Brunswick - Glynn County
Joint Water and Sewer Commission

BIDDING AND CONTRACT DOCUMENTS

TECHNICAL SPECIFICATIONS

STERLING INDUSTRIAL PARK
SR99/US341 WATER MAIN EXTENSION

GLYNN COUNTY, GEORGIA

JWSC PROJECT NO. 232

Richardson, Garretson & Associates, LLC
Consulting Engineers
4875 Riverside Drive, Suite 101
Macon, Georgia 31210

October 1, 2015

SECTION 00020
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ATTACHMENTS

Construction Plans

Sterling Industrial Park – SR99/US341 Water Main Extension
Prepared by Richardson, Garretson & Associates, LLC

BIDDING REQUIREMENTS

SECTION 00100
INVITATION FOR BIDS

Sealed bids for **SR99/US341 WATER MAIN EXTENSION - STERLING INDUSTRIAL PARK** will be received by the Brunswick-Glynn County Joint Water and Sewer Commission (JWSC) at the JWSC's Office of the Director of Procurement, 1703 Gloucester Street, Brunswick, Georgia 31520 until **11:00 A.M. local time on TUESDAY, NOVEMBER 17, 2015** at which time and place they will be publically 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 JWSC (Phone: 912-261-7136; E-mail: jmeridith@bgjwsc.org) upon payment of a non-refundable two hundred dollars (**$200.00)** for each set of documents requested. The documents are also available electronically (CD) free of charge.

The work of this contract includes the construction of water system improvements in the Sterling area of Glynn County, GA. More specifically the project includes, but is not limited to, mobilization; traffic control; furnishing and installing approximately 17,700 LF of 8" and 10,340 LF of 12" C900 PVC Water Main; 215 LF of 16" and 350 LF 20" Jack and Bore; 580 LF of 12" HDPE Directional Bore; erosion and sediment controls; connections to the existing system; testing; and complete surface restoration. All work must be completed within 270 consecutive calendar days from receipt of a written notice to proceed.

The Bidder is ***encouraged*** to examine the work locations and inform himself fully as to the conditions present at the site. Site visits must be coordinated through the JWSC Planning and Construction Division at (912) 261-7136, attention Janice Meridith, at least 24 hours in advance. A ***mandatory pre-bid meeting*** will be held in the JWSC main conference room, 1703 Gloucester Street, Brunswick, Georgia 31520 at **11:00 A.M. local time on TUESDAY, OCTOBER 27, 2015** followed by a site visit for anyone interested in attending.

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.

SECTION 00200
INSTRUCTIONS TO BIDDERS

1.0 Intent

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 during the bidding period must be submitted in writing or e-mailed to the Contract Project Representative identified in Paragraph 2.0 of the General Conditions on or before ***5:00 P.M. local time on TUESDAY, NOVEMBER 3, 2015***. Requests for clarification received after this date will not be considered. Responses to requests for clarification will be issued by addendum to all qualified bidders (*see paragraph 3 below*) and will also be posted on the JWSC website (www.bgjwsc.org).

2.0 Work to be Done

The work of this contract includes the construction of water system improvements in the Sterling area of Glynn County, GA. More specifically the project includes, but is not limited to, mobilization; traffic control; furnishing and installing approximately - furnishing and installing approximately 17,700 LF of 8" and 10,340 LF of 12" C900 PVC Water Main; 215 LF of 16" and 350 LF 20" Jack and Bore; 580 LF of 12" HDPE Directional Bore -- furnishing and installing approximately 17,700 LF of 8" and 10,340 LF of 12" C900 PVC Water Main; 215 LF of 16" and 350 LF 20" Jack and Bore; 580 LF of 12" HDPE Directional Bore; erosion and sediment controls; connections to the existing system; testing; and complete surface restoration. All work must be completed within 270 consecutive calendar days from receipt of a written notice to proceed.

3.0 Site Examination

The Bidder is ***encouraged*** to examine the work locations and inform himself fully as to the conditions present at the site. Site visits must be coordinated through the JWSC Planning and Construction Division at (912) 261-7136, attention Janice Meridith, at least 24 hours in advance. A ***mandatory pre-bid meeting*** will be held in the JWSC main conference room, 1703 Gloucester Street, Brunswick, Georgia 31520 at ***11:00 A.M. local time on TUESDAY, OCTOBER 27, 2015*** followed by a site visit for anyone interested in attending.

4.0 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.

4.1 Determination of Successful Bidder

The contract, if awarded, will be awarded to the lowest responsive, responsible Bidder. The determination of the Bidder's ***responsibility*** will be made by the JWSC based on whether the Bidder:

- Maintains a permanent place of business,
- Has the appropriate technical experience,
- Has adequate plant and equipment to do the work properly and expeditiously,
- Has suitable financial means to meet obligations incidental to this work, and
- Is appropriately licensed for the described work in the State of Georgia
- Submitted the E-Verify Affidavits and Agreements with bid.

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 be 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.

5.0 Bid Alternates

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

6.0 Contract Time

Contract time shall consist of Two Hundred Seventy (270) 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 hundred dollars (**$2,000.00)** for each calendar day that he shall be in default of completing the work within the time limit named herein.

7.0 Bid Form

Bids shall be submitted on the Bid Form included. Bids shall be based upon unit or 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.

8.0 Submission of Bids

Bidder shall submit ***an original and three (3) copies*** of its Bid in an opaque sealed envelope at the time and place indicated in the Invitation. On the outside of the envelope containing the Bid shall be noted the following:

"Sealed Bid – SR99/US341 Water Main Extension"
JWSC Project No. 232

The outside of the envelope shall also bear the name, address and Utility Contractor's License Number of the Bidder.

All blanks in the Bid Form 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, and E-Verify Affidavit and Agreement*** 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.

SECTION 00410
BID FORM

DATE SUBMITTED: _____

PROJECT NAME: **Sterling Industrial Park**
SR99/US341 Water Main Extension
Glynn County, Georgia
JWSC Project No. 232

SUBMITTED TO: Brunswick – Glynn County Joint
Water and Sewer Commission
1703 Gloucester Street
Brunswick, Georgia 31520

SUBMITTED BY:

Company Name _____

Address _____

_____

_____

Georgia Utility Contractor's License No. _____

Acknowledge Receipt of Addenda Numbers _____

The undersigned as BIDDER hereby declares that the only person or persons interested in the BID as principal or Principals is or are named herein and that no other person than herein mentioned has any interest in the BID or in the Contract to be entered into; that this BID is made without connection with any other person or parties making a BID, and that it is in all respects fair and in good faith without collusion or fraud.

The BIDDER declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the plans and specifications for the work and the documents relative thereto; and has read all General and Special Conditions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed.

The BIDDER proposes and agrees, if the BID is accepted, to contract with the Brunswick – Glynn County Joint Water and Sewer Commission to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation and labor to complete the work in full and complete accordance with the shown, noted, described and reasonably intended requirements of the plans, specifications and contract documents to the full and entire satisfaction of the Brunswick – Glynn County Joint Water and Sewer Commission with a definite understanding that no money will be allowed for extra work except as set forth in the attached General

Conditions and contract documents for the prices set forth below.

DIVISION I - BASE BID ITEMS					
Item	**Qty.**	**Unit**	**Description**	**Unit Price**	**Total Price**
1			**Clearing and Grubbing**		
a.	0	Ac.	Clearing and Grubbing	$	$
				$	$
2			**Erosion and Sedimentation Control**	$	$
a.	3,659	L.F.	Sediment Barriers (Type A Silt Fence)	$	$
b.	36	Ea.	Hay Bale Check Dam	$	$
c.	1.5	Ac.	Mulching & Temporary Grassing	$	$
d.	1.5	Ac.	Permanent Grassing	$	$
e.	1	L.S.	Stormwater Permitting and Monitoring	$	$
f.	2	Ea.	Construction Entrance	$	$
g.	5	Ea.	Inlet Sediment Traps	$	$
h.	6	Ea.	Filter Ring	$	$
i.	3	Ea.	Storm Drain Outlet Protection	$	$
3			**Water Mains and Accessories**		
a.	5,148	L.F.	12” PVC Water Main Installation	$	$
b.	2	Ea.	12” x 12” Tee, MJ	$	$
c.	3	Ea.	12” x 8” Tee, MJ	$	$
d.	11	Ea.	12” Gate Valve with Box	$	$
e.	1,085	L.F.	8” PVC Water Main Installation	$	$
f.	4	Ea.	8” Gate Valve with Box	$	$
g.	1	Ea.	8”-45° Bend, MJ	$	$
h.	1	Ea.	8”-11.25° Bend MJ	$	$
i.	172	Ea.	Harness Type Bell Restraints	$	$
j.	3	Ea.	Temporary Dead End Complete	$	$
k.	1	Ea.	Utility Conflict Resolution Complete	$	$

