anti-competitive business practices	[ ]	[ ]	c. Violations of securities laws (state & federal)	[ ]	[ ]
			d. False / misleading advertising	[ ]	[ ]
b. Consumer fraud misrepresentation	[ ]	[ ]	e. Violation of local Government ordinances	[ ]	[ ]

License Revocation: Has the Bidder or any principal ever had a business license revoked, suspended, or the renewal thereof denied, or is a party to such a proceeding that may result in same?

Yes [ ] No [ ]

Responses: If "yes" is the response to any of the questions on the previous page, provide information such as date, court, sentence, fine, location, and all other specifics for each "yes" response.

AFFIDAVIT

This Bid is submitted to Brunswick-Glynn County Joint Water and Sewer Commission (JWSC) by the undersigned who is an authorized officer of the company and said company is licensed to do business in Georgia. Further, the undersigned is authorized to make these representations and certifies these representations are valid. The Bidder recognizes that all representations herein are binding on the Company and failure to adhere to any of these commitments, at the JWSC's option, may result in a revocation of the granted contract.

Consent is hereby given to the JWSC to contact any person or organization in order to make inquiries into legal, character, technical, financial, and other qualifications of the Bidder.

The Bidder understands that, at such time as the JWSC decides to review this Bid, additional information may be requested. Failure to supply any requested information within a reasonable time may result in the rejection of the Bid with no re-submittal rights.

The successful Bidder understands that the JWSC, after considering the legal, financial, technical, and character qualifications of the Bidder, as well as what in the JWSC's judgment may best serve the interest of its rate payers and employees, may grant a contract.

The successful Bidder understands that this bid is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a bid for the same, and is in all respects fair and without collusion or fraud. I understand that collusive bidding is a violation of state and federal law and can result in fines, prison sentences, and civil damage awards.

Any contract issued will be on the basis of the Bidder's service, financial plans and arrangements being feasible and adequate to fulfill the conditions set forth in this project and the successful Bidder's response.

Company Name: _____

Authorized Person: _____ Signature: _____
(*Print/Type)*

Title: _____ Date: _____

Address: _____

_____

Telephone: _____ Fax: _____ Email: _____

FORM OF CONTRACT

Office of the Director
Brunswick-Glynn County Joint Water and Sewer Commission
1703 Gloucester Street
Brunswick, Georgia 31520
(912) 261-7127 Phone
(912) 261-7178 Fax
E-Mail: pcrosby@bgjwsc.org

PART A – CONTRACT FORM

CONTRACT FOR SERVICES
BY AND BETWEEN
BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
AND
(COMPANY TO BE NAMED)

THIS AGREEMENT made and entered into by and between the **BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION**, a public corporation created by Local Act of the General Assembly of the State of Georgia, acting by and through its Commissioners (hereinafter referred to as the "JWSC") and *Company to be Named*, a *State of incorporation* licensed to do business in the State of Georgia (hereinafter referred to as the "Contractor").

WITNESSETH

WHEREAS, The JWSC issued an Invitation for Bids on or about October 13, 2016 (hereinafter referred to as the "Solicitation") from qualified vendors to provide for its **PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS, JWSC PROJECT NO. 505** (hereinafter referred to as the "Project"); and

WHEREAS, the Contractor submitted a qualified bid in response to the Solicitation; and

WHEREAS, the JWSC, at a regular meeting held on _____, 2016, authorized the award of the Project to the Contractor; and

WHEREAS, it is the intention of the parties hereto to enter into this contract (hereinafter referred to as the "Agreement") in order to provide a statement of the respective covenants, conditions and agreements in connection with the performance of services by Contractor to the JWSC.

NOW THEREFORE, FOR AND IN CONSIDERATION of the mutual covenants and conditions set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. INDEPENDENT CONTRACTOR STATUS AND RESPONSIBILITIES

(a) In the performance of the Project services required under this Agreement, Contractor shall be an "independent contractor" with the authority and responsibility to control and direct the performance and details of the Project Work and services required under this Agreement; provided, however, JWSC shall have a right to inspect Work in progress to determine whether, in JWSC's opinion, the Project services are being performed by Contractor in accordance with the provisions of this Agreement.

(b) ALL persons hired or used by Contractor shall be Contractor's employees and agents and Contractor shall ensure that such persons are qualified to engage in the activity and services in which they participate. Contractor shall be responsible for the accuracy, completeness and adequacy of any and all work and services performed by Contractor's employees and agents and shall ensure that all applicable licensing and operating requirements of federal, state, county and municipal governments, and all applicable accreditation and other standards of quality generally accepted in the field of Contractor activities are complied with and satisfactorily met.

(c) Contractor expressly agrees to assume the sole and entire liability (if any liability is determined to exist) to its employees, agents and other persons for all loss, damage or injury caused by Contractor's employees and agents in the course of their employment. The mere participation in the performance of Project services under this Agreement shall not constitute nor be construed as employment with JWSC and shall not entitle Contractor or Contractor's employees, agents or subcontractors to vacation, sick leave, retirement or other benefits afforded by employees of the JWSC. Contractor shall be responsible for payment of applicable income, social security and any other federal, state, and/or local taxes and fees.

(d) Contractor assumes sole responsibility for completion of the Project undertaken pursuant to this Agreement. The JWSC shall consider Contractor the sole point of contact with regard to contractual matters. Subcontracting of any part of the Project Work or services contemplated by this Agreement may not be entered by Contractor without prior written approval by the JWSC.

2. CONTRACT DOCUMENTS

(a) This Agreement consists of this document and other documents which are incorporated herein by reference as though set forth fully herein (hereinafter referred to in this Agreement as the Contract Documents), as follows:

(1) JWSC's Solicitation, dated Date including Addendums, if any.

(2) Contractor's Bid for **PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS, BGJWSC PROJECT NO. 505** dated _____, 2016.

(3) This Agreement, which includes the following Parts:

Part A: Contract Form
Part B: Performance Bond
Part C: Payment Bond
Part D: Affidavit of Payment of Claims
Part E: Certificate of Insurance
Part F: Certificate of Drug Free Workplace
Part G: E-Verify Contractor Affidavit and Agreement
Part H: E-Verify Subcontractor Affidavit and Agreement

(b) In case of any conflicts, the terms and conditions set forth in this Agreement shall control over the terms and conditions of the documents incorporated herein by this Section 2, Contract Documents.

3. SCOPE OF WORK

(a) Contractor agrees to provide all the skill, labor, materials and equipment necessary to carry out, in good faith, the complete requirements of the Project specified as **PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS, JWSC PROJECT NO. 505,** in strict conformity with all sections of the Solicitation, whose program services together with the Contractor's Bid, the Invitation for Bids, Instructions to Bidders, General Conditions, Special Conditions, Construction Plans, Standards for Water and Sewer Design and Construction, Technical Specifications, this Agreement and all addenda hereto annexed, and the Contract Documents shall form essential parts of this Agreement as if fully contained herein.

(b) Contractor agrees to perform all Project services as contemplated herein in a manner that does not jeopardize the safety of Contractor's workers, JWSC personnel or any other person, including providing and maintaining all necessary precautions for the protection of the public. In addition, Contractor agrees to perform the Project contemplated herein in a manner that poses no threat to the environment or violates any federal, state or local statute, ordinance, rule or regulation regarding environmental concerns.

(c) Contractor agrees to keep the rights-of-way, easement area and adjacent property free from accumulations of waste materials, rubbish and other debris resulting from the Work, and progressively as the Work is completed he shall remove all waste materials, rubbish and debris from and about the work areas and shall leave the site clean.

4. NOTICE TO PROCEED; LIQUIDATED DAMAGES

(a) *Notice to Proceed:* The Contractor agrees to commence the Project included in this Agreement on a date to be specified in a written Notice to Proceed and shall fully complete the Project within a period of **two hundred (200) consecutive calendar days** after the effective commencement date.

(b) *Liquidated Damages:* Time is of the essence and is an essential element of this Agreement, and the Contractor shall pay to the JWSC, not as a penalty, but as liquidated damages, the sum of **Two Thousand Dollars ($2,000.00)** for each calendar day that he shall be in default of completing the work within the time limit named herein. These fixed liquidated damages are not established as a penalty but are calculated and agreed upon in advance by the JWSC and the Contractor due to the uncertainty and impossibility of making a determination as to the actual and consequential damages incurred by the JWSC and its rate payers as a result of the failure on the part of the Contractor to compete the Work on time. Such liquidated damages referred to herein are intended to be and are cumulative and shall be in addition to every other remedy now or hereafter enforceable at law, in equity, by statute or under this Agreement.

5. COMPENSATION

(a) The JWSC agrees to pay the Contractor, in current funds, for the performance of this Agreement based on the units and lump sum pricing for the Project and listed at Exhibit "A," which sums shall also pay for all loss or damage arising out of the nature of the Project aforesaid, or in the performance of the Project and for all expenses incurred by, or in consequence of the Project, its suspension or discontinuance, and for well and faithful completion of the Project and the whole thereof, as herein provided.

(b) The JWSC and Contractor agree that the Construction Plans, Standards for Water and Sewer Design and Construction, Technical Specifications, and all Addenda thereto together are as fully a part of the Contract as if attached or herein repeated. The Contractor, recognizing the particular requirements of the JWSC budgetary process, agrees to waive the terms of O.C.G.A. § 13-11-1 *et seq.*, known as the Georgia Prompt Pay Act. Contractor agrees that the Work and services required by this Agreement may require inspection and approval of the JWSC's engineers or consultants and that the time of repayment shall be tolled for a reasonable time as required for said inspection and approval.

(c) Contractor further agrees to toll the time for payment herein under for an additional and reasonable period of time for the JWSC representative overseeing the Project or Work contemplated by this Agreement to approve the Work and/or services performed.

(d) The JWSC shall have forty-five (45) days from approval by the JWSC representative in which to pay the Contractor; subject to any documentation requests by the JWSC as necessary to allow the JWSC to evaluate the completeness and accuracy of monies due.

6. TERM OF AGREEMENT

(a) This Agreement shall be for a period of **two hundred (200)** consecutive calendar days after the effective commencement date of the Work.

(b) This Agreement is binding on the parties as of date last written below.

7. INSURANCE

Contractor shall not commence Work on the Project under this Agreement until all insurance set forth in the Solicitation, Section 7.0, Insurance (*see* General Conditions), has been obtained and such insurance certificates have been approved by the JWSC. The certificates of insurance shall indicate the JWSC as an additional named insured and that the coverages are primary and not contributory with any similar insurance purchased by the JWSC, and shall contain a provision that such coverage shall not be cancelled until at least thirty (30) days prior written notice has been given to the JWSC.

8. INDEMNIFICATION

To the fullest extent permitted by laws, statutes, rules and regulations, the Contractor shall indemnify and hold harmless the JWSC, its officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, damages, losses and expenses, including but not limited to all fees and charges of engineers, attorneys and other professionals and all court costs, arising out of or resulting from the performance of the Work, but only to the extent caused in whole or in part by acts or omission of the Contractor, its officers, directors, employees, agents, and anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, costs, damage, loss or expense is caused in part by a party indemnified hereunder. In any and all claims against the JWSC or any of its agents or employees, the indemnification obligation shall not be limited in any way by the amount or type of damages. Contractor shall not indemnify JWSC, its agents or employees for their own, sole negligence.

9. ASSIGNMENT

Contractor shall not assign or transfer any part of or the entire Project to be performed under this Agreement, or any right accruing hereunder, without the express written consent of JWSC. The JWSC may condition any consent and approval upon such terms and provisions that JWSC may deem necessary. Further, no assignment of claims for money due or to become due to Contractor under this Agreement shall be effective unless the assignment of such claim is first approved, in writing, by the JWSC.

10. PROHIBITED DISCRIMINATION

Contractor shall comply with all applicable federal and state laws prohibiting discrimination against any person on the grounds of race, color, religion, sex, national origin, age, disability, veteran status or any other status protected by law, in employment or in any condition of employment with Contractor or in participation in the benefits of the Work provided by Contractor under this Agreement.

11. COMPLIANCE WITH ALL LAWS

Contractor shall observe and comply with the laws of the State of Georgia which require authorization or licensing to conduct business in the State. Notwithstanding statutory exemptions or exclusions, Contractor agrees to subject itself to the jurisdiction and process of the Courts of the State of Georgia as to all matters and disputes arising or to arise under this Agreement and the performance thereof, including all issues relating to liability for taxes, licenses or fees levied by the State.

12. REMEDIES; DISPUTE RESOLUTION

(a) Contractor irrevocably consents that any legal action or proceeding arising out of or in any manner relating to this Agreement shall be brought in any court in Glynn County, Georgia. Contractor designates the Secretary of the State of Georgia as its agent for service of process, provided no such agent located in Georgia is on file with the said Secretary. Contractor, by the execution and delivery of this Agreement, expressly and irrevocably assents to and submits to the personal jurisdiction of any court in Glynn County, Georgia, and in any said action or proceeding. Contractor hereby expressly and irrevocably waives any claim or defense in any said action or proceeding based on any alleged lack of jurisdiction, improper venue or *forum non conveniens* or any similar basis.

(b) A dispute between the parties arising out of or in any manner relating to this Agreement, or breach thereof, may be submitted to binding arbitration or resolved in a court of law having jurisdiction of such matters. Once a party elect's arbitration, such election is binding on both parties. An arbitrator selected from a panel in Glynn County, Georgia, provided by the American Arbitration Association shall resolve the dispute. The cost of arbitration shall

be borne equally by the parties. The arbitration decision may be appealed in accordance with State law.

(c) No provision set forth in this Section is to have the effect to abridge the right of any party to proceed in a court of law or equity.

13. MODIFICATION OF AGREEMENT

No modification, alteration or amendment to the terms of this Agreement shall be effective unless written and signed by the authorized representative of all parties hereto.

14. WAIVER

The failure of either party at any time to enforce or require performance of any provision hereof shall in no way operate as a waiver or affect the right of such party at a later time to enforce the same. No waiver by either party of any condition or the breach of any provision contained in this Agreement, whether by conduct or otherwise, in any one or more instances, shall be deemed to be or construed as a further or continuing waiver of any such condition or breach, or a waiver of any other condition or of any breach of any other provision contained in this Agreement.

15. TERMINATION OF AGREEMENT

(a) The JWSC may, at any time upon written notice to the Contractor, terminate this Agreement for convenience, without prejudice to any right or remedy of the JWSC, in whole or as to any portion of the Project, then existing or which may thereafter accrue. If the JWSC terminates this Agreement for convenience, then JWSC's only obligation to Contractor will be for payment of compensation earned up to the date of such termination and all outstanding costs including those materials in transit and un-cancellable.

(b) When the Contractor's services have been terminated by the JWSC, the Contractor in calculating his termination application for payment, shall develop his outstanding costs, including those materials in transit and un-cancellable with the appropriate percentage markups; subcontractors shall follow the same procedures. All costs must be substantiated by adequate back-up documentation. Any retention or payment of moneys due to the Contractor by the JWSC will not release the Contractor from liability.

(c) The Contractor may not terminate this Agreement without the JWSC's consent except for failure of the JWSC to pay sums due to the Contractor hereunder. Prior to termination, the Contractor must give written notice to the JWSC allowing thirty (30) days to investigate and remedy any failure or breach hereof. Should the JWSC fail to remedy the failure or breach hereof within such thirty (30) days, the Contractor shall give written notice, addressed to the JWSC Executive Director, sent by certified mail, return receipt requested, of its intention to cease providing services upon a day certain after delivery of such notice.

16. AGREEMENT SECURITY - BONDS

(a) A bid guarantee in an amount not less than five percent (5%) of the amount bid must accompany each bid. Acceptable forms of bid guarantees are: a bid bond, certified check or cashier's check made payable to the Brunswick-Glynn County Joint Water and Sewer Commission. The JWSC will return bid guarantees, other than bid bonds, to unsuccessful Bidders as soon as practicable, but not sooner than the execution of a contract with the successful Bidder. If for any reason whatsoever the successful Bidder withdraws from the competition after opening the bids, or refuses to execute the Contract, the JWSC will proceed on the Bid Bond or deposit the certified check or cashier's check as damages for the Bidder's failure to enter into a contract for the work.

(b) Performance and Payment bonds, each in an amount equal to one hundred percent (100%) of the contract amount will be required of the successful Bidder.

(c) The Surety of the Bid Bond, Performance Bond, and Payment Bond shall be 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 one hundred percent (100%) of the bid amount. The Bonds and Surety shall be subject to approval by the JWSC legal counsel.

(d) Attorneys-in-fact who sign and seal Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated copy of their Power of Attorney evidencing the authority of the individual signing the bond.

17. NOTICES

(a) All notices, approvals, consents, requests, demands, claims or other communications shall be in writing (collectively referred to as Notice).

(b) It shall be sufficient service of any Notice if the same shall be delivered or mailed by first class registered or certified mail, return receipt requested, postage prepaid and addressed as follows:

(1) If to Contractor: Name of Contractor

(2) If to JWSC: Jimmy W. Junkin, Executive Director
Brunswick-Glynn County Joint Water
and Sewer Commission
1703 Gloucester Street
Brunswick, Georgia 31520

(3) Copy to: Charles A. Dorminy, JWSC Attorney
Hall Booth Smith, P.C.
3528 Darien Highway, Suite 300
Brunswick, Georgia 31525

(c) Any Notice hereunder shall be deemed to have been given or made as of the time of actual delivery or in the case of mailing when the same should have been received in due course of post. Any notice by facsimile transmission shall be deemed to have been given or made upon receipt and if verified by the facsimile apparatus that the transmission was in fact delivered, including the number to which the facsimile was sent, and the time and date it was transmitted successfully.

(d) The parties hereto may, by Notice given hereunder, designate any different address to which subsequent Notices shall be sent or the person to whose attention the same shall be directed.

18. WARRANT OF AUTHORITY

Each individual executing this Agreement on behalf of any party expressly represents and warrants that he/she has authority to do so, and thereby to bind the party on behalf of which he/she signs, to the terms of this Agreement.

19. ENTIRE AGREEMENT; BENEFIT TO PARTIES

(a) This Agreement and any attached exhibit(s) constitute the final and entire agreement and understanding between the parties hereto regarding the subject matter hereof. No prior written promises, or contemporaneous or subsequent oral promises or representations, shall be binding and are to be without effect in the construction of any of the terms or conditions of this Agreement.

(b) With the exception of rights expressly conferred herein, nothing expressed or mentioned in or to be implied here from is intended or shall be construed to give to any person other than the parties hereto, any legal or equitable right, remedy or claim under or in respect hereto or any agreement, condition or provision herein contained and no provision shall be construed as creating any debt as against Contractor or JWSC in favor of any such person; this Agreement and the covenants, conditions and provisions hereof being intended to be used for the sole and exclusive benefits of the parties hereto.

(c) Contractor and JWSC, their successors, executors, administrators and assigns hereby agree to the full performance of the covenants herein contained.

20. GOVERNING LAW

This Agreement shall be governed by and construed in accordance with the laws of the State of Georgia.

21. TIME IS OF THE ESSENCE

Time is of the essence in fulfilling all terms and conditions of this Agreement.

22. EXECUTION IN COUNTERPARTS

This Agreement may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

23. MISCELLANEOUS PROVISIONS

(a) Section captions herein are for convenience of reference only and neither limits nor amplifies the provisions of this Agreement.

(b) Should any term, provision or other part of this Agreement be declared illegal or unenforceable, it shall be excised or modified to conform to the appropriate laws or regulations, and the remainder of the Agreement shall not be affected but shall remain in full force and effect.

(c) The foregoing whereas clauses are hereby incorporated into this Agreement and made a part thereof.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement in their names under seal, all by their duly authorized officers, as of the date last written below, in two (2) counterparts, each of which shall without proof or accounting for the other counterparts, be deemed an original contract.

COMPANY TO BE NAMED

By: _____
Name and title of corporate officer to be named

Attest to:

By: _____
Name and title of corporate officer to be named Date and SEAL

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION

By: _____
Thomas A. Boland, Sr., Chairman

Attest to:

By: _____
Jimmy W. Junkin, Executive Director Date and SEAL

PART A: CONTRACT FORM CONTINUED

Please be advised that the Contract Form, herein above, contemplates the Project described and when the successful Bidder is selected and the Project awarded, then JWSC will provide the successful Bidder with a **PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS – GLYNN COUNTY, GEORGIA, BGJWSC PROJECT NO. 505** agreement which will include the standard contract provisions as set forth in the Contract Form herein, as applicable.

PART B - PERFORMANCE BOND

State of Georgia
City of Brunswick
County of Glynn

KNOW ALL MEN BY THESE PRESENT, that we _____

_____ , as Principal, and _____

_____ , as Surety, do hereby acknowledge ourselves indebted and firmly bound and held unto the Brunswick-Glynn County Joint Water and Sewer Commission (JWSC), for the use and benefit of those entitled thereto in the not to exceed sum of _____

_____ $ (_____)

for the payment of which will and truly to be made, in lawful money of the United States, we do hereby bind ourselves, successors, assigns, heirs, and personal representatives.

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

WHEREAS, the JWSC has engaged the said Contractor for the not to exceed sum of _____ $ (_____)

for the **PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS, BGJWSC PROJECT NO. 505**, as more fully appears in a written Agreement bearing the same project title, a copy of which Agreement is by reference hereby made a part thereof.

NOW, THEREFORE, if a said Contractor shall fully and faithfully perform all the undertakings and obligations under the said agreement or contract herein before referred to and shall fully indemnify and save harmless the JWSC from all costs and damage whatsoever which it may suffer by reason of any failure on the part of said Contractor to do so, and shall fully reimburse and repay the JWSC such default, and shall guarantee all products and workmanship against defects for a period of one year, then this obligation or bond shall be null and void, otherwise, it shall remain in full force and effect.

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

This bond is given pursuant to and in accordance with the provisions of O.C.G.A. § 36-91-1 *et seq.* and all the provisions of the law referring to this character of bond as set forth in said sections or as may be hereinafter enacted, and these are hereby made a part hereof to the

same extent as if set out herein in full.

IN WITNESS WHEREOF, the said Principal has hereunder affixed its signature and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on

This the _____ day of _____, 2016, executed in two (2) counterparts.

PRINCIPAL: _____

By: _____

Title: _____

(**SEAL)**

Signed and Sealed in the Presence of:

1. _____

2. _____

SURETY: _____

By: _____

Title: _____

(**SEAL)**

Signed and Sealed in the Presence of:

1. _____

2. _____

PART C - PAYMENT BOND

State of Georgia
City of Brunswick
County of Glynn

KNOW ALL MEN BY THESE PRESENT, that we _____

_____ , as Principal, and _____

_____ , as Surety, do hereby acknowledge ourselves indebted and firmly bound and held unto the Brunswick-Glynn County Joint Water and Sewer Commission (JWSC), for the use and benefit of those entitled thereto in the not to exceed the sum of _____

_____ $ (_____)

for the payment of which will and truly to be made, in lawful money of the United States, we do hereby bind ourselves, successors, assigns, heirs, and personal representatives.

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

WHEREAS, the JWSC has engaged the said Contractor for the not to exceed sum of
_____ $ (_____)

For the **PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS – GLYNN COUNTY, GEORGIA, BGJWSC PROJECT NO. 505**, as more fully appears in a written Agreement bearing the same project title, a copy of which Agreement is by reference hereby made a part thereof.

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

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

(a) Any person, firm or corporation that has furnished labor, products, or supplies for or in the prosecution of the work provided for in said Contract shall have a direct right of action against the Contractor and Surety on this bond, which right of action shall be asserted in a proceeding, instituted in the county in which the work provided for in said Contract to be performed or in any county in which Contractor or Surety does business. Such right of action shall be asserted in proceedings instituted in the name of the claimant or claimants for his or their

use and benefit against said Contractor and Surety or either of them (but not later than one year after the final settlement of said Contract) in which action such claim or claims shall be adjudicated and judgment rendered thereon.

(b) The Principal and Surety hereby designate and appoint _____ _____ as agent of each of them to receive and accept service of process or other pleading issue or filed in any proceeding instituted on this bond and hereby consent that such service shall be the same as personal service on the Contractor and/or Surety.

(c) In no event shall the Surety be liable for a greater sum than the penalty of this bond, or subject to any suit, action or preceding thereon that is instituted later than one year after the final settlement of said Contract.

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

[Signatures on Next Page]

IN WITNESS WHEREOF, the said Principal has hereunder affixed its signature and said Surety has hereunto caused to be affixed its corporate signature and seal, by its duly authorized officers, on

This the _____ day of _____, 2016, executed in two (2) counterparts.

PRINCIPAL: _____

By: _____

Title: _____

(**SEAL)**

Signed and Sealed in the Presence of:

1. _____

2. _____

SURETY: _____

By: _____

Title: _____

(**SEAL)**

Signed and Sealed in the Presence of:

1. _____

2. _____

PART D - AFFIDAVIT OF PAYMENT OF CLAIMS
(***Submitted with Final Invoice***)

_____ this the ____ day of _____, 2016,

appeared before me, _____, a Notary Public, in and for

_____, and being by me first duly sworn states that all subcontractors and suppliers of labor and materials have been paid all sums due them to date for work performed or material furnished in the performance of the Contract between:

Brunswick-Glynn County Joint Water and Sewer Commission (JWSC) and ***To Be Named*** (Contractor), last signed _____ for the **PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS – GLYNN COUNTY, GEORGIA, BGJWSC PROJECT NO. 505**

CONTRACTOR **Company:** _____

By: _____

Title: _____

(SEAL)

Sworn to and subscribed before me this the ____ day of _____, 2016.

NOTARY PUBLIC:

Name: _____

My Commission Expires: _____

(NOTARY SEAL)

PART E - CERTIFICATE OF INSURANCE

This is to certify that _____
(Insurance Company)

of _____
(Insurance Company Address)

has issued policies of insurance, as identified by a policy number to the insured name below, and that such policies are in full force and effect at this time. Furthermore, this is to certify that these policies meet the requirements described in the General Conditions of this project; and it's agreed that none of these policies will be canceled or changed so as to affect this Certificate until thirty (30) days after written notice of such cancellation or change has been delivered to:

BRUNSWICK-GLYNN COUNTY JOINT WATER AND SEWER COMMISSION, EXECUTIVE DIRECTOR, 1703 GLOUCESTER STREET, BRUNSWICK, GEORGIA 31520

It is further agreed that Brunswick-Glynn County Joint Water and Sewer Commission shall be named as an additional insured on the Contractor's policy.

1. Insured: _____

2. Project Name: PUMP STATION 2032 REGIONAL FORCE MAIN IMPROVEMENTS – GLYNN COUNTY, GEORGIA, JWSC PROJECT NO. 505

3. Policy Number(s): _____

Date: _____ _____
(Insurance Company)

Issued At: _____ _____
(Authorized Representative)

Address: _____

_____

_____

Note: Please attach Certificate of Insurance form to this page.

PART F – CERTIFICATE OF DRUG FREE WORKPLACE

In order to have a drug- free workplace, a business shall:

Publish a statement notifying employees that the unlawful, manufacture, distribution, dispensing, possession, or use of controlled substances is prohibited in the workplace and specifying the actions that shall be taken against employees for violation of such prohibition.

Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

As a condition of working on the commodities or contractual services then under bid, the employee shall notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of any controlled substance law of the United States or any State, for a violation occurring in the workplace no later than five (5) days after such conviction.

Impose a sanction on, or require satisfactory participation in a drug abuse assistance or rehabilitation program if such in available in the employee's community, by any employee who is so convicted.

Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign this statement, I certify that this firm complies fully with the above requirements.

Company Name: _____

Authorized Signature: _____

Title: _____

Date: _____

PART G - E-VERIFY CONTRACTOR AFFIDAVIT AND AGREEMENT

Georgia Security Immigration and Compliance (GSIC) Act

The Brunswick-Glynn County Joint Water and Sewer Commission and Contractor agree that compliance with the requirements of O.C.G.A. § 13-10-91 and Rule 300-10-1-.02 of the Rules of the Georgia Department of Labor are conditions of this Agreement for the physical performance of services.

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, s*tating affirmatively that the individual, firm, or corporation which is contracting with the Brunswick-Glynn County Joint Water and Sewer Commission has registered with and is participating in the federal work authorization program known as: "E-Verify", web address* https://e-verify.uscis.gov/enroll/ operated by the United States Citizenship and Immigration Services Bureau of the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], *in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.* The undersigned Contractor also verifies that he/she/it is using and will continue to use the federal work authorization program throughout the contract period.

The undersigned Contractor agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to the contract with the Brunswick-Glynn County Joint Water and Sewer Commission, Contractor will secure from each subcontractor(s) similar verification of compliance with O.C.G.A. § 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees the Contractor will advise the Brunswick-Glynn County Joint Water and Sewer Commission of the hiring of a new subcontractor and will provide the Brunswick-Glynn County Joint Water and Sewer Commission with a Subcontractor Affidavit attesting to the Subcontractor's name, address, user identification number, and date of authorization to use the Federal Work Authorization Program within five (5) days of the hiring before the Subcontractor begins working on the Project. Contractor also agrees to maintain all records of such compliance for inspection by the Brunswick-Glynn County Joint Water and Sewer Commission at any time and to provide a copy of each such verification to the Brunswick-Glynn County Joint Water and Sewer Commission at the time the subcontractor(s) is retained to perform such services.

(Continued on Next Page)

E-Verify Employment Eligibility Verification User I.D. Number

Date of Authorization to Use Federal Work Authorization Program

Name of Contractor

Title of Authorized Officer or Agent of Contractor

Signature and Printed Name of Authorized Officer or Agent

Sworn to and subscribed before me this the ____ day of _____, 2016.

NOTARY PUBLIC:

Name: _____

My Commission Expires: _____

(NOTARY SEAL)

As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

PART H - E-VERIFY SUBCONTRACTOR AFFIDAVIT AND AGREEMENT

Georgia Security Immigration and Compliance (GSIC) Act

The Brunswick-Glynn County Joint Water and Sewer Commission and Subcontractor agree that compliance with the requirements of O.C.G.A. § 13-10-91 and Rule 300-10-1-.02 of the Rules of the Georgia Department of Labor are conditions of this Agreement for the physical performance of services.

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, s*tating affirmatively that the individual, firm, or corporation which is contracting with* _____ *a Contractor contracting with the Brunswick-Glynn County Joint Water and Sewer Commission has registered with and is participating in the federal work authorization program known as: E-Verify", web address* *https://e-verify.uscis.gov/enroll/* operated by the United States Citizenship and Immigration Services Bureau of the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act of 1986 (IRCA), P.L. 99-603], *in accordance with the applicable provisions and deadlines established in O.C.G.A. §13-10-91.* The undersigned Subcontractor also verifies that he/she/it is using and will continue to use the federal work authorization program throughout the contract period.

The undersigned Subcontractor agrees that, should it employ or contract with any other subcontractor(s) in connection with the physical performance of services pursuant to the contract with the Brunswick-Glynn County Joint Water and Sewer Commission, Subcontractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A. § 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Subcontractor further agrees the Subcontractor will advise the Brunswick-Glynn County Joint Water and Sewer Commission of the hiring of a new subcontractor and will provide the Brunswick-Glynn County Joint Water and Sewer Commission with a Subcontractor Affidavit attesting to the Subcontractor's name, address, user identification number, and date of authorization to use the Federal Work Authorization Program within five (5) days of the hiring before the Subcontractor begins working on the Project. Subcontractor also agrees to maintain all records of such compliance for inspection by the Brunswick-Glynn County Joint Water and Sewer Commission at any time and to provide a copy of each such verification to the Brunswick-Glynn County Joint Water and Sewer Commission at the time the subcontractor(s) is retained to perform such services.

(Continued on Next Page)

E-Verify Employment Eligibility Verification User I.D. Number

Date of Authorization to Use Federal Work Authorization Program

Name of Subcontractor

Title of Authorized Officer or Agent of Subcontractor

Signature and Printed Name of Authorized Officer or Agent

Sworn to and subscribed before me this the ____ day of _____, 2016.

NOTARY PUBLIC:

Name: _____

My Commission Expires: _____

(NOTARY SEAL)

As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is the "EEV/Basic Pilot Program" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

GENERAL CONDITIONS

INDEX:

0.0 DEFINITIONS

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

Acceptance. Formal action of the Owner in determining that the Contractor's work has been completed in accordance with the contract and in notifying the Contractor in writing of the acceptability of the work.

Act of God. A cataclysmic phenomenon of nature, such as a hurricane, earthquake or abnormal flooding. Rain, wind, high water, or other natural phenomenon which might reasonably have been anticipated from historical records of the general locality of the work shall not be construed as acts of God.

Addenda. Supplemental written specifications or drawings issued prior to execution of the contract which modify or interpret the project manual by addition, deletion, clarification, or corrections.

Bid. Offer of a bidder submitted on the prescribed form setting forth the price or prices of the work to be performed.

Bidder. Individual, partnership, corporation, or a combination thereof, includes joint ventures, offering a bid to perform the work.

Contract. The writings and drawings embodying the legally binding obligations between the Owner and the Contractor for completion of the work; Contract Documents attached to the Contract and made a part thereof as provided herein.

Contract Documents. The Contract, Addenda (which pertain to the Contract Documents),

Contractor's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award), the Notice to Proceed, the Bonds, these General Conditions, the Special Conditions, the Specifications and Drawings, together with all Written Amendments, Change Orders, Work Change directives, and Field Orders.

Contract Price. Amount payable to the Contractor under the terms and conditions of the contract. Based on the price given on the bid schedule, with adjustments made in accordance with the contract. The base amount given in the bid schedule shall be a lump sum bid.

Contract Time. Number of consecutive calendar days stated in the contract for the completion of the work or portions thereof.

Contractor. The individual, partnership, corporation, or combination thereof, includes joint ventures that enter into the contract with the Owner for the performance of the work. The term covers subcontractors, equipment and material suppliers, and their employees.

Day. Calendar day.

Defective. An adjective which when modifying the word "work" refers to work, including but not limited to the furnishing of materials, that is unsatisfactory, faulty, deficient, or performed in an unworkmanlike manner, in that it does not conform to or meet the requirements of the Contract, any inspection, reference standard, test or approval referred to in the Contract, or has been damaged prior to a recommendation of final payment.

Direct. Action of the Owner by which the Contractor is ordered to perform or refrain from performing work under the contract.

Directive. Written documentation of the actions of the Engineer or the Owner in directing the Contractor.

Engineer. Whenever the word "Engineer" is used in the contract, it shall be understood as referring to the Engineer of the Owner, or such other Engineer, supervisor or inspector as may be authorized by the Owner to act in any particular area of the Contract.

Equipment. Mechanical, electrical, instrumentation or other device with one or more moving parts, or devices requiring an electrical, pneumatic, electronic, or hydraulic connection.

Furnish. To deliver to the job site or a specified location any item, equipment or material.

Holidays. Legal holidays designated by the Owner.

Install. Placing, erecting, or constructing in place any item, equipment, or material.

May. Refers to permissive actions.

Owner. Brunswick-Glynn County Joint Water and Sewer Commission (JWSC).

Owner's Representative. The person, firm or corporation designated by the Owner.

Paragraph. For reference or citation purposes, paragraph shall refer to the paragraph, or paragraphs, called out by section number and alphanumeric designator where applicable.

Person. The term, person, includes firms, companies, corporations, partnerships, and joint ventures.

Project. The undertaking to be performed under the provisions of the contract.

Punch List. List of incomplete items of work and of items of work which are not in conformance with the contract. The list will be prepared by the Contract Project Representative when the Contractor (1) notifies the Contract Project Representative in writing that the work has been completed in accordance with the contract and (2) requests in writing that the Owner accept the work.

Shall. Refers to actions by either the Contractor or the Owner and means the Contractor or Owner has entered into a covenant with the other party to do or perform the action.

Specifications. That part of the contract documents consisting of written descriptions of the technical features of materials, equipment, construction system, standards, and workmanship.

Work. The labor, materials, equipment, supplies, services, and other items necessary for the execution, completion and fulfillment of the contract.