DIVISION I – BASE BID ITEMS					
Item	**Qty.**	**Unit**	**Description**	**Unit Price**	**Total Price**
l.	10	Ea.	Fire Hydrant Assembly, Complete	$	$
m.	5	Ea.	1” Water Service (PE)	$	$
n.	1	Ea.	2” Water Service (HDPE)	$	$
o.	6,233	L.F.	Testing & Disinfection	$	$
4			**Miscellaneous Removals, Replacements and Installation**		
a.	125	S.Y.	Asphalt Pavement Remove & Replace	$	$
b.	12	S.Y.	Gravel Driveway Remove & Replace	$	$
c.	256	L.F.	Jack and Bore Installation, 20” Steel Casing w/spacers	$	$
d.	80	L.F.	Jack and Bore Installation, 16” Steel Casing w/spacers	$	$
			SUB - TOTAL DIVISION I		$

DIVISION II - BASE BID ITEMS					
Item	**Qty.**	**Unit**	**Description**	**Unit Price**	**Total Price**
1			**Clearing and Grubbing**		
a.	0	Ac.	Clearing and Grubbing	$	$
				$	$
2			**Erosion and Sedimentation Control**	$	$
a.	4,315	L.F.	Sediment Barriers (Type A Silt Fence)	$	$
b.	19	Ea.	Hay Bale Check Dam	$	$
c.	1.5	Ac.	Mulching and Temporary Grassing	$	$
d.	1.5	Ac.	Permanent Grassing	$	$
e.	1	L.S.	Stormwater Permitting and Monitoring	$	$
f.	1	Ea.	Construction Entrance	$	$
g.	3	Ea.	Inlet Sediment Traps	$	$
h.	8	Ea.	Filter Rings	$	$
i.	1	Ea.	Storm Drain Outlet Protection	$	$
3			**Water Mains and Accessories**		
a.	5,090	L.F.	12” PVC Water Main Installation	$	$
b.	4	Ea.	12” x 12” Tee, MJ	$	$
c.	2	Ea.	12” x 8” Tee, MJ	$	$
d.	15	Ea.	12” Gate Valve with Box	$	$
e.	4	Ea.	12”-90° Bend, MJ	$	$
f.	2	Ea.	12”-45° Bend MJ	$	$
g.	3	Ea.	12”-22.5° Bend MJ	$	$
h.	5	Ea.	12”-11.25° Bend MJ	$	$
i.	592	L.F.	8” PVC Water Main Installation	$	$
j.	3	Ea.	8” Gate Valve with Box	$	$
k.	1	Ea.	8”-90° Bend, MJ	$	$

DIVISION II - BASE BID ITEMS					
Item	**Qty.**	**Unit**	**Description**	**Unit Price**	**Total Price**
l.	2	Ea.	8”-22.5° Bend MJ	$	$
m.	1	Ea.	8”-11.25° Bend MJ	$	$
n.	680	L.F.	12” HDPE Water Main Installation (HDD)	$	$
o.	191	Ea.	Harness Type Bell Restraints	$	$
p.	5	Ea.	Temporary Dead End	$	$
q.	13	Ea.	Fire Hydrant Assembly, Complete	$	$
r.	5,770	L.F.	Testing & Disinfection	$	$
4			**Miscellaneous Removals, Replacements and Installation**		
a.	176	SY	Asphalt Pavement Remove & Replace	$	$
b.	51	SY	Concrete Pavement Remove & Replace	$	$
c.	77	L.F.	Concrete Curb & Gutter Remove & Replace	$	$
d.	26	S.Y.	Gravel Driveway Remove & Replace	$	$
e.	110	L.F.	Jack and Bore Installation, 20” Steel Casing w/spacers	$	$
			SUB-TOTAL DIVISION II		$

DIVISION IIA - BASE BID ITEMS					
Item	**Qty.**	**Unit**	**Description**	**Unit Price**	**Total Price**
1			**Clearing and Grubbing**		
a.	.6	Ac.	Clearing and Grubbing	$	$
				$	$
2			**Erosion and Sedimentation Control**	$	$
a.	3,756	L.F.	Sediment Barriers (Type A Silt Fence)	$	$
b.	1.8	Ac.	Mulching and Temporary Grassing	$	$
c.	1.8	Ac.	Permanent Grassing	$	$
d.	1	L.S.	Stormwater Permitting and Monitoring	$	$
e.	1	Ea.	Construction Entrance	$	$
f.	2	Ea.	Storm Drain Outlet Protection	$	$
3			**Water Mains and Accessories**		
a.	4,173	L.F.	8” PVC Water Main Installation	$	$
b.	2	Ea.	8” x 8” Tee, MJ	$	$
c.	2	Ea.	8” Gate Valve with Box	$	$
d.	4	Ea.	8”-45° Bend, MJ	$	$
e.	1	Ea.	8”-22.5° Bend MJ	$	$
f.	3	Ea.	8”-11.25° Bend MJ	$	$
g.	71	Ea.	Harness Type Bell Restraints	$	$
h.	2	Ea.	Temporary Dead End Complete	$	$
i.	5	Ea.	Fire Hydrant Assembly Complete	$	$
j.	4173	L.F.	Testing and Disinfection	$	$
4			**Miscellaneous Removals, Replacements and Installation**		
a.	64	S.Y.	Asphalt Pavement Remove & Replace	$	$
b.	215	S.Y.	Concrete Pavement Remove & Replace	$	$
c.	90	L.F.	Jack and Bore Installation, 16” Steel Casing w/Spacers	$	$
			SUB-TOTAL DIVISION IIA		$

DIVISION III - BASE BID ITEMS					
Item	**Qty.**	**Unit**	**Description**	**Unit Price**	**Total Price**
1			**Clearing and Grubbing**		
a.	.03	Ac.	Clearing and Grubbing	$	$
				$	$
2			**Erosion and Sedimentation Control**	$	$
a.	900	L.F.	Sediment Barriers (Type C Silt Fence)	$	$
b.	33	Ea.	Stone Check Dam	$	$
c.	1.35	Ac.	Mulching and Temporary Grassing	$	$
d.	1.35	Ac.	Permanent Grassing	$	$
e.	1	L.S.	Stormwater Permitting and Monitoring	$	$
3			**Water Mains and Accessories**		
a.	11,650	L.F.	8” PVC C900 Water Main Installation	$	$
c.	20	Ea.	8”-45° Bend, MJ (w/Megalugs)	$	$
d.	1	Ea.	8” x 8” Tee, MJ	$	$
e.	13	Ea.	8” Gate Valve with Box	$	$
f.	3	Ea.	8”-11.25° Bend MJ	$	$
g.	23	Ea.	Fire Hydrant Assembly Complete	$	$
i.	11,650	L.F.	Testing & Disinfection	$	$
4			**Miscellaneous Removals, Replacements and Installation**		
a.	250	S.Y.	Asphalt Pavement Remove & Replace	$	$
b.	135	L.F.	Jack and Bore Installation, 16” Steel Casing w/spacers	$	$
			SUB-TOTAL DIVISION III		$

Total Base Bid (Division I through Division III) _____

_____ (Dollars) $

EXTRA WORK ITEMS (If ordered)				
Item	**Qty.**	**Unit**	**Description**	**Total Price**
A	10	CY	Unsuitable Soils Removal as ordered by Engineer	$
B	10	CY	Select Soils Backfill as ordered by Engineer	$
C	10	CY	Rock Backfill as ordered by Engineer	$

The BIDDER agrees to perform all work for the unit price or lump sum prices stated above. Items of work not listed but required for a complete installation shall be included in the price of related items. The BIDDER further agrees and understands that the quantities shown for unit price items are approximate and, as such, are subject to either increase or decrease, and that the BIDDER will be paid for actual quantities installed at the unit prices stated in the bid form. Lump sum prices stated above are subject to increase or decrease only by a properly executed change order.

The BIDDER understands that the Brunswick-Glynn County Joint Water and Sewer Commission reserves the right to accept or reject either of the Extra Work Items, or delete one or more Bid Items for the purpose of making an award; and the right to reject any or all bids including without limitation, the right to reject any or all nonconforming, nonresponsive, unbalanced or conditional Bids; and to make an award in the best interest of the Brunswick-Glynn County Joint Water and Sewer Commission.

The BIDDER further proposes and agrees to commence work under this contract, with adequate force and equipment, on a date to be specified in a written order of the Owner and shall fully complete all work hereunder within **270** consecutive calendar days from and including said date.

The undersigned BIDDER further agrees that, in case of failure on his part to execute the said Contract and Bonds within fifteen (15) consecutive calendar days after written notice being given of the award of the Contract, the check or bid bond accompanying this Bid and the monies payable thereto, shall be paid into the funds of the Brunswick-Glynn County Joint Water and Sewer Commission as liquidated damages for such failure, otherwise, the check or bid bond accompanying this Bid shall be returned to the undersigned.

The undersigned agrees to abide by all conditions of this Invitation for Bids and certifies that he/she is authorized to sign this Bid for the BIDDER.

(Continued on Following Page)

This the_____day of_____, 2015.

Company Name (Please type or Print):

Name: _____

Street: _____

City: _____

State: _____ Zip: _____

Telephone: _____

Fax: _____

Person Authorized to Sign:

Name: _____

Signature: _____

Title: _____

E-Mail: _____

EXPERIENCE AND REFERENCES:

The Bidder shall provide a minimum of three (3) references relative to work it has done of a similar nature as solicited in this Invitation for Bids. Projects shall have been completed within the last five (5) years. Give references that will afford the JWSC opportunity to judge as to experience, skill, business standing and financial ability. Information provided for reference projects shall include: description of the project, location, date of completion, construction cost, and project owner contact.

Reference Project No. 1:

Project Name and Location: _____

Brief Scope of Project: _____

_____

_____

Construction Cost: _____

Date of Completion: _____

Project Owner Contact (Name, Title, Phone No., Address): _____

_____

_____

Reference Project No. 2:

Project Name and Location: _____

Brief Scope of Project: _____

_____

_____

Construction Cost: _____

Date of Completion: _____

Project Owner Contact (Name, Title, Phone No., Address): _____

_____

_____

Reference Project No. 3:

Project Name and Location: _____

Brief Scope of Project: _____

_____

_____

Construction Cost: _____

Date of Completion: _____

Project Owner Contact (Name, Title, Phone No., Address): _____

_____

_____

SECTION 00420
BID BOND

State of Georgia
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 in the sum of _____

_____ $ (_____)

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 assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted to the Brunswick – Glynn County Joint Water and Sewer Commission a Bid for:

STERLING INDUSTRIAL PARK
SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA

JWSC PROJECT NO. 232

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 Brunswick – Glynn County Joint Water and Sewer Commission and execute a sufficient and satisfactory Performance Bond and Payment Bond payable to the Brunswick – Glynn County Joint Water and Sewer Commission, each in an amount of one hundred percent (100%) of the total contract price, in form and with security satisfactory to the Brunswick – Glynn County Joint Water and Sewer Commission, 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 Brunswick – Glynn County Joint Water and Sewer Commission, 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 Section 36-91-50 et seq. of the Code of Georgia, 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_____Day of_____, 2015

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. _____

SECTION 00430
OATH

State of Georgia
County of Glynn

I_____(Name of Individual) solemnly swear that in the procurement of the Contract for

STERLING INDUSTRIAL PARK
SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA

JWSC PROJECT NO. 232

that I or any other person associated with me or my business, corporation or partnership has prevented or attempted to prevent competition in the bidding of said project or from submitting a bid for this project by any means whatsoever.

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_____Day of_____, 2015

Name of Party: _____

Corporate or Partnership Name: _____

Sworn to and subscribed before me this_____Day of_____, 2014

NOTARY PUBLIC:

Name: _____

My Commission Expires: _____

(SEAL)

SECTION 00440
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.

Does the Bidder have the above EEO policy in place?

Yes [ ] No [ ]

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*)**

SECTION 00450
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
Fraud	[ ]	[ ]	Obstruction of justice (or any other misconduct affecting public or judicial officers' performance of their official Duties	[ ]	[ ]
Embezzlement	[ ]	[ ]			
Tax Evasion	[ ]	[ ]			
Bribery	[ ]	[ ]	False/misleading advertising	[ ]	[ ]
Extortion	[ ]	[ ]	Perjury	[ ]	[ ]
Jury Tampering	[ ]	[ ]	Conspiracy to commit any of the Foregoing offenses	[ ]	[ ]
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
Unfair/anti-competitive business practices	[ ]	[ ]	Violations of securities laws (state & federal)	[ ]	[ ]
Consumer fraud misrepresentation	[ ]	[ ]	False/misleading advertising	[ ]	[ ]
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.

SECTION 00460
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: _____

Title: _____ Date: _____

Address: _____

Telephone: _____ Fax: _____ Email: _____

SECTION 00470
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, *stating 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_____, 2014.

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).

Authority O.C.G.A. § 13-10-91. **History**. Original Rule entitled "Contractor Affidavit and Agreement" adopted F. May 25, 2007; eff. June18, 2007, as specified by the Agency.

SECTION 00480
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, *stating 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_____, 2014.

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).

Authority O.C.G.A. § 13-10-91. **History**. Original Rule entitled "Contractor Affidavit and Agreement" adopted F. May 25, 2007; eff. June18, 2007, as specified by the Agency.

CONTRACTING REQUIREMENTS

SECTION 00520

PART A – CONTRACT FORM
CONTRACT FOR SERVICES BY AND BETWEEN
BRUNSWICK – GLYNN COUNTY JOINT WATER AND SEWER COMMISSION
AND
CONTRACTOR NAME

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 ad through its Commissioners (hereinafter referred to as the "JWSC") and _____, a Georgia Corporation 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 1, 2015 (hereinafter referred to as the "Solicitation") from qualified Contractors to provide for its

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SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA
JWSC PROJECT NO. 232

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 _____, 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 the 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:

1.0 INDEPENDENT CONTRACTOR STATUS

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.

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.

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.

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.

2.0 CONTRACT DOCUMENTS

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:

- JWSC's Solicitation dated Oct. 1 , 2015 including Addendums, if any.

- Contractor's Bid dated Nov 17 , 2015

for

STERLING INDUSTRIAL PARK
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GLYNN COUNTY, GEORGIA
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- 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

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 2.0 Contract Documents.

3.0 SCOPE OF WORK

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

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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, Construction Plans, Standards for Water and Sewer Design and Construction, this Agreement and all addenda hereto annexed, and the Contract Documents shall form essential parts of this Agreement as if fully contained herein.

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.

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.

4.0 NOTICE TO PROCEED; LIQUATED DAMAGES

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 Seventy (270)** consecutive calendar days after the effective commencement date.

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.

5.0 COMPENSATION

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.

The JWSC and Contractor agree that the Construction Plans, Standards for Water and Sewer Design and Construction, 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.

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.

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.

6.0 TERM OF AGREEMENT

This Agreement shall be for a period of **Two Hundred Seventy (270)** consecutive calendar days after the effective commencement date of the Work.

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

7.0 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.

8.0 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.

9.0 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.

10.0 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.

11.0 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.

12.0 REMEDIES; DISPUTE RESOLUTION

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.

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.

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.

13.0 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.

14.0 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 anyone 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.

15.0 TERMINATION OF AGREEMENT

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.

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.

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.

16.0 AGREEMENT SECURITY – BONDS

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: abid 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.

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 evidencing the authority of the individual signing the bond.

17.0 NOTICES

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

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:

If to Contractor:

If to JWSC: Stephen A. Swan, Executive Director
Brunswick – Glynn County Joint Water and Sewer Commission
1703 Gloucester Street
Brunswick, Georgia 31520

Copy to: JWSC Legal Counsel

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.

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.

18.0 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.

19.0 ENTIRE AGREEMENT; BENEFIT TO PARTIES

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.

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.

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

20.0 GOVERNING LAW

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

21.0 TIME IS OF THE ESSENCE

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

22.0 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.

23.1 MISCELLANEOUS PROVISIONS

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

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.

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.

Contractor: _____

By: _____
Name

Attest to:

By: _____
Name and Title of corporate officer

Date and Seal

BRUNSWICK – GLYNN COUNTY JOINT WATER AND SEWER COMMISSION

By: _____
Donald M. Elliot, Chairperson

Attest to:

By: _____
Stephen A. Swan, 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

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Agreement which will include the standard contract provisions as set forth in the Contract Form herein, as applicable.