1.0 CONTRACT ADMINISTRATION

The Contract Administrator for this IFB shall be Mr. Jimmy W. Junkin, Executive Director (912) 261-7112. The Contract Administrator shall act as the JWSC's Representative during the execution of any subsequent contract and related amendments. He will evaluate any contract disputes in a fair and unbiased manner. The decisions of the Contract Administrator shall be final and conclusive and binding upon all parties to the Contract. Any contractual questions arising during the bidding period or during the contract period(s) are to be addressed to the Contract Administrator at the following address:

Brunswick-Glynn County Joint Water and Sewer Commission
Attn: Mr. Jimmy W. Junkin, Executive Director
1703 Gloucester Street
Brunswick, Georgia 31520
Phone: (912) 261-7112
E-Mail: jjunkin@bgjwsc.org

2.0 CONTRACT PROJECT REPRESENTATIVE

The Contract Project Representative is the JWSC's day-to-day manager of the contracted services. He shall provide the successful Bidder direction and monitor the results within the limits of the contract's terms and conditions. He will decide questions that may arise as to quality and acceptability of services performed. He shall judge as to the accuracy of quantities submitted by the successful Bidder in payment requests and the acceptability of the services that these quantities represent. He will be the point-of-contact for developing contract changes and amendments to be approved by the JWSC. Any project questions arising, subsequent to contract award, are to be addressed to the Contract Project Representative at the following address:

Brunswick-Glynn County Joint Water and Sewer Commission
Attn: Mr. Todd Kline., P.E., Senior Engineer Planning & Construction Division
1703 Gloucester Street
Brunswick, Georgia 31520
Phone: (912) 261-7122
Email: tkline@bgjwsc.org

3.0 NOTICE OF AWARD OF CONTRACT

As soon as possible, and within thirty (30) days after receipt of bids, the JWSC shall notify the successful Bidder of its intent to enter into a contract agreement. Should the JWSC require additional time to award a contract, the time may be extended by mutual agreement between the parties. If an Award of Contract has not been made within thirty (30) days from the bid opening date or within the extension mutually agreed upon, the Bidder may withdraw the bid without further liability on the part of either party.

4.0 EXECUTION OF CONTRACT DOCUMENTS

4.1 Within fifteen (15) days subsequent to successful contract negotiations, the JWSC shall furnish the successful Bidder the conformed copies of Contract Documents for execution by him.

4.2 Within fifteen (15) days after receipt of the Contract Documents, the successful Bidder shall return all the documents properly executed by him. Attached to each document shall be the certificate of insurance, proper licenses required by Federal, State, or Local authorities, and performance and payment bonds as required herein

4.3 Within thirty (30) days after receipt of the Contract Documents, executed by the successful Bidder, certificates of insurances and licenses, the JWSC shall complete the execution of the documents. Distribution of the completed documents will be made upon completion.

4.4 Should either party require an extension of any of the time limits stated above, this shall be done only by mutual agreement between both parties.

5.0 NOTICE TO PROCEED

The Notice to Proceed shall be issued within ten (10) days of the execution of the Contract Agreement by the JWSC. If there are reasons why the Notice to Proceed should not be issued within this period, the time may be extended by mutual agreement between the JWSC and successful Bidder. If the Notice to Proceed has not been issued within the ten (10) day period or within the period mutually agreed upon, the successful Bidder may terminate the Contract Agreement without further liability on the part of either party.

6.0 PROTEST OF AWARD

All protests of the award or rejection of a purchase must be filed in writing with the JWSC within ten (10) days after the award of bid or proposal. The protest must describe in detail all alleged deficiencies. Any violations of law not specifically set forth in the protest are deemed waived. The validity of the protest shall be determined by the JWSC Executive Director and the review shall be limited to any alleged violation of federal, state or local law.

7.0 INSURANCE

The successful Bidder shall not commence work under this contract until all insurance described below has been obtained and such insurance has been approved by the JWSC, nor shall the successful Bidder allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved by the successful Bidder.

The successful Bidder shall maintain insurance with companies reasonably acceptable to

the JWSC, authorized to do business in Georgia, and having a rating with A.M. Best & Co. of A-VII or better, unless otherwise approved in writing by the JWSC. Such insurance as will protect the successful Bidder from claims set forth herein below which may arise out of or result from the operations of the successful Bidder under the contract, whether such operations be by the successful Bidder, by anyone directly or indirectly employed by the successful Bidder, or by anyone for whose acts the successful Bidder may be liable including, but not limited to, the following:

7.1 Claims under workers' compensation, disability benefit, and other similar employee benefit acts;

7.2 Claims for damages because of bodily injury, occupational sickness, disease, or death of any employee of the successful Bidder;

7.3 Claims for damages because of bodily injury, sickness, disease, or death of any person other than an employee of the successful Bidder;

7.4 Claims for damages insured by usual personal injury liability coverage which are sustained by any other person;

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

7.6 Claims for damages because of professional errors and omissions; and

7.7 Claims for contractually assumed liability under the contract.

The aforesaid insurance required to be maintained by the successful Bidder may be written under an umbrella policy or policies, but shall not be written for less than the limits of liability specified herein below or less than any limits required by law, whichever is greater. The successful Bidder shall maintain during such time as the successful Bidder is performing hereunder the services, subject to a policy or policies having a deductible not greater than $25,000 on account of any one occurrence, (i) workers' compensation insurance in an amount not less than the greater of that required by law or $1,000,000 for injuries, including accidental death to any one person, (ii) commercial general liability insurance with a general aggregate of $2,000,000 and not less than $1,000,000 for each occurrence, (iii) automobile liability insurance in an amount not less than a combined single limit of $1,000,000 for injuries, including accidental death, and (iv) property damage liability insurance in an amount not less than $1,000,000 on account of any one occurrence with a $2,000,000 aggregate.

Further, the successful Bidder shall maintain, during the period beginning with the commencement of the performance by the successful Bidder of the services and ending one year after the Project shall be substantially completed, subject to a policy or policies having a deductible not greater than $25,000 on account of any one claim, professional errors and omissions insurance in an amount not less than $1,000,000 per claim and annual aggregate with a $25,000 deductible.

Certificates of insurance indicating that the successful Bidder has obtained such coverage and a copy of the policies evidencing such coverage, if requested by the JWSC, shall be filed with the JWSC prior to the commencement by the successful Bidder of the contracted services. Such certificates shall be in form and substance reasonably acceptable to the JWSC, shall indicate that, except in respect to workers' compensation insurance coverage and professional errors and omissions insurance, JWSC is an additional named insured with respect to such coverage, shall indicate that such coverage is primary and is not contributory with any similar insurance purchased by the JWSC, and shall contain a provision that such coverage shall not be canceled until at least thirty (30) days prior written notice has been given to the JWSC.

8.0 QUANTITIES

None of the various JWSC departments, divisions, employees or agencies, individually or collectively, shall be required to purchase any minimum or maximum amount during the life of any contract, or extension thereof, as a result of this IFB

9.0 SUSPENSION OR TERMINATION OF SERVICES

The anticipated contract between the successful Bidder and the JWSC may be terminated based on any one of the following:

9.1 Failure of the Bidder to perform based on the Bidders bankruptcy, lack or loss of skilled personnel, or disregarding laws, ordinances, rules, regulations or orders of any public body having jurisdiction. Should any single, multiple or all of the above conditions occur the JWSC shall have the authority to terminate the contract with written notice to the successful Bidder. The successful Bidder shall be liable for any losses occurring as a result of not abiding by the terms of the contract.

9.2 The JWSC may terminate the contract at will. All correspondence of this nature will be forwarded by certified or registered mail with return receipt requested.

9.3 Any termination of the successful Bidder services shall not affect any right of the JWSC against the successful Bidder then existing or which may thereafter occur. Any retention of payment of monies by the JWSC due the successful Bidder will not release the successful Bidder from compliance with the Contract Documents.

10.0 INDEMNIFICATION

The successful Bidder will indemnify and hold harmless the JWSC, its officers, employees, and agents, each and any one of them, from and against all claims, damages, losses and expenses including attorneys' fees arising out of or resulting from the performance of the services, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, including the loss of use resulting therefrom; and is caused in whole or in part by any

negligent or willful act or omission of the successful Bidder and anyone directly or indirectly employed by him or anyone for whose acts any of them may be liable. In any and all claims against the JWSC or any of their agents or employees, by any employee of the successful Bidder, directly or indirectly employed by him, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the successful Bidder or under federal and state workers' compensation and disability benefits statutes, and applicable laws relating thereto. No party shall indemnify any other party for their own sole negligence.

11.0 ASSIGNMENTS

The successful Bidder shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the JWSC. In case the successful Bidder assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the successful Bidder shall be subject to prior liens of all persons, firms, and corporations for services rendered or materials supplied for the performance of the services set forth in this contract.

12.0 LAWS AND REGULATIONS

The successful Bidder's attention is directed to the fact that all applicable Federal, State and Local laws and ordinances, including rules and regulations of all authorities having jurisdiction over the services, shall apply to the contract throughout. The successful Bidder shall keep himself fully informed of all laws, ordinances and regulations of the Federal, State, County and municipal governments or authorities in any manner affecting those engaged or employed in providing these services or in any way affecting the conduct of the services 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 Contract Documents or in the specifications herein referred to, in relation to any such law, ordinance, regulation, order or decree, he shall herewith report the same in writing to the JWSC.

The successful Bidder shall at all times observe and comply with all such existing laws, ordinances and regulations, and shall protect and indemnify the JWSC and its agents against the violation of any such law, ordinance, regulation, order or decree, whether by himself or by his employees. Licenses of a temporary nature, necessary for the prosecution of the services, shall be secured and paid for by the successful Bidder.

13.0 NOTICE AND SERVICE THEREOF

13.1 All notices, demands, requests, instructions, approvals, and claims shall be in writing.

13.2 Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor specified in his bid (or at such other

office as the Contractor may from time to time designate to the JWSC in writing), or if deposited in the United States Mail in a sealed, postage-prepaid envelope, or delivered, with charges prepaid, to any telegraph company for transmission, in each case addressed to such office.

13.3 All papers required to be delivered to the JWSC shall, unless otherwise specified in writing to the Contractor, be delivered to the Contract Administrator. Any notice to or demand upon the JWSC will be sufficiently given if delivered to the Office of said Contract Administrator or if deposited in the United States Mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to said Contract Administrator or to such other representative of the JWSC or to such other address as the JWSC may subsequently specify in writing to the Contractor.

14.0 SCHEDULE, REPORTS, AND RECORDS

The Contractor shall submit to the JWSC schedules, reports, estimates, records and other data as the JWSC may request concerning services performed or to be performed.

15.0 CHANGES IN THE CONTRACT

15.1 Changes in the Service

The JWSC may at any time, as the need arises, order changes within the scope of the services without invalidating the Contract Agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the services, an equitable adjustment shall be negotiated culminated by the issuance of a Contract Amendment and signed and sealed by the parties. The Contractor shall proceed with the performance of any changes in the services so ordered by the Contract Administrator unless the Contractor believes that such order entitles him to a change in the fee or time or both, in which event he shall give the Contract Administrator written notice thereof within fifteen (15) days after the receipt of the Contract Amendment, and the Contractor shall not execute such amendments pending the receipt of an executed Notice to Proceed instruction from the JWSC.

The JWSC may, when changes are minor or when changes would result in relatively small changes in the Fee or Contract Time, elect to postpone the issuance of a Contract Amendment until such time that a single amendment of substantial importance can be issued incorporating several changes. In such cases, the JWSC shall indicate this intent in a written notice to the Contractor.

15.2 Changes in Contract Price

The contract price shall be changed only by a mutual agreement by the Contractor and the JWSC transmitted as a Contract Amendment. The Contractor shall, when required by the JWSC, furnish to the JWSC the method and justification used in computing the change in price as related to the services ordered.

15.3 Changes in Contract Period

The Contract Period shall be changed only by a Contract Amendment. Changes in the services described in above and any other claim made by the Contractor for a change in the Contract Period shall be evaluated by the JWSC and if the conditions warrant, an appropriate adjustment of the Contract Periods will be made.

16.0 PAYMENTS AND COMPLETION

16.1 Application for Payment

The Contractor shall submit an application for payment (invoice) for services rendered during the preceding calendar month. This application shall be sent to the Contract Project Representative listed in Paragraph 2.0.

16.2 Certificate for Payments

If the Contractor has made application for payment, as above, then the Contract Project Representative will issue a Certificate for Payment to the Finance Division for such amount as is determined to be properly due, or state in writing the itemized and specific reasons for withholding a Certificate. After the Certificate for Payment has been issued, the Finance Division shall pay to the Contractor within thirty (30) days the amount covering services completed. No Certificate for Payment, nor any payment, shall constitute an acceptance of any services not in accordance with the Contract Documents.

16.3 Failure of Payment

If the Contract Project Representative fails to approve an application for payment, through no fault of the Contractor, within seven (7) working days after receipt from the Contractor, or if the Finance Division fails to pay the Contractor within thirty (30) days after receipt of a Certificate for Payment, then the Contractor shall receive interest on the balance due with the interest being one percent (1%) per month not to exceed three (3) months (3%). The JWSC reserves the right to reject the Contract Project Representative's certification of any request for payment by the Contractor without the accrual of interest.

16.4 Governing Document

All parties expressly agree that the provisions of the Georgia Prompt Pay Act, Title 13, Chapter 11, of the Official Code of Georgia Annotated, are superseded by the terms and conditions of this agreement.

16.5 Final Payment

Upon receipt of written notice from the Contractor that all contracted services are complete, the Contract Administrator will, within a reasonable time, review all services and reports. If the Contract Administrator finds the services and reports of the Contractor complete and acceptable in accordance with the provisions of the Contract Documents, he shall, within a reasonable time, direct the Finance Division that final payment be made. The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and still unsettled.

17.0 CONTRACTOR'S CLAIM

No claim for additional or other compensation beyond the contract price shall be allowable unless the Contractor makes **written demand therefore within thirty (30)** days of the occurrence of any event which gives rise to such claim.

18.0 CONTRACT AGREEMENT JURISDICTION

Contractor irrevocably consents that any legal action or proceeding against it under, arising out of, or in any manner relating to, this Agreement shall be brought in any court in Glynn County, Georgia. Contractor designates the Secretary of the State of Georgia as its agent for service of process, provided no such agent located in Georgia is on file with the said Secretary. Contractor, by the execution and delivery of this Agreement, expressly and irrevocably assents to and submits to the personal jurisdiction of any court in Glynn County, Georgia, and in any said action or proceeding. Contractor hereby expressly and irrevocably waives any claim or defense in any said action or proceeding based on any alleged lack of jurisdiction, improper venue or *forum non conveniens* or any similar basis.

19.0 OWNERSHIP OF DATA

All data and other records supplied to the Contractor for this project shall remain the sole property of the JWSC. The Contractor shall not, without written consent, copy or use such records, except to carry out contracted work, and will not transfer such records to any other party not involved in the performance of the Contract pursuant to this IFB, and will return submitted records to the JWSC upon completion of the work hereunder. The JWSC shall have the right, without the consent of the Contractor, to extract such data in industry standard formats, using standard Contractor utilities and at no cost to the JWSC. The JWSC acknowledges that the storage, compilation, format, and layout constitute proprietary and secret trade information of the Contractor, and are protected by Federal copyright law.

SPECIAL CONDITIONS

1.0 EXISTING FACILITY OPERATIONS

The Contractor shall coordinate the work with the Owner so that the construction activities required do not interfere with or prevent the operation of the existing facilities. If at any time, any portion of the facility is out of service, the Contractor must obtain approval from the Owner as to the date, time and length of time that portion of the facility is out of service. Extended outages will require that the Contractor provide, at Contractor's expense, any necessary by-pass pumping or other arrangements as required.

Connections to the existing facilities or alteration of existing facilities will be made at times when the facility involved is not in use or at times established by the Owner when the use of the facility can be conveniently interrupted for the period of time needed to make the connection or alteration. Notify the Owner at least ten (10) days prior to relocating any facility piping or taking any existing facility component out of service.

2.0 PROJECT SCHEDULE

2.1 Project Schedule: The following activities shall be completed by the indicated date or days after Notice to Proceed.

Task or Milestone	Completion (Days after NTP)
Shop Drawing Submittals	
Completion and submission of all Shop Drawings by Contractor	14
Review of Shop Drawings By JWSC/Engineer	28
Re-submittal of Shop Drawings By Contractor (if Required)	35
Review of Re-submittal Shop Drawings By JWSC/Engineer (if Required)	42
Critical Submittals	
Project Schedule*	7
Schedule of Values*	7
Horizontal Directional Drill Work Plan, Supplemental Work Plan, and Calculations	7
Superintendent Qualifications and Contact Information	7
Temporary Bypass Systems Plan and Requirements	14
Dewatering Plan	14
Substantial Completion of Phase 1 – Work for Project Scope Along Frederica Road (Includes Portion of Base Bid and Additive Alternate, if contracted)	105
Substantial Completion of Phase 2 – Work for Project Scope Along Palmetto Street, Entrance Road and On-Site at Dunbar Creek WPCP (Includes Portion of Base Bid)	170
Final Completion of All work (including all restoration)	200
* The construction progress schedule shall show the proposed dates of commencement and completion of the various milestones of the work required under the contract as well as the anticipated amounts of each monthly payment that will become due to the Contractor in accordance with the progress schedule. The construction progress schedule will be a true reflection of the actual construction progress, shall be reviewed and updated for the bi-weekly project meetings and	

submitted with the monthly periodic payment request. The monthly payment request shall not be considered complete without the accurately updated construction progress schedule.

2.2 Work Hours

Unless otherwise noted in the Contract Documents, the time allotted for completion of the project is based on a standard work week with construction activities between 7:00 a.m. and 7:00 p.m., Monday through Friday. Contractor shall coordinate any necessary night or weekend construction activities a minimum of 24 hours in advance with the JWSC project representative and Glynn County.

2.3 Delays

Contractor shall not be compensated for delays caused by Contractor's inefficiency, rework made necessary by Contractor's error, failure to perform the Work as scheduled, or any other corrective or productivity measures made necessary by errors, omissions, or failures to properly perform the Work. Neither shall the Contractor be compensated for delays caused by events by Act of God as described in the General Conditions. Within thirty (30) days after the onset of a delay, Contractor shall notify the JWSC in writing of the delay, which shall provide: (1) a detailed description of the delay and its probable duration, (2) the specified portion of the Work affected, and (3) an opinion as to the cause of the delay and liability (if any) for the delay. In the case of continuing delay for the same cause, only one notice of delay is necessary. Failure to provide this notice within thirty (30) days of the delay waives any claim for extension of time resulting from such delay. If the delay is due to the failure of another contractor on a separate but conflicting project to complete its work in a timely manner, changes ordered in the Work, an Act of God event, or any other cause which the JWSC, in its sole judgment and discretion, determines to justify the delay, then the Contract Completion Date may be extended as necessary to compensate for the delay. All time extensions shall be in the form of a written amendment signed by both parties.

3.0 SUBSTITUTIONS

This Section outlines the restrictions and requirements for substitutions, product and manufacturer options, and construction method options.

For the purposes of these Contract Documents, a "substitute item" shall be defined as one of the following:

A product or manufacturer offered as a replacement to a specified product or manufacturer.

A product or manufacturer offered in addition to a specified product or manufacturer.

A “substitute construction method” shall be defined as one of the following:

A mean, method, technique, sequence or procedure of construction offered as a replacement for a specified mean, method, technique, sequence or procedure of construction.

A mean, method, technique, sequence or procedure of construction offered in addition to a specified mean, method, technique, sequence or procedure of construction.

An item or construction method, which is offered where no specific product, manufacturer, mean, method, technique, sequence or procedure of construction is specified or shown on the drawings, shall not be considered a substitute and shall be at the option of the Contractor, subject to compliance with all provisions in the Contract Documents for that item or construction method.

For products specified only by a referenced standard, the Contractor may select any product by any manufacturer, which meets the requirements of the Specifications, unless otherwise indicated in the Contract Documents.

If the manufacturer is named on the drawings or in the Specifications as an acceptable manufacturer, products of that manufacturer meeting all requirements of the drawings and specifications are acceptable.

Whenever the Engineer’s design is based upon a specific product or process of a specific manufacturer, that manufacturer shall be so listed in the specifications or on the drawings, and such product or process shall be used in the base bid.

Any ***Contractor*** proposing to furnish products or processes other than those listed as base bid items shall make a written application for approval of the proposed substitution to the JWSC/Engineer at least 15 days prior to the date set for receipt of bids. The minimum information required in the application is listed below.

A. Documentation demonstrating that the item being proposed as a substitute will fit in the space allowed, perform the same functions and have the same capabilities as the product or process specified.

B. A letter signed by an officer of the company certifying compliance with the specifications without exception.

C. Installation list with contacts and phone numbers for the same minimum number of installations and years of experience as the specified product or process.

D. Complete descriptive and technical data addressing all specification requirements.

E. Complete list of deviations from the specifications as written.

F. Identification of accessory items required as a result of the proposed substitution.

G. Identification of all architectural, structural, mechanical, piping, electrical or other modifications required as a result of the proposed substitution.

Whenever a product specification includes minimum experience requirements which the proposed substitution cannot meet, a condition of approval will require that the manufacturer furnish the Owner with a cash deposit or bond acceptable to the Owner in an amount equal to the cost of the product or process which shall remain in effect until the experience requirement has been met.

The burden of proving equivalency of a proposed substitute to an item designated by trade name or manufacturer's name referenced on the drawings or in the specifications rests on the party submitting the request for approval. The JWSC/Engineer will give consideration to reports from reputable independent testing laboratories, verified experience records showing the reputation of the proposed product with previous users or any other written information that is reasonable under the circumstances. The degree of proof required for approval of a proposed substitute as equivalent to a named product is the amount of proof necessary to convince the JWSC/Engineer beyond all doubt. To be acceptable, a proposed substitute must meet or exceed all requirements of the drawings and specifications.

If the proposed substitution is approved, an addendum will be issued to all prospective bidders at least five days prior to the date set for the opening of bids listing any and all approved substitutions. If approved, the bidder may offer a price for the substitution in the bid form for the Owner's consideration. The bid offered shall include the cost of all additional architectural, structural, mechanical, piping, electrical or other modifications, including engineering and design costs, required as a result of the proposed substitution. The JWSC/Engineer shall be the final judge on questions of equivalence.

4.0 SUBMITTALS

The work under this Section includes submittal to the JWSC/Engineer of shop drawings, product data and samples required by the various sections of these specifications. The submittal contents required are specified under each Section.

4.1 Definitions

Shop Drawings: Shop drawings include technical data, drawings, diagrams, procedures and methodology, performance curves, schedules, templates, patterns, test reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.

Product Data: Product data includes standard printed information on materials, products and systems, not specifically prepared for this project other than the designation of selections from among available choices printed therein.

Samples: Samples include both fabricated and un-fabricated physical

examples of materials, products and units of work, both as complete units and smaller portions of units of work, either for limited visual inspection or more detailed testing and analysis.

4.2 Routing of Submittals

Submittals and routine correspondence shall be routed as follows:

- Supplier to Contractor
- Contractor to JWSC
- JWSC to Engineer
- Engineer to JWSC
- JWSC to Contractor
- Contractor to Supplier

4.3 Submittal Log

The Contractor shall submit to the Engineer a complete list of preliminary items for which shop drawings are to be submitted. Included in this list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the Engineer shall in no way expressed or implied relieve the Contractor from submitting complete Shop Drawings and providing materials, equipment, etc., fully in accordance with the Specifications. This procedure is required in order to expedite final review of Shop Drawings.

The Engineer will review the submitted preliminary shop drawing list and information and will develop a submittal log required for the project. The Contractor is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the JWSC and the Engineer. This log should include the following items:

1. Submittal-Description and Number assigned.
2. Date to JWSC.
3. Date returned to Contractor (from JWSC).
4. Approval Status of Submittal.
5. Date of Resubmittal and Return (as applicable).
6. Date material release (for fabrication).
7. Projected date of fabrication.
8. Projected date of delivery to site.
9. Status of O&M manuals submittal.
10. Related Specification Section.
11. Related Drawings Sheet Number.

4.4 Contractor's Responsibilities

The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall ensure that the material

or equipment shall be as described in the submittal. The Contractor shall verify in writing that all features of all products conform to the requirements of the drawings and specifications. **If the Contractor takes exception to the specifications, the Contractor shall note the exception in the letter of transmittal to the Engineer and the shop drawings shall clearly indicate any deviations in the submittal from the requirements of the Contract Documents.** Submittal documents shall be clearly edited to indicate only those items which are being submitted for review. All extraneous material shall be crossed out or otherwise obliterated. The Contractor shall ensure that there is no conflict with other submittals and shall notify the JWSC/Engineer in each case where his submittal may affect the work of another contractor or the Owner. The Contractor shall ensure coordination of submittals among the related crafts and subcontractors.

The transmittal letter which accompanies all submittals must include the following information:

1. Date.
2. Project Title and Number.
3. Contractor's name, address, phone and fax numbers.
4. The number of each Shop Drawing, Project Data, and Sample submitted.
5. Notification of Deviations from Contract Documents.
6. Submittal Log Number.

Before each submittal, the Contractor shall have determined and verified all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto; all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the work; and all information relative to the Contractor's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

Submittal documents common to more than one piece of equipment shall be identified with the appropriate equipment numbers and specification section and paragraph. Each submittal shall bear a stamp or written indication that the Contractor's obligations under the contract with respect to the Contractor's review and approval of that submittal have been met. Any deviations from the requirements of the drawings and specifications shall be noted on the submittals.

The Contractor shall submit six (6) copies of all specified information and/or submittals may be made electronically in PDF format. **Submittals which do not have all the information required to be submitted including notification of deviations and the Contractor's stamp or written indication of review, are not acceptable and will be returned without**

review.

The Contractor shall be responsible for and bear all costs of damages which may result from the ordering of any material or from proceeding with any part of work prior to the completion of the review by JWSC of the necessary Shop Drawings.

The Contractor shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment he proposed to supply both as pertains to his own work and any work affected under other parts, headings, or divisions of Drawings and Specifications.

4.5 Review Procedures

The JWSC/Engineer's review will not extend to means, methods, techniques, sequences or procedures of construction, or to verifying quantities, dimensions, weights, or fabrication processes, or to safety precautions or programs incident thereto. Unless otherwise specified, within fourteen days after receipt of a submittal, the JWSC/Engineer will review the submittal and return three (3) copies or an electronic PDF format of the review to the Contractor with comments. The returned submittals will indicate one of the following actions:

- If the review indicates conformance with the drawings and specifications, submittal copies will be marked **"NO EXCEPTIONS TAKEN"**. In this event, the Contractor may begin to implement the work or incorporate the material or equipment covered by this submittal.

- If the review indicates limited corrections are required, submittal copies will be marked **"MAKE CORRECTIONS NOTED".** The Contractor may begin implementing the work or incorporate the materials or equipment covered by the submittal in accordance with the noted corrections. Where submittal information will be incorporated into Operation and Maintenance data, a corrected copy shall be provided.

- If the review indicates that the submittal is insufficient or contains incorrect data, submittal copies will be marked **"AMEND AND RESUBMIT".** Except at his own risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted, and returned marked either "NO EXCEPTION TAKEN" or "MAKE CORRECTIONS NOTED".

- If the review indicates that the submittal does not comply with the drawings and specifications, submittal copies will be marked **"REJECTED - SEE REMARKS".** Submittals with deviations that have not been clearly identified will be rejected. Except at his own

risk, the Contractor shall not undertake work covered by this submittal until it has been revised, resubmitted, and returned marked either “NO EXCEPTIONS TAKEN” or “MAKE CORRECTIONS NOTED”.

Review of drawings, submittals, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of his responsibility for errors and omissions therein and shall not be regarded as an assumption of risks or liability by JWSC or Engineer or by any officer or employee thereof, and the Contractor shall have no claim under the contract on account of the failure or partial failure, or the method of work, material, or equipment so reviewed. A mark of “NO EXCEPTION TAKEN” or “MAKE CORRECTIONS NOTED” shall mean that the JWSC/Engineer has no objection to the Contractor, upon his own responsibility, using or providing the materials or equipment proposed.

5.0 INTERPRETATION OF PLANS AND SPECIFICATIONS

All questions regarding the meaning or intent of the plans, specifications and contract documents shall be directed in writing to the JWSC’s Contract Project Representative identified in Paragraph 2.0 of the General Conditions. Reference may be made throughout the Contract Documents to the Standards for Water and Sewer Design and Construction of the Brunswick – Glynn County Joint Water and Sewer Commission. In the event of a conflict between the aforementioned Standards and the project plans and specifications prepared by Four Waters Engineering, Inc. (4Waters), the 4Waters plans and specifications shall take precedence.

6.0 FIELD ENGINEERING

Field engineering shall include all surveying work required to layout the proposed facilities and control the location of the finished project. The Contractor shall be solely responsible for constructing the project to the correct horizontal and vertical alignment as shown on the drawings and as specified herein. The Contractor shall assume all costs associated with rectifying any work constructed in the wrong location.

The drawings provide the location and/or coordinates of principal components of the project.

6.1 Owner’s Responsibilities

The Owner will provide the following:

- At least one (1) vertical control point on the project site with its elevation
- A topographic survey (included on the drawings)

The Owner may, acting through the Engineer, order changes to the location

of some of the components of the project or provide clarification to questions regarding the correct alignment.

6.2 Contractor's Responsibilities

The Contractor's responsibilities include but are not limited to the following:

- Be responsible for setting reference points and/or offsets, establishment of baselines, and all other layout, staking and other surveying required for the construction of the project.

- Safeguard all reference points, stakes, grade marks, horizontal and vertical control points, and bear the cost of re-establishing same if disturbed.

- Stake out temporary and permanent easements or the limits of construction to ensure that the work is not deviating from the indicated limits.

- Record drawing surveys shall be performed in accordance with Paragraph 7.0 of these Special Conditions.

Baselines shall be defined as the line to which the location of the work is referenced, i.e. edge of pavement, road centerline, property line, right of way or survey line.

7.0 RECORD DOCUMENTS

The work under this Section includes but is not limited to the compiling, maintaining, recording and submitting of project record documents as herein specified.

Record documents include but are not limited to the following:

- Drawings
- Specifications
- Change orders and other modifications to the Contract
- Engineer field orders or written instructions, including requests for information (RFI) and clarification memos
- Reviewed shop drawings, product data and samples
- Test records

The Contractor shall maintain on-site an up to date set of As-Built Drawings.

7.1 Record Drawings

The Contractor is solely responsible for proper and correct documentation of all work, and for meeting the following As-Built requirements. The Contractor shall plan ahead and have their surveyor on-site to record information and

data during construction. As-Built Drawings maintained by the Contractor shall provide dimensions, distances and coordinates to the nearest 0.1 foot. Elevations shall be provided to the nearest 0.01 foot.

Contractor shall provide Final As-Built drawings to the Engineer of Record in AutoCAD format, in Georgia State Plane East Zone Coordinates (Horizontal Datum NAD 83 and Vertical Datum NAVD88), conducted by a surveyor licensed in the State of Georgia of all installed components of the project from a post construction field run survey. As-Built data provided to the Engineer of Record for incorporation into the Record Drawings shall include Horizontal Directional Drill pipe installation information in plan and profile views in AutoCAD format with X, Y, and Z coordinates in Georgia State Plane East Zone Coordinates (Horizontal Datum NAD 83 and Vertical Datum NAVD88) conducted by a surveyor licensed in the State of Georgia. Directional Drill Bore Log shall be provided as part of the As-Built documentation and shall be in Georgia State Plane East Zone Coordinates (Horizontal Datum NAD 83 and Vertical Datum NAVD88) and be relative to the established surface survey bench mark and baseline stationing that is tied to existing, fixed and visible sight features. Directional Drill Bore Log shall show recorded X, Y, and Z locations of the drill head at minimum every 20 feet in the AutoCAD format documentation.

The Contractor shall pay all surveying and preparation costs associated with the Final As-Built Drawings. The Final As-Built Drawings shall provide elevations to the nearest 0.01 foot for all manhole inverts, manholes frames and all other pertinent items constructed by the Contractor. The Final As-Built Drawings shall provide dimensions, distances and coordinates to the nearest 0.1 foot and angles to the nearest 10 seconds.

Final As-Built Drawings shall be labeled “FINAL AS-BUILT DRAWINGS” and shall include the name of the licensed surveyor who prepared the drawings, the date the survey was conducted, certification statement with the horizontal and vertical datum used, and surveyor’s seal.

Final As-Built Drawings shall include the following:

- Horizontal and vertical location of all exposed and underground piping systems, valves, appurtenances, fittings, taps; etc., and all deviations from the design plans. Provide size, material, top of pipe elevations, invert elevations, slope percentages, length and type of all pipes, vertical clearances at each utility crossing.

- Location and dimensions of roadways and parking areas;

- Location of structures including finish floor elevations, tank depths, top and bottom elevations;

- Horizontal angle and distance between manholes;

- If profiles or cross-sections are part of the design plans, then As-Built data shall be shown on each profile or cross-section on the As-Built drawings.

The Engineer of Record shall review and utilize the Final As-Built information provided by the Contractor for the preparation of the Final Record Drawings. Contractor shall provide written certification of the accuracy and completeness of the Final As-Built information provided to the Engineer of Record.

7.2 Specifications

Legibly mark each section to record the manufacturer, trade name, catalog number and supplier of each product and item of equipment actually furnished. Also record all changes made by Requests for Information (RFI), field order, clarification memorandums of Contract change order.

7.3 Submittal

At the completion of the project, deliver Record Documents to the JWSC/Engineer. Include a signed transmittal letter which lists the title and number of each record document. Final As-Built Drawings shall be provided as noted in Section 7.1.

8.0 WARRANTY

Contractor shall warrant that the Work, workmanship and material furnished by Contractor shall be new and of specified quality, shall conform to the requirements of the Contract Documents, shall be free from defects, and shall be free from any security interest, lien, or other encumbrances. This warranty shall remain in effect for a period of twelve (12) months after FINAL ACCEPTANCE OF THE WORK, unless otherwise specified in the Contract Documents. Any defective Work, workmanship, or material corrected during the warranty period shall be similarly warranted for twelve (12) months following its correction or for such other period as specified herein. The express warranty set forth herein shall not be exclusive and shall not act as a limitation upon any statutory or other warranty of any kind, express or implied, including any implied warranty of merchantability or fitness for a particular purpose.

In the event of breach of this warranty, Contractor shall take the necessary actions to correct the breach in the most expedient manner as dictated by then-existing circumstances. All costs incidental to the repair, replacement, redesign, and testing incurred as a result thereof, including the removal, replacement, and reinstallation of equipment in place when the Work was started, shall be Contractor’s responsibility. Upon written notification of a breach, Contractor shall promptly send the necessary personnel to the project site to assume responsibility for corrective action. Time is of the essence. Contractor shall be afforded necessary and reasonable access to

perform warranty work. If Contractor fails to promptly correct the breach, the JWSC may take corrective action without waiving any other rights or remedies it may have, and Contractor shall reimburse the JWSC for all expenses reasonably incurred in performing such corrective action.

9.0 SEWAGE SPILLS

9.1 Contractor Requirements

During the contract period the Contractor shall be responsible for repair of any damaged sewer system infrastructure and for any sewer system overflows or spills which result from the Contractor's activities. The Contractor shall be responsible for, at no cost to the Brunswick-Glynn County JWSC, the cleanup, notification, advertisement, monitoring, sampling and analysis, reporting, and other requirements as noted in the following section 8.2, of any sewer system overflows or spills which result from the Contractor's activities.

9.2 Georgia EPD Requirements for Sewage Spills

A. It shall be the duty of the person in charge of such substances at the time to forthwith notify EPD in person or by telephone of the location and nature of the danger, and it shall be such person's further duty to immediately take all reasonable and necessary steps to prevent injury to property and downstream users of said water.

1. Spills and Major Spills:

a. A "spill" is any discharge of raw sewage by a Publicly Owned Treatment Works (POTW) to the waters of the State.

b. A "major spill" means:

1) The discharge of pollutants into waters of the State by a POTW that exceeds the weekly average permitted effluent limit for biochemical oxygen demand (5-day) or total suspended solids by 50 percent or greater in one day, provided that the effluent discharge concentration is equal to, or greater than 25 mg/L for biochemical oxygen demand or total suspended solids.

2) Any discharge of raw sewage that 1) exceeds 10,000 gallons or 2) results in water quality violations in the waters of the State.

c. "Consistently exceeding effluent limitation" means a POTW exceeding the 30-day average limit for biochemical oxygen demand or total suspended solids for at least five days out of each seven day period during a total period of 180 consecutive days.