SECTION 00610
PERFORMANCE BOND

State of Georgia
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 , 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 Brunswick –Glynn County Joint Water and Sewer Commission has engaged the said Contractor for the not to exceed sum of _____(_____)
for the Project entitled:

STERLING INDUSTRIAL PARK
SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA
JWSC PROJECT NO. 232

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 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 Brunswick – Glynn County Joint Water and Sewer Commission 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 Brunswick – Glynn County Joint Water and Sewer Commission
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. §§ 36-10-1 *et seq.* and 36-82-100 *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_____, 2015, executed in three (5) 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. _____

SECTION 00620
PAYMENT BOND

State of Georgia
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, for the use and benefit of those entitled thereto in the not to exceed penal 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 Brunswick – Glynn County Joint Water and Sewer Commission has engaged the said Contractor for the not to exceed sum of _____

_____for the Project entitled:

STERLING INDUSTRIAL PARK
SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA
JWSC PROJECT NO. 232

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 proceeding 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. §§ 36-10-1 *et seq.* and 36-82-100 *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_____, 2015, executed in two (5) 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. _____

SECTION 00630
PART D - AFFIDAVIT OF PAYMENT OF CLAIMS

_____This the_____day of_____, 2015

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 the Brunswick – Glynn County Joint Water and Sewer Commission (JWSC) and _____ _____(Contractor) last signed on_____, for the

STERLING INDUSTRIAL PARK
SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA
JWSC PROJECT NO. 232

CONTRACTOR **Company:** _____

By: _____

Title: _____

(SEAL)

Sworn to and subscribed before me this the_____day of_____, 2015

NOTARY PUBLIC **Name:** _____

My Commission Expires: _____

(NOTARY SEAL)

SECTION 00640
PART E – CERTIFICATE OF INSURACE

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 named 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 the Brunswick – Glynn County Joint Water and Sewer Commission shall be named as an additional insured on the Contractor's policy.

Insured: _____

Project Name: **STERLING INDUSTRIAL PARK**
SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA
JWSC PROJECT NO. 232

Policy Number(s): _____

Date: _____ _____
(Insurance Company)

Issued At: _____ _____
(Authorized Representative)

Address: _____

_____

_____

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

SECTION 00650
PART E - 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: _____

SECTION 00700
GENERAL CONDITIONS

INDEX:

1.1 Definitions

Where used throughout these contract documents the following words and terms shall have the meanings indicated. The meanings shall be applicable to the singular, plural, masculine and feminine of the words and terms.

Acceptance. Formal action of the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 flood. 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, including joint ventures, offering a bid to perform the work.

Contract. The writings and drawings embodying the legally binding obligations between the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 Advertisement for Bids, 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 Contract, 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, including joint ventures who enter into the contract with the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION for the performance of the work. The term covers subcontractors, equipment and material suppliers, and their employees.

Contractor's Plant and Equipment. Equipment, material, supplies, and all other items, except labor, brought onto the site by the Contractor to carry out the work, but not to be incorporated in the work.

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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION, or such other Engineer, supervisor or inspector as may be authorized by the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION.

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

May. Refers to permissive actions.

Owner. The Brunswick - Glynn County Joint Water and Sewer Commission.

Owner's Representative. The person, firm or corporation designated by the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION.

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 Owner's Representative when the Contractor (1) notifies the Owner's Representative in writing that the work has been completed in accordance with the contract and (2) requests in writing that the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION accept the work.

Shall. Refers to actions by either the Contractor or the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION and means the Contractor or BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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.

Continued on Next Page

1.0 Contract Administration

The Contract Administrator for this IFP shall be Mr. Stephen A. Swan Executive Director (912) 261-7122. The Contract Administrator shall act as the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION'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 Bid 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
Attention: Mr. Stephen A. Swan, Executive Director
1703 Gloucester Street
Brunswick, Georgia 31520
Phone: (912) 261-7112
E-Mail: sswan@bgjwsc.org

2.0 Owner's Representative

The Owner's Representative is the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION'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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION. Any project questions arising, subsequent to contract award, are to be addressed to the Owner's Representative at the following address:

Brunswick – Glynn County Joint Water and Sewer Commission
Attention: Mr. W. Todd Kline, P.E., Senior Engineer
1703 Gloucester Street
Brunswick, Georgia 31520
Phone: (912) 261-7122
E-Mail: tkline@bgjwsc.org

3.0 Notice of Award of Contract

As soon as possible, and within sixty (60) days after receipt of bids, the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION shall notify the successful Bidder of its intent to enter into a contract agreement. Should the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 sixty (60) 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.

4.1 Execution of Contract Documents

4.2 Within fifteen (15) days subsequent to successful contract negotiations, the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION shall furnish the successful Bidder the conformed copies of Contract Documents for execution by him.

4.3 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 and proper licenses required by Federal, State, or Local authorities.

4.4 Within thirty (30) days after receipt of the Contract Documents, executed by the successful Bidder certificates of insurances and licenses, the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION shall complete the execution of the documents. Distribution of the completed documents will be made upon completion.

4.5 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION. 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 must be filed in writing with the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION within ten (10) days after the award of bid. 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION Contract Administrator and the review shall be limited to any alleged violation of federal, state or local law.

7.1 Insurance

The successful Bidder shall not commence the Work under the Contract until all insurance described below has been obtained and such insurance has been approved by the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION, 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION, 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION. 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:

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

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

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

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

7.6 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from;

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.

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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION, shall be filed with the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION prior to the commencement by the successful Bidder of the contracted services. Such certificates shall be in form and substance reasonably acceptable to the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION, shall indicate that, except in respect to workers' compensation insurance coverage, BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER

COMMISSION, 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION.

8.0 Quantities

None of the various BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 Advertisement for Bids.

9.1 Suspension or Termination of Services

The anticipated contract between the successful Bidder and the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION may be terminated based on any one of the following:

9.2 Failure of the Bidder to perform based on the Bidder's 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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.

9.3 The BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION may terminate the contract at will. All correspondence of this nature will be forwarded by certified or registered mail with return receipt requested.

9.4 Any termination of the successful Bidders services shall not affect any right of the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION against the successful Bidder then existing or which may thereafter occur. Any retention of payment of monies by the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION and their officers, employees, Engineers, 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION. 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION.

The successful Bidder shall at all times observe and comply with all such existing laws, ordinances and regulations, and shall protect and indemnify the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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.

13.1 Notice and Service Thereof

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

13.3 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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.

13.4 All papers required to be delivered to the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION shall, unless otherwise specified in writing to the Contractor, be delivered to the Contract Administrator. Any notice to or demand upon the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION or to such other address as the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION may subsequently specify in writing to the Contractor.

14.0 Schedule, Reports and Records

The Contractor shall submit to the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION schedules, reports, estimates, records and other data as the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION may request concerning services performed or to be performed.

15.1 Changes in the Contract

15.2 Changes in the Service. The BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION.

The BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION shall indicate this intent in a written notice to the Contractor.

15.3 Changes in Contract Price. The contract price shall be changed only by a mutual agreement by the Contractor and the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION transmitted as a Contract Amendment. The Contractor shall, when required by the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION, furnish to the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER

COMMISSION the method and justification used in computing the change in price as related to the services ordered.

15.4 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION and if the conditions warrant, an appropriate adjustment of the Contract Periods will be made.

16.1 Payments and Completion

16.2 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 Owner's Representative listed in Paragraph 2.0.

16.3 Certificate for Payments. If the Contractor has made application for payment, as above, then the Owner's Representative will issue a Certificate for Payment to the Owner 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 Owner 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.

16.4 Failure of Payment.

If the Owner's 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 Owner 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION reserves the right to reject the Owner's Representative's certification of any request for payment by the Contractor without the accrual of interest.

16.5 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.

16.6 Final Payment. Upon receipt of written notice from the Contractor that all contracted services are complete, the Owner's Representative will, within a reasonable time, review all services and reports. If the Owner's Representative 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, recommend to the Owner 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 Berrien 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 Berrien 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 Engineer. 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 Advertisement for Bids, and will return submitted records to the BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION upon completion of the work hereunder. The BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION 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 BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION. The BRUNSWICK - GLYNN COUNTY JOINT WATER AND SEWER COMMISSION acknowledges that the storage, compilation, format, and layout constitute proprietary and secret trade information of the Contractor, and are protected by Federal copyright law.

20.0 Contractor's Status

It is agreed that the Contractor shall occupy the status of an Independent Contractor and the Contractor's employees are not employees of the Owner.

TECHNICAL SPECIFICATIONS
DIVISION ONE

SECTION 01100
SUMMARY OF WORK

PART 1 GENERAL

1.1 DESCRIPTION

The work to be performed on this project shall consist of furnishing all labor, materials, equipment and incidentals and performing all work required to construct the following project complete in place and ready to operate.