2. The following specific requirements shall apply to POTW's. If a spill or major spill occurs, the owner of a POTW shall immediately:

a. Notify EPD, in person or by telephone, when a spill or major spill occurs in the system.

b. Report the incident to the local health department(s) for the area affected by the incident. The report at a minimum shall include the following:

1) Date of the spill or major spill;

2) Location and cause of the spill or major spill;

3) Estimated volume discharged and name of receiving waters; and

4) Corrective action taken to mitigate or reduce the adverse effects of the spill or major spill.

c. Post a notice as close as possible to where the spill or major spill occurred and where the spill entered State waters and also post additional notices along portions of the waterway affected by the incident (i.e. bridge crossings, boat ramps, recreational areas, and other points of public access to the affected waterway). The notice at a minimum shall include the same information required in 8.2 A. 2. b. (1-4) above. These notices shall remain in place for a minimum of seven days after the spill or major spill has ceased.

d. Within 24 hours of becoming aware of a spill or major spill, the owner of a POTW shall report the incident to the local media (television, radio, and print media). The report shall include the same information required in 8.2 A. 2. b (1-4) above.

e. Within five (5) days (of the date of the spill or major spill), the owner of a POTW shall submit to EPD a written report which includes the same information required in 8.2 A. 2. b (1 -4) above.

f. Within 7 days (after the date of a major spill), the owner of a POTW responsible for the major spill, shall publish a notice in the largest legal organ of the County where the incident occurred. The notice shall include the same information required in 8.2 A. 2. b (1-4) above.

g. The owner of a POTW shall immediately establish a monitoring program of the receiving waters affected by a major spill or by consistently exceeding an effluent limit, with such monitoring being at the expense of the POTW for at least one year. The monitoring program shall include an upstream sampling point as well as sufficient downstream locations to accurately characterize the impact of the major spill or the consistent exceedance of effluent limitations described in the definition of "Consistently exceeding effluent limitation" above. As a minimum, the following parameters shall be monitored in the receiving stream:

1) Dissolved Oxygen;
2) Fecal Coliform Bacteria;
3) pH;
4) Temperature; and
5) Other parameters required by the EPD.

h. The monitoring and reporting frequency as well as the need to monitor additional parameters, will be determined by EPD. The results of the monitoring will be provided by the POTW owner to EPD and all downstream public agencies using the affected waters as a source of a public water supply. Within 24 hours of becoming aware of a major spill, the owner of a POTW shall provide notice of a major spill to every county, municipality, or other public agency whose public water supply is within a distance of 20 miles downstream and to any others which could be potentially affected by the major spill.

Brunswick - Glynn
Joint Water and Sewer Commission

TECHNICAL SPECIFICATIONS

FOR

PUMP STATION 2032 REGIONAL FORCEMAIN IMPROVEMENTS
ST. SIMONS ISLAND, GEORGIA

PREPARED BY

FOUR WATERS ENGINEERING, INC.
324 6th Avenue North
JACKSONVILLE BEACH, FL 32250
(904) 414-2400
PEF006711

TECHNICAL SPECIFICATIONS (FOUR WATERS ENGINEERING, INC.)

DIVISION 1 – GENERAL REQUIREMENTS

DIVISION 2 – SITE WORK

DIVISION 15 - MECHANICAL

ATTACHMENTS

Construction Plans: Brunswick-Glynn JWSC Lift Station 2032 Regional Forcemain Improvements, St. Simons Island, Georgia prepared by Four Waters Engineering, Inc. dated October 2016.

Geotechnical Report: **Report of Geotechnical Exploration Brunswick-Glynn County JWSC Forcemain**, St. Simons Island, Georgia, E&A Project No. 35-24198, September 12, 2016, prepared by Ellis & Associates, Inc.

Test Hole Data: JWSC LS2032 Regional Forcemain Improvements Project Test Holes 1 – 49, September 10, 2016, prepared by RHD Services, Inc.

Wetland Evaluation Letter: Field Inspections for Wetlands on Proposed JWSC LS2032 Forcemain Project on St. Simons Island, Glynn County, Georgia, August 24, 2016, prepared by Southeastern Environmental Associates, LLC

Permits:

- Georgia Environmental Protection Division LS2032 Regional FM Improvements Project NPDES Permit No. GA0021521

- GSWCC Erosion Control & Sedimentation Control Permit – Pending

- Glynn County Tree Advisory Board Tree Removal Approval – Pending Written Approval

- Glynn County Land Disturbing Activity – Pending (will be transferred to contractor)

- Georgia Department of Natural Resources NOI to Discharge Storm Water Associated with Construction Activity – Pending (will be transferred to contractor)

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. This Contract comprises the construction of the Pump Station (Lift Station) 2032 Regional Forcemain Improvements as shown on the Construction Drawings and specified in the Contract Documents including the General Conditions, Special Conditions, and Technical Specifications. The work consists of furnishing all labor, equipment and materials (unless otherwise noted), including but not limited to, the following:

1. Approximately 10,450 Linear Feet (LF) of 16-inch HDPE (DR11) forcemain via horizontal directional drill, stub-out for future connection, and all necessary appurtenances. JWSC has pre-purchased 11,000 LF of 16-inch HDPE (DR11) forcemain piping which will be delivered to Contractor at the project site by the supplier.

2. Approximately 760 LF of 16-inch PVC (DR18) forcemain by open cut construction and all necessary appurtenances.

3. Additive Alternate for approximately 1,100 LF of 16-inch HDPE (DR11) forcemain via horizontal directional drill, approximately 15 LF of 16-inch PVC (DR18) forcemain by open cut construction, stub-out for future connection, and all necessary appurtenances.

4. 16-inch forcemain tie-in from new 16-inch HDPE forcemain to existing 10-inch stub-out connection at LS2032. Approximately 15 LF of 10-inch PVC (DR18) forcemain by open cut construction, new above ground 10-inch bypass assembly, and all necessary appurtenances to connect to existing 10-inch stub-out connection and new 16-inch HDPE forcemain.

5. Tie-in and discharge of 16-inch forcemain to Dunbar Creek WPCP headworks with 16-inch above ground bypass assembly and connection at existing Junction Box upstream of the existing Manual Screen Structure, including LinkSeal connection, and rehabilitation of existing structures including coating of existing Junction Box and Manual Screen Structure with SewperCoat, and rehabilitation of approximately 90 LF of 30-inch Ductile Iron gravity sewer.

6. Temporary bypass pumping operations including but not limited to all pumps, piping and hoses, valves, fittings, accessories, power and fuel, controls and monitoring to bypass entire influent wastewater flow to Dunbar Creek WPCP during tie-in to existing Junction Box and rehabilitation of structures and piping at WPCP.

7 Temporary pathways along project route including all signage, clearing, temporary pathway matting, demarcation materials, netting system, and removal and restoration.

8. All associated mobilization/demobilization, demolition, tree removal, proper disposal of drilling mud and other fluids and materials, required staging and work areas, removal, disposal and replacement of unsuitable soils, dewatering, all joint materials, fittings, gaskets, adapters, and coatings, all testing, soil erosion and sedimentation control, maintenance of traffic, complete project area restoration, adherence to all permit requirements including sampling and monitoring, project photographs and videos, as-builts and record documents, and all other work and appurtenances shown on the Construction Drawings and indicated or implied in the Contract Documents and Specifications, or required for the forcemain system complete and ready for use.

B. The Contractor shall furnish all labor, equipment, tools, services and incidentals to complete all Work required by these Specifications and as shown on the Construction Drawings.

C. The Contractor shall perform the Work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, cleanup, replacements and restoration required as a result of damages caused during this construction.

D. All materials, equipment, skills, tools and labor which is reasonably and properly inferable and necessary for the proper completion of the Work in a substantial manner and in compliance with the requirements stated or implied by these Specification or Drawings shall be furnished and installed by the Contractor without additional compensation, whether specifically indicated in the Contract Documents or not.

E. The Contractor shall comply with all Municipal, County, State, Federal, and other codes which are applicable to this Project.

1.02 CONTRACTOR'S USE OF PREMISES

A. The Contractor shall assume full responsibility for the protection and safekeeping of products and materials at the job site. If additional storage or work areas are required, they shall be obtained by the Contractor at no additional cost to the Owner.

1.03 WORK SEQUENCE

A. The project has a specific sequence of construction to limit impacts to the community. The required sequencing of construction is provided below.

1. Construction Phasing:

- Phase One: Frederica Road

- Phase Two: Palmetto Street, Entrance Road and On-Site at Dunbar Creek WPCP

2. Construction Phasing Description: The first phase of the construction of the forcemain shall be along Frederica Road. Upon completion of the first phase of construction, the second phase shall begin with the construction of the forcemain along Palmetto Street, the entrance road to Dunbar Creek WPCP and the on-site construction and rehabilitation at Dunbar Creek WPCP. **The Contractor must complete each phase of construction in its entirety before moving to the next phase of construction.**

3. Phase One: The following construction criteria shall be followed for Phase One: Frederica Road.

   a. The contractor may mobilize to only one following HDD drill rig site for pipe installation prior to completing required testing, tie-ins, inline valve, and ARV installation.
   b. A HDD pipe segment tie-in location is considered complete when the drill and pullback disturbed areas are, at a minimum, temporarily stabilized in order for the bike/pedestrian path to be safely in operation until final stabilization is completed by the final completion date, stated in the Special Conditions.
   c. No more than two uncompleted tie-in locations shall be allowed at a time.
   d. No more than one bike/pedestrian path closure for pipe fusing and pullback operations shall be allowed at a time.

B. The Contractor shall establish his work sequence based on the use of necessary crews to facilitate completion of construction within the allotted Contract Time and in the sequence noted.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. This Section specifies administrative and procedural requirements to define pay items and determine payable amounts, and includes but is not limited to:
   1. General Provisions
   2. Cash Allowances
   3. Work Not Paid for Separately
   4. Measurement for Payment

B. Related Sections:

   1. General and Special Conditions

   2. JWSC Standards for Water and Sewer Design and Construction

1.02 GENERAL PROVISIONS

A. This specification includes standard descriptions for all bid items. This Contract's specific bid items are listed in the Bid Form which will be used to develop an approved Schedule of Values.

B. The total Contract Amount shall cover the Work required by the Contract Documents. All costs in connection with the successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction, equipment, and tools; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of the Contractor and all costs in connection therewith shall be included in the prices bid.

C. If used, all estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) for the purpose of comparing the bids submitted for the Work, and (b) as a basis for determining an initial Contract Amount. The actual amounts of Work completed and materials furnished under unit price items may differ from the estimated quantities. The Owner does not expressly or by implication represent that the actual quantities involved will correspond exactly to the quantities stated in the Bid Form; nor shall the Contractor plead misunderstanding or deception because of such estimate or quantities or of the character, location or other conditions pertaining to the Work. Payment to the Contractor will be made only for the actual quantities of work performed or material furnished in accordance with the Drawings, Specifications,

and other Contract Documents, and it is understood that the quantities may be increased or decreased as provided in the General Conditions.

D. If used, the unit prices listed in the Bid Form shall include all services, obligations, responsibilities, labor, materials, devices, equipment, royalties and license fees, supervision, temporary facilities, construction equipment, bonds, insurance, taxes, clean up, traffic control, control surveys, field offices, close out, overhead and profit and all connections, appurtenances and any other incidental items of any kind or nature, as are necessary to complete the Work in accordance with the Contract Documents, unless otherwise noted.

E. Payment for Work will be based on the percent of completed work of each item in the Schedule of Values, including stored materials, as determined by the Owner. Progress of work in each item of the Schedule of Values will be determined separately by the Owner. However, the Owner will issue a single payment certificate for progress on the Contract.

F. The Contractor agrees that it will make no claim for damages, anticipated profits, or otherwise because of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefore.

G. Where payment by scale weight is specified under certain items, the Contractor shall provide suitable weighing equipment which shall be kept in accurate adjustment at all times and certified. The weighing of all material shall be performed by the Contractor in the presence and under the supervision of the Owner.

H. All schedules included in the Contract Documents are given for convenience and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quantity of materials and equipment included in Work to be done under this Contract.

I. Where pipe fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve the Contractor from laying and jointing different or additional items where required.

1.03 CASH ALLOWANCES

A. The Contractor shall include in the Total Bid Amount, all cash allowances stated in the Contract Documents and listed in the Bid Form. Items covered by these allowances shall be supplied for such amounts and by such persons as the Owner may direct.

B. The Contractor will obtain the Owner's written acceptance before providing equipment, materials or other Work under a cash allowance. Payments under a cash allowance will be made based on actual costs, excluding costs of general conditions, handling, unloading, storage, installation, etc., which will be considered to be included within the Contract Price. Payments within the limits of any allowance will exclude overhead and profit and bond and insurance premiums, since those costs will be considered to be included within the Contract Amount. The Contractor shall submit appropriate documentation to validate the actual cost of the item.

C. The amount of the allowance shall be adjusted accordingly by Change Order to recognize the allowable cost incurred by the Contractor.

1.04 WORK NOT PAID FOR SEPARATELY

A. Delivery: Payment for equipment delivery, storage or freight shall be included in the pay items including their installation and no other separate payment will be made therefore.

B. Bonds: Payment for bonds required by the Contract shall be included in the pay items for the Work covered by the required bonds and no separate payment will be made.

C. Preparation of Site: Unless otherwise noted, payment for preparation of site shall be included in pay items proposed for the various items of Work and no separate payment will be made therefore. Preparation of site includes setting up construction plant, offices, shops, storage areas, sanitary and other facilities required by the specifications or state law or regulations; providing access to the site; obtaining necessary permits and licenses; payments of fees; general protection, temporary heat and utilities including electrical power, water and sewer; providing shop and working drawings, certificates and schedules; providing required insurance; pre-construction and construction progress photographs and videos; clearing and grubbing; trench excavation, sheeting, shoring and bracing; dewatering and disposal of surplus water, backfill, compaction and grading; testing materials and apparatus; maintenance of drainage systems; appurtenant work; and close-out documentation; cleaning up; and all other work regardless of its nature which may not be specifically referred to in a Bid Item but is necessary for the complete construction of the project set forth by the Contract.

D. Permitting & Permit Fees. Section 01065: Permits and Fees identifies all permits which the Owner has obtained or submitted applications for. All other permits and fees necessary for the project are the responsibility of the Contractor, shall be included in the pay items for the Work requiring the permits, and will not be paid for separately.

E. The Owner reserves the right to delete any item included in the Bid Form/Schedule of Values and decrease the Contract Price by the scheduled amount for the item deleted.

1.05 MEASUREMENT FOR PAYMENT

A. Methods of Measurement - Generally:

1. Units of measurement shall be defined in general terms as follows:
   a. Linear Feet (LF)
   b. Square Feet (SF)
   c. Square Yards (SY)
   d. Cubic Yards (CY)
   e. Each (EA)
   f. Lump Sum (LS)

2. Unit Price Items:

   a. Linear Feet (LF) shall be measured along the horizontal length of the centerline of the installed material, unless otherwise specified. Pipe shall be measured along the length of the completed pipeline, regardless of the type of joint required, without deduction for the length of valves or fittings. Pipe included within the limits of lump sum items will not be measured.

   b. Square Feet (SF), Square Yards (SY), Cubic Yards (CY), and Each (EA) shall be measured as the amount of the unit of measure installed and accepted as complete within the limits specified and shown in the Specifications and Drawings. Slope angles and elevations shall be measured using land-surveying equipment. Contractor shall provide supporting documentation (i.e. drawings, delivery tickets, invoices, survey calculations, etc.) to verify actual installed quantities.

3. Lump Sum Items:

   a. Payment will be made for each individual lump sum item on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

4. Adjustments to costs provided in the accepted Schedule of Values may be made only by Change Order.

5. The Owner reserves the right to delete any item included in the Bid Form/Schedule of Values and decrease the Contract Price by the scheduled amount for the item deleted.

1.06 PAYMENT ITEMS

A. Mobilization and Demobilization

1. Measurement: Measurement of various items for Mobilization and Demobilization shall not be made for payment and all items shall be included in the lump sum price. This lump sum price shall not exceed 5% of the total of all bid items.

2. Payment: Payment of 75 percent of the applicable lump sum price for the item shall be full compensation for the Work consisting of the preparatory Work and operations in mobilizing for beginning Work on the Contract, including, but not limited to, movement of those personnel, equipment, supplies and incidentals to the project site, preparation of submittals, and for the establishment of temporary offices and buildings, safety equipment and first aid supplies, project signs, field surveys, sanitary and other facilities required by these specifications, and State and local laws and regulations. The costs of General Requirements, bonds, permits, and any required insurance, and any other preconstruction expense necessary for the start of the Work, excluding the cost of construction materials, shall also be included. This Work also consist of the general project management of the Work including, but not limited to, field supervision and office management, as well as other incidental cost for management of the Work during the duration of the Contract. This Work also includes maintenance of the field office for the duration of the Contract.

3. Payment of the remaining 25 percent of the applicable lump sum price for this item shall be full compensation for the Work consisting of demobilization or the operations normally involved in ending Work on the project including, but not limited to, termination and removal of temporary utility service and field offices; demolition and removal of temporary structures and facilities; restoration of Contractor storage areas; disposal of trash and rubbish, removal of equipment from the site, and any other post-construction work necessary for the proper conclusion of the Work.

B. Maintenance of Traffic

1. Measurement: Measurement shall be based on satisfactory Control and Maintenance of Traffic in accordance with the Construction Drawings, Glynn County requirements and associated permit requirements.

2. Payment: Payment of the applicable Contract lump sum price will be full compensation for furnishing all labor, materials, and equipment necessary to maintain public roadway and pedestrian/bicycle traffic including flag men, uniformed police officers, barricades, warning lights/flashers, lighted sign boards, and signs. Also included is furnishing, installing, maintaining, and removal of a Traffic Control Plan, control and safety devices, control of dust, temporary crossing structures over trenches, temporary pedestrian/bicycle

pathway including matting and netting systems, any necessary detour facilities, and other special requirements for the safe and expeditious movements of traffic, including vehicular, bicycle, and pedestrian. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

C. Erosion, Sedimentation and Pollution Control

1. Measurement: Measurement shall be based on satisfactory Erosion, Sedimentation and Pollution Control in accordance with the Construction Drawings, Contract Documents and all Federal, State and local requirements and associated permit requirements.

2. Payment: Payment of the applicable Contract lump sum price will be full compensation for furnishing all labor, materials, and equipment to control and prevent erosion and sediment transportation from the Work area to adjacent properties and waterways, including installation, maintenance, monitoring, inspection and reporting, and removal of temporary erosion, sedimentation and pollution controls. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

D. Pressure Piping (Forcemain) – Horizontal Directional Drill

1. Measurement: Pressure Piping (Forcemain) – Horizontal Directional Drill installation shall be measured in actual linear feet satisfactorily furnished and installed, as measured along the length of the centerline of the completed directionally drilled pressure forcemain piping in accordance with the Construction Drawings and Contract Documents. The Contractor shall include in the Contract unit price its allowance for horizontal deflection, vertical deflection, and all wastage.

2. Payment: Payment will be made at the Contract unit price per linear foot for Pressure Piping (Forcemain) – Horizontal Directional Drill. Payment shall be full compensation for all labor, materials, and equipment to construct the respective pipeline including coordination with existing utilities, protection of existing utilities including service connections, tree protection, excavation, sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, backfill, compaction, and grading, project planning, submittals, and calculations; horizontal directional drilling and related systems, mud recycling, entry/back reaming pits, laying and fusing/joining pipe; locate wire system; testing; swabbing, flushing; site restoration (unless specifically noted otherwise), clean-up, proper disposal of all remaining drilling mud, other fluids, and solids, and bore logs and reports. This item also includes all necessary restraining devices; identification markers; and all necessary adapters and fittings not specifically called out in other line items. Any temporary water service lines the Contractor installs to provide water for the Horizontal Directional Drill operations shall be included in this item and shall include cost of piping installation and abandonment. Contractor shall be

responsible for removal, clean-up, and disposal of drill fluid breakouts.

In order to expedite construction of the project, Owner has pre-purchased 11,000 linear feet of 16-inch HDPE (DIPS DR11) forcemain piping. All other piping necessary for the Base Bid installation shall be provided by the Contractor and shall be included in the unit cost of this item. All piping for the Additive Alternate installation shall be provided by the Contractor and shall be included in the unit cost of the item.

E. Pressure Piping (Forcemain) (Varies by Size, by Open Cut)

1. Measurement: Pressure Piping (Forcemain) – Open Cut installation regardless of size shall be measured in actual linear feet satisfactorily furnished and installed, as measured along the length of the centerline of the completed open cut pressure forcemain piping in accordance with the Construction Drawings and Contract Documents, regardless of the type of joint required, without deduction for the length of valves and fittings. Pipe included within the limits of lump sum pay items will not be measured for payment under this item. Piping installed by horizontal directional drill has a separate description.

2. Payment: Payment will be made at the Contract unit price per linear foot for Pressure Piping (Forcemain) – Open Cut. Payment shall be full compensation for all labor, materials, and equipment to construct the respective pipeline including coordination with existing utilities, protection of existing utilities including service connections, tree protection, excavation, sheeting, shoring and bracing, dewatering, groundwater treatment and disposal, backfill, compaction, and grading, all testing, swabbing, flushing, site restoration (unless specifically noted otherwise), and clean-up. This item also includes all necessary restraining devices, locate wire system, detection tape, and identification markers. All piping for this item shall be provided by Contractor and shall be included in the unit cost of the item.

F. 10-Inch Discharge Bypass Assembly at LS2032 Site

1. Measurement: 10-Inch Discharge Bypass Assembly at LS2032 Site shall be measured by satisfactory installation of the discharge bypass assembly complete and operational in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment of the 10-Inch Discharge Bypass Assembly at LS2032 Site will be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to construct the assembly including excavation, backfilling, compacting and grading; necessary mechanical restraints; concrete support ring; assembly components from buried MJt DI 90° bend through check valve and blind flange, 316 SS pipe support, and concrete pad; and related work to complete the installation. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the

Owner.

G. Fittings and Piping Accessories (Varies by Material, Type, Size)

1. Measurement: Fittings and Piping Accessories installation regardless of material, type, and size shall be measured by the actual number satisfactorily furnished and installed in accordance with the Contract Drawings and Contract Documents.

2. Payment: Payment will be made at the Contract unit price for each Fitting or Piping Accessory of each material, type, and size. Payment shall be full compensation for all labor, materials, and equipment to furnish and install Fittings and Piping Accessories, including any necessary mechanical restraints, tie rods, or supports, with all required excavation, backfill, and compaction, and all necessary incidentals required to complete and test the work.

H. Valves (Varies by Type and Size)

1. Measurement: Valves regardless of type and size shall be measured by the actual number satisfactorily furnished and installed in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment will be made at the Contract unit price for each Valve of each type and size. Payment shall be full compensation for all labor, materials, and equipment necessary to furnish and install the Valve with noted operator, complete, with all required excavation and backfill, necessary jointing, adapter/extension pieces, supports (if applicable), mechanical restraints at valve, nuts, bolts, socket clamps, sleeves; valve box and cover, valve tags, electronic ball markers; valve box extension (if applicable); debris shield; flushing; testing; and all incidental and related work required to complete the Valve. Air Release Valves shall have separate descriptions.

I. Air Release Valve Assembly in Pedestal

1. Measurement: Air Release Valve Assembly in Pedestal installation shall be measured by the actual number satisfactorily furnished and installed in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment will be made at the Contract unit price for each Air Release Valve Assembly in Pedestal. Payment shall be full compensation for all labor, materials, and equipment necessary to furnish and install the Air Release Valve Assembly in Pedestal including all excavation, backfill, and compaction; tapping or cutting pipelines; all piping, fittings and valves between air release valve and main, saddle, sleeve or tee fitting in main; pedestal box and support; and all incidental and related work to complete the Air Release Valve Assembly in Pedestal.

J. Air Release Valve Assembly in Manhole

1. Measurement: Air Release Valve Assembly in Manhole installation shall be measured by the actual number satisfactorily furnished and installed in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment will be made at the Contract unit price for each Air Release Valve Assembly in Manhole. Payment shall be full compensation for all labor, materials, and equipment necessary to furnish and install the Air Release Valve Assembly in Manhole, complete, including all excavation; backfill, and compaction; tapping or cutting pipelines; HDPE manhole with hatch cover, all piping, fittings and valves between air release valve and main, saddle, sleeve or tee fitting in main, and all incidental and related work to complete the Air Release Valve Assembly in Manhole.

K. Tie-In to 10-Inch Existing Forcemain at LS2032 Site

1. Measurement: Tie-In to 10-Inch Existing Forcemain at LS2032 Site shall be measured by satisfactory installation of the tie-inch complete and operational in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment of the Tie-In to 10-Inch Existing Forcemain at LS2032 Site will be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to identify the location of the existing 10-inch piping stub-out; excavation, backfilling, and compacting; tie-in of proposed and existing forcemains including any piping accessories or incidentals; dewatering; testing; and related work to complete the installation. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

L. 16-Inch Forcemain Connection to Existing Junction Box at Dunbar Creek WPCP

1. Measurement: Measurement for 16-Inch Forcemain Connection to Existing Junction Box at Dunbar Creek WPCP shall be measured by satisfactory connection of the tie-inch complete and operational in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment of the 16-Inch Forcemain Connection to Existing Junction Box at Dunbar Creek WPCP will be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to complete the work including excavation, sheeting, shoring and bracing, protection of surrounding structures and piping, dewatering, backfill, compaction, and final grading, core drilling concrete box, connection and sealing of proposed forcemain to box with LinkSeal, any necessary repairs to junction box wall due to construction, reforming flow line as necessary, grouting, clean-up, placing and removing all necessary signs and barriers, plus all incidental work necessary for a complete and operable

installation.

M. Recoat Existing Junction Box at Dunbar Creek WPCP

1. Measurement: Measurement of Recoat Existing Junction Box at Dunbar Creek WPCP shall be measured by satisfactory completion of the preparation and coating of the junction box, complete and operational in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment of Recoat Existing Junction Box at Dunbar Creek WPCP will be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to remove and clean any solids from the junction box, properly dispose of all solids, remove the existing coating from the interior of the structure, repair any damage to the structure and prepare all surfaces in accordance with SewperCoat manufacturer's instructions, and for Bio-Nomic Services to properly install the SewperCoat product on the interior of the structure and provide a 10-year warranty on the materials and labor associated with the coating. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

N. Rehabilitate Existing Manual Screen Structure at Dunbar Creek WPCP

1. Measurement: Measurement of Rehabilitate Existing Manual Screen Structure at Dunbar Creek WPCP shall be measured by satisfactory completion of the demolition in the structure, and preparation and coating of the structure, complete and operational in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment of Rehabilitate Existing Manual Screen Structure at Dunbar Creek WPCP will be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to remove and clean any solids from the structure, properly dispose of all solids, remove the remaining components of the screen frame and equipment from the structure, remove the existing coating from the interior of the structure, repair any damage to the structure and prepare all surfaces in accordance with SewperCoat manufacturer's instructions, and for Bio-Nomic Services to properly install the SewperCoat product on the interior of the structure and provide a 10-year warranty on the materials and labor associated with the coating. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

O. 30-Inch Ductile Iron Gravity Sewer Rehabilitation by CIPP

1. Measurement: Measurement for payment of 30-Inch Ductile Iron Gravity Sewer Rehabilitation by CIPP shall be measured in actual linear feet satisfactorily rehabilitated with CIPP, as measured along the length of the centerline of the piping from the inside face of upstream to inside face of

downstream structures, in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment will be made at the Contract unit price per linear foot for 30-Inch Ductile Iron Gravity Sewer Rehabilitation by CIPP. Payment shall be full compensation for all labor, materials, and equipment to prepare the existing pipeline and properly install the CIPP including pre- and post-installation inspection videos, pre-installation sewer pipe cleaning, clearing of any pipeline obstructions, all water and power necessary for the rehabilitation operations, furnishing and applying the Cured-In-Place-Pipe material, curing and trimming, testing, incidentals, and all other related and necessary items required to successfully complete the rehabilitation.

P. 16-Inch Bypass Assembly at Dunbar Creek WPCP

1. Measurement: 16-Inch Bypass Assembly at Dunbar Creek WPCP shall be measured by satisfactory installation of the bypass assembly complete and operational in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment of the 16-Inch Bypass Assembly at Dunbar Creek WPCP Site will be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to construct the assembly including excavation, backfilling, compacting and grading; necessary mechanical restraints; concrete support ring; assembly components from buried MJt DI 90° bend through FLG DI 90° bend and blind flange; and related work to complete the installation. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

Q. Temporary Bypass System Operations at Dunbar Creek WPCP

1. Measurement: Temporary Bypass System Operations at Dunbar Creek WPCP shall be measured by satisfactory completion of the sewer bypass operations at Dunbar Creek WPCP during construction in accordance with the Construction Drawings and Contract Documents.

2. Payment: Payment of the Temporary Bypass System Operations at Dunbar Creek WPCP will be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, equipment and fuel, as necessary for temporary bypass system operations, including preparation of all submittals, calculations, and plans required; delivery, setup, takedown, and removal; pumps, controls, piping, and hoses, fittings, valves, supports, LineStops, insert valves, plugs, or other items needed to block upstream flow; modification and restoration of existing manholes and structures for suction and discharge; tanks, tankers, vacuum/pumper trucks, temporary bypass and service piping, hauling and proper disposal of sewage, cleanup, flow monitoring and logging equipment; gasoline/diesel fuel, protection of existing facilities, utilities, and property, traffic maintenance, bypass

equipment protection, signs and barriers, monitoring, maintenance, and all incidental work required to satisfactorily complete this item. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

R. Restoration (Varies by Phase/Location)

1. Measurement: Measurement for Restoration shall be based on satisfactory restoration of all areas disturbed by construction activities in accordance with the Owner's requirements, Construction Drawings, and Contract Documents.

2. Payment: Payment of Restoration shall be made at the Contract lump sum price. Payment shall be full compensation for furnishing all labor, materials, and equipment to restore the areas disturbed by construction to equal or better than pre-construction condition. Areas covered by this pay item are highly established and landscaped. Satisfactory restoration of these areas includes restoration of all landscaping, mailboxes, trees, fences, signs, roadway paving, sidewalk, curb and gutter, driveways, lawn/grass and right-of-way areas with sod or seed as required, trees, mulch/straw, foundations, irrigation systems, and other structures and items disturbed by construction. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the project Owner, Glynn County, and Sea Palms POA representative.

S. Tree Removal

1. Measurement: Tree Removal shall be measured for the complete and satisfactory removal of the noted trees as identified on the Construction Drawings and in accordance with the Contract Documents, and Glynn County Tree Advisory Board requirements.

2. Payment: Payment of Tree Removal shall be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to remove and properly dispose of the trees identified on the Construction Drawings in accordance with Glynn County Tree Advisory Board guidelines. Only the noted trees are included. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner.

T. Disposal and Replacement (with A-3 Sand) of Unsuitable Soils

1. Measurement: Disposal and Replacement (with A-3 Sand) of Unsuitable Soils shall be measured in actual cubic yards of unsuitable soil material to be disposed of and replaced in accordance with the Contract Documents.

2. Payment: Payment for Disposal and Replacement (with A-3 Sand) of Unsuitable Soils shall be made at the Contract unit price per cubic yard and shall constitute full payment for all labor, materials, equipment, and

transportation to remove from the job site and dispose of all unsuitable material and furnish, place and compact suitable backfill as specified in the Contract Documents. The cost of excavation of unsuitable backfill and dewatering shall be included with the cost of the related piping or structure installation.

U. Water Service Repair

1. Measurement: Water Service Repair shall be measured by the actual number of water services satisfactorily restored in accordance with the Contract Documents.

2. Payment: Payment will be made at the Contract unit price for each Water Service Repair. Payment shall be full compensation for all labor, materials, and equipment necessary to restore a water service including furnishing and installing service piping; connection to water main and meter; corporation stop, curb stop, and service fittings; meter couplings; removal of old service piping (if applicable); cutting and threading existing pipe; all necessary jointing, removing, adjusting; all required removal of grassing; excavation; dewatering; backfill; compaction; locate wiring; boring (if required); flushing and disinfection, protecting existing structures; cleaning up the site; furnishing all material, labor, tools and equipment; and all incidental and related work to complete the item.

V. As-Built Documents and Drawings

1. Measurement: As-Built Documents and Drawings shall be measured for the complete and approved As-Built Documents and Drawings provided by Contractor to Engineer of Record in accordance with the Contract Documents, specifically the Special Conditions.

2. Payment: Payment of As-Built Documents and Drawings shall be made at the Contract lump sum price which shall be full compensation for furnishing all labor, materials, and equipment to accurately record, document, and prepare as-built drawings in AutoCAD format, in accordance with the Special Conditions. All survey work shall be performed by a surveyor licensed in the State of Georgia. Payment will be made based on a percentage of completion basis as estimated by the Contractor and approved by the Owner

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01065

PERMITS AND FEES

PART 1 - GENERAL

A. The Contractor shall obtain and pay for all permits and licenses related to his work including, but not limited to, Right-of-Way including maintenance of traffic, Glynn County Land Disturbing Activity, and NOI for NPDES coverage, as relevant to the project.

B. Permits by Owner: The Owner prior to the advertisement of the project has applied for permits with the following agencies:

Georgia Environmental Protection Division (GA EPD)

Georgia Department of Natural Resources (GA DNR)

Glynn County Tree Advisory Board

Glynn County

Georgia Soil and Water Conservation Commission (GSWCC)

(Refer to Table 01065A for permit information.)

Table 01065A
PERMIT INFORMATION

The following permits have been obtained or are anticipated to be obtained by the Owner prior to construction:

Permit	Permit No.	Issue Date
Georgia Environmental Protection Division (LS2032 Regional FM Improvements)	NPDES Permit No. GA0021521	10/05/2016
GSWCC (Erosion Control & Sedimentation Control)	Pending	Pending
Glynn County Tree Advisory Board	Pending Written Approval Tree Removal was approved at 9/26/16 Tree Advisory Board Meeting	Pending
Glynn County Land Disturbing Activity	Pending	Pending
Georgia Department of Natural Resources Notice of Intent to Discharge Storm Water Associated with Construction Activity	Pending	Pending

END OF SECTION

SECTION 01380

CONSTRUCTION PHOTOGRAPHS AND VIDEO

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Pre-construction photographs.
2. Periodic construction photographs.
3. Final Completion construction photographs.
4. Pre-construction videotapes.
5. Periodic construction videotapes.
6. Time-lapse sequence construction videotapes.

B. Related Sections include the following:

1. JWSC Standards for Water and Sewer Design and Construction.

2. Measurement and Payment: Section 01025.

3. Submittals: Special Conditions.

4. Project Closeout: Section 01700.

1.3 ALLOWANCE

A. Costs: Costs for photographs and video services shall be included in Contractor's bid price for the project. No additional payment will be made for these services.

1.4 SUBMITTALS

A. Construction Photographs: Digital or Print may be submitted in accordance with the following requirements:

1. Print Photographs:
   a. Format: 4- by 6-inch minimum smooth-surface matte prints on single-weight commercial-grade photographic paper mounted on linen or card

stock to allow a 1-inch-wide margin and enclosed back to back in clear plastic sleeves that are punched for standard 3-ring binder.

2. Digital Images: Submit a complete set of digital image electronic files as a Project Record Document on CD-ROM. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as the sensor, uncropped.

3. Identification: With all photographs provide the following information either on the back of prints or as an electronic Word or PDF document corresponding to each digital image file name.

   a. Name of Project.
   b. Name of Contractor.
   c. Date photograph was taken if not date stamped by camera.
   d. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
   e. Unique sequential identifier.

B. Video: Submit two (2) copies of each video on CD or DVD with protective sleeve or case within seven days of recording.

1. Identification: On each copy, provide an applied label with the following information:

   a. Name of Project.
   b. Name of Contractor.
   c. Date video was recorded.
   d. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
   e. Weather conditions at time of recording.

2. Transcript: Provide two (2) copies, prepared on 8-1/2-by-11-inch (215-by-280-mm) paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as corresponding videotape. Include name of Project and date of videotape on each page. Electronic Word or PDF document corresponding to the video file transcript can be provided in lieu of paper/binder copies.

1.5 COORDINATION

A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs and video without obscuring shadows.

1.6 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.7 EXTRA PRINTS

A. If requested by Owner/Engineer, photographer shall prepare extra prints of photographs. Photographer shall distribute these prints directly to designated parties who will pay the costs for extra prints.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. Photographer: Engage a qualified commercial photographer to take construction photographs.

B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

C. Film Images:

1. Date Stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken such that stamp is integral to photograph.
2. Field Office Prints: Retain one set of prints of progress photographs in the field office at Project site, available at all times for reference. Identify photographs same as for those submitted to Owner/Engineer.

D. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in filename for each image.
2. Field Office Images: Maintain one set of images on CD-ROM or DVD in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Owner/Engineer.

E. Preconstruction Photographs: Before commencement of clearing, excavation, demolition, or starting construction, take color/digital photographs of Project site, route,

and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Owner/Engineer. Contractor shall maintain a copy of the pre-construction photographs for a period of two (2) years following the completion of the project. Pre-construction photographs shall be reviewed and approved by JWSC and Engineer prior to disturbing project site.

1. Flag excavation areas, construction limits before taking construction photographs.
2. Take photographs to show existing conditions adjacent to project site and right-of-way before starting the Work. Give particular attention to existing landscaping, trees, driveways, fences, and other such structures.
3. Take photographs of existing buildings either on or adjoining project site or right-of-way to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

F. Periodic Construction Photographs: Take photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

G. Engineer-Directed Construction Photographs: From time to time, Engineer will instruct photographer about number and frequency of color/digital photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

H. Time-Lapse Sequence Construction Photographs: Take as indicated, to show status of construction and progress since last photographs were taken.

1. Frequency: Take photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment.

I. Final Completion Construction Photographs: Take color photographs after date of Substantial Completion for submission as Project Record Documents. Owner/Engineer will direct photographer for desired vantage points.

1. Do not include date stamp.

3.2 CONSTRUCTION VIDEO

A. Video Photographer: Engage a qualified commercial videographer to record construction videos.

B. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of construction. Display continuous running time and date. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

C. Narration: Describe scenes on video by audio narration by microphone or by dubbing audio narration off-site after video is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

1. Confirm date and time at beginning and end of recording.
2. Begin each video with name of Project, Contractor's name, videographer's name, and Project location.

D. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video opposite the corresponding narration segment.

E. Preconstruction Video: Before commencement of clearing, excavation, demolition, or starting construction, record video of Project site, route, and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Owner/Engineer. Contractor shall maintain a copy of the pre-construction video for a period of two (2) years following the completion of the project. Pre-construction videos shall be reviewed and approved by JWSC and Engineer prior to disturbing project site.

1. Flag excavation areas and construction limits before recording construction videotapes.
2. Record video to show existing conditions adjacent to project site and right-of-way before starting the Work. Give particular attention to existing landscaping, trees, driveways, fences, and other such structures.
3. Show existing buildings either on or adjoining project site or right-of-way to accurately record physical conditions at the start of construction.
4. Show protection efforts by Contractor.

END OF SECTION

SECTION 01640

OWNER FURNISHED MATERIALS

PART 1 - GENERAL

1.01 SCOPE

A. This Section of the Specifications identifies materials which will be or have been purchased by the Owner for use on this Project and outlines the requirements necessary to coordinate the purchase of specified materials by the Owner and defines the responsibilities of the Contractor related to the procurement, delivery, installation and start-up of the Owner furnished materials.

B. The Contractor shall be responsible for scheduling the delivery of the materials to the Project site, as well as establishing the hours of delivery and method of delivery to the Project site.

C. “Seller” shall mean the party under separate contract with Owner to furnish the products or special services specified herein.

1.02 COSTS

A. The Contractor's receiving, unloading, storing, handling, distributing, labor, installation, and overhead costs, plus profit and other expenses contemplated for the Owner furnished materials shall be included in the lump sum bid. The Contractor shall consider the freight cost to the Project site as being prepaid.

B. Should the delivered product from the Supplier not be in accordance with the Specifications, the Contract may be adjusted by a change order.

C. The amount of change order will not recognize any changes in unloading, storage, handling, labor, installation, and overhead costs, nor profit and other expenses caused by the adjustment of the final invoice amount.

D. Contractor shall pay all delivery waiting charges.

1.03 SUBMITTALS

A. The Contractor shall submit listing of Owner Furnished Materials that have been delivered with each periodic payment request as evidenced by providing copies of all bills of lading.

B. Contractor shall submit with each construction progress schedule a schedule for required deliveries of Owner Furnished Material.

C. All Seller submittals, including operation and maintenance manuals and record drawings, are to be provided from the Seller to the Contractor for submission to the Owner.

D. Manufacturer shall provide a warranty to the Contractor that the product conforms to the specifications and that the product is free from defects in materials and workmanship for a period of one (1) year from the date of final completion of the installation.

1.04 OWNER AND CONTRACTOR RESPONSIBILITIES

A. Owner will only be purchaser of the material identified in this Section. All coordination and ownership of responsibilities as identified by the Specifications associated with each item of material shall be by the Contractor. The manufacturer's installation, operation, and maintenance instructions for Owner furnished products shall also be the Contractor's responsibility.

   1. Shop drawing coordination will be the Owner's responsibility for pre-purchased Owner furnished materials.

B. All communication regarding scope of supply, delivery, installation, warranty, warranty repair, and manufacturer's services is to be conducted directly between the Contractor and the supplier.

C. All parts or adapters necessary to integrate the Owner furnished products with products provided by the Contractor shall be provided by the Contractor at no additional cost to the Owner.

D. Contractor shall be responsible for scheduling the delivery of the materials to the Project site, as well as establishing the hours of delivery, and method of delivery to the Project site. Contractor shall maintain communication with the material suppliers, and the Owner as necessary, to keep informed as to shipment schedules.

E. Should any material be damaged, lost or fail under test, and in the opinion of the Owner, such failure or damage is the result of improper handling, it shall be replaced in kind by the Contractor at no cost to the Owner.

F. Upon receipt of materials from the manufacturer or supplier, the Contractor shall make an inspection of such materials, checking and certifying the bill of lading, noting any discrepancies and obtaining a proper memorandum signed by the agent of the carrier for any shortage in the shipment, or for any damaged materials received. All bills of lading and any memorandum for shortage or damage of material in the shipment shall be promptly submitted to the Owner. The Contractor shall be responsible for distribution of all materials as required to complete the work. Materials furnished to the Contractor shall be in the custody of the Contractor from the time of receipt by the Contractor of such materials from the carrier until final acceptance of the completed work. The Contractor shall be responsible for any loss or damage to materials furnished by the Owner.

G. Unless indicated otherwise, products shall be furnished freight on board to the Project site.

H. Upon delivery, the Contractor shall conduct with Owner or Engineer a joint inspection for the purpose of identifying product, general verification of quantities, and observation of apparent condition. Such inspection will not be construed as final or as receipt of any product that, as a result of subsequent inspections and tests, are determined to be nonconforming.

I. Damaged or incomplete products to be returned for replacement shall not be unloaded, except as necessary to expedite return shipment. Contractor shall submit claims for transportation damage and expedite replacement of damaged, defective, or deficient products.

J. Indicate signed acceptance of delivery on a copy of the bill of lading.

K. Use of Owner Furnished Materials in no way relieves Contractor from warranty requirements of the project contract.

1.05 UNLOADING, STORAGE AND PROTECTION

A. Contractor shall have complete responsibility for unloading Owner Furnished Material. Unload material upon delivery to Project site. Unload material in accordance with manufacturers' instructions, or as specified.

B. Store, protect, and maintain material to prevent damage until final acceptance of completed work. Damage to or loss of material during unloading or after unloading shall be repaired to original condition, or replaced with new identical material, at the discretion of Owner at no additional cost to the Owner.

C. Maintain complete inventory of all Owner Furnished Material after their transfer to Contractor.

D. Immediately after installation, lubricate components in accordance with manufacturer's instructions.

E. Follow manufacturer's instructions for protection and maintenance until final acceptance of the Project.

F. Furnish incidental supplies including lubricants, cleaning fluids, and similar products as needed for protecting and maintaining the Owner Furnished Material.

PART 2 - PRODUCTS

2.01 SPECIFICATION

A. The Owner Furnished Materials for the Project include:

1. 11,000 linear feet of 16-inch High Density Polyethylene (HDPE) DIPS (DR11) piping for the horizontal directional drilling of the forcemain. This piping will be pre-purchased.

B. For further information, contact the Supplier.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install products in conformance with Seller furnished shop drawings and manufacturer's installation instructions.

B. Provide all interconnecting structures, equipment, piping, electrical and instrumentation work, finish painting, and appurtenances to achieve a complete and functional system.

3.02 FIELD FINISHING

A. Touch up or repair damage to coatings resulting from unloading, storage, installation, testing, and startup.

B. If finish coats are damaged extensively after transfer, completely repaint.

C. Touch up, repair, or complete repainting shall match color of original paint, and shall be fully compatible with applied primers and finish.

3.03 TESTS AND INSPECTION

A. Perform tests and inspections of installed products in accordance with Specifications and manufacturer's instructions.

END OF SECTION

SECTION 01700

PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final Completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Sections:

1. Project Record Documents: Special Conditions.

2. Construction Photographs and Video: Section 01380.

3. Operation and Maintenance Data: Section 01730.

4. JWSC Standards for Water and Sewer Design and Construction and other Sections of Specifications for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include operating certificates, and similar releases.

4. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
7. Complete startup testing of systems.
8. Submit test/adjust/balance records.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover in heat and other utilities.
11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
12. Complete final cleaning requirements, including touchup painting.
13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, JWSC/Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. JWSC/Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by JWSC/Engineer, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining Final Completion status, complete the following:

1. Submit a final Application for Payment according to Contract Requirements.
2. Submit certified copy of JWSC/Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by JWSC/Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
5. Submit consent of surety to final payment.
6. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, JWSC/Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. JWSC/Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order
2. Organize items applying to each space by major element.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Engineer.
    d. Name of Contractor.
    e. Page number.

4. Submit list of incomplete items in one of the following formats:

    a. PDF electronic file.
    b. Three (3) paper copies of punch list, unless otherwise indicated. JWSC/Engineer will return one (1) copy.

1.6 WARRANTIES

A. Submittal Time: Unless otherwise requested, submit warranty documentation prior to request for Final Completion inspection. Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Final Completion is indicated. Upon completion of successful final inspection, submit an original Letter of Warranty to the JWSC, signed by an authorized Officer of the Contracting company, on the Contractor's letterhead, guaranteeing workmanship, materials, and equipment for a period of 12 months from the date of the letter. Letter shall be dated with five (5) days following the successful final inspection.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Specifications.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide table of contents at beginning of document.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

D. WARRANTY REQUIREMENTS
1. When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
2. When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
3. Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
4. Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
5. The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
6. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.
7. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner for approval prior to final execution.
8. Provide written certifications of compliance and other commitments and agreements for continuing services in a form which includes all pertinent information including:
    a. Quantities and dates of shipments.
    b. Attestment that materials incorporated into the Work comply with specified requirements. Certification shall not be construed as relieving the

Contractor from furnishing satisfactory materials, if the material is later found to not meet specified requirements.

c. Signature of officer of company.

d. Laboratory test reports submitted with certificates of compliance shall show dates of testing, specification requirements under which testing was performed, and results of tests.

e. Refer to Special Conditions and individual Specification Sections for specific content requirements, and particular requirements for submittal of special warranties.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal, State, and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

2. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
g. Sweep concrete floors broom clean in unoccupied spaces.
h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
i. Clean transparent materials, including glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish glass, taking care not to scratch surfaces.
j. Remove labels that are not permanent.
k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

    1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.

l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
m. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.

    1) Clean HVAC system in compliance with NADCA’s ACR Standard, latest version. Provide written report upon completion of cleaning.

q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
r. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Do not burn waste materials. Do not bury debris or excess materials on the Owner’s property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION

SECTION 01730

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.

a. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent Sections of Specifications.

2. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

B. Related Requirements Described Elsewhere:

1. Special Conditions

2. 01700: Project Closeout

3. Requirements as listed in various specification sections and in JWSC Standards for Water and Sewer Design and Construction.

1.02 QUALITY ASSURANCE

A. Preparation of data shall be done by personnel:

1. Trained and experienced in maintenance and operation of described products.

2. Familiar with requirements of the relevant Specification Sections.

3. Skilled as technical writer to the extent required to communicate essential data.

4. Skilled as draftsman competent to prepare required drawings.

1.03 FORM OF SUBMITTALS

A. Prepare data in form of an instructional manual for use by Owner's personnel.

B. Format: Hard Copy Manuals

1. Size: 8-1/2 inches by 11 inches.

2. Paper: 20-pound minimum, white, for typed pages.

3. Test: Manufacturer's printed data, or neatly typewritten.

4. Drawings:

   a. Provide reinforced punched binder tab, bind in with text.

   b. Reduce larger drawings and fold to size of text pages but not larger than 14 inches by 17 inches.

5. Provide fly-leaf for each separate product, or each piece of operating equipment.

   a. Provide typed description of products and major component parts of equipment.

   b. Provide identified tabs.

6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:

   a. Title of Project.

   b. Identity of separate structure as applicable.

   c. Identity of general subject matter covered in the manual.

7. Binders:

   a. Commercial quality three-post binders with durable and cleanable plastic covers.

   b. Maximum post width: 2 inches.

   c. When multiple binders are used, correlate the data into related consistent groupings.

C. Format: Electronic Copy Manuals

1. All materials identified in 1.03 B. above shall also be provided in Adobe Acrobat© Portable Document Format (PDF) on CD, DVD, or USB Flash Drive.

1.04 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.

1. Contractor, name of responsible principal, address and telephone number.

2. A list of each product required to be included, indexed to content of the volume.

3. List, with each product, the name, address and telephone number of:

    a. Subcontractor or installer.

    b. A list of each product required to be included, indexed to content of the volume.

    c. Identify area of responsibility of each.

    d. Local source of supply for parts and replacement.

4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.

B. Product Data:

1. Include only those sheets which are pertinent to the specific product.

2. Annotate each sheet to:

    a. Clearly identify specific product or part installed.

    b. Clearly identify data applicable to installation.

    c. Delete references to inapplicable information

C. Drawings:

1. Supplement product data with drawings as necessary to clearly illustrate:

    a. Relations of component parts of equipment and systems.

    b. Control and flow diagrams.

2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.

3. Do not use Project Record Documents as maintenance drawings.

D. Written text, as required to supplement product data for the particular installation:

1. Organize in consistent format under separate headings for different procedures.

2. Provide logical sequence of instructions of each procedure.

E. Copy of each warranty, bond and service contract issued.

1. Provide information sheet for Owner's personnel, give:

a. Proper procedures in event of failure.

b. Instances which might affect validity of warranties or bonds.

1.05 MANUAL FOR MATERIALS AND FINISHES

A. Submit four (4) copies of complete manual in final form.

B. Content: for architectural products, applied materials and finishes:

1. Manufacturer's data, giving full information on products.

a. Catalog number, size, composition.

b. Color and texture designations.

c. Information required for reordering special manufacturing products.

2. Instructions for care and maintenance.

a. Manufacturer's recommendation for types of cleaning agents and methods.

b. Cautions against cleaning agents and methods which are detrimental to product.

c. Recommended schedule for cleaning and maintenance.

C. Content, for moisture protection on weather-exposed products:

1. Manufacturer's data, giving full information on products.

a. Applicable standards.

b. Chemical composition.

c. Details of installation.

2. Instructions for inspection, maintenance and repair.

D. Additional requirements for maintenance data: Refer to respective sections of Specifications and JWSC Standards for Water and Sewer Design and Construction.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit four (4) copies of complete manual in final form.

B. Content, for each unit of equipment and system, as appropriate:

1. Description of unit and component parts.

    a. Function, normal operating characteristics, and limiting conditions.

    b. Performance curves, engineering data and tests.

    c. Complete nomenclature and commercial number of replaceable parts.

2. Operating procedures:

    a. Start-up, break-in, routine and normal operating instructions.

    b. Regulation, control, stopping, shut-down and emergency instructions.

    c. Summer and winter operating instructions.

    d. Special operating instructions.

3. Maintenance procedures:

    a. Routine operations.

    b. Guide to "trouble-shooting".

    c. Disassembly, repair and reassembly.

    d. Alignment, adjusting and checking.

4. Servicing and lubrication required.

5. Manufacturer's printed operating and maintenance instructions.

6. Description of sequence of operation by control manufacturer.

7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.

    a. Predicted life of parts subject to wear.

    b. Items recommended to be stocked as spare parts.

8. As-installed control diagrams by controls manufacturer.

9. Each contractor's coordination drawings.

    a. As-installed color coded piping diagrams.

10. Charts of valve tag numbers, with location and function of each valve.

11. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.

12. Other data as required under pertinent sections of specifications and JWSC Standards for Water and Sewer Design and Construction.

C. Content, for each electric and electronic systems, as appropriate:

1. Description of system and component parts.

    a. Function, normal operating characteristics, and limited conditions.

    b. Performance curves, engineering data and tests.

    c. Complete nomenclature and commercial number of replaceable parts.

2. Circuit directories and panelboards.

    a. Electrical service.

    b. Controls.

    c. Communications.

3. As installed color coded wiring diagrams.

4. Operating procedures:

    a. Routine and normal operating instructions.

    b. Sequences required.

    c. Special operating instructions.

5. Maintenance procedures:

    a. Routine operations.

    b. Guide to "trouble-shooting".

    c. Disassembly, repair and reassembly.

    d. Adjustment and checking.

6. Manufacturer's printed operating and maintenance instructions.

7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

8. Other data as required under pertinent sections of specifications and JWSC Standards for Water and Sewer Design and Construction.

D. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.

E. Additional requirements for operating and maintenance data: Respective sections of Specifications and JWSC Standards for Water and Sewer Design and Construction.

1.07 SUBMITTAL SCHEDULE

A. Submit two (2) copies of preliminary draft of proposed formats and outlines of contents of Operating and Maintenance Manuals within 60 days after Notice to Proceed.

1. The Engineer and Owner will review the preliminary draft and return one (1) copy with comments.

B. Submit two (2) copies of completed data in final form no later than 30 days following the Engineer's and Owner's review of the last shop drawing and/or other submittal specified in the Special Conditions and other specification sections.

1. One (1) copy will be returned with comments to be incorporated into final copies.

C. Submit four (4) hard copies and two (2) CDs, DVDs, or USB Flash Drives with electronic PDF copies of approved manual in final form directly to the offices of the JWSC, within 30 calendar days of product shipment to the project site and preferably within 30 days after the reviewed copy is received.

D. Append four (4) hard copies and two (2) CDs, DVDs, or USB Flash Drives with electronic PDF copies of addendum to the operation and maintenance manuals as applicable and certificates as specified within 30 days after final inspection and equipment start-up test.

1.08 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

B. Review operating and maintenance manual with personnel in full detail to explain all aspects of operations and maintenance which shall constitute the basis of

instruction.

1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

PART 2 - PRODUCTS - (Not Used)

PART 3 - EXECUTION - (Not Used)

END OF SECTION

SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. This Section provides for the complete or partial removal and disposal of specified existing structures, foundations, slabs, piping, mechanical, electrical, existing (to be abandoned) piping and miscellaneous appurtenances encountered during construction operations.

2. Demolition includes:

a. Demolition, partial removal and cutting of existing masonry and metals as required for the new construction.

b. Distribution of salvageable and excess unacceptable material and equipment as specified below.

c. Off-site disposal of excess and unacceptable materials and equipment.

3. The Contractor shall examine the various Drawings regarding the existing site, visit the project site and determine for himself the extent of the work affected therein and all conditions under which he is required to perform the various operations.

1.02 PERMITS AND NOTICES

A. Permits and Licenses: Contractor shall obtain all necessary permits and licenses for performing the work and shall furnish a copy of same to the Owner and Engineer prior to commencing the work. The Contractor shall comply with the requirements of the permits.

B. Notices: Contractor shall issue written notices of planned demolition to companies or local authorities owning utility conduit, wires or pipes running to or through the project site. Copies of said notices shall be submitted to the Owner and Engineer.

C. Utility Services: Contractor shall notify utility companies or local authorities furnishing gas, water, electrical, telephone or sewer service to remove any equipment owned by them in structures to be demolished and to remove, disconnect, cap or plug their services to facilitate demolition.

1.03 CONDITIONS OF STRUCTURES

A. The Owner and the Engineer assume no responsibility for the actual condition of the structures to be demolished or modified.

1.04 REMOVAL OF EXISTING EQUIPMENT

A. Scope of work: Contractor shall furnish all labor, equipment, materials, and incidentals necessary to remove existing equipment, piping, fittings, valves, and/or appurtenances not required for the proper operation of the project improvements as indicated on the Drawings and Specifications. Removal shall be consistent with the final configuration of the new and modified systems as indicated on the Drawings, as specified herein, or as required by the Owner.

B. The Contractor shall not proceed with the removal of any equipment, piping, or appurtenances without specific approval of the Owner. Any equipment, piping, or appurtenances removed without proper authorization, which are necessary for the operation of the project improvements shall be replaced to the satisfaction of the Owner at the Contractor’s expense.

C. All equipment removed shall remain the property of the Owner unless designated otherwise by the Owner.

E. If the Owner elects not to retain ownership of a certain item, the item shall become the property of the Contractor and shall be removed from the site at the Contractor’s expense.

F. Concrete, concrete block and unsalvageable bricks shall be hauled to an appropriate waste disposal site by the Contractor.

G. All other material shall be hauled to an appropriate waste disposal site by the Contractor.

H. The storage of or sale of removed items on the site will not be allowed.

1.05 TRAFFIC AND ACCESS

A. Conduct demolition and modification operations, and the removal of equipment and debris to ensure minimum interference with roads, streets, walkways both on-site and off-site, and to ensure minimum interference with occupied or used facilities.

B. Special attention is directed towards maintaining safe and convenient access to the new and existing facilities by Owner’s personnel and associated vehicles. Relocation of the Contractor's materials, labor, or equipment due to uncoordinated interruption will be at the Contractor's expense.

D. Do not close or obstruct streets, walkways or other occupied or used facilities without permission from the authorizing agency, Engineer and Owner. Provide approved alternate routes around closed or obstructed traffic in access ways.

1.06 DAMAGE

Promptly repair damage caused to adjacent facilities by demolition operations as directed by the Engineer and at no cost to the Owner.

1.07 UTILITIES

A. Maintain new and existing utilities to remain in service and protect against damage during demolition operations.

B. Do not interrupt existing or new utilities serving occupied or used facilities, except when authorized by the Owner or Engineer. Provide temporary services during interruptions to existing utilities as acceptable to the Owner and Engineer.

C. The Contractor shall cooperate and coordinate with the Owner to shut off utilities serving structures of the existing facilities as required by demolition operations.

E. The Contractor shall be solely responsible for making all necessary arrangements and for performing any necessary work involved in connection with the discontinuance or interruption of all public and private utilities or services under this jurisdiction of the utility companies.

E. All utilities being abandoned shall be disconnected and terminated at the service mains in conformance with the requirement of the utility companies or the municipality owning or controlling them.

1.08 POLLUTION CONTROL

A. For pollution control, use water sprinkling, temporary enclosures, and other suitable methods as necessary to limit the amount of dust and dirt rising and scattering in the air to the lowest level of air pollution practical for the conditions of work. Comply with the governing regulations.

1.09 QUALITY CONTROL

A. Protect all existing materials and equipment to be salvaged or reused from damage.

B. Cap or plug all lines to be abandoned. Place covers and label all junction boxes, conduits and wire as abandoned.

C. Leave all exposed ends of all pipe and conduit or junction boxes covered and safe.

PART 2 - MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 02110

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This work includes clearing, grubbing, removing, and disposing of vegetation and debris within the limits of construction and easement areas adjacent to the right-of-way as shown on the Drawings or as designated by the Engineer. Except, do not remove objects designated to remain or removed according to other sections of these Specifications. This work also includes preserving (from injury and defacement) vegetation and objects designated to remain in place.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Sections of the Technical Specifications, apply to this Section.

B. JWSC Standards for Water and Sewer Design and Construction

C. Section 01380: Construction Photographs and Video

D. Section 02200: Earthwork

E. Section 02220: Excavating, Backfilling, and Compacting.

1.3 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting, capping or sealing, and removing site utilities as well as abandoning site utilities in place.
7. Temporary erosion- and sedimentation-control measures.

B. Related Work Described Elsewhere:

1. *September 12, 2016 Ellis & Associates, Inc. Report of Geotechnical Exploration Brunswick-Glynn County JWSC Forcemain, St. Simons Island, Georgia. E&A Project No. 35-24198.*

1.4 DEFINITIONS

A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.

D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, as indicated on Drawings.

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, as indicated on Drawings.

F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.5 MATERIAL OWNERSHIP

A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain on Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes pre-construction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed photographs or videotape.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.7 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide approved alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify Georgia811 (www.Georgia811.com) Utilities Protection Center (UPC) or other relevant utility locators for area where Project is located before site clearing.

C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

D. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

E. Do not direct vehicle or equipment exhaust towards protection zones.

F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

G. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 02200 Earthwork and 02220 Excavating, Backfilling, and Compacting.

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Flag or wrap a 1-inch blue vinyl tie tape flag around each tree trunk at 54 inches above the ground.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion and sedimentation control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. General: Protect trees and plants remaining on-site as identified on Drawings. Unless specifically indicated for removal, protection shall be provided for trees and plants.

B. Replace trees, shrubs, and other vegetation that is noted to remain or to be relocated that are damaged by construction operations in a manner approved by Engineer at no additional cost to Owner.

3.4 EXISTING UTILITIES

A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place in accordance with Section 02050: Demolition.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees unless specifically identified for removal.
   a. All tree removals must have been approved by the Glynn County Tree Advisory Board.

b. All tree removal operations shall be in accordance with Glynn County ordinances and permit requirements.

2. Do not remove shrubs and other vegetation indicated to remain or to be relocated.
3. Grind down stumps and remove roots, obstructions, and debris to a depth of 36 inches below exposed subgrade.
4. Use only hand methods for grubbing within protection zones.
5. Only those branches of existing trees that interfere in some way with the Contractor's operations are to be trimmed and only with the approval of Glynn County.
6. Where necessary, repairs to damaged wood caused by Contractor's operations shall be performed under the direction of a certified arborist at no additional cost to Owner, as required by Glynn County.
7. Chip removed tree branches and stockpile in areas approved by Engineer and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and non-soil materials from topsoil, including clay lumps, gravel, and other objects more than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil, as necessary, to allow for respreading deeper topsoil.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

SECTION 02140

DEWATERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope of Work: The work to be performed under this section shall include furnishing all equipment and labor necessary to remove storm or subsurface waters from excavation areas in accordance with the requirements of this project.

B. Related Work Described Elsewhere:

1. JWSC Standards for Water and Sewer Design and Construction

2. Earthwork: Section 02200.

3. *September 12, 2016 Ellis & Associates, Inc. Report of Geotechnical Exploration Brunswick-Glynn County JWSC Forcemain*, St. Simons Island, Georgia. E&A Project No. 35-24198.

1.02 QUALITY ASSURANCE

A. The dewatering of any excavation area and the disposal of the water shall be in strict accordance with the latest revision of all local, state, and federal government rules and regulations.

B. Qualifications: The temporary dewatering system shall be designed by a firm who regularly engages in the design of dewatering systems and who is fully experienced, reputable and qualified in the design of such dewatering systems. The firm shall have a successful record of operation for a minimum of five (5) years prior to bid date.

1.03 SUBMITTALS

A. Contractor shall engage a Professional Geotechnical Engineer registered in the State of Georgia to prepare a signed and sealed Dewatering Plan for the project if either of the following should occur:

1. If Contractor anticipates dewatering activities will be necessary along the route of the forcemain installed via open cut construction or for the Horizontal Directional Drill pits.

2. If Contractor anticipates dewatering activities will be necessary at Dunbar Creek WPCP for the installation of the forcemain tie-in to the existing junction box.

B. Materials and Shop Drawings: Shop drawings required to establish compliance with the specifications and any Dewatering Plan shall be submitted in accordance with the provisions of the Special Conditions. Submittals shall include at minimum

the following:

1. Design notes and drawings.

2. Descriptive literature of the temporary dewatering system.

3. Layout of all pumps and piping involved.

4. Bill of materials.

PART 2 – PRODUCTS

2.01 GENERAL

A. The Contractor shall provide adequate equipment for the removal of storm or subsurface waters which may accumulate in the excavations. The equipment used for dewatering systems shall be standard dewatering equipment of proven ability as designed and manufactured by firms having experience in the design and production of such equipment. The equipment furnished shall be designed, constructed and installed in accordance with the best practices and methods.

B. The Contractor shall engage a Professional Geotechnical Engineer registered in the State of Georgia to design temporary dewatering systems for the project in compliance with the Dewatering Plan. The Contractor shall submit to JWSC for review, a conceptual plan for the dewatering systems prior to commencing work. The dewatering systems installed shall be in conformity with the overall construction plan, and certification of this shall be provided by the Geotechnical Professional Engineer. The Contractor shall be required to monitor the performance of the dewatering systems during the progress of the work and require such modifications as may be necessary to assure that the systems will perform satisfactorily. Dewatering systems shall be designed in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed structures and to preserve the integrity of adjacent structures.

PART 3 – EXECUTION

3.01 DEWATERING

A. The Contractor shall provide adequate equipment for the removal of storm or subsurface waters which may accumulate in the excavation.

B. If subsurface water is encountered, the Contractor shall utilize suitable equipment to adequately dewater the excavation so that it will be dry for work and pipe laying. A wellpoint system or other Engineer approved dewatering method shall be utilized if necessary to maintain the excavation in a dry condition for preparation of the trench bottom and for pipe laying. The water table should be maintained at least 2 feet below the required depth of excavation. The dewatering system should not be decommissioned until sufficient deadweight

exists on the structures to prevent uplift or an uplift protection system, if necessary, is in place.

C. Dewatering by trench pumping will not be permitted if migration of fine grained natural material from bottom, side walls, or bedding material will occur.

3.02 DISPOSAL

A. Water pumped from the trench or other excavation shall be disposed of in storm sewers having adequate capacity, canals, or suitable disposal pits.

B. Contractor is responsible for acquiring any permits required to discharge the water and shall protect waterways from turbidity during the operation by the use of Best Management Practices.

C. In areas where adequate disposal sites are not available, partially backfilled trenches may be used for water disposal only when the Contractor's plan for trench disposal is approved in writing by the Engineer. The Contractor's plan shall include temporary culverts, barricades and other protective measures to prevent damage to property or injury to any person or persons.

D. No flooding of streets, roadways, driveways, or private property will be permitted. Engines driving dewatering pumps shall be equipped with residential type mufflers. Where practical and feasible, electric "drops" should be used in lieu of portable generators.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope of Work: This section includes materials, testing, and earthwork for excavations, fills, and embankments.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 1 Specification Sections, apply to this Section.

B. *September 12, 2016 Ellis & Associates, Inc. Report of Geotechnical Exploration Brunswick-Glynn County JWSC Forcemain, St. Simons Island, Georgia. E&A Project No. 35-24198.*

C. JWSC Standards for Water and Sewer Design and Construction

D. Related Sections:

1. Dewatering: Section 02140.

2. Excavating, Backfilling, and Compacting: Section 02220.

3. Loaming, Seeding and Mulching: Section 02922.

4. Solid Sodding: Section 02934.

1.03 STATUTORY REQUIREMENTS

A. All excavation, trenching, sheeting, bracing, etc., shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926.650 Subpart P) and State of Georgia and local requirements. Where conflict between OSHA, State and local regulations exists, the most stringent requirements shall apply.

1.04 SUMMARY

A. Contractor shall furnish all labor, materials, equipment and incidentals required and perform all excavation work and grading; place and compact backfill and fill; and dispose of unsuitable, waste and surplus materials as shown on the Drawings and as specified herein.

B. Contractor shall provide the services of a Licensed Professional Engineer registered in the State of Georgia to prepare temporary excavation support system designs and submittals, as necessary.

C. Contractor shall furnish and install temporary excavation support systems, including sheeting, shoring and bracing, as necessary, to insure the safety of personnel and protect adjacent structures, piping, etc., in accordance with Federal, State and local laws, regulations and requirements.

D. All work shall be performed in accordance with the geotechnical recommendations as listed in 1.02 B above. Where the requirements of this section conflict with the recommendations of the geotechnical recommendations, the more stringent requirements shall be employed.

1.05 SUBMITTALS

A. Excavation support system designs shall be prepared by a Licensed Professional Engineer, registered in the State of Georgia having a minimum of five (5) years of professional experience in the design and construction of excavation support systems. Contractor shall submit an original and electronic version in PDF format of the Licensed Professional Engineer's certification, stating that the excavation support systems designs have been prepared by the Professional Engineer and that the Professional Engineer will be responsible for their execution.

B. Submit two (2) copies of a report from an approved testing laboratory verifying that any off-site borrow material conforms to the gradation specified.

1.06 REFERENCE STANDARDS

A. Where reference is made to American Society for Testing and Materials (ASTM) standards, the revision in effect at the time of bid opening shall apply.

1.07 QUALITY ASSURANCE

A. At all structures, prior to the placement of bedding material, concrete work mats, structural fill or structural concrete, coordinate with the soils testing laboratory to verify the suitability of the existing subgrade soil and to perform in-place soil density tests as required to verify that the bearing capacity of the subgrade is sufficient.

B. Prior to and during the placement of backfill and fill, coordinate with the soils testing laboratory to perform in-place soil density tests to verify that the backfill/fill material has been compacted in accordance with the compaction requirements specified elsewhere. The Engineer may designate areas to be tested.

1.08 DEFINITIONS

A. Where the phrase "in-the-dry" is used in this Section, it shall be defined to mean a soil condition such that the in-place moisture content of the soil at that time is no more than two (2) percentage points above the optimum moisture content of that soil as determined by the laboratory test of the moisture-density relation appropriate to the specified level of compaction.

B. Where used in this Section, "structures" refers to all buildings, tanks, wet wells, manholes and below grade vaults or structures.

1.09 TESTING REQUIREMENTS

A. Determination of laboratory moisture-density relationship and maximum density shall be by the Modified Proctor Method of ASTM D-1557. At least one (1) test per soil type shall be made.

B. In place soil density shall be determined either by use of a Nuclear Density Meter per ASTM D-2922 or by use of the Drive Sleeve Method per ASTM D-2937. In place field densities shall be taken at least one (1) every 2,500 square feet at not greater than one (1) foot vertical intervals for all areas of potential building construction. Field Density Tests are to be located no further than 300 feet apart on center with a minimum of one (1) per roadway and one (1) per 5,000 square feet of parking/maneuvering area. One (1) density test is required for each pad or isolated footing and for every 20 linear feet of strip/wall footing length. For each tank mat foundation at least four (4) in place field densities shall be taken. In place field densities shall be taken at least one (1) every 300 feet of utility trench and not further than one (1) foot vertically or per lift, whichever is less.

C. Fill material from offsite shall be tested using a minus 200 sieve wash to check grain size. At least one (1) such test shall be run per 500 cubic yards of material brought from offsite.

D. Compaction shall be deemed to comply with the Specifications if no tests fall below the specified relative compaction. The Contractor shall pay the costs of any retesting of work not conforming to the Specifications.

E. "Relative compaction" is the ratio, expressed as a percentage, of the in-place density to the laboratory maximum density.

F. Density tests will be made for determination of specified compaction by an independent testing laboratory provided by the Contractor as approved by the Engineer. Tests will be made in locations reviewed and approved by the Engineer. If any tests are unsatisfactory, the Contractor shall re-excavate and re-compact the fill or backfill until the desired compaction is obtained. Additional compaction tests will be taken to each side of an unsatisfactory test at locations approved by the Engineer to determine the extent of re-excavation and re-compaction necessary.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PREPARATION

A. Test Pits

1. Perform exploratory excavation work (test pits) for the purpose of verifying the location of underground utilities and structures and to check for unknown utilities and structures, prior to commencing excavation work.

2. Test pits shall be backfilled as soon as the desired information has been obtained. Backfilled surfaces shall be stabilized in accordance with approved erosion and sedimentation control plans and specifications.

B. Dewatering and Drainage Systems

1. Temporary dewatering and drainage systems shall be in place and operational prior to beginning excavation work. All dewatering systems shall be in accordance with Section 02140: Dewatering.

3.02 EXCAVATION SUPPORT

A. Furnish, install, monitor and maintain excavation support (e.g., shoring, sheeting, bracing, trench boxes, etc.) as required by Federal, State or local laws, ordinances, regulations and safety requirements. Support the sides of excavation, to prevent any movement which could in any way reduce the width of the excavation below that necessary for proper construction and to protect adjacent structures from undermining, settlement or other damage. Take care to prevent the formation of voids outside of sheeting. If voids occur behind sheeting, immediately backfill and compact the voids with common fill material. Voids in locations that cannot be properly compacted upon backfilling shall be filled with lean concrete.

B. Install excavation supports outside the neat lines of foundations. Supports shall be plumb and securely braced and tied in position. Excavation support shall be adequate to withstand all pressures to which the supports will be subjected. Any movement or bulging of supports shall be corrected to provide the necessary clearances, dimensions and structural integrity.

C. Excavation Supports Left in Place

1. Excavation supports that are required to remain in place, if applicable, are indicated on the Drawings.

2. The Owner or Engineer may direct that certain excavation supports remain in place, or be cut off at any specific elevation. Supports directed by the Owner or Engineer to be left in place and not so designated on the

Drawings or otherwise specified herein to remain in place, will be paid for in accordance with the Terms and Conditions of the contract. If the Contractor believes that such a directive increases Contractor's cost and would thereby entitle Contractor to a change in contract cost, Contractor shall notify the Engineer in accordance with the applicable article(s) in the Terms and Conditions pertaining to changes in the work.