STERLING INDUSTRIAL PARK
SR99/US341 WATER MAIN EXTENSION
GLYNN COUNTY, GEORGIA
JWSC PROJECT NO. 232

The work of this contract includes the construction of water system improvements in the Sterling Industrial Park area of Glynn County. More specifically the project includes, but is not limited to, furnishing and installing approximately 17,700 LF of 8" and 10,340 LF of 12" C900 PVC Water Main; 215 LF of 16" and 350 LF 20" Jack and Bore; 580 LF of 12" HDPE Directional Bore; erosion and sediment controls; connections to the existing system; testing; and complete surface restoration. All work must be completed within 270 consecutive calendar days from receipt of a written notice to proceed.

1.2 PARTIAL OWNER OCCUPANCY

The existing facilities to which these improvements are being made will continue in operation during the construction period with the exception of necessary outages of short duration to facilitate connections to existing sewer mains designated to remain in service. All such necessary outages must be coordinated in advance with the OWNER at least 72 hours in advance. Arrangements can be made by contacting Janice Meridith @ (912) 261-7136. The OWNER will furnish no work or materials associated with this project.

(END OF SECTION)

SECTION 01110
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SCOPE

Under this section shall be included the methods of measurement and payment for items of work under this Contract.

1.2 ESTIMATED QUANTITIES

All estimated quantities for unit price items, stipulated in the Proposal, or other Contract Documents, are approximate and are to be used as a basis for estimating the probable cost of the Work and for comparing the bids submitted for the Project. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of the work done and material furnished as shown on the Plans. The Contractor agrees to make no claim for damages, anticipated profits or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts included in the Proposal. The Contractor will provide assistance to the Owner to check quantities and elevations when so requested.

1.3 CONSTRUCTION ITEMS

Bid Item No. 1 – Clearing and Grubbing

Clearing and Grubbing shall be measured and paid for based on the contract unit price per acre properly performed as specified and shown on the drawings. This item shall include legal disposal and dressing of cleared areas.

Bid Item No. 2 – Erosion and Sediment Control

Silt Fence (Type A and Type C) shall be measured and paid for based on the contract unit price per linear foot properly installed as specified and shown on the drawings. Price will include maintenance of Silt Fence during the construction period.

Hay Bale Check Dams shall be measured and paid for based on the contract unit price per each location as shown on the drawings. Additional sediment barriers may be installed as directed by the JWSC or representative.

Stone Check Dams shall be measured and paid for based on the contract unit price per each location as shown on the drawings. Additional sediment barriers may be installed as directed by the JWSC or representative.

Temporary and Permanent Grassing (seeding, mulching, fertilizing) shall be measured and paid for based on the contract unit price per acre for installed, maintained, and

accepted grassing.

NPDES Stormwater Monitoring shall be measured and paid for based on the contract lump sum for its implementation and completion.

Construction Exits shall be measured and paid based on the contract unit price per each installed and maintained.

Measurement and payment for **Inlet Sediment Traps** shall be made based on the contract unit price per each installed and maintained.

Measurement and payment for **Filter Rings** shall be made based on the contract unit price per each installed and maintained.

Measurement and payment for **Storm Drain Outlet Protection** shall be made based on the contract unit price per each installed and maintained.

Bid Item No. 3 – Water Mains and Accessories:

Water Main (PVC), installed in accordance with the specifications and accepted by the Owner, shall be measured from fitting to fitting and paid for at the unit price shown in the Bid Form per linear foot. The unit price shall include all labor, equipment and material necessary for a complete installation as specified. No separate payment will be made for excavation, dewatering or backfill.

Water Main (HDPE), installed in accordance with the specifications and accepted by the Owner, shall be measured from fitting to fitting and paid for at the unit price shown in the Bid Form per linear foot. The unit price shall include all labor, equipment and material necessary for a complete installation as specified. No separate payment shall be made for excavation, dewatering, backfill, PVC/HDPE transition or restraint.

Valves and fittings, installed in accordance with the specifications and drawing details and accepted by the Owner, shall be measured and paid per each for a complete installation. No separate payment shall be made for retainer glands, restraint or valve boxes to complete the installations per specifications and drawing details.

Harness Bell Restraints, installed in accordance with the specifications and drawing details and accepted by the Owner, shall be measured and paid per each for a complete installation.

Temporary Dead End, installed in accordance with the specifications and drawing details and accepted by the Owner, shall be measured and paid per each for a complete installation.

Utility Conflict Resolution, installed in accordance with the specifications and drawing details and accepted by the Owner, shall be measured and paid per each for a complete installation of fittings, retainers and bell restraint.

Fire Hydrant Assembly, installed in accordance with the specifications and drawing details and accepted by the Owner, shall be measured and paid per each for a complete installation. No separate payment shall be made for retainer glands, restraint, hydrant tee, pipe or valve box to

complete the installations per specifications and drawing details.

Water Service, installed in accordance with the specifications and drawing details and accepted by the Owner, shall be measured and paid per each. No separate payment shall be made for tapping saddle, stops, backflow prevention meter box or other appurtenances to complete the installation. Line item does not include meter sets or taps.

Testing and Disinfection, successfully performed in accordance with the specifications and accepted by the Owner, shall be measured and paid at the unit price shown in the Bid Form per linear foot. No separate payment shall be made for retest if required.

Bid Item No. 4 – Miscellaneous Removal, Replacement and Installation:

Removal and replacement of asphalt and concrete pavement shall be measured and paid based on the contract unit price per square yard as shown in the Proposal. Asphalt and concrete pavement replacement shall be completed as specified and as shown on Plan Details. Price will include all labor, materials, and appurtenances for disposal of removed materials and a complete installation per detail and specifications. Price shall include replacement of any roadway striping per G.D.O.T. standards.

Measurement and payment for **gravel pavement or driveway removal and replacement** shall be made based on the contract unit price per square yard.

Jack and Bore Installation Complete, installed in accordance with the specifications and drawing details and accepted by the Owner, shall be measured and paid based on the contract unit price per linear foot as shown in the Proposal. No separate payment shall be made for seals, spacers, restraints or other appurtenances to complete the installation.

Extra Work Items

Measurement and payment for **Unsuitable Soils Removal**, as authorized by Owner and Engineer, shall include removal and disposal of soils determined to be unacceptable for use and paid per Cubic Yard of materials removed and legally disposed.

Measurement and payment for **Select Soils or Rock Backfill,** as authorized by Owner and Engineer, shall be measured and paid per Cubic Yard of materials delivered, placed and properly compacted.

(END OF SECTION)

SECTION 01120
FIELD ENGINEERING

PART 1 GENERAL

1.1 SCOPE

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.

1.2 JWSC'S RESPONSIBILITIES

The requirements of this paragraph apply only to those projects for which the Contractor is under direct contract to the JWSC.

The Project Surveyor will provide the following:

One (1) vertical control point on the project site with its elevation (included on the drawings – Plan Sheet 4)

A topographic survey (included on the drawings)

The JWSC may, acting through the Engineer of Record, order changes to the location of some of the components of the project or provide clarification to questions regarding the correct alignment.

1.3 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 the work is not deviating from the indicated limits.

Record drawing surveys shall be performed in accordance with Section 01700 of these specifications. 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.

1.4 STAKING PRECISION

1.4.1 Site Work

The precision of construction staking shall match the precision of a component's location as indicated on the drawings. Staking of utilities shall be done in accordance with generally accepted practice for the type of utility.

1.4.2 Water Mains and Accessories

The precision of construction staking required shall be that which the correct location of the water main can be established for construction and verified by the Engineer of Record. Where the location of the components of the water main, such as valves, fittings, fire hydrants, etc. are not dimensioned on the drawings, they shall be located based upon scaling these locations from the drawings with relation to readily identifiable landmarks (survey reference points, power poles, manholes, etc.).

1.4.3 Sewer Mains, Manholes and Appurtenances

The precision of construction staking shall be no less than 1:10,000. Horizontal distances shall be measured with a precision no less than 0.01 feet and horizontal angles measured with a precision of no less than 10 seconds.

1.5 QUALITY ASSURANCE

The Contractor shall furnish documentation, prepared by a Registered Professional Surveyor currently licensed in the State of Georgia, confirming that staking is being done to the horizontal and vertical alignment shown in the Contract Documents. This requires that the Contractor hire at his own expense, a registered surveyor suitable to the JWSC to provide on-going construction staking and confirmation of such.

Any deviations from the drawings shall be confirmed by the Engineer of Record prior to construction of that portion of the project.

(END OF SECTION)

SECTION 01340
SHOP DRAWINGS

PART 1 GENERAL

1.1 SCOPE

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

1.2 DEFINITIONS

1.2.1 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.

1.2.2 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.

1.2.3 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.

1.3 ROUTING OF SUBMITTALS

Submittals and routine correspondence shall be routed as follows:

Supplier to Contractor
Contractor to Engineer/JWSC
Engineer/JWSC to Contractor
Contractor to Supplier

1.4 SUBMITTAL LOG

At the discretion of the JWSC, a submittal log shall be created and issued to the Contractor as the complete listing of submittals required for the project.