3. The right of the Owner or Engineer to direct that certain excavation supports remain in place shall not be construed as creating any obligation on the Owner or Engineer to give such direction, nor shall failure to give such direction relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient excavation supports to prevent any movement of the ground or damage to adjacent structures.

D. Excavation supports shall be carefully removed in such manner so as not to endanger the Work or other adjacent structures, roadways, utilities, or property. All voids left or caused by withdrawal of supports shall be immediately filled with sand and compacted.

3.03 STRUCTURAL EXCAVATION PROCEDURES

A. Excavations for structures shall be suitably wide for construction of the structures, including excavation supports, dewatering and drainage systems and working clearances.

B. Excavation shall be performed in-the-dry and shall be accomplished by methods which preserve the undisturbed state of subgrade soils. Drainage and dewatering systems shall be in place and operational prior to beginning excavation work. In no case shall the earth be plowed, scraped or excavated by any means so near to the finished subgrade that would disturb the finished subgrade. Hand excavation of the final 3 to 6-in may be required to obtain a satisfactory, undisturbed subgrade. Subgrade soils which become soft, loose, "quick", or otherwise unsatisfactory for support of structures as a result of inadequate excavation, dewatering, or other construction methods shall be removed and replaced with lean concrete, compacted structural fill or suitable crushed rock, subject to prior approval by the Engineer, at no additional cost to the Owner.

C. When excavations have reached the required subgrade, notify the soils testing laboratory to verify the suitability of the existing subgrade soils for the anticipated foundation and structural loadings. If the existing subgrade soils are determined to be unsuitable, follow the requirements of paragraph 3.03 D and the geotechnical report identified in 1.02 B.

D. Subgrade Preparation

1. To reduce the potential for post construction settlements of pipelines which bear in loose clayey soils (Soil Boring B-6 between 12 to 17 feet)

and loose organic soils (Soil Boring B-1 between 2.5 to 4.5 feet) the following is recommended:

a. At least one (1) foot of clayey soils (SC) below the pipeline inverts be over-excavated and replaced with compacted structural backfill to final bearing elevations.

b. If encountered at the structures bearing level, organic soils (A-8) should be completely removed below the structures and replaced with compacted structural fill.

c. Compacted structural fill should then be placed around and above structures and pipelines to final grade.

d. Alternatively, to reduce the amount of structural fill and over-excavation, a medium duty woven geotextile such as MIRAFI 600X, or equivalent, may be used as a barrier between compacted fill and clayey materials. If a woven geotextile is used, the amount of over-excavation can be waived for the pipeline. The geotextile should be placed in the excavation bottom and sides above the clayey soils creating a barrier between the clayey soils and structural backfill to preclude contamination of the backfill. A compacted structural fill material should then be used to backfill to the final bearing elevation and around and above structures and pipelines to final grade.

E. Over-excavation beyond the limits and depths required by the Contract Documents shall be replaced at no additional cost to the Owner by structural fill or other approved material subject to the prior approval of the Engineer.

3.04 GENERAL FILLING AND BACKFILLING PROCEDURES

A. Fill and backfill materials shall be placed in lifts to suit the specified compaction requirements to the lines and grades required, making allowances for settlement and placement of cover materials (i.e. topsoil, sod, etc). Soft spots or uncompacted areas shall be corrected.

B. Fill and backfill materials shall not be placed on frozen surfaces, or surfaces covered by snow or ice. Fill and backfill material shall be free of snow, ice and frozen earth.

C. Compaction in open areas may be accomplished by any of the following methods: compaction equipment, fully loaded ten-wheel trucks, tractor dozers weighing at least 30,000 lbs and operated at full speed, or heavy vibratory rollers. Compaction in confined areas (including areas within a 45-degree angle extending upward and outward from the base of a wall) and in areas where the use of large equipment is impractical, shall be accomplished by hand operated

vibratory equipment or mechanical tampers. Lift thickness shall not exceed 6-inches (measured before compaction) when hand operated equipment is used.

D. Fill and backfill shall not be placed and compacted when the materials are too wet to properly compact (i.e. the in-place moisture content of the soil at that time is no more than three (3) percentage points above the optimum moisture content of that soil as determined by the laboratory test of the moisture-density relation appropriate to the specified level of compaction).

3.05 FILL AND BACKFILL PROCEDURES

A. Fill and backfill material placed immediately adjacent to and within 10-ft of all structures shall be select fill. All structure water-tightness tests and dampproofing/waterproofing shall be completed prior to placing fill or backfill around structures. Place and compact select fill in even lifts of 6-inches (compacted thickness) uniformly around the structure.

B. Common fill may be used in areas beyond those designated for select fill unless shown or specified otherwise. Common fill shall be placed in even lifts having a maximum thickness (measured before compaction) of 12-inches.

C. Fill required beneath building slabs or slabs on grade (except sidewalks) shall be structural fill. Place and compact structural fill in even lifts of 6-inches (compacted thickness).

3.06 EMBANKMENT FILL PROCEDURES

A. Prior to placing embankment fill materials, all organic materials (including peat and loam) and loose inorganic silt material (loess) shall be removed from areas beneath the embankments. If the subgrade slopes are excessive, the subgrade shall be stepped to produce a stable, horizontal surface for the placement of embankment materials. The existing subgrade shall then be scarified to a depth of at least 6-inches.

B. Embankment fill shall consist of common fill material and shall be placed and compacted in even lifts of 12-inches (compacted thickness).

C. Rock may be used in embankment fill only with prior, written approval of the Engineer.

3.07 IMPERVIOUS FILL

A. Impervious fill shall be placed in controlled, even lifts having a maximum thickness (measured before compaction) of 6-inches. Compaction shall be sufficient to attain a permeability of less than 1x10-7 cm/sec.

B. Moisture content of impervious fill to be compacted shall be maintained at or near its optimum moisture content (minus 2 to plus 3 percent).

3.08 COMPACTION REQUIREMENTS

A. Compaction shall be performed in accordance with Section 02220: Excavating, Backfilling, and Compacting.

3.09 DISPOSAL OF UNSUITABLE, WASTE AND/OR SURPLUS EXCAVATED MATERIAL

A. Unsuitable, waste and surplus excavated material shall be removed and disposed of off-site. Materials may be temporarily stockpiled in an area within the limits of construction that does not disrupt construction activities, create any nuisances or safety hazards, or otherwise restrict access to the work site, as approved by Owner.

3.10 GRADING

A. Grading shall be performed to the lines and grades shown on the Construction Drawings. All objectionable material encountered within the limits indicated shall be removed and disposed of. Subgrades shall be completely and continuously drained and dewatered throughout the grading process. Install temporary drains, drainage ditches, etc., to intercept or divert surface water which may affect the execution or condition of grading work.

B. If at the time of grading it is not possible to place any material in its proper section of the Work, it shall be stockpiled in approved areas for later use. No extra payment will be made for the stockpiling or double handling of excavated material.

C. Stones or rock fragments larger than 2-inches in their greatest dimensions will not be permitted within the top 6-inches of the finished grade of fills and embankments.

D. In cut areas, all loose or protruding rocks in slopes shall be removed to line or finished grade of the slope. All cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Construction Drawings unless otherwise directed by the Engineer.

END OF SECTION

SECTION 02220

EXCAVATING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The work included under this Section consists of clearing, excavating, grading and backfilling as required for the construction of the buildings, structures, piping and appurtenances as shown on the Drawings and specified herein.

B. Related Work Described Elsewhere:

1. JWSC Standards for Water and Sewer Design and Construction

2. Dewatering: Section 02140.

3. Clearing and Grubbing: Section 02110.

4. Earthwork: Section 02200.

5. *September 12, 2016 Ellis & Associates, Inc. Report of Geotechnical Exploration Brunswick-Glynn County JWSC Forcemain, St. Simons Island, Georgia. E&A Project No. 35-24198.*

C. Definitions:

1. Maximum Density: Maximum weight in pounds per cubic foot of a specific material.

2. Optimum Moisture: Percentage of water in a specific material at maximum density.

3. Rock Excavation: Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.

4. Suitable: Suitable materials for fills shall be a non-cohesive, non-plastic granular local sand and shall be free from vegetation, organic material, marl, silt or muck and shall generally consist of soils classified SP per ASTM D-2487. The Contractor shall furnish all additional fill material required. Where shown on the Drawings, back fill shall be No. 57 stone meeting all applicable Georgia Department of Transportation standards. All fill and backfill material shall be subject to approval of the Engineer.

5. Unsuitable: Unsuitable materials are highly organic soil (peat or muck) or loose to very loose clayey soils classified as Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 or Groups A-2-6, A-2-7, A-4, A-5, A-6, A-7, and A-8 according to AASHTO M 145, or a combination of these groups.

   a. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Plan for Earthwork: The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. Prior to commencing the excavation, the Contractor shall submit a plan of his proposed operations to the Engineer for review. The Contractor shall consider, and his plan for excavation shall reflect, the equipment and methods to be employed in the excavation. No claims for extras based on substrata or groundwater table conditions will be allowed.

1.02 QUALITY ASSURANCE

A. A Testing Laboratory employed by the Contractor and approved by the Engineer will make such tests as are specified. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of his progress. Costs for all testing shall be paid by the Contractor, including any and all tests which have to be repeated because of the failure of the tested material to meet specifications. Testing Laboratory or Contractor shall provide a map of all test locations.

B. Determination of laboratory moisture-density relationship and maximum density shall be by modified Proctor method of ASTM D-1557. At least one (1) test per soil type shall be made.

C. In place soil density shall be determined either by use of the Drive Sleeve Method per ASTM D-2937 or by use of a Nuclear Density Meter per ASTM D-2922. In place field densities shall be taken at least one (1) every 2,500 square feet at not greater than one (1) foot vertical intervals for all areas of potential building construction. Field Density Tests are to be located no further than 300 feet apart on center with a minimum of one (1) per roadway and one (1) per 5,000 square feet of parking/maneuvering area. One (1) density test is required for each pad or isolated footing and for every 20 linear feet of strip/wall footing length. For each tank mat foundation at least four (4) in place field densities shall be taken. In place field densities shall be taken at least one (1) every 300 feet of utility trench and not further than one (1) foot vertically or per lift, whichever is less.

D. Fill material from offsite shall be tested using a minus 200 sieve wash to check grain size. At least one (1) such test shall be run per 500 cubic yards of material brought

from offsite.

E. Compaction shall be deemed to comply with the Specifications if no tests fall below the specified relative compaction. The Contractor shall pay the costs of any retesting of work not conforming to the Specifications.

1.03 JOB CONDITIONS

A. If, in the opinion of the Engineer, conditions encountered during construction warrant a change in structure elevation, or in the depth of removal of unsuitable material from that indicated on the Drawings, an adjustment will be made in the contract price by the unit cost, as provided per the Terms and Conditions of the Contract and the Schedule of Values.

1.04 PROTECTION

A. Pre-Construction Survey:

1. Prior to commencing excavation or dewatering, the Contractor shall conduct a survey of those existing structures which may be subject to settlement or distress resulting from excavation or dewatering operations.

2. The Contractor shall monitor the structures surveyed to ascertain evidence of settlement or distress. If settlement or distress becomes evident the Contractor shall be required to repair the structures to the previous condition to the satisfaction of the Engineer. Costs shall be paid by the Contractor.

B. Excavation Support

1. Furnish, install, monitor and maintain excavation support (e.g., shoring, sheeting, bracing, trench boxes, etc) as required by Federal, State or local laws, ordinances, regulations and safety requirements. Support the sides of excavation, to prevent any movement which could in any way reduce the width of the excavation below that necessary for proper construction and protect adjacent structures from undermining, settlement or other damage. Take care to prevent the formation of voids outside of sheeting. If voids occur behind sheeting, immediately backfill and compact the voids with common fill material. Voids in locations that cannot be properly compacted upon backfilling shall be filled with lean concrete.

2. Install excavation supports outside the neat lines of foundations. Supports shall be plumb and securely braced and tied in position. Excavation support shall be adequate to withstand all pressures to which the supports will be subjected. Any movement or bulging of supports shall be corrected to provide the necessary clearances, dimensions and structural integrity.

3. Excavation Supports Left in Place

   a. Excavation supports that are required to remain in place, if applicable, are indicated on the Drawings.

   b. The Owner or Engineer may direct that certain excavation supports remain in place, or be cut off at any specific elevation. Supports directed by the Owner or Engineer to be left in place and not so designated on the Drawings or otherwise specified herein to remain in place, will be paid for in accordance with Terms and Conditions of the Contract. If the Contractor believes that such a directive increases Contractor's cost and would thereby entitle Contractor to a change in contract cost, Contractor shall notify the Engineer in accordance with the applicable article(s) in the Terms and Conditions of the Contract pertaining to changes in the work.

   c. The right of the Owner or Engineer to direct that certain excavation supports remain in place shall not be construed as creating any obligation on the Owner or Engineer to give such direction, nor shall failure to give such direction relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient excavation supports to prevent any movement of the ground or damage to adjacent structures.

4. Excavation supports shall be carefully removed in such manner so as not to endanger the Work or other adjacent structures, utilities, or property. All voids left or caused by withdrawal of supports shall be immediately filled with sand and compacted.

C. Pumping and Drainage:

1. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations, and shall keep such excavations dry so as to obtain a satisfactory undisturbed suborder foundation condition until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels. The Contractor shall engage a Geotechnical Professional Engineer registered in the State of Georgia, to design the temporary dewatering systems for all structures in accordance with Division 2 Section 02140 Dewatering. The dewatering system installed shall be in conformity with the overall construction plan, and certification of this shall be provided by the Geotechnical Professional Engineer. The Contractor shall be required to monitor the performance of the dewatering systems during the progress of the work and require such modifications as may be required to assure that the systems are performing satisfactorily.

2. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the suborder soils at proposed bottom of excavation and to preserve the integrity of adjacent structures. Well or sump installation shall be constructed with proper sand filters to prevent drawing of finer grained soil from the surrounding ground.

3. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and pumped from the excavation to maintain a bottom free from standing water.

4. The Contractor shall take all additional precautions to prevent uplift of any structure during construction.

5. The conveying of water in open ditches or trenches will not be allowed. Permission to use any storm sewers, or drains, for water disposal purposes shall be obtained from the authority having jurisdiction. Any requirements and costs for such use shall be the responsibility of the Contractor. However, the Contractor shall not cause flooding by overloading or blocking up the flow in the drainage facilities, and he shall leave the facilities unrestricted and as clean as originally found. Any damage to facilities shall be repaired or restored as directed by the authority having jurisdiction, at no cost to the Owner.

6. Flotation shall be prevented by the Contractor by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully responsible and liable for all damages which may result from failure of this system.

7. Removal of dewatering equipment shall be accomplished after the system is no longer required; the material and equipment constituting the system shall be removed by the Contractor.

8. The Contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on groundwater quality.

D. Trench Safety Practices:

1. The Contractor shall comply with the Federal Department of Labor, Bureau of Labor Standards, 29 CFR, 1926.650 Subpart P. All trench work shall be in compliance with requirements of the State of Georgia.

2. The Contractor shall submit written assurance with the associated cost that the trench excavator shall comply with all applicable trench safety standards.

1.05 SUBMITTALS

A. The Contractor shall submit sieve analysis for all soils and Testing Laboratory data in accordance with Special Conditions and JWSC Standards for Water and Sewer Design and Construction.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. All fill and backfill material shall be subject to the approval of the Engineer.

2. All fill and backfill material shall be free of organic material, trash, or other objectionable material. Excess or unsuitable material shall be removed from the job site by the Contractor.

B. Common Fill Material: Common fill shall be sand and shall not contain stones, rock, concrete or other rubble larger than 2 inches in diameter. It shall have physical properties which allow it to be easily spread and compacted.

C. Structural Fill: Structural fill shall be reasonably well graded sand to gravelly sand having the following gradation:

U.S. Sieve Size	Percent Passing by Weight
1/2	100
3/8	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 50	0-5

To minimize capillary rise under the slabs on grade, the upper one (1) foot of soil in building pad areas shall consist of soils classified SP per ASTM D-2487 and shall have less than 2 percent passing the No. 200 sieve.

D. Select Fill material shall meet the following soil and gravel classifications as covered in ASTM D2321 and restated below:

1. Class I Soils*: Manufactured angular, granular material, 1/4 to 1-1/2 inches (6 to 4 mm) size, including materials having significance such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells. Sieve analysis for crushed stone is given below separately.

a. Crushed Stone: Crushed stone shall consist of clean mineral aggregate free from clay, loam or organic matter, conforming with ASTM C-33 stone size No. 89 and with particle size limits as follows:

U.S. Sieve Size	Percent Passing by Weight
1/2	100
3/8	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 50	0-5

2. Class II - Coarse sands and gravels with maximum particle size of one and one half (1-1/2") inch, including variously graded sands and gravels containing small percentages of fines, generally granular and non-cohesive, either wet or dry. Soil Types GW, GP, SW, and SP (Unified Soil Classification System) are included in this class. In accordance with ASTM D-2487, less than 5 percent pass No. 200 sieve.

   a. GW: Well-graded gravels and gravel-sand mixtures, little or no fines. 50 percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.

   b. GP: Poorly graded gravels and gravel-sand mixtures, little or no fines. 50 percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.

   c. SW: Well-graded sands and gravelly sands, little or no fines. More than 50 percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.

   d. SP: Poorly graded sands and gravelly sands, little or no fines. More than 50 percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.

E. Coarse Sand: Sand shall consist of clean mineral aggregate with particle size limits as follows:

U.S. Sieve Size	Percent Passing by Weight
3/8 inch	100
No. 10	85-100
No. 40	20-40
No. 200	0-12

F. Other Material: All other material, not specifically described, but required for proper completion of the work shall be selected by the Contractor and approved by the Engineer.

PART 3 - EXECUTION

3.01 PREPARATION

A. Clearing:

1. The site shall be cleared in accordance with Division 2 Section 02110 Clearing and Grubbing.

2. The construction areas shall be cleared of all obstructions and vegetation including large roots and undergrowth, within 10 feet of the lines of the excavation.

3. Strip and stockpile topsoil on the site at the location to be determined by the Engineer.

3.02 EXCAVATION

A. General: Excavations for roadways, structures and utilities must be carefully executed in order to avoid interruption of any existing utilities and to minimize disruption of traffic flows.

B. Excavating for Roadways/Structures/Utilities:

1. Excavation shall be made to such dimensions as will give suitable room for building the foundations and the structures, for bracing and supporting, for pumping and draining, and for all other work required.

a. Excavation for precast or prefabricated structures shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the selected backfill material. Prior to placing the selected backfill the excavation shall be sounded, if not dewatered, using a rigid pole to indicate to the satisfaction of the Owner that excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.

b. Excavation for structures constructed or cast in place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation leveled and left ready to receive construction. Material disturbed below the foundation elevation in dewatered excavation shall be replaced with 3000 psi concrete.

c. Footings: Cast-in-place concrete footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.

2. Immediately document the location, elevation, size, material type and

function of all new subsurface installations, and utilities encountered during the course of construction.

3. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the Drawings and should anticipate the encounter of unknown obstructions during the course of work.

4. Encounters with subsurface obstructions shall be hand excavated.

5. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of suborder soils. Suborder soils which become soft, loose, "quick" or otherwise unsatisfactory for support of structures as a result of inadequate dewatering or other construction methods, shall be removed and replaced by crushed stone as required by the Engineer at the Contractor's expense.

6. The bottom of excavations shall be rendered firm and dry before placing any structure. Excavated material not suitable for backfill shall be removed from the site and disposed of by the Contractor.

7. All pavements shall be cut prior to removal, with saws and approved power tools.

8. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

9. All locations and elevations as required herein must be permanently documented by the Contractor, on the As-Built Drawings prior to the Engineer approval of the Application for Payment for that work.

3.03 DRAINAGE

A. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations, and keep such excavations dry so as to obtain a satisfactory undisturbed suborder foundation condition. The dewatering method used shall prevent disturbance of earth below grade.

B. All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, without damage to surrounding property, and in accordance with pertinent rules and regulations.

C. No construction, including pipe laying, shall be allowed in water. No water shall be allowed to contact masonry or concrete within 24 hours after being placed. The Contractor shall constantly guard against damage due to water and take full responsibility for all damage resulting from his failure to do so.

D. The Contractor will be required at his expense to excavate below grade and refill

with approved fill material if the Owner determines that adequate drainage has not been provided.

3.04 UNDERCUT

A. If the bottom of any excavation is below that shown on the Drawings or specified because of Contractor error, convenience, or unsuitable suborder due to the Contractor's excavating method, he shall refill to normal grade with structural fill at his own cost. Fill material and compaction method shall be as directed by the Engineer.

3.05 FILL AND COMPACTION

A. Compact and backfill excavations according to the following schedule. (Proctor Standard shall be ASTM D-698, Modified Proctor Standard shall be ASTM D-1557):

B. STRUCTURES AND ROADWORK

Area	Material	Compaction
Backfill beneath Structures (footings and/or slab Excavations)	Structural Fill	6 inch lifts, compacted backfill beneath to 98 percent by Modified Proctor Method Maximum density. Fill should not be placed over any in-place soils until those deposits have been compacted to 98 percent Modified Proctor maximum density.
Backfill beneath Roadways, Parking, and Service Drives *	Structural Fill	12 inch lifts, compacted backfill beneath to 100 percent by Standard Proctor Method Maximum density. Fill should not be placed over any in-place soils until those deposits have been compacted to 100 percent Standard

		Proctor maximum density.

*The upper one (1) foot of soils supporting slabs on grade or sidewalks should be compacted to 100 percent maximum dry density.

Utility Trenches	Select Fill/ Structural Fill (beneath Roadways)	6 inch lifts (to 1 ft above pipe), compacted backfill beneath to 98 Percent by Modified Proctor Method Maximum density. Fill should not be placed over any in-place soils until those deposits have been compacted as indicated.
Around structures	Select Fill	6 inch lifts, 95 percent of Modified Proctor maximum density by Proctor Method. Use light rubber-tired or vibratory plate compactors.
Non-structural Areas	Common Fill	12 inch lifts, 90 percent of Modified Proctor Method

B. Pipe shall be laid in open trenches unless otherwise indicated on the Drawings or elsewhere in the Contract Documents.

C. Excavations shall be backfilled to the original grade or as indicated on the Drawings. Deviation from this grade because of settling shall be corrected. Backfill operation shall be performed to comply with all rules and regulations and in such a manner that it does not create a nuisance or safety hazard.

D. Embankments shall be constructed true to lines, grades and cross sections shown on the Drawings or ordered by the Owner and Engineer. Embankments shall be placed in successive layers of not more than 12 inches in thickness, loose measure, for the full width of the embankment. As far as practical, traffic over the work during the construction phase shall be distributed so as to cover the maximum surface area of each layer.

E. If the Contractor requests approval to backfill material utilizing lifts and/or methods other than those specified here, such request shall be in writing to the Engineer. Approval will be considered only after the Contractor has performed tests, at the Contractor's expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The Owner's approval will be in writing.

END OF SECTION

SECTION 02320

CURED IN PLACE PIPE LINING

PART 1. GENERAL

1.01 SCOPE OF WORK:

The work specified in this section consists of rehabilitation of existing gravity sewer piping with a Cured-In-Place-Pipe (CIPP) lining. It is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube, which is inverted into the original conduit by use of a hydrostatic head or compressed air or pulled into place. The resin is cured by circulating hot water or steam within the tube. The CIPP will be continuous and tight fitting. This work shall include all equipment, materials, and labor for the complete and proper installation, testing, restoration of gravity sewer piping, and environmental protection and restoration. Related sewer system bypassing operations are described under Section 02960: Temporary Sewer Bypass Operations.

1.02 REFERENCE STANDARDS:

This specification references standards from the American Society for Testing and Materials, such as:

A. ASTM F1216 (Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube),
B. ASTM F1743 (Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)),
C. ASTM D5813 (Cured-in-Place Thermosetting Resin Sewer Pipe),
D. ASTM D790 (Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials), and
E. D2990 (Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics)

which are made a part hereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and these referenced documents, this specification will govern.

1.03 QUALIFICATIONS:

A. The work specified in this Section requires significant previous experience and expertise in similar work to avoid negative impacts to public safety and the environment. Therefore, the Contractor performing the work shall be qualified, in JWSC's judgment, to complete the CIPP work.

1.04 WARRANTY:

The Contractor shall supply to JWSC a one (1) year unconditional warranty. The warranty shall include materials and installation and shall constitute complete replacement

and delivery to the site of materials and installation of same to replace defective materials or defective workmanship with new materials/workmanship conforming to the specifications.

1.05 PERMITS:

The Contractor shall verify the existence of all necessary permits before commencing any work on the project.

1.06 SUBMITTALS:

A. Materials and Shop Drawings: Copies of all materials required to establish compliance with the Specification shall be submitted in accordance with the Special Conditions. Submittals shall include at least the following:

1. Certified shop drawings showing all important details and materials of construction and standards.

1.07 NOTIFICATION:

The JWSC Representative must be notified 48 hours (minimum) in advance of starting the CIPP work. The temporary sewer bypass operations must be verified as in operation.

1.10 SITE PREPARATION:

A. Prior to initiation of CIPP installation, Contractor shall conduct:

1. Pre-Installation Video recorded to DVD. Video shall be used to assess the general condition of the piping and need for any deficient pipe sections or areas that may be considered for point repair. Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by close circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions, which may prevent proper installation of CIPP. Adverse conditions it shall be noted for correction. A videotape or dvd and suitable log shall be kept for reference by the Owner
2. Pre-Installation Sewer Line Cleaning: Clean the sewer to be rehabilitated; furnishing water for jetting and energy required for de-rooting equipment and other power cleaning machines; remove all foreign material from the sewer pipe walls that will prevent the proper installation of the CIPP Pipe; clean and inspect the connecting structure.
3. Sewer System Bypassing: Ensure bypass operations are approved and in operation. See Section 02960: Temporary Sewer Bypass Operations.

B. Following installation of the CIPP, Contractor shall conduct:

1. Post-Installation Video recorded to DVD. Video shall show proper installation of CIPP lining and reinstatement of service lines, if any.

PART 2. PRODUCTS

2.01. TUBE

A. The sewn Tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216, Section 5.1 or ASTM F1743, Section 5.2.1 or ASTM D 5813, Sections 5 and 6. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections. The wet out Tube shall have a relatively uniform thickness that when compressed at installation pressures will equal or exceed the calculated minimum design CIPP wall thickness. The Tube shall be manufactured to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during installation.

B. The outside layer of the Tube shall be coated with an impermeable, flexible membrane that will contain the resin and allow the resin impregnation (wet out) procedure to be monitored. The Tube shall contain no intermediate or encapsulated elastomeric layers. No material shall be included in the Tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident. The wall color of the interior pipe surface of CIPP after installation shall be a relatively light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. Seams in the Tube shall be stronger than the non-seamed felt material. The Tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 ft. Such markings shall include the Manufacturers name or identifying symbol. The tubes must be manufactured in the USA.

2.02. RESIN

A. The resin system shall be a corrosion resistant polyester or vinyl ester system including all required catalysts, initiators that when cured within the tube create a composite that satisfies the requirements of ASTM F1216, ASTM D5813 and ASTM F1743, the physical properties herein, and those which are to be utilized in the submitted and approved design of the CIPP for this project. The resin shall produce a CIPP that will comply with the structural and chemical resistance requirements of this specification.

B. The Owner authorizes the use of proven materials that serve to enhance the pipe performance specified herein. Proven materials have passed independent laboratory testing, not excluding long-term (10,000 hour) structural behavior testing, and have been successfully installed to repair failing host pipes in the U.S. for at least four (4) years. In addition to the aforementioned, the Owner may require that the contractor demonstrate that the enhancements proposed exceed the specifications herein, prior to the installation of the enhanced material

systems. This section in no way shall be interpreted as authorization to deviate from the minimum standard practices set forth herein.

2.02. GENERAL CORROSION REQUIREMENTS

A. The finished CIPP shall be fabricated from materials which when cured will be chemically resistant to withstand internal exposure to domestic sewage. The Contractor shall certify that CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.

2.03 STRUCTURAL REQUIREMENTS

A. The CIPP shall be designed as per ASTM F1216, Appendix X1. The CIPP design shall assume no bonding to the original pipe wall.

B. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during testing of field samples, new samples will be cut from the work. Any re-occurrence may cause rejection of the work. The cured pipe material (CIPP) shall conform to the structural properties, as listed below:

Minimum CIPP Physical Properties

Test Method	Minimum Resin per ASTM F1216	Enhanced Resin
Modulus of Elasticity ASTM D-790 (short term)	400,000 psi	400,000 psi
Flexural Stress ASTM D-790	4,500 psi	4,500 psi

The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in above section and in accordance with the Design Equations in the appendix of ASTM F1216, and the following design parameters:

- Design Safety Factor = 2.0
- Retention Factor for Long-Term Flexural Modulus to be used in Design = 50% (To be multiplied by short-term modulus to obtain long-term modulus)
- Ovality = 2%
- Enhancement Factor K = NA

- Ground Water Depth (above invert) = ½ Soil Depth ft.
- Soil Depth (above crown) = 14 ft.
- Soil Modulus = 700 psi
- Soil Density = 120 pcf
- Live Load = AASHTO H- 20
- Design Condition (partially or fully deteriorated) = fully deteriorated

Refer to Table #1 for Dimensional Ratios (DR's) required for pipe sections, based on the pipe condition, depth, ovality, etc. as computed for the conditions shown, using ASTM F1216 Design Equations.

Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

The Enhancement Factor 'K' to be used in 'Partially Deteriorated' Design conditions shall be assigned a value of 7.

2.04 TESTING REQUIREMENTS

A. Chemical Resistance: The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical-testing requirements.

B. Hydraulic Capacity - Overall, the Hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition. The roughness coefficient of the CIPP shall be verified by third party test data.

PART 3. EXECUTION

3.01 INSTALLATION: CIPP installation shall be in accordance with ASTM F1216, Section 7 or ASTM F1743, Section 8, with the following additional requirements:

A. Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. To insure thorough resin saturation throughout the length of the felt tube, the point of vacuum shall be no further than 25 feet from the point of initial resin introduction. After vacuum in the tube is established, a vacuum point shall be no further than 75 feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular as possible. A roller system shall be used to uniformly

distribute the resin throughout the tube. If the Installer uses an alternate method of resin impregnation, the method must produce the same results. Any alternate resin impregnation method must be proven.

B. Tube Insertion Method - The tube shall be inverted into place using fluid pressure in accordance with ASTM F1216, or pulled into place by ASTM F1743.

C. Temperature Control - Temperature gauges shall be placed to determine the temperature of the incoming and outgoing fluid from the heat source. Another such gauge shall be placed inside the tube at the invert level at the remote end to determine the temperature at that location during the cure cycle.

D. Sewer Line Cleaning and Bypassing – Prior to insertion and installation of the Cured-In-Place-Plastic-Pipe, the sewer line shall be cleaned. During the rehabilitation process the sewage shall be by-passed as needed to complete the work. In no case shall the water level in the upstream manhole be allowed to rise above the crown of the pipe. Contractor shall be responsible for any damage caused by sewer overflows occurring during the rehabilitation process.

E. Calibation Hose - If a calibration hose is required to be used during the process of the installation of the Cured-In-Place Plastic Pipe, this calibration hose shall be wet and impregnated with sufficient amount of resin prior to inversion.

F. INSURANCE OF EXCESS RESIN - The tube shall be impregnated with sufficient amount of resin to insure that the resin will be observed on the outer surface of the tube when squeezed and insure that the cured CIPP meets the approved minimum design thickness.

3.02 REINSTATEMENT OF BRANCH CONNECTIONS:

A. It is the intent of these specifications that branch connection to buildings be reopened without excavation, utilizing a remotely controlled cutting device, monitored by a video TV camera. The Contractor shall certify he has a minimum of two (2) complete working cutters plus spare key components on the site before each inversion. No additional payment will be made for excavations for the purpose of reopening connections. The Contractor shall be responsible for all costs and liability associated with such excavation and restoration work. Reinstatement of branch connections shall be made by experienced operators only. Cuts shall be circular, brushed smooth and shall be 100% of the service pipe diameter. Cuts not meeting this requirement shall be re-cut or, if necessary, shall be repaired by excavation at no additional cost to the Owner.

3.03 INSPECTION

A. Samples: CIPP samples shall be prepared for each installation designated by the owner/engineer or approximately 20% of the project’s installations. Pipe physical properties will be tested in accordance with ASTM F1216 or ASTM F1743, Section 8, using either method proposed. The flexural properties must meet or exceed the

values listed in the “Minimum CIPP Physical Properties” table in this specification, Table 1 of ASTM F1216 or the values submitted to the Owner/engineer by the contractor for this project’s CIPP wall design, whichever is greater. Wall thickness of samples shall be determined as described in paragraph 8.1.6 of ASTM F1743. The minimum wall thickness at any point shall not be less than 90% of the submitted minimum design wall thickness as calculated in the “Minimum CIPP Physical Properties” table in this specification.

B. Leakage Testing: Leakage testing of the CIPP shall be accomplished during cure while under a positive head. CIPP products in which the pipe wall is cured while not in direct contact with the pressurizing fluid (e.g., a removable bladder) must be tested by an alternative method approved by the Owner.

C. Finish: The finished CIPP shall be continuous over the entire length of an insertion run between two structures and be free, as commercially practicable, from visual defects such as foreign inclusions, dry spots, pinholes, and delamination.

D. Wrinkled Pipe: The Contractor will be allowed a maximum wrinkle of .25 (twenty five hundredth) inch before deduction will occur and .5 (five tenth) inch will result in a 20 (twenty) percent deduction for the entire cost of the affected pipe reach, structure to structure. The Owner will reject any wrinkle greater than .5 (five tenth) inch. The Contractor will be required to replace the rejected line at no additional cost to the Owner.

E. Sealing CIPP at Structures: If due to broken or misaligned pipe at the structure wall, CIPP fails to make a tight seal, the Contractor shall apply a seal at that point with a material compatible with the CIPP.

F. Visual Inspection: Visual inspection of the CIPP shall be in accordance with ASTM F1216, Section 8.6. The Contractor will provide the Owner with a color DVD. The video will include both the before and after conditions. The video will also include the location of restored connections measured as a distance from the upstream structure.

G. CIPP Edge at Structures: All CIPP edges entering or exiting a structure shall be ground smooth and shall not catch any rags or wastewater debris. If debris is collecting at CIPP edge, Contractor shall bypass flow and regrind edge of CIPP until desired result is achieved.

3.04 CLEANUP

A. Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

END OF SECTION

SECTION 02922

LOAMING, SEEDING, AND MULCHING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The Contractor shall furnish all labor, materials, equipment, incidentals necessary and place loam finish grade, seed, and maintain all seeded areas as specified herein including all areas disturbed by the Contractor's operations.

B. Related Work Described Elsewhere:

1. Earthwork: Section 02200.

1.02 WARRANTY

A. All restoration and re-vegetation work shall be subject to the one (1) year warranty period of the Contract as specified in the Special Conditions of the Contract herein.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Loam (topsoil) shall be fertile, natural soil, typical of the locality, free from large stones, roots, sticks, peat, weeds and sod and obtained from naturally well drained areas. It shall not be excessively acid or alkaline nor contain toxic material harmful to plant growth. Topsoil stockpiled under other Sections of this Division may be used, but the Contractor shall furnish additional loam at his own expense, if required. All areas disturbed by the Contractor's operations which are not to be sodded shall be seeded as specified herein, in addition to those areas delineated on the plans for seeding.

B. Fertilizer shall be complete commercial fertilizer, 16-4-8 grade or as recommended by the seed supplier. It shall be delivered to the site in the original unopened containers each showing the manufacturer's guaranteed analysis. Store fertilizer so that when used it shall be dry and free flowing.

C. Lime shall be ground limestone.

D. Seed shall be from the same or previous year's crop; each variety of seed shall have a percentage of germination not less than 90, a percentage of purity not less than 85, and shall have not more than a one (1) percent weed content.

E. Seed shall be a ½ blend of Pensacola Bahia and Rye applied at a rate of 50 - 100 pounds per acre.

F. Seed shall be delivered in sealed containers bearing the dealer's guaranteed analysis.

G. Mulch shall be clean small-grain straw.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Loam shall be placed to a minimum depth of 4 inches.

B. Lime shall be applied at the rate necessary to achieve a pH of 6 to 7.

C. Fertilizer shall be applied at the rate of 800 pounds per acre.

D. The subgrade of all areas to be loamed and seeded shall be raked and all rubbish, sticks, roots, and stones larger than 2 inches shall be removed. Loam shall be spread and lightly compacted to finished grade. Compacted loam shall not be less than the depth specified. No loam shall be spread in water or while frozen or muddy.

E. After the loam is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over loam surface and thoroughly incorporated with loam. Lime shall be added in sufficient quantity to provide a soil pH of 6 to 7.

F. Fertilizer shall be uniformly spread and immediately mixed with the upper 2 inches of topsoil.

G. Immediately following this presentation the seed shall be uniformly applied and lightly raked into the surface. Lightly roll the surface and water with fine spray.

H. All seeded areas shall be mulched with clean small-grain straw at a rate of 1-1/2 to 2 tons per acre. Latex acrylic copolymer, or organic tackifier shall be a commercial product specifically manufactured for use as straw mulch tackifier.
An asphalt tackifier shall only be used when temperatures are too low to allow the use of a latex acrylic copolymer and only with prior written approval from the Engineer. Mechanical tacking will be considered on a case-by-case basis as approved by the Engineer.

I. The Contractor shall keep all seeded areas watered and in good condition, reseeding if and when necessary, until a good, healthy, uniform growth is established over the entire area seeded, and shall maintain these areas in an approved condition until final acceptance of the Contract.

J. On slopes, the Contractor shall protect against washouts by an approved method. Any washout which occurs shall be regraded and reseeded at the Contractor's expense until good sod is established.

K. The Contractor shall maintain the areas in grass in a neat manner by watering, mowing, raking clippings and leaves, and appurtenances until the project is completed.

END OF SECTION

SECTION 02934

SOLID SODDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: The work specified in this Section consists of establishing a stand of grass, within the areas indicated on the Drawings or Specifications, by furnishing and placing grass sod. Also included are fertilizing, watering and maintenance as required to assure a healthy stand of grass.

B. Related Work Described Elsewhere:

1. Earthwork: Section 02200.

1.02 SUBMITTALS

A. A certification of sod quality by the producer shall be delivered to the Engineer ten (10) days prior to use.

1.03 WARRANTY

A. All restoration and re-vegetation work shall be subject to the one (1) year warranty period of the Contract as specified in the Special Conditions of the Contract herein.

PART 2 - PRODUCTS

2.01 GRASS SOD

A. Grass sod shall be matched to existing lawn and shall be well matted with grass roots. The sod shall be taken in rectangles, preferably 12 inch by 24 inch, shall be a minimum 2 inches in thickness and shall be live, fresh and uninjured at the time of planting. Sod type shall be as required by Glynn County or Sea Palms POA Head of Maintenance within their respective areas. If no specific requirement is made, supplied sod shall be Bahia grass.

B. It shall be reasonably free of weeds and other grasses and shall have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. The sod shall be planted as soon as possible after being dug and shall be shaded and kept moist until it is planted.

2.02 FERTILIZER

A. Commercial fertilizer shall comply with the state fertilizer laws.

B. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid and (3) water-soluble potash contained in the fertilizer.

C. The chemical designation of the fertilizer shall be 16-4-8, or as recommended by the sod supplier. At least 50 percent of the nitrogen shall be derived from organic sources. At least 50 percent of the phosphoric acid shall be from normal super phosphate or an equivalent source which will provide a minimum of two units of sulfur.

The amount of sulfur shall be indicated on the quantitative analysis card attached to each bag or other container.

2.03 WATER FOR GRASSING

A. The water used in the sodding operations shall be obtained from potable water sources. Contractor shall be responsible for transporting water from the source of supply and applying it to the sodded area.

PART 3 - EXECUTION

3.01 PREPARATION OF GROUND

A. The area over which the sod is to be placed shall be scarified or loosened to a depth of at least four (4) inches and then raked smooth and free from debris. Where the soil is sufficiently loose and clean, the Engineer, at his discretion, may authorize the elimination of ground preparation.

3.02 APPLICATION OF FERTILIZER

A. Before applying fertilizer, the soil pH shall be brought to a range of 6.0 to 7.0.

B. The fertilizer shall be spread uniformly over the area to be sodded at the rate recommended by the fertilizer manufacturer, by a spreading device capable of uniformly distributing the material at the specified rate. Immediately after spreading, the fertilizer shall be mixed with the soil to a depth of approximately 4 inches.

C. On steep slopes, where the use of a machine for spreading or mixing is not practicable, the fertilizer shall be spread by hand and raked in and thoroughly mixed with the soil to a depth of approximately 2 inches.

3.03 PLACING SOD

A. The sod shall be placed on the prepared surface, with edges in close contact and shall be firmly and smoothly embedded by light tamping with appropriate tools.

B. Where sodding is used in drainage ditches, or on slopes of 4:1 or greater, the setting of the pieces shall be staggered so as to avoid a continuous seam along the line of low. Along the edges of such staggered areas, the offsets of individual strips

shall not exceed 6 inches. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a feather-edge effect.

C. On slopes greater than 2 to 1, the Contractor shall, if necessary, prevent the sod from sliding by means of wooden pegs driven through the sod blocks into firm earth, at suitable intervals.

D. Sod which has been cut for more than 72 hours shall not be used unless specifically authorized by the Engineer after his inspection thereof. Sod which is not planted within 24 hours after cutting shall be stacked in an approved manner and maintained and properly moistened. Any pieces of sod which, after placing, show an appearance of extreme dryness shall be removed and replaced by fresh, uninjured pieces.

E. Sodding shall not be performed when weather and soil conditions are, in the Engineer's opinion, unsuitable for proper results.

3.04 WATERING

A. The areas on which the sod is to be placed shall contain sufficient moisture, as determined by the Engineer, for optimum results. After being placed, the sod shall be kept in a moist condition to the full depth of the rooting zone for at least 2 weeks. Thereafter, the Contractor shall apply water as needed until the sod roots and starts to grow for a minimum of 60 days (or until final acceptance, whichever is latest).

3.05 MAINTENANCE

A. The Contractor shall, at his expense, maintain the sodded areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include repairing of any damaged areas and replacing areas in which the establishment of the grass stand does not appear to be developing satisfactorily.

B. Replanting or repair necessary due to the Contractor's negligence, carelessness or failure to provide routine maintenance shall be at the Contractor's expense.

END OF SECTION

SECTION 02960

TEMPORARY SEWER BYPASS SYSTEMS

PART 1 -- GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall design the systems and furnish all tools, supplies, materials, labor, equipment, fuel, and maintenance necessary for the installation, testing, placing into operation, maintaining, and monitoring of temporary bypass systems for the purpose of diverting sewer flow around components of the JWSC existing sewer system. At no point during the setup, installation, operation, or demobilization of the temporary bypass systems shall interruption of the sewer flow upstream or downstream of the bypassing location be caused. Should such interruption or backup of existing sewer infrastructure occur, Contractor shall provide all equipment and vacuum/pumper trucks which may be necessary to reduce the potential for sewer spills and maintain the up and downstream flows, and properly dispose of all collected sewage.

1. Temporary sewer bypass systems will be required at the Dunbar Creek WPCP during the contract period for tie-in of the proposed forcemain to the Dunbar Creek WPCP headworks.
2. Contractor shall monitor, log and report pumping flow data to JWSC.
3. Temporary sewer bypass operations will be required for the following activities:
    a. To establish bypass pumping operations from the two (2) existing manholes in the northeast corner of the Dunbar Creek WPCP to the existing junction box located immediately upstream of the screen at the Dunbar Creek WPCP site, bypassing the 30-inch gravity sewer pipe, and structures in between, which carry all influent flow to the WPCP.

B. The design, installation, operation, and monitoring of the temporary bypass pumping systems shall be the Contractor's responsibility. The Contractor shall employ the services of a vendor who can demonstrate to the JWSC and Engineer that it specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least five (5) references of projects of a similar size and complexity as this project performed by the vendor's firm within the past ten (10) years.

C. The bypass systems shall meet the requirements of all Federal, State, and Local codes and regulatory agencies having jurisdiction.

1.02 DEFINITIONS

A. "Interruption of pumping operations" is defined as any activity that will result in a change in the current method of operation. Contractor shall request such "interruption of pumping operations" from JWSC no less than ninety-six (96)

hours in advance. JWSC may defer the request as allowed by Article 2.01 A. 4 of this Section.

B. "Partial Utilization", "Substantial Completion", and "Warranty Period for Items in Continuous Service": Refer to the "Contract Documents" for definition.

C. The terms "open, close, start, stop, operate, verify, energize, de-energize, transfer, switchover, etc." when used in conjunction with permanent equipment at Dunbar Creek WPCP that is in-service or about to be placed in-service are understood to mean: JWSC's operation or maintenance staff shall perform the operation upon written request from the Contractor.

D. The term "operational test" refers to the period of specified duration that the installed system is tested to verify operational integrity of a system prior to placing the system in-service. Operational testing requires that representatives of the equipment manufacturers be on-site for timely identification and resolution of system issues.

E. "Low Flow Period" refers to the time of day when the WPCP influent flow rate reaches the diurnal minimum. It typically occurs between the hours of 3 AM and 7 AM but shall be verified by JWSC.

1.03 SUBMITTALS

A. Bypass Systems Plan: The Contractor shall submit to the JWSC/Engineer detailed Drawings and shop drawings outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing sewer flows. The Bypass Systems Plan shall be signed and sealed by a Professional Engineer registered in the State of Georgia. The Bypass Systems Plan shall be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials, connections, fuel storage, and all other incidental items necessary to provide satisfactory bypassing operations and backups for each of the proposed activities identified in paragraph 1.01 A. 2. The Bypass Systems Plan shall provide sufficient detail to ensure proper protection of Dunbar Creek WPCP, the existing forcemains and gravity sewer, and other relevant JWSC facilities, including protection of the access and bypass pumping locations. **No bypassing activities or construction shall begin until all provisions and requirements have been reviewed and approved by the JWSC and Engineer.** The Bypass Systems Plan shall include, but is not limited to, the following details for each of the proposed activities identified in paragraph 1.01 A..:

1. Detailed drawings showing all required equipment and staging areas for pumps, tanks, fuel storage, and piping within the project site at Dunbar Creek WPCP and/or Glynn County right-of-way areas;

2. Plugging methods and types of plugs;

3. Number, size, material, location and method of installation of suction piping;

4. Number, size, material, method of installation and location of installation of discharge piping;

5. Bypass pump sizes, capacity, number of each size to be on site and fuel requirements;

6. Pump curves showing pump operating range are to be submitted;

7. Fuel storage information and tank size;

8. Thrust and restraint block sizes and locations as necessary in accordance with manufacturer/supplier of LineStops, Insert Valves, and other equipment to be installed within piping;

9. Sections showing suction and discharge bypass piping depth, embedment, select fill and special backfill, and any equipment necessary to maintain vehicular and construction equipment in driveways and parking areas; modification of existing structures including manholes to allow for efficient installation of bypass pumping equipment and operation.

10. Method of noise control for each bypass pump. Dunbar Creek WPCP is located within a residential area.

11. Any temporary pipe supports and anchoring required;

12. Design for access to bypass system operation locations indicated on the Drawings and specified herein;

13. Calculations and selection of bypass pump pipe size(s);

14. Schedule for installation of and maintenance of bypass pumping lines.

15. Emergency plan for adverse weather and flooding for various phases of the Work and bypass system operation locations.

16. Contractors plan for providing continuous monitoring of the bypass pumping operations including qualifications of any onsite monitoring persons and specifications of any electronic monitoring operations.

17. Necessary restoration including repairs to existing structures which were modified to install and operate bypass pumping equipment.

B. Sequence of Bypass System Operations

1. The Contractor shall develop a Sequence of Bypass System Operations regarding staging of piping connections and equipment. Under no circumstances

shall the proposed Sequence of Bypass System Operations lead to an interruption of the lift stations or sewer collection system directly upstream of the bypass location or of the downstream operations at the Dunbar Creek WPCP during the project.

2. Contractor shall submit the proposed Sequence of Bypass System Operations to the JWSC and Engineer for review and approval in conjunction with the Bypass Systems Plan. The Sequence of Bypass Systems Operations shall define work to be performed, including the following items:

   a. Definition of the start date, duration and end date for each of the segments of the work at each bypass location.

   b. For each segment of work, define activities to be performed by or witnessed by JWSC and date on which these activities are to be performed.

   c. Scheduling/timing of manufacturer's field services, as specified.

3. Provide complete list of equipment and material that is required to perform each segment of work.

1.04 SCHEDULE OF BYPASS OPERATIONS

Contractor shall provide bypassing operations for the following activities/locations identified in 1.01 A. as noted below:

A. To establish bypass pumping operations from the two (2) existing manholes in the northeast corner of the Dunbar Creek WPCP to the existing junction box located immediately upstream of the screen at the Dunbar Creek WPCP site, bypassing the 30-inch gravity sewer pipe, and structures in between, which carries all influent flow to the WPCP.

   1. The establishment of these bypass systems shall be conducted as necessary to prepare for and complete the connection of the proposed 16-inch forcemain system to the existing junction box immediately downstream of the two (2) manholes, to rehabilitate and recoat the junction box and manual screen structure, and to rehabilitate a portion of the existing 30-inch DIP gravity sewer with CIPP. These bypass systems shall remain in operation, at a minimum, until the forcemain connection to the junction box has been made and the structures and DIP gravity sewer have been rehabilitated.

PART 2 – PRODUCTS

2.01 PUMPING EQUIPMENT

A. General:

1. It is essential to the operation of the JWSC's sewer system that there be no interruption in the conveyance of wastewater to and from any of the proposed bypass system locations throughout the duration of the project. To this end, the Contractor shall provide, maintain, operate, and monitor all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary fuel, and all other labor and equipment necessary to intercept the sewer flow before it reaches the point where it would interfere with the construction work, carry it past the work and return it to the existing sewer system downstream of the work.

2. It is the Contractor's responsibility to provide equipment that is adequate for the performance of the temporary bypassing operations under this Contract within the time specified. All equipment shall be kept in satisfactory operating condition, shall be capable of safely and efficiently performing the required operations, and shall be subject to review by the JWSC's Representative at any time within the duration of the Contract. All operations hereunder shall conform to the applicable requirements of the OSHA Standards for construction.

3. Should the Contractor fail to maintain the continuous operation of the bypass systems and operations, JWSC shall repair/operate the bypass systems to include materials, sewage hauling and any other activities required and shall look to recover costs incurred during its operation/repair of the temporary bypass system or other lift stations affected from monies owed the Contractor for other portions of the project work.

4. Operational requirements take precedence over Contractor activities. Therefore, interruption of the influent flow of wastewater to and through the Dunbar Creek WPCP will not be allowed and all bypassing operations shall be coordinated with and are subject to the operational requirements of JWSC.

5. The Contractor shall provide for utilities and services for its own operations. The Contractor shall furnish, install and maintain all temporary utilities during the contract period including removal upon completion of the project work.

6. Pumps used shall be fully automatic self-priming units that do not require the use of foot-valves in the priming system.

7. The pumps shall be diesel/fuel powered, unless otherwise approved.

8. All pumps shall be sound attenuated and equipped with quiet packs.

9. All pumps used shall be constructed to allow dry running for long periods of time to accommodate the cyclical nature of the flows.

10. All pumps shall be High Pressure Solids Handling Self-Priming Pumps as manufactured by Thompson Pump & Manufacturing Co., Inc. in state of Georgia, Godwin Pumps by Xylem, or JWSC/Engineer approved equal.

11. Furnish each pump with the necessary stop/start and liquid level controls.

12. Each bypass location utilizing pumping systems shall have 100% supplemental pumping capability in standby for the entire required bypass capacity.

13. All flows on the discharge side of bypass systems shall be continuously measured with calibrated flow metering devices approved by JWSC.

14. Contractor shall not be permitted to stop or impede the sewer system flows under any circumstances except as otherwise defined and approved by JWSC and Engineer. The Contractor shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding.

15. The Contractor shall protect water resources, wetlands and other natural resources.

B. Temporary Bypass System Requirements: The Contractor shall be responsible for the construction, mobilization/demobilization, maintenance, operation, and monitoring of the temporary bypass facilities as described herein and indicated on the Drawings. Bypass systems shall be operated 24 hours per day once placed in to operation until JWSC approves demobilization of system. **100% supplemental pumping capability shall be provided at each bypass location/installation in standby. All Flow and TDH information shall be verified and approved prior to installing temporary bypass systems.**

1. Dunbar Creek WPCP Influent Bypass

To establish bypass pumping operations from the two (2) existing manholes in the northeast corner of the Dunbar Creek WPCP to the existing junction box located immediately upstream of the screen at the Dunbar Creek WPCP site, bypassing the 30-inch gravity sewer pipe, and structures in between, which carries all influent flow to the WPCP. Bypass operations are necessary in order to prepare for and complete the connection of the proposed 16-inch forcemain system to the junction box downstream of the two (2) manholes, and to rehabilitate/recoat the junction box and manual screen structure and to rehabilitate a portion of the existing 30-inch DIP gravity sewer piping with CIPP.

Primary Operating Condition	
Typical Operation: 3 MGD (2,083 gpm) from each manhole (Total 6 MGD)	~25.0 Ft TDH with 16” manifolded discharge piping
Total with Supplemental Backup Operation: 6 MGD (4,167 gpm) from each manhole (Total 12 MGD)	~60.0 Ft TDH with 16” manifolded discharge piping

System head conditions listed above are estimates based on nominal pipe sizes, site layout, and structure depth and surface elevation; Contractor shall calculate system head conditions based on their proposed suction and discharge piping systems and locations for both typical operation and peak conditions with supplemental pump operation. Contractor shall utilize the number of pumps necessary to satisfactorily move flow from/to the identified suction and discharge points without potential for backup in the Dunbar Creek WPCP influent gravity sewer system. Total combined peak flow bypass pumping capability for the bypass system shall be 12 MGD (8,333 gpm).

C. Additional Bypass Requirements

1. All backup/standby pumps shall be piped into the suction and discharge piping/headers and shall be on-line and ready for use in the event they are needed.

2. All bypass pumps (lead, lag, backup) shall have a performance curve that meets the performance curve for the operating conditions indicated in 2.01 B 1. with pump established on ground elevation as shown on the drawings.

3. Contractor shall provide continuous monitoring of the bypass pumping operations whether by qualified onsite monitoring persons or by electronic monitoring operations to ensure continuous operation of the system.

4. The bypass pumps shall be quiet models producing no more than 70 dBA at a distance of 23 feet.

5. Provide all pipeline plugs, LineStops, Insert Valves, pumps of adequate size to handle peak flows, and temporary suction and discharge piping and fittings to ensure that the total current flow capacities indicated can be safely diverted during the project.

6. The Contractor shall make all arrangements for temporary bypass pumping operations during the time when the sewer infrastructure is shut down/offline for any reason.

7. Discharge Piping shall be constructed of steel, ductile iron, or polyethylene pipe with positive, restrained joints. Under no circumstances will aluminum “irrigation” type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the JWSC/Engineer.

8. Operation: The bypass pumps shall have variable capacity by controlling the speed of the diesel engine. Each pump shall have a separate control panel.

9. Provide vacuum and pressure gauges on the suction and discharge headers.

10. Provide liquid level controls to automatically change the speed of the pumps to suit the incoming flow conditions.

11. Control Sequence – Contractor shall coordinate with JWSC operations staff to determine appropriate set points and controls for temporary bypass pumping operations including lead and lag pumps.

PART 3 – EXECUTION

3.01 PREPARATION

A. The Contractor shall be responsible for locating any existing utilities in the area where the Contractor selects to locate the bypass equipment, pumps and pipelines. The Contractor shall locate the bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from JWSC and the Engineer. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor. Driveway access and parking areas shall not be impeded by bypass piping.

B. During bypass operations, the Contractor shall protect the Dunbar Creek WPCP, gravity sewers, and all infrastructure from damage inflicted by the Contractor's equipment and operations. The Contractor shall be responsible for all physical damage to existing infrastructure caused by human or mechanical failure.

C. During bypass pumping, Contractor shall not allow sewage to be leaked, dumped, or spilled in or onto any area outside of the existing sanitary sewer system.

D. In the event of accidental spill or overflow, Contractor shall immediately stop the discharge and take action to clean up and disinfect the spill. Promptly notify JWSC and Engineer so that required reporting can be made. Refer to the Special Conditions for additional requirements.

E. In the event of accidental spill or overflow, the Contractor is responsible for any damages that may have occurred to public or private property including cleaning, disinfection, and other corrections to the satisfaction of the Engineer at no cost to the Owner.

3.02 INSTALLATION AND REMOVAL

A. The Contractor shall pipe sections or make connections to the existing suction and discharge structures and shall construct temporary bypass pumping structures only at the access locations indicated on the Drawings, as approved in the Bypass Systems Plan and Sequence, and as may be required to provide an

adequate suction and discharge conduit, unless otherwise approved by JWSC and Engineer.

B. Plugging or blocking of sewer flows shall be performed with the use of existing slide gates, plugs, and/or LineStops (if approved) which shall be installed by contractors approved by JWSC. When plugging or blocking is no longer needed for performance of the work, the plugs shall be removed in a manner that permits the sewer flow to slowly return to normal without surge, surcharging, or causing other major disturbances downstream.

C. The installation of bypass pipelines is prohibited in all wetland areas. The pipelines must be located within the Dunbar Creek WPCP site. When the bypass pipelines cross driveways or local streets, the Contractor must place the bypass pipelines in trenches and cover with traffic rated plates or temporary pavement.

D. At the conclusion of the bypass system operations, when all of the relevant modifications are complete, tested, and ready for operation, the Contractor shall demonstrate the new system in automatic mode for 72 hours. At the completion of the demonstration period, and upon receipt of JWSC's/Engineer's written approval, the Contractor shall remove all the piping and bypass pumping equipment, restore all property to pre-construction condition and restore all pavement.

3.03 QUALITY CONTROL AND MAINTENANCE

A. Testing: Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to actual operation. The Engineer and JWSC shall be given 24 hours notice prior to testing.

B. Inspection: Contractor shall inspect the bypass pumping system a minimum of twice daily, typically at the beginning and end of the work day, to ensure that the system is working correctly.

C. Maintenance Service: Contractor shall insure that the temporary bypass system is properly maintained and a responsible operator shall inspect the bypass pumping and other equipment a minimum of once daily during all times when pumps are operating.

D. Monitoring: The Contractor shall be responsible for monitoring the bypass operations 24 hours per day, 7 days per week. Any electronic monitoring in lieu of onsite monitoring must be detailed in the comprehensive written Bypass Systems Plan and approved by JWSC and Engineer.

E. Extra Materials: Spare parts for pumps and piping shall be kept on site as required. Adequate hoisting equipment for each pump and accessories shall be maintained on the site. Adequate diesel fuel storage for pumps shall be provided to maintain constant operations of the pumps.

3.04 COORDINATION

A. The Contractor shall submit a Sequence of Bypass Operations in accordance with 1.03 B. which details the interruptions to be made which the Contractor shall be fully responsible for. One week prior to connections being made to existing structures or pipes, a coordination meeting shall be held between the Contractor, Engineer, and JWSC to discuss the approved construction plan.

B. Schedule of construction, interconnecting details, and other revisions necessary for proper interfacing of the Work shall be subsequently modified by Contractor accounting for results of said coordination meeting. The JWSC and Engineer shall be notified 24 hours prior to any actual interruptions or connections being made. No bypassing operations shall begin prior to securing JWSC's approval of respective connection plan and work schedule.

END OF SECTION

SECTION 15000

MECHANICAL - GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. All equipment furnished and installed under this contract shall conform to the general stipulations set forth in this section and with the JWSC Water and Sewer Standards for Design and Construction.

2. Contractor shall coordinate all details of equipment with other related parts of the Work, including verification that all structures, piping, wiring, and equipment components are compatible. Contractor shall be responsible for all structural and other alternations in the Work required to accommodate equipment differing in dimensions or other characteristics from that contemplated in the Contract Drawings or Specifications.

B. Contract Drawings and Specifications: The Contract Drawings and Specifications shall be considered as complementary, one to the other, so that materials and work indicated, called for, or implied by the one and not by the other shall be supplied and installed as though specifically called for by both. The Contract Drawings are to be considered diagrammatic, not necessarily showing in detail or to scale all of the equipment or minor items. In the event of discrepancies between the Contract Drawings and Specifications, or between either of these and any regulations or ordinances governing work of these specifications, the bidder shall notify the Engineer in ample time to permit revisions.

1.02 QUALITY ASSURANCE

A. Materials and Equipment: Unless otherwise specified, all materials and equipment furnished for permanent installation in the work shall conform to applicable standards and specifications and shall be new, unused, and undamaged when installed or otherwise incorporated in the work. No such material or equipment shall be used by the Contractor for any purpose other than that intended or specified, unless such use is specifically authorized in writing by the Owner. No material shall be delivered to the work site without prior acceptance of drawings and data by the Engineer.

B. Equivalent Materials and Equipment:

1. Whenever a material or article is specified or described by using the name of a proprietary product or the name of a particular manufacturer or vendor, the specific item mentioned shall be understood as establishing the type, function, and quality desired. Other manufacturers' products will be accepted, if so noted, provided sufficient information is submitted to allow the Engineer to determine that the products proposed are

equivalent to those named. Such items shall be submitted for review in accordance with Special Conditions section.

C. Governing Standards: Equipment and appurtenances shall be designed in conformity with ANSI, ASME, ASTM, IEEE, NEMA, OSHA, AGMA, and other generally accepted applicable standards. They shall be of rugged construction and of sufficient strength to withstand all stresses which may occur during fabrication, testing, transportation, installation, and all conditions or operations. All bearings and moving parts shall be adequately protected against wear by bushings or other acceptable means. Provisions shall be made for adequate lubrication with readily accessible means.

D. Tolerances: Machinery parts shall conform to the dimensions indicated on the drawings within allowable tolerances. Protruding members such as joints, corners, and gear covers shall be finished in appearance. All exposed welds shall be ground smooth and the corners of structural shapes shall be rounded or chamfered.

E. Clearances: Ample clearances shall be provided for inspection and adjustment. All equipment shall fit the allotted space and shall leave reasonable access room for servicing and repairs. Greater space and room required by substituted equipment shall be provided by the Contractor and at his expense.

F. Testing:

1. When the equipment is specified to be factory tested, the results of the tests shall be submitted to the Engineer and approval of the test results shall be obtained before shipment of the equipment.

2. When an item of equipment, including controls and instrumentation, has been completely erected, the Contractor shall notify the Engineer, who will designate a time to make such tests as required, and operate the item to the satisfaction of the Engineer. All testing shall be done in the presence of the Engineer. "Completely erected" shall mean that the installation is erected, all necessary adjustments have been made, all required utility connections have been made, required lubricants and hydraulic fluid have been added and the unit has been cleaned and painted.

G. Pressure Test:

1. After installation, all of the pressurized piping shall be pressure tested. Piping shall be tested in accordance with Section 15044: Pressure Testing of Piping.

2. All tests shall be made in the presence of and to the satisfaction of the Owner’s Representative and Engineer and also, to the satisfaction of any local or state inspector having jurisdiction.

a. Unless otherwise indicated in the Special Conditions or specific

technical specifications, provide not less than three days' notice to the Owner's Representative, Engineer and the authority having jurisdiction when it is proposed to make the tests.

b. Any piping or equipment that has been left unprotected and subject to mechanical or other injury in the opinion of the Engineer shall be retested in part or in whole as directed by the Engineer.

c. The piping systems may be tested in sections as the work progresses but no joint or portion of the system shall be left untested.

3. All elements within the system that may be damaged by the testing operation shall be removed or otherwise protected during the operation.

4. All defects and leaks observed during the tests shall be corrected and made tight in an approved manner and the tests repeated until the system is proven tight.

5. Repair all damage done to existing or adjacent work or materials due to or on account of the tests at no cost to Owner.

6. Provide test pumps, gauges, or other instruments and equipment required for the performance of all tests. Provide all temporary bracing, test plugs, additional restraint, and thrust blocking which may be required for test pressures above normal working pressures.

7. All tests shall be maintained for as long a time as required to detect all defects and leaks but not outside of the minimum/maximum durations specified for each type of pipe or piping system.

H. Failure of Test:

1. Defects: Any defects in the equipment, or deviations from the guarantees or requirements of the Specifications, shall be promptly corrected by the Contractor by replacements or otherwise. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails to correct any defects or deviations, or if the replaced equipment when tested shall fail again to meet the guarantees or specified requirements, the Owner, notwithstanding his having made partial payment for work and materials which have entered into the manufacture for such equipment, may reject that equipment and order the Contractor to remove it from the premises at the Contractor's expense.

2. Rejection of Equipment: In case the Owner rejects a particular item of equipment, then the Contractor hereby agrees to repay to the Owner all sums of money paid to him to deliver to the Contractor a bill of sale of all his rights, title, and interest in and to the rejected equipment provided, however that the equipment shall not be removed from the premises until the Owner obtains from other sources other equipment to take the place

of that rejected. The bill of sale shall not abrogate the Owner's right to recover damages for delays, losses or other conditions arising out of the basic Contract. The Owner hereby agrees to obtain the alternate equipment within a reasonable time and the Contractor agrees that the Owner may use the original equipment furnished by him without rental or other charge until the other equipment is obtained.

I. Responsibility During Tests: The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof.

J. Acceptance of Materials:

1. Only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the Contractor shall be subject to the inspection and acceptance of the Owner. No material shall be delivered to the work without prior submittal approval of the Engineer.

2. The Contractor shall submit to the Engineer data relating to materials and equipment he proposes to furnish for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product and to form an opinion as to its conformity to the specifications.

3. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either prior to beginning or during the progress of the work, the Contractor shall submit samples of materials for such special test as may be necessary to demonstrate that they conform to the specification. Such sample shall be furnished, stored, packed, and shipped as directed at the Contractor's expense. Except as otherwise noted, the Owner will make arrangements for and pay for tests.

4. The Contractor shall submit data and samples sufficiently early to permit consideration and acceptance before materials are necessary for incorporation in the work.

K. Safety Requirements: In addition to the components shown and specified, all machinery and equipment shall be safeguarded in accordance with the safety features required by the current codes and regulations of ANSI, OSHA, and local industrial codes.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Packaging: All equipment shall be suitably packaged to facilitate handling and protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept thoroughly dry at all times.

B. Protection: All machined surfaces and shafting shall be cleaned and protected from corrosion by the proper type and mount of coating necessary to assure protection during shipment and prior to installation. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. All painted surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of Engineer.

C. Lubrication: Grease and lubricating oil shall be applied to all bearings and similar items as necessary to prevent damage during shipment and storage.

D. Marking: Each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

E. Fabricated sub-assemblies, if any, shall be shipped in convenient sections as permitted by carrier regulations and shall be properly match-marked for ease of field erection.

F. Responsibility:

1. The Contractor shall be responsible for all material, equipment, and supplies sold and delivered to the site under this Contract until final inspection of the work and acceptance thereof by the Owner. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.

2. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven (7) days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering, and any other costs associated with making the necessary corrections.

G. Delivery: The Contractor shall arrange deliveries of products in accordance with construction schedules and coordinate to avoid conflict with work and condition at the site.

1. The Contractor shall deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.

2. Immediately on delivery, the Contractor shall inspect shipments to assure compliance with requirements of Contract Documents and accepted submittals, and that products are properly protected and undamaged.

3. Under no circumstances shall the Contractor deliver equipment to the site more than one month prior to installation without written authorization

from the Engineer.

H. Storage and Protection of Products:

1. The Contractor shall furnish a covered, weather-protected storage structure providing a clean, dry non-corrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this project. Storage of equipment shall be in strict accordance with the "Instructions for Storage" of each equipment supplier and manufacturer including connection of space heaters, and placing of storage lubricants in equipment. Corroded, damaged, or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.

   a. The Contractor shall store products subject to damage by the elements in weather-tight enclosures.

   b. The Contractor shall maintain temperature and humidity within the ranges required by manufacturer's instructions.

   c. The Contractor shall store fabricated products above the ground, on blocking or skids, to prevent soiling or staining. The Contractor shall cover products which are subject to deterioration with impervious sheet coverings and provide adequate ventilation to avoid condensation.

   d. The Contractor shall store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

2. All materials and equipment to be incorporated in the work shall be handled and stored by the Contractor before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft, or damage of any kind whatsoever to the material or equipment.

3. Cement, sand, and lime shall be stored under a roof and off the ground, and shall be kept completely dry at all times. All structural and miscellaneous steel and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt, or grease, and in a position to prevent accumulations of standing water, staining, chipping, or cracking. Brick, block, and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling to a minimum.

4. All materials which, in the opinion of the Engineer/Owner’s Representative, have become damaged and are unfit for the use intended or specified, shall be promptly removed from the site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.

5. The Contractor shall arrange storage in a manner to provide easy access for inspection. The Contractor shall make periodic inspections of stored products to assure products are maintained under specified conditions, and free from damage or deterioration.

6. Protection After Installation: The Contractor shall provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. The Contractor shall remove covering when no longer needed.

1.04 WARRANTY AND GUARANTEES

The manufacturer's warranty period shall be concurrent with the Contractor's correction period for one (1) year (unless otherwise indicated in the technical specifications or other Contract Documents) after the time of final completion and acceptance.

1.05 MAINTENANCE MATERIALS

All grease, oil, and fuel required for testing of equipment shall be furnished with the respective equipment. The Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by the manufacturer with each item of equipment supplied.

PART 2 - PRODUCTS

2.01 FABRICATION AND MANUFACTURE

A. Workmanship and Materials:

1. Contractor shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage or other failure. Materials shall be suitable for service conditions.

2. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and gages so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests.

3. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least ¼-inch thick.

B. Lubrication:

1. Equipment shall be adequately lubricated by systems which require attention no more frequently than weekly during continuous operation. Lubrications systems shall not require attention during startup or shutdown and shall not waste lubricants.

2. Lubricants of the type recommended by the equipment manufacturer shall be furnished by the Contractor in sufficient quantity to fill all lubricant reservoirs and to replace all consumption during testing, startup, and operation prior to acceptance of equipment by Owner. Unless otherwise specified or permitted, the use of synthetic lubricants will not be acceptable.

3. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the normal operating area or platform. Drains shall allow for convenient collection of waste oil in containers from the normal operating area or platform without removing the unit from its normal installed position.

C. Safety Guards: All belt or chain drives, fan blades, couplings, and other moving or rotating parts shall be covered on all sides by a safety guard. Safety guards shall be fabricated from 16 USS gage or heavier galvanized or aluminum-clad sheet steel or ½-inch mesh galvanized expanded metal. Each guard shall be designed for easy installation and removal. All necessary supports and accessories shall be provided for each guard. Supports and accessories, including bolts, shall be galvanized. All safety guards in outdoor locations shall be designed to prevent the entrance of rain and dripping water.

D. Equipment Foundation Supports:

1. All foundations, platforms and hangers required for the proper installation of equipment shall be furnished and installed by the Contractor.

2. Unless otherwise indicated or specified, all equipment shall be installed on reinforced concrete bases at least 6 inches high. Cast iron or welded steel baseplates shall be provided for pumps, compressors, and other equipment. Each unit and its drive assembly shall be supported on a single baseplate of neat design. Baseplates shall have pads for anchoring all components and adequate grout holes. Baseplates for pumps shall have a means for collecting leakage and a threaded drain connection. Baseplates shall be anchored to the concrete base with suitable anchor bolts and the space beneath filled with grout. All open equipment bases shall be filled with non-shrinking grout sloped to drain to the perimeter of the base.

3. The Contractor shall furnish, install and protect all necessary guides, bearing plates, anchor and attachment bolts, and all other appurtenances required for the installation of equipment. These shall be of ample size and strength for the purpose intended.

4. Equipment suppliers shall furnish suitable anchor bolts for each item of equipment. Anchor bolts, together with templates or setting drawings, shall be delivered sufficiently early to permit setting the anchor bolts when the structural concrete is placed. Unless otherwise indicated or specified, anchor bolts for items of equipment mounted on baseplates shall be long enough to permit 1-1/2 inches of grout beneath the baseplate and to provide adequate anchorage into structural concrete.

5. Structural steel supports and miscellaneous steel required for supporting and/or hanging equipment and piping furnished under this Section shall be provided and installed by Contractor.

6. All foundations, anchor pads, piers, thrust blocks, inertia blocks and structural steel supports shall be built to template and reinforced as required for loads imposed on them.

7. The Contractor shall assume all responsibility for sizes, locations and design of all foundations, anchor pads, pier, thrust blocks, inertia blocks, curbs and structural steel supports.

E. Shop Painting:

1. All steel and iron surfaces shall be protected by suitable paint or coatings applied in the shop. Surfaces which will be inaccessible after assembly shall be protected for the life of the equipment. Exposed surfaces shall be finished smooth, thoroughly cleaned, and filled as necessary to provide a smooth uniform base for painting. Electric motors, speed reducers, starters, and other self-contained or enclosed components shall be shop primed or finished with a high-grade oil-resistant enamel suitable for coating in the field with an alkyd enamel. Coatings shall be suitable for the environment where the equipment is installed.