PART 3 EXECUTION

3.1 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. 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 in each case where his submittal may affect the work of another contractor or the JWSC. The Contractor shall ensure coordination of submittals among the related crafts and subcontractors.

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 copies of all specified information. **Submittals which do not have all the information required to be submitted including deviations, are not acceptable and will be returned without review.**

In lieu of hard copies, submittals may be made electronically via email to jmeridith@bgjwsc.org. **The routing of submittals shall remain as specified in Paragraph 1.3 of this Section.**

3.2 REVIEW PROCEDURES

The JWSC'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 will review the submittal and return three copies 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 the JWSC or the Engineer of Record 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 has no objection to the Contractor, upon his own responsibility, using or providing the materials or equipment proposed.

(END OF SECTION)

SECTION 01500
TEMPORARY FACILITIES

PART 1 GENERAL

The requirements of this Section apply only to those projects for which the Contractor is under direct contract to the JWSC.

1.1 SCOPE

Temporary facilities required for this work include, but are not necessarily limited to the following:

Temporary utilities such as water and electricity

First aid facilities

Sanitary facilities

Potable water

Temporary enclosures and construction facilities

1.2 GENERAL

First aid facilities, sanitary facilities and potable water shall be available on the project site on the first day that any activities are conducted on site. The other facilities shall be provided as the schedule of the project dictates.

Use all means necessary to maintain temporary facilities in proper and safe condition throughout the construction period. In the event of loss or damage, immediately make all repairs and replacements necessary at no additional cost to the JWSC.

Remove all temporary facilities as rapidly as the progress of the work will allow.

1.3 TEMPORARY UTILITIES

1.3.1 General

Provide and pay all costs for water, electricity and other utilities required for the performance of the work. Pay all costs for temporary utilities until project completion.

1.3.2 Temporary Water

Provide temporary piping and upon completion of the work remove all such temporary piping. Provide and remove water meters.

1.3.3 Temporary Electricity

Provide all necessary wiring for the Contractor's use. Furnish, locate and install area distribution boxes such that the individual trades may use their own construction type extension cords to obtain adequate power and artificial lighting at all points where required.

1.4 FIRST AID FACILITIES

The Contractor shall provide a suitable first aid station, equipped with all facilities and medical supplies necessary to administer emergency first aid treatment. The Contractor shall have standing arrangements for the removal and hospital treatment of any injured person. All first aid facilities and emergency ambulance service shall be made available by the Contractor to the JWSC and the Engineer's personnel.

1.5 SANITARY FACILITIES

The Contractor shall furnish, for use of the Contractor's personnel all necessary toilet facilities which shall be secluded from public observation. These facilities shall be chemical toilets. All facilities shall be kept in a clean and sanitary condition and shall comply with the requirements and regulations of the area in which the work is performed.

1.6 POTABLE WATER

The Contractor shall be responsible for furnishing a supply of potable drinking water for employees, subcontractors, inspectors, engineers and the JWSC who are associated with the work.

1.7 ENCLOSURES AND CONSTRUCTION FACILITIES

Furnish, install and maintain for the duration of the construction all required scaffolds, tarpaulins, canopies, steps, bridges, platforms and other temporary construction necessary for the completion of the work in compliance with all pertinent safety and other regulations

1.8 PARKING FACILITIES

Parking facilities for the Contractor's employees and subcontractors shall be the Contractor's responsibility. The storage and work facilities provided by the JWSC, if any, shall not be used for parking by the Contractor.

(END OF SECTION)

SECTION 01510
JOB SITE SECURITY

PART 1 GENERAL

1.1 BARRICADES, LIGHTS AND SIGNALS

The Contractor shall furnish and erect such barricades, fences, lights and danger signals and shall provide such other precautionary measures for the protection of persons or property and of the work as necessary. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise, the Contractor shall furnish and maintain at least one light at each barricade and sufficient numbers of barricades shall be erected to keep vehicles from being driven on or into any work under construction.

The Contractor will be held responsible for any damage to the work due to failure of barricades, signs and lights. The Contractor's responsibility for the maintenance of barricades, signs and lights shall not cease until the project has been accepted by the JWSC.

(END OF SECTION)

SECTION 01600
SUBSTITUTIONS

PART 1 GENERAL

1.1 SCOPE

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

1.2 DEFINITIONS

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.

1.3 GENERAL

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 JWSC's or Engineer of Record's design is based upon a specific product or process of a specific manufacturer, that manufacturer shall be so listed in the specifications and such product or process ***shall be used in the base bid***.

1.4 APPROVALS

Any ***Contractor*** proposing to furnish products or processes other than those listed in the specifications shall make a written application for approval of the proposed substitution to the JWSC or Engineer of Record at least 10 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 JWSC with a cash deposit or bond acceptable to the JWSC 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 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 beyond all doubt. To be acceptable, a proposed substitute must meet or exceed all requirements of the plans or 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. 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 shall be the final judge on questions of equivalence.

(END OF SECTION)

SECTION 01700
RECORD DOCUMENTS

PART 1 GENERAL

1.1 SCOPE

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:

1. Drawings
2. Specifications
3. Change orders and other modifications to the Contract
4. JWSC field orders or written instructions, including requests for information (RFI) and clarification memos
5. Reviewed shop drawings, product data and samples
6. Test records

The Contractor shall maintain an up to date set of Record Drawings

1.2 SYSTEM SOURCE AND QUALITY ASSURANCE

1.2.1 STORAGE

Store documents and samples in the Contractor's office, apart from documents used for construction. File documents and samples in accordance with the format of these specifications

1.2.2 Maintenance

Maintain documents in a clean, dry legible condition and in good order. Do not use record documents for construction purposes. Record documents shall at all times be available for inspection by the JWSC. Failure to maintain record documents in a satisfactory manner may be cause for withholding of a certificate for payment.

Each document shall be labeled "PROJECT RECORD" in neat, large printed letters. All record information shall be kept concurrently with construction progress. Do not conceal any work until the project information is recorded.

1.3 RECORD DRAWINGS

Record 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.

Final record drawings shall be prepared by a professional surveyor licensed in the State of Georgia from a post construction field run survey. The Contractor shall pay all surveying and preparation costs associated with the final record drawings. The final record drawings shall provide elevations to the nearest 0.01 foot for the invert of all precast structures, access covers, and all other pertinent items constructed by the Contractor. The final record drawings shall provide dimensions, distances and coordinates to the nearest 0.01 foot and angles to the nearest 10 seconds.

Final Record Drawing shall be labeled "FINAL RECORD DRAWINGS" and shall include the name of the surveyor who prepared the drawings as well as the date the drawings were prepared.

Record drawings shall include the following:

Horizontal and vertical location of all exposed and underground piping systems including manholes, services, cleanouts, valves, hydrants and fittings

Location and dimensions of roadways and parking areas

Location of structures including finish floor elevations

Include the following statements on the Record Drawings:

CONTRACTOR'S STATEMENT:

The water and/or wastewater piping systems, as shown on these *Record Drawings,* have been constructed in substantial compliance with the Standards and Specifications for this project and in consideration of the two (2) year workmanship and materials warranty. Any significant deviations from the materials specified or workmanship standards required have been approved by the JWSC and the Engineer of Record prior to installation. The information has been reviewed by a principal of the company or an executive officer, as cited below, and to the best of his/her knowledge and belief these *Record Drawings* are accurate and complete.

Company Name: _____

Principal Officer Name: _____

Principal Officer Signature: _____

Date Signed: _____

ENGINEER'S STATEMENT:

These *Record Drawings* have been prepared based on construction, location, elevation, and testing information provided by the Contractor, Surveyor and the JWSC. This information has been reviewed by the Engineer of Record, as cited below, and to the best of his/her knowledge and belief these *Record Drawings* are consistent with the design intent of the approved site development plans and any approved modifications or changes.

Engineer's Name: _____

Engineer's Signature: _____

Georgia P.E. Registration No. : _____

Date Signed: _____

SURVEYOR'S STATEMENT:

To the best of my knowledge and belief the Water and/or Wastewater *Record Drawings* shown hereon have been prepared in conformance with the ***JWSC Record Drawing Standards*** and are an accurate representation of the field conditions based upon ground visible evidence of system components, and the engineering, contractor and JWSC information provided.

Surveyor's Name: _____

Surveyor's Signature: _____

Georgia R.L.S. Registration No. : _____

Date Signed: _____

(Continued on the following page)

JWSC's STATEMENT:

These *Record Drawings* have been prepared and confirmed based on periodic field observations during construction, field testing, CCTV and physical inspections of system components by JWSC staff. This information has been reviewed by JWSC Superintendents and Construction Inspection staff, as cited below, and to the best of their knowledge and belief these *Record Drawings* are accurate and complete in accordance with adopted ***JWSC Record Drawing Standards and Specifications***.

Water Distribution Superintendent's Name: _____

Water Distribution Superintendent's Signature: _____

Date Signed: _____

WW Collection Superintendent's Name: _____

WW Collection Superintendent's Signature: _____

Date Signed: _____

Project Inspector's Name: _____

Project Inspector's Signature: _____

Date Signed: _____

1.4 SUBMITTAL

At the completion of the project, deliver Record Documents to the JWSC. Include a signed transmittal letter which lists the title and number of each record document.

(END OF SECTION)

TECHNICAL SPECIFICATIONS
DIVISION TWO

SECTION 02120
EROSION, SEDIMENTATION AND POLLUTION CONTROL

PART 1 GENERAL

The requirements of this Section apply only to those projects for which the Contractor is under direct contract to the JWSC.

1.1 SCOPE

The work of this section includes implementation of the Erosion, Sedimentation and Pollution Control plan including but not limited to the installation and maintenance of all structural and vegetative Best Management Practices (BMP's), and all other work and appurtenances required.

1.2 RELATED WORK SPECIFIED ELSEWHERE

SECTION 02210	Trenching Excavation, Bedding and Backfill
SECTION 02555	Water Distribution System

1.3 APPLICABLE STANDARDS

The following standards and/or publications are made a part of this specification by reference. The Contractor shall obtain copies all referenced standards or publications and keep available on the jobsite at all times during the construction period. In the event of conflicts among the various sources cited below, the most stringent criteria shall take precedence.

"Manual for Erosion and Sediment Control in Georgia", latest edition copies of which are available from the State Soil and Water Conservation Commission.

1.4 QUALIFICATIONS

1.4.1 Installers

Installation of BMP's must be performed by an installer who has completed Erosion, Sedimentation and Pollution Control Plans similar in material, design and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance.

The Contractor must disclose to the JWSC/ENGINEER prior to project award all violations and citations received in the last five (5) years from the Georgia Environmental Protection Division, Army Corps of Engineers, and other City/County/State agencies dealing with erosion and sediment control deficiencies or wetlands deficiencies.

1.4.2 Inspectors

Contractor shall have a Qualified Personnel, as defined by the NPDES Permit on site whenever construction activity occurs. "Qualified Personnel" means a person who has successfully completed an erosion and sediment control short course eligible for continuing education units, or an equivalent course approved by the Georgia Environmental Protection Division and the State Soil and Water Conservation Commission.

1.5 SUBMITTALS

The following information shall be submitted prior to commencement of the work.

Copy of Certification with GSWCC number of Qualified Person(s)

Technical Product Data for

Sediment barriers

Inlet protection materials

NPDES Forms

A Notice of Intent (NOI) with the JWSC's and Operator's signatures is ***required*** for this project.

Notice of Implementation immediately after completing the installation of the initial BMP's

PART 2 MATERIALS

2.1 MATERIALS

All materials shall conform to these specifications and to the applicable standards listed in Paragraph 1.3 of this Section. BMP's required but not specified below shall be in accordance with the "Manual for Erosion and Sediment Control in Georgia" latest edition.

2.1.1 Ds1 - Disturbed Area Stabilization (Mulching Only)

Ds1 is a temporary cover of plant residues applied to the soil surface for a period of six (6) months or less when seeding is not practical. Materials shall consist of the following.

Compressed and compacted bound bundles of wheat, oat, rye or other local hays free of weeds

Wood waste consisting of chips, sawdust or bark

Polyethylene film

Hydro-mulch

Composed of wood cellulose fiber containing no germination or growth inhibiting factors

Colored green to allow visual metering in application and properties evenly dispersed and suspended when agitated in water

Add hydro-mulch water slurry in hydraulic seeder after proportionate quantities of seed, fertilizer and other materials have been introduced

Moisture Content	9.9% (+ or -) 3.0%
Organic Matter	99.2% (+ or -) 0.8%
Ash Content	0.8% (+ or -) 0.2%
Water Holding Capacity (min)	1150 grams water per 100 grams fiber

2.1.2 Ds2 - Disturbed Area Stabilization (Temporary Seeding)

Ds2 is a temporary vegetative cover with fast growing seedings for up to a twelve (12) month period or until permanent vegetated is established. Materials shall consist of the following.

Lime

Lime shall be natural limestone containing minimum 85% total carbonates.

95% or more pass 20 mesh sieve
55% pass 60 mesh sieve
40% pass 100 mesh sieve

Fertilizer

Fertilizer shall be as follows.

Dry or hydro

Commercial grade manufactured in accordance with Georgia Department of Agriculture Specifications and bearing approval label of State of Georgia

Grade containing plant food elements determined by laboratory analysis

Grass Seed

Grass Seed must be planted according to recommendations contained the "Manual for Erosion and Sediment Control in Georgia" or as approved by a Landscape Architect.

Ryegrass, annual (Lolium Multiflorum) containing minimum 98% pure seed with 90% minimum germination and maximum 0.5% weed seed

Bermuda 100% hulled common Bermuda grass (Cynodun Dactylon) containing minimum 87% pure Bermuda with 85% minimum germination and maximum 1% weed seed

All seed types listed in the "Manual for Erosion and Sediment Control in Georgia".

Hydro-seed shall be applied at the following rates.

Ryegrass	250	Lbs/Acre
Bermuda	175	Lbs/Acre

2.1.3 Ds3 - Disturbed Area Stabilization (Permanent Vegetation)

Ds3 is permanent vegetative cover using grasses, trees, shrubs or legumes on highly erodible or critically eroded lands. Materials shall consist of the following.

Lime

Lime shall be natural limestone containing minimum 85% total carbonates. Dolomitic limestone shall be used in sandy plains and coastal soils. Conventional equipment shall be use to ground limestone.

95% or more pass 20 mesh sieve
55% pass 60 mesh sieve
25% pass 100 mesh sieve

For hydraulic seeding use finely ground limestone.

98% or more pass 20 mesh sieve
70% pass 100 mesh sieve

Fertilizer

Fertilizer shall be as follows.

Dry or hydro

Commercial grade manufactured in accordance with Georgia Department of Agriculture Specifications and bearing approval label of State of Georgia

Grade containing plant food elements determined by laboratory analysis

Grass Seed

Grass Seed must be planted according to recommendations contained the "Manual for Erosion and Sediment Control in Georgia" or as approved by a Landscape Architect.

Ryegrass, annual (Lolium Multiflorum) containing minimum 98% pure seed with 90% minimum germination and maximum 0.5% weed seed

Bermuda 100% hulled common Bermuda grass (Cynodun Dactylon) containing minimum 87% pure Bermuda with 85% minimum germination and maximum 1% weed seed

Hydro-seed shall be applied at the following rates.

Ryegrass	250	Lbs/Acre
Bermuda	175	Lbs/Acre

2.1.4 Cd - Check Dam

Check dam (Cd) is a small temporary barrier consisting of stone or hay bales constructed across a swale, drainage ditch or area of concentrated flow.

Hay Bale Check Dams

Compressed and compacted bound bundles of wheat, oat, rye or other local hays free of weeds

2.1.5 Co - Construction Exit

Construction Exit (Co) is a stone stabilized pad located at any point where traffic will be leaving a construction site to a public right of way, street, alley, sidewalk or parking area.

Aggregate size shall be National Stone Association R-2 (1 1/2-inch to 3 1/2-inch stone)

Approved Geo-textiles

Amoco CEF-1199, 2019
Carthage 6%
Contech C70/06
GT-400E
Geotex 104 F
Filterweave 403, 700
TNS Advanced Technologies M706
US Fabrics 670
Terratex EP

2.1.6 Sd1-Sediment Barrier

A temporary structure made of silt fence supported by steel or wooden posts, sandbags, straw bales or other filtering material.