2. Surfaces to be painted after installation shall be prepared for painting as recommended by the paint manufacturer for the intended service, and then shop painted with one or more coats of the specified primer. Unless otherwise specified, the shop primer for steel and iron surfaces shall be Cook "391-N-167 Barrier Coat", Koppers "No. 10 Inhibitive Primer", or equal.

3. Machined, polished, and nonferrous surfaces which are not to be painted shall be coated with rust-preventive compound, Houghton "Rust Veto 344", Rust-Oleum "R-9", or equal.

F. Nameplates: Contractor shall provide equipment identification nameplates for each item of equipment. Unless otherwise indicated, nameplates shall be 1/8-inch Type 304 stainless steel and shall be permanently fastened. Plates shall be fastened using round head metallic drive screws, or where metallic drive screws are impractical, with stainless steel pop rivets. Metallic drive screws shall be brass or stainless steel, Type V and No. 8 by 3/8-inch long. Names and/or

equipment designations shall be engraved on the plates and the engraving painted with a primer and black paint system compatible with stainless steel. Contractor shall submit a list of proposed names and designations for review prior to fabrication of nameplates. At a minimum, each nameplate shall include equipment manufacturers name, year of manufacture, serial number and principal rating data.

G. Pipe Identification: Underground pipe: All non-metallic water and forcemain piping has have locate wire systems installed in accordance with Owner's standards and technical specifications. Detection tape shall be installed for all water and force main piping in accordance with Owner's standards.

2.02 ACCESSORIES

Special Tools and Accessories: Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.

PART 3 - EXECUTION

3.01 INSTALLATION AND OPERATION

A. Installation: Equipment shall not be installed or operated except by, or with the guidance of, qualified personnel having the knowledge and experience necessary for proper results. When so specified, or when employees of Contractor or his subcontractors are not qualified, such personnel shall be field representatives of the manufacturer of the equipment or materials being installed.

1. The Contractor shall have on site sufficient proper construction equipment and machinery of ample capacity to facilitate the work and to handle all emergencies normally encountered in work of this character. To minimize field erection problems, mechanical units shall be factory assembled when practical.

2. Equipment shall be erected in a neat and workmanlike manner on the foundations and supports at the locations and elevations shown on the Drawings, unless otherwise directed by the Engineer during installation.

3. All equipment shall be installed in such a manner as to provide access for routine maintenance including lubrication.

4. For equipment such as pumping units, which require field alignment and connections, the Contractor shall provide the services of the equipment manufacturer's qualified mechanic, millwright, machinist, or authorized representative, to align the pump and motor prior to making piping connections or anchoring the pump base.

5. Equipment of a portable nature which require no installation shall be delivered to a location designated by the Owner.

B. Tolerances: Precision gauges and levels shall be used in setting all equipment. All piping and equipment shall be perfectly aligned, horizontally and vertically. Tolerances for piping and equipment installation shall be ½-inch to 30 ft horizontal and vertically. All valves and operators shall be installed in the position shown on the Contract Drawings or as directed by the Engineer, if not shown.

C. Alignment and Level: The equipment shall be brought to proper level by shims (1/4 inch maximum). After the machine has been leveled and aligned, the nuts on the anchor bolts shall be tightened to bind the machine firmly into place against the wedges or shims.

D. Grouting: The grout shall be tamped into position with a board, steel bar, or other tool. Tamping should not be so hard as to raise or otherwise displace the plate.

E. Contact of Dissimilar Metals: Where the contact of dissimilar metal may cause electrolysis and where aluminum will contact concrete, mortar, or plaster, the contact surface of the metals shall be separated using not less than one coat of zinc chromate primer and one heavy coat of aluminum pigmented asphalt paint on each surface.

F. Cutting and Patching: All cutting and patching necessary for the work shall be performed by the Contractor.

G. Operation: All equipment installed under this Contract, including that furnished by Owner or others under separate contract, shall be placed into successful operation according to the written instructions of the manufacturer or the instructions of the manufacturer's field representative. All required adjustments, tests, operation checks, and other startup activity shall be provided.

3.02 OBSERVATION OF PERFORMANCE TESTS

Where the specifications require observation of performance tests by the Owner’s Representative or Engineer such tests shall comply with the quality assurance paragraph in this section.

3.03 MANUFACTURER'S FIELD SERVICES

Services Furnished Under This Contract:

1. An experienced, competent, and authorized representative of the manufacturer of each item of equipment shall visit the site of the Work and inspect, check, adjust if necessary, and approve the equipment installation. In each case, the manufacturer's representative shall be present when the equipment is placed in operation. The manufacturer's representative shall re-visit the job site as often as necessary until all trouble is corrected and the equipment installation and operation are satisfactory in the opinion of Engineer/Owner’s Representative at no additional cost to Owner. The authorized representative shall also utilize the

site visit to instruct the Owner’s staff in the proper operation of the equipment.

2. Each manufacturer's representative shall furnish to Owner and Engineer, a letter of certification stating that the equipment has been properly installed and lubricated; is in accurate alignment; is free from any undue stress imposed by connecting piping or anchor bolts; and has been operated under full load conditions and that it operated satisfactorily.

3. All costs for field services shall be included in the contract amount for such item.

END OF SECTION

SECTION 15044

PRESSURE TESTING OF PIPING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

Hydrostatic testing shall be conducted for all pressurized piping systems. Pressure and leakage testing shall be performed in accordance with the JWSC Standards for Water and Sewer Design and Construction and the relevant sections of the technical specifications.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Testing fluid shall be potable water.

2.02 MATERIALS AND EQUIPMENT

A. Unless otherwise indicated, Contractor shall provide pressure gauges, pipes, bulkheads, pumps, and meters to perform the hydrostatic testing.

PART 3 - EXECUTION

3.01 TESTING

A. All work shall conform to the requirements of the JWSC Standards for Water and Sewer Design and Construction and the relevant sections of the technical specifications as noted below.

1. Reference Section 2.5.3.8 of the JWSC Standards for hydrostatic testing of water mains.

2. Reference Section 4.7.7 of the JWSC Standards for hydrostatic testing of force mains.

3. For hydrostatic testing of HDPE piping reference Section 15075. HDPE piping shall be tested separately from PVC and DIP piping.

END OF SECTION

SECTION 15062

DUCTILE IRON PIPE AND FITTINGS

PART I - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. The work under this section includes the furnishing, installation, and testing of all Ductile Iron pipe and fittings and appurtenant materials and equipment as indicated on the Construction Drawings and/or as specified herein. All work shall conform to the requirements of the JWSC Standards for Water and Sewer Design and Construction and as described in this Section.

1.02 QUALITY ASSURANCE

A. Reference Standards

1. Ductile iron pipe centrifugally cast in metal or sand lined molds: ANSI A 21.51.

2. Ductile iron pipe thickness: ANSI A 21.50.

3. Cement mortar lining for water: ANSI21.4.

4. Cast and ductile iron fittings: ANSI A 21.10.

5. C.I. pipe flanges and fittings: ANSI B 16.1.

6. Threaded flanges: CIPRA standard.

B. Qualifications: All ductile iron pipe and fittings shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished. The pipe and fittings shall be designed, constructed, installed in accordance with the best practices and methods and shall comply with these Specifications as applicable.

C. Manufacturer: Pipe and fittings shall be as manufactured by the American Cast Iron Pipe Company, U.S. Pipe and Foundry Company, Star Pipe Products, or Engineer approved equal.

1.03 SUBMITTALS

A. Shop Drawings, including layouts within, and under buildings and structures shall be submitted to the Engineer for approval in accordance with Special Conditions. Shop Drawings shall be prepared by the pipe manufacturer.

B. Tabulated layout schedule, as appropriate for project.

C. Details of special elbows and fittings.

D. Calculations and/or test data demonstrating that the proposed retrained joint arrangement can transmit the required forces.

E. Copy of the manufacturer's quality control check of pipe material and production.

F. Provide an affidavit of compliance with AWWA standards referenced in this specification.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All pipe shall be shipped and stored at the jobsite with wood lagging between pipes such that pipes do not make contact with one another.

B. Exercise extra care when handling cement lined pipe because damage to the lining will render it unfit for use.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Pipe - Ductile Iron Pipe Conforming to ANSI A21.51 and AWWA C151:

1. Unless otherwise shown on the Construction Drawings or Contract Documents, the minimum thickness of ductile iron pipe shall be Pressure Class 350 for piping 3 in. through 12. in., and Pressure Class 250 for piping 14 in. and larger.

2. Pipe for use with sleeve type couplings shall have plain ends (without bells or beads) cast or machined at right angles to the axis.

3. Pipe for use with split type couplings shall have ends with cast or machined shoulders or grooves that meet the requirements of the coupling manufacturer.

4. Pipe shall be supplied in lengths not in excess of 20 feet having rubber-ring type push-on joints, standard mechanical joints or restrained joints where required for underground piping and flanged joint piping, for all above ground piping as shown on the Drawings.

B. Coatings and Linings:

1. Interior Coatings and Linings:

a. Pipe for finished potable water and reclaimed water use shall be cement-mortar lined and seal coated, conforming to ANSI A21.4 and

AWWA C104.

b. Pipe and fittings for non-potable use, except as otherwise noted, shall have a ceramic epoxy coating installed on the interior of the pipe. The coating shall be Tnemec Series 431 Perma-Shield PL. Coating thickness shall be 40 mils minimum dry film thickness.

2. Exterior Coating: All ductile iron pipe and fittings shall be externally coated with a bituminous coating per ANSI A21.51.

C. Fittings:

1. All ductile iron pipe fittings shall match the pressure class rating of the adjacent piping.

2. Grooved-end fittings shall conform to AWWA C110 and ANSI B16.1 with grooved ends conforming to AWWA C606, radius cut rigid joints. Fitting material shall conform to ASTM A 48, Class 30, or ASTM A 126, Class B.

D. Joints (as shown on the Construction Drawing and/or as specified):

1. General: Joints in "runs" of aboveground piping or piping located in vaults and structures shall be rigid radius grooved end or flanged. Joints in "runs" of buried piping shall be of the push-on or mechanical-joint type per AWWA C111 except where flanged joints are required to connect to valves, meters, and other equipment.

2. Grooved-End Couplings:

a. Grooved-end couplings shall be malleable iron, ASTM A 47 (Grade 32510), or ductile iron, ASTM A 536 (Grade 65-45-12).

b. Bolts: ASTM A 183, 110,000 psi tensile strength.

c. Gaskets: Halogenated butyl rubber or EPDM for water service and Buna-N for sewage service, conforming to ASTM D 2000

d. Couplings: AWWA C606 for rigid radius ductile-iron pipe. Couplings shall be Victaulic Style 31, Gustin-Bacon No. 500, or equal.

e. Grooved-end adapter flanges for piping having an operating pressure of 150 psi and less shall be Victaulic Style 341, or equal. Flange dimensions shall conform to ANSI B16.1 Class 125.

3. Flanges:

a. Flanges shall be Class 125 per ANSI B16.1 unless otherwise specifically noted. Determine the pressure rating of the fittings based on the test pressures shown in Section 15044: Pressure Testing of Piping.

b. Gaskets: Fullface, 1/8 inch thick, neoprene: Johns-Manville, John Crane Co. , or Engineer approved equal. Gaskets shall be suitable for a water pressure of 350 psi at a temperature of 180 degrees Fahrenheit (°F). Gaskets shall comply with Appendix A of AWWA C110.

c. Bolts and Nuts for Flanges

1) Bolts and nuts for flanges located indoors, in enclosed vaults and structures, buried and submerged and located outdoors above ground or in open vaults in structures shall be Type 316 stainless steel conforming to ASTM A 193, Grade B&M for bolts, and ASTM A 194, Grade M for nuts. Bolts shall comply with Appendix A of AWWA C110.

2) Provide washers for each nut. Washers shall be of the same material as the nuts.

d. Provide specially drilled flanges when required for connection to existing piping or special equipment.

e. Factory assemble screwed on flanges shall be long-hub type screwed tightly on pipe by machine at the foundry prior to facing and drilling. Flange faces shall be coated with a rust inhibitor immediately after facing and drilling. Field assembled screwed on flanges are prohibited.

4. Push-on and mechanical joint (ANSI A21.11):

a. The plain ends of push-on pipe shall be factory, machined to a true circle and chamfered to facilitate fitting the gasket.

b. Provide gaskets manufactured from a composition material suitable for exposure to the liquid to be contained within the pipe.

c. Each joint shall be complete with rubber gasket, cast iron gland and all required bolts and nuts.

D. Thrust restraint:

1. Thrust blocks: Shall not be permitted unless specifically indicated on the Drawings.

2. Restrained joints:

a. Pipe joints shall be mechanically restrained type as accepted by the Engineer. Restrained joints that require field welding or requiring set screws will not be acceptable, except restrained joints for mechanical joints shall be Megalug by Ebba Iron, or Engineer approved equal. Standard retainer glands are not considered equal

b. Pipe joints shall be restrained on each side of the fitting for a continuous distance in accordance with DIPRA "Thrust Restraint Design for Ductile Iron Pipe". Distance restrained shall be based on sand-silt soil type, 3.0 feet of cover and Type 5 laying condition.

C. Bolts and nuts for restrained joints shall be Corten, low alloy, high strength steel.

2.02 PIPING ACCESSORIES

A. Outlets:

1. For outlets larger than 2 inches, provide a tee with a flanged outlet.

2. Provide outlets 2 inches and smaller by tapping and attaching a service clamp. Service clamps shall be as specified herein.

PART 3 - EXECUTION

3.01 INSPECTION AND TESTING

A. All pipe shall be inspected and tested at the foundry.

B. The Owner shall have the right to have any or all piping, fittings or special castings inspected and tested by an independent testing agency at the foundry or elsewhere. Such inspection and testing will be at the Owner's expense.

C. Mark as rejected and immediately remove from the job site, all pipe lengths showing a crack, damaged lining, or receiving a severe blow that may cause an incipient fracture, even though no such fractures can be seen.

D. Removal of cracked portions:

1. Any pipe showing a distinct crack, but no incipient fracture beyond the limits of the visible crack, may be cut off and the sound portion installed. Cut the pipe at least 12 inches from the visible limits of the crack. Cutting of pipe shall be done by skilled workmen, and in such a manner as to not damage the pipe. Every cut shall be square and smooth, with no damage to the pipe lining. Cut surfaces, shall be recoated as specified for the pipe.

2. Cutting and installing cracked pipe shall only be performed when approved by the Engineer, and shall be at the expense of the Contractor.

E. Carefully inspect and hammer test all pipe and fittings prior to installation.

3.02 INSTALLATION

A. Assembling joints:

1. Push-on joints:

   a. Insert the gasket into the groove of the ball.

   b. Uniformly apply a thin film of special lubricant over the inner surface of the gasket that will contact the spigot end of the pipe.

   c. Insert the chamfered end of the plain pipe into the gasket and push until it seats against the bottom of the socket.

2. Bolted joints:

   a. Remove rust preventative coatings from machined surfaces prior to assembly.

   b. Thoroughly clean and carefully smooth all burrs and other defects from pipe ends, sockets, sleeves, housings and gaskets.

3. Grooved end joints:

   a. Install grooved end pipe and fittings in accordance with the coupling manufacturer's recommendations and the following.

   b. Clean loose scale, rust, oil, grease, and dirt from the pipe or fitting groove before installing coupling. Apply the coupling manufacturer's gasket lubricant to the gasket exterior, including lips, pipe ends, and housing interiors.

   c. Fasten coupling alternately and evenly until coupling halves are seated. Use torques as recommended by the coupling manufacturer.

4. Flanged Joints:

   a. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. Clean flanges by wire brushing before installing flanged fittings. Clean flange bolts and nuts by wire brushing, lubricate bolts with oil and graphite.

   b. Insert the nuts and bolts (or studs) finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.

   c. Execute care when tightening joints to prevent undue strain upon valves, pumps and other equipment.

   d. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

5. Mechanical Joints:

   a. Thoroughly clean, with a wire brush, surfaces that will be in contact with the gaskets.

   b. Lubricate the gasket, bell and spigot by washing with soapy water.

   c. Slip the gland and gasket, in that order, over the spigot and insert the spigot into the bell until properly sealed.

   d. Evenly seat the gasket in the bell at all points, center the spigot, and firmly press the gland against the gasket.

   e. Insert the bolts, install the nuts finger tight, and progressively tighten diametrically opposite nuts uniformly around the joints to the proper tension with a torque wrench.

6. Bell and spigot joints:

   a. Thoroughly clean the bell and spigots and remove excess tar and other obstructions.

   b. Insert the spigot firmly into place and hold securely until the joint has been properly completed.

B. Fabrication:

1. Tapped connections:

   a. Make all tapped connections as shown on the Drawings or as directed by the Engineer.

   b. Make all connections watertight and of adequate strength to prevent pullout.

   c. Drill and tap normal to the longitudinal axis of the pipe.

2. Cutting:

   a. Perform all cutting with machines having rolling wheel cutters or knives designed to cut ductile iron. The use of a hammer and chisel to cut pipe is prohibited.

   b. After cutting, examine all cut ends for possible cracks.

   c. Carefully chamfer all cut ends to be used with push-on joints to prevent damage to gaskets when pipe is installed.

C. Installing Buried Piping:

1. Inspect each pipe and fitting before lowering the buried pipe or fitting into the trench. Inspect the interior and exterior protective coatings. Clean ends of pipe thoroughly. Remove foreign matter and dirt from inside of pipe and keep clean during and after laying.

2. Handle pipe in a manner to avoid any damage to the pipe. Do not drop or dump pipe into trenches under any circumstances.

3. When installing piping in trenches, do not deviate more than 1 inch from line or 1/4 inch from grade. Measure for grade at the pipe invert.

4. Grade the bottom of the trench by hand to the line and grade to which the pipe is to be laid, with allowance for pipe thickness. Remove hard spots that would prevent a uniform thickness of bedding. Before laying each section of the pipe, check the grade with a straightedge and correct any irregularities found. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point between bell holes, except that the grade may be disturbed for the removal of lifting tackle.

5. At the location of each joint, dig bell (joint) holes of dimensions in the bottom of the trench and at the sides to permit visual inspection of the entire project.

6. Keep the trench in a dewatered condition during pipelaying in accordance with Section 02200: Earthwork, and Section 02220; Excavating, Backfilling and Compacting.

7. When the pipelaying is not in progress, including the noon hours, close the open ends of pipe. Do not permit trench water, animals, or foreign material to enter the pipe.

D. Installing Interior Piping

1. All piping and fittings shall be installed true to alignment and rigidly supported thrust anchors shall be provided where required. Any damage to linings shall be repaired to the satisfaction of the Engineer before the pipe is installed. Each length of pipe shall be cleaned out before erection.

2. Sleeves shall be installed of proper size for all pipes passing through floors or walls as shown on the Drawings. Where indicated on the Drawings, or required for liquid or gas-tightness, the pipe shall be sealed with mechanical seal equal to Link-Seal as manufactured by GPT Industries., or Engineer approved equal.

3. Concrete inserts for hangers and supports shall be furnished and installed in the concrete as it is placed. The inserts shall be, in accordance with the requirements of the piping layout and jointing method and their locations shall be verified from approved piping layout drawings and the structural drawings.

4. Except as otherwise shown on the Construction Drawings either split type couplings or flange joints may be used. Prior to approval of jointing, method layouts for hanger and supports shall be submitted to the Engineer for approval.

5. Flanged joints shall be made with bolts, bolt studs with a nut on each end, or studs with nuts where the flange is tapped.

6. All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain being imposed on the equipment. When manufacturers have indicated requirements that piping loads shall not be transmitted to their equipment, a certification shall be submitted stating that such requirements have been complied with.

E. Pipe deflection:

1. Push-on and mechanical joints:

a. The maximum permissible deflection of alignment at joints shall be 80% of the manufacturer’s allowable deflection.

2. Flexible joints: The maximum deflection in any direction shall not exceed 80% of the manufacturer's instructions and recommendations.

F. Hydrostatic Testing: Test in accordance with Section 15044: Pressure Testing of Pipe.

END OF SECTION

SECTION 15075

HORIZONTAL DIRECTIONAL DRILLING

PART 1. GENERAL

1.01 SCOPE OF WORK:

The work specified in this section consists of furnishing and installing underground utilities using the horizontal directional drilling (HDD) method of installation for pipe larger than 12 inches inside diameter (ID), also commonly referred to as directional boring or guided horizontal boring. This work shall include all services, equipment, materials, and labor for the complete and proper installation, testing, restoration of underground utilities and environmental protection and restoration.

1.02 QUALITY ASSURANCE:

The requirements set forth in this document specify a wide range of procedural precautions necessary to ensure that the very basic, essential aspects of a proper directional bore installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this specification or within any associated permit (i.e.: US ACOE, EPD, DOT, Etc.). Adherence to the specifications contained herein, or the JWSC Representative's approval on any aspect of any directional bore operation covered by this specification, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract. The HDD contractor shall be responsible for the repair of all damage to private and/or public property (at no expense to JWSC). Repair work shall meet all local and state rules and requirements.

1.03 QUALIFICATIONS:

A. The work specified in this Section requires significant previous experience and expertise in similar work to avoid negative impacts to public safety and the environment. Therefore, the Contractor performing the work shall be qualified, in JWSC's judgment, to complete the horizontal directional drilling work specified herein. **The Contractor shall submit substantiating evidence of qualifications, in accordance with the provisions of this Section and the Instructions to Bidders, for pre-qualification approval.** Failure to submit the required documentation may cause the Contractor to be declared unqualified to perform the scope of work and submit a bid for the project. **All horizontal directional drilling operations including pipe joining/fusing shall be performed by the Contractor.** Subcontracting of the horizontal directional drilling operations will not be approved by JWSC for this project. In order to qualify to perform work specified in this Section the Contractor must provide evidence satisfactory to JWSC, including the following:

1. Contractor to have self-performed work comparable in nature to the scope of work required by this project for a minimum of five (5) years.

2. Contractor to have successfully self-performed at least three (3) horizontal directional drilling projects to install product pipe of a similar nominal diameter and length to the proposed project within the past five (5) years. JWSC shall have sole authority to determine the adequacy of representative projects.

3. In order to qualify to perform work specified in this Section the Contractor must provide evidence satisfactory to JWSC of the following personnel qualifications:

   a. The Contractor's proposed project manager, superintendent, drill operator, and guidance system operator assigned to horizontal directional drilling of this project shall be experienced in work of this nature and shall have successfully completed similar projects using horizontal directional drilling.

   b. All drilling, drill guidance, and pipe joining equipment operators shall be experienced in comparable horizontal directional drilling work, and shall have been fully trained in the use of the proposed equipment by an authorized representative of the equipment manufacturer(s) or their authorized training agents.

   c. All HDPE fusion equipment operators shall be qualified to perform pipe joining using the means, methods and equipment employed by the Contractor. Fusion equipment operators shall have current, formal training on all fusion equipment utilized for the project. Training received more than two (2) years prior to operation of the fusion equipment for this project shall not be considered current. The Contractor shall submit written certification of training provided by the fusion equipment manufacturer.

B. Contractor Qualification Documentation:

1. The Contractor shall submit information demonstrating compliance with the Contractor self-performance and personnel qualification requirements of this Section to become pre-qualified to perform the horizontal directional drilling operations, in accordance with the Instructions to Bidders. The Contractor shall provide the documentation noted below as proof of experience and personnel qualifications. Other Contractor qualification information shall be provided as noted in the Instructions to Bidders.

   a. The Contractor shall submit the following information for each of the three (3) referenced projects:

      1) Name and general description of project.

2) Name, title, address, and telephone number of project owner.
3) Contract start and completion date.
4) Construction cost.
5) Length, depth (typical and greatest), and diameter of each completed bore(s).
6) Description of pipe(s).
7) Type and manufacturer of drilling and installation equipment used.
8) Ground conditions encountered.
9) HDPE pressure testing procedure required.
10) Project MOT and pedestrian coordination required.
11) Special conditions of project, e.g. night work required.

b. The Contractor shall submit the following personnel information:

1) Names and resumes, including specific project experience, for the proposed project manager, superintendent, guidance operator, and drill operator, for this project, demonstrating that each meets the requirements of this Section.
2) Names and qualifications, including specific project experience, for all proposed drilling, drill guidance, and pipe joining equipment operators, for this project, including evidence of training in the use of the proposed equipment by an authorized representative of the equipment manufacturer or their qualified agent, demonstrating that each meets the requirements of this Section.

1.04 PROJECT SCHEDULE AND COOPERATION:

The project schedule shall be established on the basis of working a normal work schedule as defined in the Special Conditions, or otherwise indicated in the Construction Drawings. Unless approved or requested otherwise by JWSC, normal or general items of work, such as bacteriological testing, leakage and pressure testing, locate wire testing, density testing and final inspections, shall be scheduled during the normal work schedule. Due to operational and manpower limitations on the JWSC systems, JWSC may require the contractor to perform work outside of the normal work schedule. These operational and manpower limitations may include line filling and flushing operation, tie-in work, (cut-in work or other work) and other phases of the work which may impact the continued (non-interruptible) service to existing JWSC customers. The contractor shall plan and anticipate the cost impact of these systems limitations and provide such work or services at no additional cost to JWSC.

1.05 WARRANTY:

The Contractor shall supply to JWSC a one (1) year unconditional warranty. The

warranty shall include materials and installation and shall constitute complete replacement and delivery to the site of materials and installation of same to replace defective materials or defective workmanship with new materials/workmanship conforming to the specifications.

The pipe manufacturer shall provide a warranty to the Contractor that the pipe conforms to these specifications and that the pipe shall be free from defects in materials and workmanship for a period of one (1) year from the date of final completion of the installation. The manufacturer's warranty shall be in a form acceptable to and for the benefit of JWSC and shall be submitted by the contractor as a condition of final payment. The manufacturer's warranty to the contractor shall in no way relieve the contractor from its unconditional warranty to JWSC.

The contractor shall warrant to JWSC that the methods used on the contract, where covered by patents or license agreements, are furnished in accordance with such agreements and that the prices included herein cover all applicable royalties and fees in accordance with such license agreements. The contractor shall defend, indemnify, and hold JWSC harmless from and against any and all costs, loss, damage or expense arising out of, or in any way connected with, any claim of infringement of patent, trademark, or violation of license agreement.

1.06 REFERENCED STANDARDS:

A. The work shall conform to applicable provisions of the JWSC Standards for Water and Sewer Design and Construction, and the following standards, latest editions, except as modified herein.

B. American Water Works Association (AWWA) Standards:

AWWA C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 inch through 63 inch, for Water Distribution American Society for Testing and Materials (ASTM) Standards.

ASTM D638 Standard Test Method for Tensile Properties of Plastics.

ASTM D2122 Standard Method of Determining Dimensions of Thermoplastics Pipe and Fittings.

ASTM D2683 Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.

ASTM D2837 Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.

ASTM D3035 Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.

ASTM E3261 Standard Specification for Butt Heat Fusion Polyethylene Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

ASTM D3350 Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.

ASTM F412 Standard Terminology Relating to Plastic Piping Systems.

ASTM F714 Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR)

Based on Outside Diameter.
ASTM F2620 Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings.

1.07 PERMITS:

The Contractor shall verify the existence of all necessary permits before commencing any work on the project.

1.08 SUBMITTALS (For HDD Portions of Project Only):

A. Work Plan: Prior to beginning work, the Contractor must submit to the JWSC Representative a work plan detailing the procedure and schedule to be used to execute the project. Horizontal directional drilling shall not commence until the contractor has received written approval of all work plan submittals from JWSC.

1. Methods: The Contractor shall provide complete descriptions of proposed plans, procedures, and personnel, as well as supporting calculations, for the following:

a. Drilling operations, addressing: Procedures for pilot hole drilling and reaming. Procedures for tracking and controlling the drilling head location. Procedures for preparing as-builts.
b. Drilling fluid management plan.
c. Spoils handling and disposal plan.
d. Pipe storage and handling, addressing: Means and methods for protecting pipe and ensuring temperature control in accordance with the Contractor's installation calculations.
e. Pipeline assembly and installation, addressing: Procedures for pipe joining, pipeline pullback, and pullback monitoring.
f. Prevention of inadvertent fluid losses and spills, and contingencies for rapid containment and cleanup, addressing: Measures to mitigate risk of inadvertent fluid returns to surface. Procedures for monitoring and controlling drilling fluid flows and pressures. Equipment, resources, and procedures for identifying, containing, and cleaning up fluid losses and spills.
g. Quality control and testing procedures.
h. Safety plan.

2. Schedule: The Contractor shall provide a schedule for all horizontal directional drilling activities commencing with the site preparation and terminating on completion of testing and final acceptance of the installed pipe. The schedule shall address anticipated subsurface conditions and overall project requirements.

3. Equipment

   a. The contractor shall provide the make, model, and technical specifications for each of the following:
      1. Horizontal directional drill rig.
      2. Drilling system components.
      3. Downhole drilling assembly and reaming equipment.
      4. Downhole pressure sub.
      5 Guidance and control system.
      6. Pulling head.
      7. Swivel.
      8. Rollers.
      9. Solids separation and drill fluid recirculation systems.
      10. Pipe fusion equipment.
      11. Pipe fusion data logger.
      12. Pipe handling equipment.
      13. Pigs and pigging equipment.

   b. The Contractor shall provide the following specific equipment information:
      1. Calibration certification for the pilot bore guidance and control system.
      2. Calibration certification for the heat fusion datalogger.

4. Supplemental Work Plan Requirements: The Contractor shall provide the following additional work plan submittals. The submission requirements for additional work plan submittals including number of copies and delivery of submittals shall follow the requirements outlined in the Submittals Section of the Special Conditions. Horizontal directional drilling shall not commence until the Contractor has received written approval of all supplemental work plan submittals.

   a. The Contractor shall submit acknowledgement of use of the Maintenance of Traffic plans in the Construction Drawings or shall submit alternate detailed Maintenance of Traffic plans for entry and exit pit sites and all areas of construction which will impact typical roadway or pathway use. Approval of Glynn County will be required for ALL Maintenance of Traffic plans with the ROW Permit.

   b. Frac-Out and Surface Spill Contingency Plan: Plans for mitigating the potential for inadvertent drilling fluid losses to surface, and for rapidly identifying and cleaning up spills near the investigation borings located along the project alignment. Investigation boreholes along the alignment have been backfilled as reported in the Geotechnical Report. The Contractor's work plans shall address the risk that investigation boreholes may

contribute to the risk of drill fluid loss.

c. Contingency plan for rapidly identifying, locating, and containing any drilling fluid returns.

d. The Contractor shall submit a contingency plan to address procedures to be employed in the event any of the listed items occur.

1. Utility strike, obstruction, or inability to advance drill pipe.
2. Excessive deviation from proposed line and grade, as described within this Section.
3. Inability to move pipe through borehole during pullback.
4. Settlement or heave of roadways and structures within 50 feet of the alignment.

B. Calculations:

The Contractor shall submit final design calculations for JWSC's review and approval as soon as possible following Notice to Proceed, and in accordance with the Project Schedule section of the Special Conditions. Final design calculations shall support the Contractor's specific proposed means, methods, and products. The Contractor's final design calculations shall be prepared and sealed by a Licensed Professional Engineer registered to practice in the State of Georgia, and retained by the Contractor. Horizontal directional drilling shall not commence until the Contractor has received written approval of all design calculation submittals from JWSC.

At a minimum, design calculations shall demonstrate that the proposed pipe, equipment, and means and methods comply with the requirements of this Section and have been designed based on the design borepath, and installation means and methods, for anticipated installation and handling, hydrostatic, earth, and live loads, installation temperature and site conditions. Design calculations shall address the considerations and guidelines presented in ASTM F1962: Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings

The Contractor shall supply copies of all other calculations required to support the required submittals for horizontal directional drilling. At a minimum, the following calculations should be included:

1. Maximum allowable pipe loading limits.
2. Pullback load calculation based upon proposed drill path plan and profile.
3. Buoyancy effect calculations.
4. Effects of ballasting plan on pipe pullback forces.
5. Hydrofracture analysis. This should include a maximum annular pressure curve and the respective formation pressure versus depth based on the proposed drill plan and profile.
6. Confirmation that design parameters do not exceed predicted installation stresses including factors such as tensile load, buckling and deformation.

C. Shop Drawing Submittals:

For all materials provided, Contractor shall provide copies of documentation (actual catalog data, brochures, drawings and descriptive literature) necessary to establish compliance with the Specifications in accordance with Submittals Section of the Special Conditions.

D. Construction Records:

1. Daily Reports: The Contractor shall maintain daily activity reports throughout all horizontal directional drilling operations, including pipe installation. A sample daily report shall be submitted to JWSC for approval prior to the commencement of drilling operations. Daily reports shall be submitted within 24 hours of completion, and shall include, for each drill rod added or withdrawn, or every 30 feet during drilling, pre-reaming, and pullback:

    a. Downhole tools and equipment in use.
    b. Description of ground conditions encountered.
    c. Description of drilling fluid.
    d. Drilling fluid pumping rate.
    e. Maximum and minimum downhole fluid pressures.
    f. Drilling head location - at least every 10 feet along the bore path.
    g. Drill stem torque.
    h. Details and perceived reasons for delays greater than one hour other than normal breaks and shift changes.
    i. Details of any unusual conditions or events.

2. Production and Record Drawings: The Contractor shall maintain at the construction site a complete set of field drawings for recording the as-built conditions. The Contractor shall plot as-built conditions on the field drawings, including the location in plan and elevation of the drill string, reaming head, and installed pipe, at the completion of each production shift. The Contractor shall compile and submit as-built data in accordance with the Project Record Documents requirements in the Special Conditions.

    a. As-Built data provided to the Engineer of Record for incorporation into the Record Drawings shall include Horizontal Directional Drill pipe installation information in plan and profile views in AutoCAD format with X, Y, and Z coordinates in Georgia State Plane East Zone Coordinates (Horizontal Datum NAD 83 and Vertical Datum NAVD 88) conducted by a surveyor licensed in the State of Georgia. Directional Drill Bore Log shall be provided as part of the As-Built documentation and shall be in Georgia State Plane East Zone Coordinates (Horizontal Datum NAD 83 and Vertical Datum

NAVD 88) and be relative to the established surface survey bench mark and baseline stationing that is tied to existing, fixed and visible sight features. Directional Drill Bore Log shall show recorded X, Y, and Z locations of the drill head at minimum every 20 feet in the AutoCAD format documentation.

3. Testing and Quality Control and Assurance Documentation: The Contractor shall maintain records for all testing and quality control and assurance procedures. The following records shall be provided to JWSC or JWSC's Representative on the day that information is acquired by the Contractor:
   a Manufacturer's Field Reports.
   b. Test reports.
   c. Fusion reports. For each weld, provide an electronic and printed report of the downloaded information for each weld.

1.09 NOTIFICATION:

The JWSC Representative must be notified 48 hours (minimum) in advance of starting the drilling work. The Directional Bore shall not begin until the proper preparations (see Work Plan) for the operation have been completed.

1.10 SITE PREPARATION:

A. Prior to any alterations to work-site, Contractor shall video record and photograph entire work area in accordance with Section 01380: Construction Photographs and Video. Two (2) copies of such documentation shall be given to the JWSC Representative and Engineer and one (1) copy shall remain with Contractor for a period of two (2) years following the completion of the project. Pre-construction videos and photographs shall be reviewed and approved by JWSC and Engineer prior to disturbing project site.

B. The Contractor shall coordinate utilities locates with Georgia811 (web site www.Georgia811.com). Once the locate service has field marked all utilities, the Contractor shall verify each utility (including any service laterals, i.e. water, wastewater, cable, gas, electric, telecommunications, etc.) and those within each paved area. Verification may be performed utilizing Ground Penetrating Radar, hand dig, or vacuum excavation. Prior to initiating drilling, the Contractor shall record on the drawings both the horizontal and vertical location of the utilities off of a predetermined baseline. The Contractor shall utilize the Ground Penetrating Radar over the projected bore path whether utilities are located in the horizontal drill pathway or not, in order to reduce the opportunity of conflicting with any unforeseen obstructions.

C. Work site shall be graded and filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas.

D. Following drilling operations, Contractor will de-mobilize equipment and restore the work-site to original condition. All excavations will be backfilled and compacted in accordance with Section 02220 Excavating, Backfilling, Compacting and the Construction Details.

1.11 ENVIRONMENTAL PROTECTION:

Contractor shall place erosion and sediment control measures between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, permits, and state, federal and local regulations. Contractor shall place approved protection methods to limit intrusion upon project area. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations including environmental condition stated in local, state and federal permits. Fuel may not be stored in bulk containers (greater than 25 gallons) within 200' of any water-body or wetland.

1.12 SAFETY:

Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner.

1.13 DOMESTIC WATER:

For the supply of domestic water during construction, the Contractor shall utilize a JWSC meter assembly (meter & backflow device) and pay for all water consumed.

PART 2. MATERIALS

2.01. HIGH DENSITY POLYETHYLENE (HDPE, PE) PIPE AND FITTINGS:

A. Materials:

Materials used for the manufacture of polyethylene pipe and fittings shall be PE3608 or PE4710 high density polyethylene meeting cell classification 345464C per ASTM D3350; and meeting Type III, Class B or Class C, Category 5, Grade P34 per ASTM D1248; and shall be listed in the name of the pipe and fitting Manufacturer in PPI TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73°F per ASTM D-2837. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.

B. Polyethylene Pipe

HDPE Pipe shall conform to AWWA C906, DR-11, Ductile Iron Pipe (DIP) size and NSF 61 Standard. For pipe sizes 24-inch and larger, the HDPE may be IPS size, DR 11. Polyethylene pipe shall be manufactured in accordance with ASTM F714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter and shall be so marked. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, dimensions and either quick burst or ring tensile strength (equipment permitting).

C. Nominal Pipe Sizes

Nominal pipe sizes only are indicated on the drawings and bid form. Outside diameter of pipe is generally 1 to 2-inches greater than the nominal pipe diameter.

D. Service Identification:

Permanent identification of piping service shall be provided by co-extruding multiple equally spaced color stripes into the pipe outside surface or by solid colored pipe shell. The striping material shall be the same material as the pipe material except for color. Colors for identifying piping service shall be in accordance with JWSC Standards for Water and Sewer Design and Construction.

E. Back-up Rings and Flange Bolts:

Flange adapters shall be fitted with lap joint flanges pressure rated equal to or greater than the mating pipe. Convoluted style backup rings preferred over the flat stock rings. The lap joint flange bore shall be chamfered to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

F. Manufacturer’s Quality Control:

The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rated, and contamination. The cell classification properties of the material shall be certified by the supplier, and verified by Manufacturer’s Quality Control.

G. Polyethylene Mechanical Joint (MJ) Adapters:

Mechanical connections of HDPE pipe to Ductile Iron or PVC piping, mechanical joint fittings, or valves shall be through a fusible polyethylene mechanical joint adapter with or without an integral, internal stainless steel insert. Mechanical joint adapter shall be of the same DR rating as the pipe. Adaptors shall include longer T-bolts or all thread rods with nuts at the mechanical joint bell.

2.02 DRILLING FLUIDS SHALL BE A BENTONITE SLURRY.

2.03 DELIVERY, STORAGE AND HANDLING OF MATERIALS:

A. Inspect materials delivered to the site for damage. All materials found during inspection or during the progress of work to have cracks, flaws, cracked linings, or other defects shall be rejected and removed from the job site without delay.

B. Unload and store opposite or near the place where the work will proceed with minimum handling. Store material under cover out of direct sun light. Do not store directly on the ground. Keep all materials free of dirt and debris.

C. Contractor is responsible for obtaining, transporting and sorting any fluids, including water, to the work site.

D. Disposal of fluids is the responsibility of the Contractor. Disposal of fluids shall be done in a manner that is in compliance with all permits and applicable federal, state, or local environmental regulations. The bentonite drilling slurry, as appropriate, shall be recycled for reuse in the hole opening operation, or shall be hauled by the Contractor to an approved location or landfill for proper disposal. Contractor shall thoroughly clean entire area of any fluid residue upon completion of installation, and replace any and all plants, vegetation, and sod damaged, discolored or stained by drilling fluids.

1. Disposal Site: An available disposal site has been identified for this project at Seaboard Construction Company, Inc. site on US-17. Contractor to verify this location and any others available. Seaboard Construction office located at 25 Whitlock Street, Brunswick, GA 31520, contact number (912) 264-1064. Contractor is responsible for the cost of disposal including but not limited to hauling and disposal charges.

2.04 EQUIPMENT REQUIREMENTS

A. GENERAL:

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe, a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the drill, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be re-used, a guidance system to accurately guide boring operations, a vacuum truck of sufficient capacity to handle the drilling fluid volume, trained and competent personnel to operate the system. All equipment shall be in good, safety operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

B. DRILLING SYSTEM

1. Drilling Rig:

The directional drilling machine shall consist of a power system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations. The rig shall be grounded during drilling and pull-back operations. There shall be a system to detect electrical current from the drilling string and an audible alarm which automatically sounds when an electrical current is detected.

2. Drill Head:

The drill head shall be steerable and shall provide the necessary cutting surfaces and drilling fluid jets.

3. Mud Motors (if required):

Mud motors shall be of adequate power to turn the required drilling tools.

4. Drill Pipe:

Shall be constructed of high quality 4130 seamless tubing, grade D or better.

C. GUIDANCE SYSTEM:

Magnetic Guidance System (MGS) wireline, wireless or gyroscopic shall provide real time electronic data to the inspector on request. All daily data and project data shall be displayed on the “As Built”. If deemed necessary, JWSC shall, at the contractor’s expense, require a third party to verify the drill path profile and location of the installed line to JWSC satisfaction. The guidance system shall be capable of tracking at all depths up to forty feet (40’) below the maximum proposed depth and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction). The guidance system shall be accurate to +/-2% of the vertical depth of the borehole at sensing position at depths up to one hundred feet and accurate within 1.5 meters horizontally.

The Guidance System shall be of a proven type and shall be operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies on the surface of the drill path and shall consider such influences in the operation of the guidance system if using a magnetic system.

1. Bore Tracking and Monitoring:

At all times during the pilot bore the Contractor shall provide and maintain a bore tracking system that is capable of accurately locating the position of the drill head in the x, y, and z axes. The Contractor shall record these data at least once per drill pipe length.

a. Downhole and Surface Grid Tracking System:

Contractor shall monitor and record x, y, and z coordinates relative to an established surface survey bench mark. The data shall be continuously monitored and recorded at least once per drill pipe-length.

b. Deviations between the recorded and design bore path shall be calculated and reported on the daily log. If the deviations exceed plus or minus 5 feet (horizontal or vertical deviation) from the design path, such occurrences shall be reported immediately to JWSC. The Contractor shall undertake all necessary measures to correct deviations and return to design line and grade.

c. Drilling Fluid Pressures and Flow Rates:

Drilling fluid pressures including drilling fluid pressure in the borehole annular space and flow rates shall be continuously monitored and recorded by the Contractor. These measurements shall be made during pilot bore drilling, reaming, and pullback operations.

D. DRILLING FLUID (MUD) SYSTEM:

1. Mixing System:

A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid. Mixing system shall continually agitate the drilling fluid during operations.

2. Drilling Fluids:

Drilling fluid shall be composed of clean water, appropriate additives and clay. Water shall be from an authorized source with a minimum pH of 6.0. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No potentially hazardous material may be used in drilling fluid.

3. Delivery System:

The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled

during drilling operations shall be contained and conveyed to the drilling fluid recycling system or disposed of properly. A berm, minimum of 12" high, shall be maintained around drill rigs, drilling fluid mixing system, entry and exit pits and drilling fluid cycling system to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage, recycling, and disposal facilities.

4. Drilling Fluid Viscosity

In the event that inadvertent returns or returns loss of drilling fluid occurs during pilot hole drilling operations, Contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March funnel and then wait another 30 minutes. If mud fracture or returns loss continues, Contractor shall cease operations and notify JWSC Representative. JWSC Representative and Contractor shall discuss additional options and work will then proceed accordingly.

5. Drilling Fluid Recycling System:

The drilling fluid recycling system shall separate sand, dirt and other solids from the drilling fluid to render the drilling fluid re-usable. Spoils separated from the drilling fluid will be stockpiled for later use or disposal.

6. Control of Drilling Fluids:

The Contractor shall follow all requirements of the Frac-Out and Surface Spill Contingency Plan as submitted and approved and shall control operational pressures, drilling mud weights, drilling speeds, and any other operational factors required to avoid hydrofracture fluid losses to formations, and control drilling fluid spillage. This includes any spillages or returns at entry and exit locations or at any intermediate point. All inadvertent returns or spills shall be promptly contained and cleaned up. The Contractor shall maintain on-site mobile spoil removal equipment during all drilling, pre-reaming, reaming and pullback operations and shall be capable of quickly removing spoils. The Contractor shall immediately notify JWSC of any inadvertent returns or spills and immediately contain and clean up the return or spill.

E. OTHER EQUIPMENT:

1. Pipe Rollers:

Pipe rollers shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall be used to prevent excess sagging of pipe and to protect trees during pipe pullback operations.

2. Pipe Rammers:

Hydraulic or pneumatic pipe rammers may only be used if necessary and with the authorization of JWSC Representative.

3. Restrictions:

Other devices or utility placement systems for providing horizontal thrust other than those defined above in the preceding sections shall not be used unless approved by the JWSC Representative prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within the tolerances prescribed by the particular conditions of the project.

F. DATA LOGGER.

1. General:

A data logger shall be used to record and document all butt weld fusion processes. A record shall be made of every fusion weld made. The data logger shall be of a rugged, handheld computer as the recording device connected to a data collection device. The data collection device shall record the heater temperature and fusion pressure profile over time. All data shall be recorded and transmitted to the handheld computer where the joint report will be stored, viewed, printed, or transferred to a desk top computer for archiving. The operator associated with the fusion process shall utilize the data logger report as one means to confirm a complete and proper weld. This data shall be made immediately available to the JWSC Representative, upon request. Unless approved otherwise by JWSC, a written or downloaded report for each fusion weld process shall be required and submitted to the JWSC Representative within ten (10) working days after the fusion weld process for review and approval. If a potential defect fusion weld is suspected by JWSC or the Contractor, the work shall stop and a mutually acceptable (between the Contractor and JWSC) corrective action plan shall be executed.

2. Data logger:

Equipment shall be Mc Elroy Datalogger Model no. DL6303 DL 6304 or JWSC approved equal.

PART 3. EXECUTION

3.01 DRILLING PROCEDURES

A. DRILL PATH:

Prior to drilling Contractor shall utilize all verified locate information to determine drill pathway. Marked up drawings (see Site Preparation paragraph) shall be on site at all times, and referred to during the drill operation.

B. GUIDANCE SYSTEM:

Contractor shall provide and maintain instrumentation necessary to accurately locate the pilot hole (both horizontal and vertical displacements), measure pilot string torsional and axial forces and measure drilling fluid discharge rate and pressure. The JWSC Representative shall have access to instrumentation and readings at all times during operation.

C. PILOT HOLE:

The pilot hole shall be drilled along the path shown on the plans and profile drawings. Unless approved otherwise by JWSC, the pilot-hole tolerances shall be as follows:

1. Elevation:

As shown on the plans.

2. Alignment:

As indicated; at a minimum three (3) feet within the right-of-way, easement, CMPA boundary, or other restrictive designations.

3. Curve Radius:

The pilot hole radius shall be no less than 80% of the maximum bending radius as recommended by the pipe manufacturer of the pipe being installed. In no case shall the bending radius be less than 30 pipe diameters, unless approved otherwise by JWSC.

4. Entry Point Location:

The exact pilot hole entry point shall be within ±5 feet of the location shown on the drawings without prior JWSC written permission for deviation.

5. Exit Point Location:

The exit point location shall be within ± 5 feet of the location shown on the drawings without prior JWSC written permission for deviation.

6. Limitations on Depth:

HDPE pipe larger than bore hole path shall be specifically designed by

the engineer and approved by JWSC. Where utilities cross under roads, the depth of cover shall comply with applicable authorizing agency and permit.

7. Water Main and Non-Water Main Separation Requirements:

The minimum separation requirements between water main and a non-water main shall be as required by Georgia EPD and in accordance with relevant permits. The current requirements are specified below:

a. Water mains shall be laid at least ten (10) feet horizontally from any existing or proposed sanitary sewer, storm sewer or sewer manhole. The distance shall be measured edge-to-edge.

b. When local conditions prevent a horizontal separation of 10 feet, the water main may be laid closer to a sewer (on a case-by-case basis) provided the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer. It is advised that the sewer be constructed of materials and with joints that are equivalent to water main standards of construction and be pressure tested to assure water-tightness prior to backfilling.

D. PULL BACK:

After successfully reaming bore hole to the required diameter, Contractor will pull the pipe through the bore hole. In front of the pipe will be a swivel and appropriate tools per the contractor's approved Work Plan. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations Contractor will not apply more than the maximum safe pipe pull force at any time. Maximum allowable tensile force imposed on the pull section shall be equal to 80% of the pipe manufacturer's safety pull (or tensile) strength.

1. Torsional stress shall be minimized by using a swivel to connect a pull section to the reaming assembly.

2. The pullback section of the pipeline shall be supported during pullback operations so that it moves freely and the pipe is not damaged.

3. External pressure shall be minimized during installation of the pullback section in the reamed hole. Damaged pipe resulting from external pressure shall be replaced at no cost to the JWSC.

4. Buoyancy modification shall be at the discretion of the Contractor and shall be approved by the JWSC Representative. The Contractor shall be responsible for any damage to the pull section resulting from such modifications.

5. In the event that pipe becomes stuck, Contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, Contractor will notify JWSC Representative. JWSC Representative and Contractor will discuss options and then work will proceed accordingly.

3.02 PIPE ASSEMBLY

A. GENERAL:

Pipe shall be welded/fused together in one length, if space permits. Pipe may be placed on pipe rollers before pulling into bore hole to minimize damage to the pipe. It is critical that all original oxidized pipe surface be removed in order for fusion to take place. The scraping process requires that approximately 0.10” of the outer “skin” be removed in order to penetrate the oxidation and contamination barrier. Oxidized pipe surface simply will not bond.

B. ACCEPTABILITY OF DAMAGED PIPE:

Cuts or gouges that reduce the wall thickness by more than 10% is not acceptable and must be cut out and discarded.

C. BUTT FUSION LOG:

Each butt fusion shall be recorded and logged by an approved electronic monitoring device (Reference paragraph 2.04 F.2.) affixed to the fusion machine. Joint data shall be submitted as part of the As-Recorded information, in accordance with this specification.

D. BUTT FUSION TESTING:

When requested by a JWSC inspector, butt fusion testing will be performed. The test fusion shall be allowed to cool completely, and then fusion test coupons shall be cut out. The test shall involve McElroy’ “In Field Tensile Tester” which utilizes test coupons (conducted in accordance with manufacturer’s recommendations) or JWSC pre-approved test methods and/or manufacturer.

E. MECHANICAL JOINING:

Polyethylene pipe and fittings may be joined together or to other materials by means of flanged connections (flange adapters and back-up rings) or mechanical couplings designed for joining polyethylene pipe or for joining polyethylene pipe to another material. Mechanical couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer’s recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins. External joint restraints shall not be used in lieu of fully restrained mechanical couplings.

F. GENERAL REQUIREMENTS FOR OPEN-CUT CONSTRUCTION:

Mains shall be constructed of the materials specified and as shown on the drawings. Pipe and fittings shall be carefully handled to avoid damage, and if feasible, while they are suspended over the trench before lowering, they shall be inspected for defects and to detect cracks. Defective, damaged or unsound pipe or fittings shall be rejected. Each section of the pipe shall rest upon the pipe bed for the full length of its barrel. Any pipe which has its grade or joint disturbed after laying shall be taken up and re-laid. Only suitable soils shall be utilized in the backfill operation. All precautions shall be taken to prevent sand or other foreign material from entering the pipe during installation. If necessary, a heavy, tightly woven canvas bag of suitable size shall be placed over each end of the pipe before lowering into the trench and left there until the connection is made to the adjacent pipe. Any time the pipe installation is not in progress, the open ends of pipe shall be closed by a watertight plug or other method approved by the JWSC. Plugs shall remain in pipe ends until all water is removed from the trench. Any sand or foreign material that enters the pipe shall be removed from the pipe immediately. No pipe shall be installed when trench conditions (standing water, excess mud, etc.) or the weather (rain, etc.) is unsuitable for such work, except by permission of the JWSC. Any section of pipe already laid which is found to be defective or damaged shall be replaced with new pipe. Lines shall be located as shown on the drawings. The Contractor shall investigate well in advance of pipe laying any conflicts which may require readjustments in planned locations and advise the JWSC Representative of the results of these investigations so that the necessary modifications may be determined. Refer to JWSC Standards for Water and Sewer Design and Construction and other sections of the Technical Specifications for additional requirements.

3.03 SWABBING

A. The purpose of swabbing a new pipeline is to conserve water while thoroughly cleaning the pipeline of all foreign material, sand, gravel, construction debris and other items not found in a properly cleaned system. Prior to pressure testing of a new pipeline, swabbing shall be utilized as indicated below.

B. All new water and sewer force mains greater than 12” I.D. shall be hydraulically cleaned with a polypropylene swabbing device to remove dirt, sand and debris from main.

C. If swabbing access and egress points are not provided in the design drawings, it will be the responsibility of the Contractor to provide temporary access and egress points for the cleaning, as required.

D. Passage of cleaning poly swabs through the system shall be constantly monitored, controlled and all poly swabs entered into the system shall be individually marked and identified so that the exiting of the poly swabs from the system can be confirmed.

E. Cleaning of the system shall be done in conjunction with, and prior to, the initial filling of the system for its hydrostatic test.

F. The Contractor shall insert flexible polyurethane foam swabs (two pounds per cubic foot density) complete with rear polyurethane drive seal, into the first section of pipe. The swabs shall remain there until the pipeline construction is completed. A JWSC representative shall be present for the swabbing process including swab insertion and retrieval.

G. The line to be cleaned shall only be connected to the existing distribution system at a single connection point.

H. Locate and open all new in-line valves beyond the point of connection on the pipeline to be cleaned during the swabbing operation.

I. At the receiver or exit point for the poly swab, the Contractor is responsible for creating a safe environment for collection of debris, water and the swab. Considerations shall be made for protecting surrounding personnel and property and safe retrieval of the swab.

J. Only with JWSC personnel on-site shall the supply valve from the existing distribution system be operated. Cleaning and flushing shall be accomplished by propelling the swab down the pipeline to the exit point with potable water. Flushing shall continue until the water is completely clear and swab(s) is/are retrieved.

1. Re-apply a series of individual swabs in varying diameters and/or densities as required, to attain proper cleanliness of pipeline.

2. Swabbing speed shall range between two and five feet per second.

K. After the swabbing process, pressure testing and disinfection, as appropriate, of the pipe shall be completed in accordance with the JWSC Standards for Water and Sewer Design and Construction and this specification.

3.04 TESTING

A. DISINFECTION TESTS:

1. Upon satisfactory completion of the hydrostatic testing, all new water lines and other pipe related installations which may have been contaminated by the work shall be disinfected prior to being placed in service. Disinfection shall follow the applicable provisions of AWWA Standard C651 – AWWA Standard for Disinfecting Water Mains, the Rules for Safe Drinking Water as published by the Georgia Environmental Protection Division, and as outlined in the JWSC Standards for Water and Sewer Design and Construction.

B. HYDROSTATIC (PRESSURE AND LEAKAGE) TESTS:

1. Contractor shall test HDPE pipelines installed under this Contract in

accordance with these specifications prior to acceptance of the pipeline by the JWSC. All field tests shall be made in the presence of the JWSC Representative. Except as otherwise directed, all pipelines shall be tested. Unless approved otherwise by JWSC, all fusible or butt weld joints shall be tested, including MJ adapter fittings associated with the new construction. All piping to operate under liquid pressure shall be tested in sections of approved length. The pressure testing of an HDPE line section shall be tested separately from the PVC and DIP line sections. Where impractical, the HDPE test section shall include only a minimum amount of PVC and DIP within the test section. If at all possible, the PVC and DIP test sections shall be left exposed during the pressure test for visual leakage observation. For these tests, the Contractor shall furnish clean water, suitable temporary testing plugs or caps, and other necessary equipment, and all labor required. JWSC may elect to furnish suitable pressure gauges for these tests. If not, the Contractor will furnish suitable pressure gauges, calibrated by an approved testing laboratory, with increments no greater than 2 psi. Gauges used shall be of such size that pressures tested will not register less than 10% or more than 90% of the gauge capacity. All valved sections shall be hydrostatic tested to insure sealing (leak allowance) of all line valves. All HDD over 100 linear feet shall be air pressure tested (above ground) @ 5 PSI for a period of 15 minutes, prior to insertion. There shall be no pressure loss allowed.

2. Unless it has already been done, the section of pipe to be tested shall be filled with potable water and air shall be expelled from the pipe. If blow offs or other outlets are not available at high points for releasing air, the Contractor shall provide 1 inch (minimum taps and blow-off valves (at the 12:00 position), as necessary. The cost of constructing blow-off valves and plugging them, after a successful pressure test, shall be included in the unit price bid amount for the HDD installation.

3. Hydrostatic testing shall consist of 150 psig test pressures, based on the elevation of the highest point of the line or section under test. Pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the JWSC Representative. The pump, pipe connection and all necessary apparatus shall be furnished by the Contractor and shall be subject to the approval of the JWSC Representative.

5. Maximum duration for pressure test, including initial and final phase of the test, shall not exceed eight (8) hours. If the test is not completed due to leakage, equipment failure, etc., depressurize the test section, and then allow it to “relax” for at least eight (8) hours before bringing the test section up to test pressure again.

6. Initial Phase of Pressure Testing: First, all air must be removed from the test section. The pressure test shall be completed after the line is backfilled. If possible, all flanged or mechanical joint valves and fittings shall be left exposed for visual leak inspection. If possible all PVC and DIP test sections shall be left exposed for visual leak inspection. Initially,

the pressure within the test section should be raised to approximately 160 psi and then allowed to be idle (no additional make-up water/pressure to be injected), for approximately 3 hours. During this 3 hour period, the test section shall be allowed to stabilize and come to an equilibrium stage. No additional make-up water/pressure shall be applied to the test section during this 3 hour stabilization period unless the line pressure drops below 140 psi. In this case, make-up water/pressure shall only be applied to the test section to maintain a minimum of 140 psi (during the 3 hour stabilization period).

7. Final Phase of Pressure Testing:

The final phase of the pressure test shall involve applying make-up water/pressure to achieve an "initial test pressure" of 150 psi (minimum)/155 psi (maximum). The test section is then allowed to be idle (no make-up water/pressure is added) for a period of 2 hours. After this 2 hour period, make-up water/pressure is applied and measured to re-establish the "initial test pressure". The quantity of water utilized to re-pump the line shall be measured and compared to the allowable quantities as determined by the table below. If the actual make-up water quantity is equal or less than the allowable amount, the pressure test passes. If the actual make-up water quantities are greater than the allowable amount, the pressure test fails (see enclosed JWSC test form).

Table 1: Allowable Make Up Amount

Nominal Pipe Size (inches)	Make-up Water Allowance (Gallons/Linear feet of Pipe) 2-hour test
6	0.0030
8	0.0050
10	0.0065
12	0.0115
14	0.0140
16	0.0165
18	0.0215
20	0.0275
22	0.0350
24	0.0440
26	0.0500
28	0.0555
30	0.0635
32	0.0715
34	0.0810
36	0.0900
42	0.1155
48	0.1350
54	0.1570

8. In the event a section fails to pass the tests, the Contractor shall do

everything necessary to locate, uncover (even to the extent of uncovering the entire section), and replace the defective pipe, valve, fitting or joint. Visible leaks shall be corrected regardless of total leakage. Lines which fail to meet these tests shall be retested as necessary until test requirements are complied with. All testing shall be performed at the Contractor's expense.

9. If, in the judgment of JWSC, it is impracticable to follow the foregoing procedures exactly for any reason, modifications in the procedure shall be made with approval; but, in any event, the Contractor shall be responsible for the ultimate tightness of the piping within the above requirement. Re-disinfection of water mains shall be required if the line is de-pressurized for repairs prior to tying.

C. LOCATE WIRE:

Two locate wires shall be provided on all HDPE installations. For HDD projects, locate wire shall be 12 AWG high strength copper-clad carbon steel with 45 mils (min) insulation. For open-cut portions of the project, the locate wire construction and testing shall meet the requirements as listed in the General Notes and Construction Details in the Construction Drawings. The external color shall be blue for water and green for wastewater. Locate wire shall be brought to grade within a valve box or locate station box at all "entry point locations" and all "exit point locations". For HDD projects, there is no maximum length or interval between locate wire stations. The testing and report requirements within the General Notes of the Construction Drawings shall be required except as modified herein. If both locate wires break or are not continuous (from end to end), the Contractor shall, at the Contractor's expense, provide soft-digs for the portions of the main with 12-feet or less cover (every 25 LF along main) to confirm as-built data. This soft-dig data shall be recorded on the as-built record drawings.

JWSC
RECORD of PRESSURE and LEAKAGE TEST (HDPE PIPE)

Project:_____
TEST SECION:_____
JWSC REPRESENTATIVE:_____SIGNATURE_____
TEST DATE:__/_____/_____ TEST TIME:_____ BEGIN_____ END_____
OTHER TEST PHASE ATTENDEE'S:

_____ _____
_____ _____
_____ _____

PRESSURE AND LEAKAGE TEST CALCULATIONS:
_____WATER MAIN _____ WASTEWATER FORCE MAIN _____RECLAIMED WATER MAIN
Line Pressure Test:
Start:_____ PSI (Minimum of 150 PSI or 2x operating pressure) End:_____PSI
PSI Difference: _____PSI (IF GREATER THAN 5 PLI, THE TEST FAILS)

TYPE OF HDPE PIPE (DR RATING) (1)	**DIAMTER OF PIPE (INCHES) (2)**	**LINEAR FEET (3)**	**2-HOUR TEST FACTOR (see JWSC TABLE) (4)**	**TOTAL ALLOWABLE LEAKAGE (3X4) (5)**
			Total Allowable Leakage Amount (Gallons):	

Allowable Leakage Amount _____ Gal _____Oz. (32 oz per qt; 120 of per gal)
Actual Leakage Amount _____Gal _____Oz.
Pressure and Leakage Test Results (Pass or Fail) _____
The above is based on the average pressure test of 150 PSI, 2 hour test period. If the actual leakage amount is equal or less than the allowable leakage amount, the leakage test is acceptable.

JWSC 2 HOUR TEST FACTORS NOMINAL PIPE SIZE (inches) – ALLOWABLE LEAKAGE AMOUNT (Gallons/Linear Feet of Pipe)						
4" – 0.0020	6" – 0.0030	8" – 0.0050	10" – 0.0065	12" – 0.0115	14"- 0.0140	16" – 0.0165
18" – 0.0215	20" – 0.0275	22" – 0.0350	24" – 0.0440	26" – 0.0500	28" – 0.0500	30" – 0.0635
32" – 0.0715	34" – 0.0810	36" – 0.0900	42" – 0.1155	48"- 0.1350	54" – 0.1570	

File No. _____

END OF SECTION

SECTION 15100

VALVES AND SPECIALTIES - GENERAL

PART 1 - GENERAL

1.01 DESCRIPTION

Scope of Work: Furnish, install, support, and test valves, gates, hydrants, cocks, stops, and faucets, when applicable, (hereinafter referred to as "valves") in the location(s) and of the size(s) and quantities shown on the Drawings and/or as directed by the JWSC. All work shall conform to the requirements of the JWSC Standards for Water and Sewer Design and Construction and as described in this Section.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. All equipment furnished under this Specification shall be new and unused and shall be a standard product which has a successful record of reliable service in similar installations for a minimum of five (5) years.

2. All valves of same type and duty shall be furnished by a single manufacturer.

B. Standards:

1. ANSI.

2. AISI.

3. SSPC.

4. AWWA.

1.03 SUBMITTALS

A. Materials and Shop Drawings: Copies of all materials required to establish compliance with the Specification shall be submitted in accordance with the Special Conditions. Submittals shall include at least the following:

1. Certified shop drawings showing all important details of construction, dimensions (including laying length), and weight.

2. Descriptive literature, bulletins, and/or catalogs showing all valve parts, valve operator, and describing material of construction by material and specification (e.g., AISI).

3. Valve coatings and linings, as required.

4. A complete total bill of materials for all equipment.

B. Operating Instructions: Copies of operating and maintenance instructions shall be furnished in accordance with Section 01730 Operation and Maintenance Data. These shall include equipment lists, descriptions, and information necessary to instruct operating and maintenance personnel unfamiliar with the valves.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Shipping:

1. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed.

2. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the JWSC.

3. Finished surfaces of all exposed openings shall be protected by wooden blanks, strongly built and securely bolted thereto.

4. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

5. After hydrostatic or other tests, all entrapped water shall be drained prior to shipment, and proper care shall be taken to protect parts from the entrance of water during shipment, storage and handling.

6. Each box or package shall be properly marked to show its net weight in addition to its contents.

B. Storage:

1. Store valves and accessories in an area on the construction site protected from weather, moisture, or possible damage.

2. Do not store valves or accessories directly on the ground.

C. Handling:

1. Handle valves and accessories to prevent damage of any nature.

2. Carefully inspect all materials for:

a. Defects in workmanship and materials.

b. Removal of debris and foreign material in valve openings and seats.

c. Proper functioning of all operating mechanisms.

d. Tightness of all nuts and bolts.

PART 2 - PRODUCTS

2.01 MATERIALS - GENERAL

A. Materials shall be as indicated in JWSC Standards for Water and Sewer Design and Constructions, specific sections, or on the Drawings, and compatible with intended use.

B. Valves shall have the name of the manufacturer and the size of the valve cast or molded onto the valve body or bonnet or shown on a permanently attached stainless steel plate.

C. Bolts, washers, nuts, and gaskets for flanged valves shall be as described in the JWSC Standards for Water and Sewer Design and Construction or the specific piping sections.

D. Coat metal valves located above ground or in vaults and structures the same as the adjacent piping. Apply the specified prime coat at the place of manufacture. Apply finish coat in field. Finish coat shall match color of the adjacent piping.

2.02 PLUG VALVES – FORCEMAIN ISOLATION

A. All plug valves, unless specifically shown otherwise on the drawings, shall be of non-lubricated, eccentric plug type with resilient faced plugs and shall be furnished with end connections as shown on the Contract Drawings, unless otherwise approved. Flanged valves shall be faced and drilled to the ANSI 125/150 lb standard. Mechanical joint ends shall meet AWWA C111, Class B.

B. Valve bodies shall be ASTM A126, Class B cast iron with all exterior mounted bolts and nuts to be stainless steel. Valve shall have Buna “N” neoprene, epoxy, or fusion bonded, nylon faced plug. The interior of all plug valves shall be epoxy coated.

C. Port areas shall be 100% of full pipe area. The valve seat material shall consist of either a welded in 1/8 inch overlay of 90% pure nickel, or 316 stainless steel screwed into the cast iron body. Upper and lower plug stem bearings shall be sleeve-type of a stainless steel or other non-corrosive bearing material. The packing shall be adjustable and the bonnet shall be bolted. All bolts, nuts and washers shall be 316 stainless steel for buried, non-buried, and pit installed service. All buried valves on push-on joint pipe shall have mechanical joint ends and meet the requirements of ANSI A21.11. All exposed (non-buried) valves shall have flanged ends in accordance with American Standard B16.1, Class 125. The valves shall be rated for a minimum of 150 psi, non-shock cold W.O.G. and shall provide drip-tight shut off with this pressure in either direction. The operating nut or hand wheel shall have an arrow cast in the metal indicating direction of opening. The valve manufacturer shall furnish certified copies of performance, leakage and hydrostatic testing as outlined in AWWA C504.

D. All plug valves 8-inches and larger shall be equipped with totally enclosed worm gear actuators complying with AWWA C504. All gearing shall run in oil. The actuator housing shall be semi-steel with seals to prevent dirt or water from entering the housing. Shaft bearings shall be permanently lubricated bronze bushings. Appropriately sized hand wheel operators shall be provided for each non-buried, gear-actuated valve. Buried valves shall have seals on all shafts and gaskets on valve covers. Buried valves shall be provided with 2-inch square operating nut with extension stem with operating nut no more than 8-inches below finish grade.

E. Plug valves shall be as manufactured by DeZurik PEF Eccentric Plug Valves, Pratt Ballcentric Full Port Eccentric Plug Valve, or JWSC approved equal.

2.03 CHECK VALVES

A. Check valve shall be mounted horizontally unless approved otherwise by JWSC. Check valves shall conform to the requirements of AWWA C508.

B. All check valve interiors shall be fully coated with a liquid thermosetting epoxy suitable for use in wastewater applications.

C. Check valves shall be swing check type. Swing check valves larger than two (2) inch nominal size shall be cast iron body with stainless steel bolts and nuts, flanged ends, 316 stainless steel shaft connected to a steel outside lever and weight, swing-type with straight-away passageway of full pipe area. The valve shall have renewable bronze seat ring and rubber-faced disc.

D. Check valves larger than two (2) inch shall be 150 psi working pressure.

E. Check valves two (2) inch and smaller nominal size shall be all brass swing check valves, 200 psi working pressure.

F. Swing check valves larger than two (2) inch nominal size shall be Clow Valve Company Style 1106LW or Style 159-02 or JWSC approved equal.

2.04 AIR RELEASE VALVES

A. Air release valve shall be two (2) inch inlet (minimum), stainless steel internal trim (including float, lever arm, leakage, etc.), stainless steel assembly bolts, stainless steel backwash accessories including quick disconnects and stainless steel ball valves (gate valve are also acceptable). The body of the air valve shall be 316 stainless steel or nylon plastic. Short body style shall only be substituted for the standard size when head clearance (for the standard style) is not available or if approved by JWSC.

B. Air release valves shall be installed at forcemain high points. Air release valve shall be installed within sealed manhole/box or within above grade pedestal as indicated in Construction Details.

C. Air release valves for use on sewer forcemains shall be A.R.I. Model S-020.

2.05 VALVE BOXES

A. All buried valves shall have cast-iron three-piece adjustable valve boxes. Valve boxes shall be provided with suitable heavy bonnets and shall extend to such elevation at or slightly above the finished grade surface as directed by the JWSC. The barrel shall be two-piece, sliding type, having 5-1/4-inch shaft. The upper section shall have a flange at the bottom having sufficient bearing area to prevent settling and shall be complete with a cast iron cover. Covers shall have "WATER" or "SEWER" cast into the top for all such mains, as appropriate. The actuating nuts for deeper valves shall be extended to come up to within four (4) feet of the finished grade.

B. Care shall be taken installing valve boxes to ensure that valve stems are vertical and the cast iron box has been placed over the stem with base bearing on compacted fill and top flush with final grade. Boxes shall have sufficient bracing to maintain alignment during backfilling. Contractor shall remove any sand or undesirable fill from valve box prior to final inspection. Any valve box which has been moved from its original position by trench settlement or other causes, and which prevents the use of a valve wrench for opening and closing of the valve, shall be reset by the Contractor prior to final acceptance. The entire assembly shall be plumb.

C. In unpaved areas, a poured in place reinforced concrete valve pad shall be installed around all valve boxes. The concrete thickness shall be four (4) inches for poured in place collars. The top of the poured in place collar shall be level with the top of the cast iron valve box and **level with the final grade**.

PART 3 - EXECUTION

3.01 PREPARATION

A. Apply coatings to valves and miscellaneous piping appurtenances as per JWSC Standards for Water and Sewer Design and Construction.

B. Apply coats of paint filler and enamel to parts customarily finished at the shop.

C. Apply a shop coat of grease or other suitable rust resistant coating to ferrous surfaces obviously not to be painted.

3.02 INSTALLATION

A. Install valves and accessories in strict accordance with manufacturer's instructions and recommendations, as shown on the Drawings and/or as directed by the JWSC.

B. Carefully erect all valves and support them in their respective positions free from distortion and strain.

C. Bolt holes of flanged valves shall straddle the horizontal and vertical centerlines of the pipe run to which the valves are attached. Clean flanges by wire brushing before installing flanged valves. Clean flange bolts and nuts by wire brushing, lubricate threads with oil and graphite, and tighten nuts uniformly and progressively. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.

D. Support all valves connected to pumps and equipment, and in piping systems that cannot support valves.

E. Repair any scratches, marks and other types of surface damage, etc., with original coating as supplied by the factory.

3.03 INSPECTION AND TESTING

A. Check and adjust all valves and accessories for smooth operation.

B. Test valves for leakage at the same time that connecting pipelines are tested. See Section 15044: Pressure Testing of Piping for pressure testing requirements. Protect or isolate any parts of valves, operators, or control and instrument systems whose pressure rating is less than the pressure tests.

C. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reseat or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints.

END OF SECTION