Sediment Barrier Type 'A' (Sd1-A)

Fabric height	36-inches
Trench Depth	6-inches

Fence Posts	48-inches long 1 1/2-inch by 1 1/2-inch Oak 3-inch diameter or 2-inch by 4-inch softwood Steel 1.3 Lbs/Ft Minimum

Approved silt fence fabrics

Amoco CEF 2019
Beltech 755 & 890
Cady bag Company 20-CSF 350/26
LINQ Industrial Fabrics, Inc. GTF-200S
Geotex 914SC, 915SC
TNS Advanced Technologies TNSW101
Terratex GASF
Willacoochee Industrial Fabrics, Inc. 1215 Silt Fence

PART 3 EXECUTION

3.1 PERFORMANCE REQUIREMENTS

Erosion control devices shall be installed as shown on the plans (and elsewhere as deemed necessary) and are required for all earth areas disturbed by grading and construction operations. The extent of disturbed areas is shown on the construction plans. Erosion control activities include but are not limited to:

Initial installation of erosion control devices
Implementation of Best management Practices (BMP's)
Application of temporary ground cover
Maintenance of erosion control devices for the duration of the construction period.
Application of permanent ground cover
Removal of erosion control devices

3.1.1 Non-Compliance

Upon notification by the JWSC of non-compliance with this specification, the Contractor has seven (7) days to address and install additional erosion control devices or otherwise correct the deficiencies noted.

3.1.2 Temporary Erosion Control Measures

Contractor shall install, maintain, repair and/or replace all temporary erosion control measures including, but not limited to, the following:

Silt fences
Construction exits
Check Dams

The Contractor shall be responsible for providing additional erosion control measures as needed to prevent sediment from leaving the site. Contractor shall be responsible for all additional costs associated with additional erosion control measures.

3.1.3 Maintenance of Erosion Control Measures

The Contractor is responsible for maintenance, repair and/or replacement of erosion control measures throughout the construction period due to any of the following causes:

Downed silt fences
Washed out silt fences and rock
Vandalism
When silt overburdens structure
Erosion of earth or dam
Damage due to abnormal weather conditions

3.2 SEQUENCE OF EVENTS

Best Management Practices (BMP's) shall be implemented during construction activities from commencement of construction to completion. Schedule grading operations so as to minimize the time that denuded soils are exposed. Any exposed area left undisturbed for a period of 14 days or longer shall be stabilized with mulch or temporary seeding.

3.3 INSTALLATION AND MAINTENANCE

3.3.1 Ds1 - Disturbed Area Stabilization (Mulching Only)

Install mulch on all building pad area left for more than seven (7) days. Mulch shall re-applied whenever ground cover is less than 90%.

Dry straw or hay shall be applied uniformly at a depth of 2-inches to 4-inches by hand or by mechanical equipment. Straw or hay mulch shall be anchored immediately after application. Mulch can be pressed into the soil with a disk harrow using packer disk. Mulch spread with special blower-type equipment may be anchored with emulsified asphalt, tackifiers and/or binders.

Wood waste shall be applied at a depth of 2-inches to 3-inches.

Cut back asphalt shall be applied at the rate of 1200 gallons per acre.

Polyethylene film shall be secured over banks or stockpiled soil material for temporary protection.

3.3.2 Ds2 - Disturbed Area Stabilization (Temporary Seeding)

All disturbed areas shall be seeded within seven (7) days of the completion of land disturbing activities or when land disturbing activities are to be discontinued for longer than two weeks. Seed areas outside buildings, walks and paving not to immediately receive permanent grass or landscaping with temporary seed producing fast growing cover resistant to erosion.

Maintenance of seeded areas shall include but not be limited to watering, re-fertilization, weeding, mowing and repairing washouts and gullies.

3.3.3 Ds3 - Disturbed Area Stabilization (Permanent Vegetation)

Permanent vegetation and structural control measures must be installed as soon as practicable.

3.3.4 Cd - Check Dams

Construct temporary ditch checks of stone, sand or cement bagged, rip-rap, or treated timber post in all ditches and drainage areas on or adjacent to the work area and/or as shown on the plans. The toe of the upstream dam shall be at the same elevation as the top of the downstream dam. The height of check dams shall be 24-inches maximum at center. Check dams shall be 9-inches lower at the center than the outer edges. Side slopes shall be 2:1 or flatter.

3.3.5 Co - Construction Exit

Contractor shall provide temporary construction exits at all locations where vehicles exit the construction site. The stone pad thickness shall be at least 6-inches and shall cover the full width of the entrance. in no case shall the pad width be less than 20 feet. The length of the stone pad shall be at least 50 feet. A layer of geo-textile fabric shall be placed between the stone pad and the soil surface as specified in paragraph 2.1.6 above. Periodically add a 2-inch thick top dressing to maintain pad effectiveness and sprinkle regularly to settle accumulated sediment.

3.3.6 Sd1 - Sediment Barriers

Construct silt fences in accordance with applicable regulations and details. Sediment barriers shall be installed at the toe of all embankments or at the perimeter of all disturbed areas and shall be located to interrupt silt transport conveyed by surface runoff.

Remove, re-distribute and compact sediments which accumulate behind silt fences when such accumulations reach one-half the original height of the barrier and immediately before beginning temporary grassing operations.

Replace fabric whenever it has deteriorated to such extent that the effectiveness of the barrier is compromised or every six months, whichever comes first.

3.4 CONCRETE WASHOUT AREAS

Contractor shall provide at least one 10' by 10' washout area for the disposal of excess concrete, mortar and similar products. Washout areas shall be cleaned as needed. Washout areas shall be completely removed after construction has been completed. Remove all concrete and silt and dispose of materials in an approved landfill. Backfill, grade and stabilize area.

3.5 REMOVAL OF TEMPORARY DEVICES

Temporary erosion control devices shall remain in place and be properly maintained until one of the following has occurred:

A permanent device has been installed to replace the function of the temporary device.

The Contractor has achieved 95% stabilization of disturbed areas and a Notice of Termination has been submitted.

Remove erosion control devices installed under this contract and any erosion control devices left from previous phases of work.

(END OF SECTION)

SECTION 02220
TRENCHING EXCAVATION, BEDDING AND BACKFILL

PART 1 GENERAL

1.1 SCOPE

The work of this section includes trench excavation, dewatering, bedding, backfilling and all other work required for the installation of underground water, and sewer systems as shown on the drawings and/or specified herein.

1.2 RELATED WORK SPECIFIED ELSEWHERE

02120	Erosion, Sedimentation and Pollution Control
02555	Water Distribution System
02650	Sanitary Sewer System

1.3 APPLICABLE STANDARDS

All work to be performed in accordance with applicable provisions of the Southern Standard Building Code, OSHA Safety Requirement, State and Local Ordinances and other authorities having jurisdiction.

All construction shall comply with the Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926, subpart P, revised July 1, 1995.

If local authorities have standard specifications for pavement removal and replacement, work shall be done in accordance with such standards.

In the event of conflicts among the various sources cited above, the most stringent criteria shall take precedence.

1.4 PROTECTION

1.4.1 Existing Utilities

Contractor shall contact the Utilities Protection Center at 1-800-282-7411 at least 72 hours in advance of trenching operations. The location of existing underground utilities shown on the plans is based upon the best information available and may not be accurate or complete. The Contractor shall verify the location of all underground utilities prior to commencing work and shall be responsible for the protection of same. Any damage to existing utilities shall be promptly repaired at the Contractor's expense to the full and complete satisfaction of the utility owner.

1.4.2 Existing Structures

Contractor shall protect from damage all existing structures, roads, sidewalks, curbing, etc. against damage from foot or vehicular traffic. Install and maintain adequate barricades, planking, bridging as necessary. Underpin or otherwise support adjacent structures, including service lines and pipe chases, to prevent damage by excavation work.

1.4.3 Excavations

Protect excavations by shoring, sheeting, bracing or other means as required to prevent cave-ins or loose dirt from falling into excavated trenches. Methods and procedures utilized shall conform to, as a minimum, the requirements of OSHA and other governing authorities having jurisdiction.

1.5 QUALITY ASSURANCE

Tests for compaction and density, where required, shall be conducted by an independent testing laboratory selected by the JWSC and paid for by the Contractor. The Contractor shall make all necessary excavations and provide access to the work by the testing laboratory. The cost of all retests made necessary by the failure of materials to conform to the requirements of these specifications shall be paid for the Contractor.

PART 2 MATERIALS

2.1 BEDDING AND BACKFILL MATERIALS

Pipe bedding and backfill materials shall be as follows:

Class I:
This Class includes angular, 1/4-inch to 1-1/2-inch graded stone including a number of fill materials including coral, slag, crushed stone and crushed shells.

Class II:
This Class includes coarse sands and gravels with maximum particle size of 1-1/2-inches 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 are included in this Class.

Class III:
This Class includes fine sand with clayey gravels including fine sands, clay-sand mixtures, and gravel-clay mixtures. Soil types GM, GC, SM and SC are included in this Class.

Class IV:
This Class includes silt, silty clays and clays including organic clays and silts of medium to high plasticity and liquid limits. Soil Types MH, ML, CH and CL are included in this Class. ***Class IV materials may only be used with the approval of the Engineer.***

Class V:
This Class includes the organic soils OL, OH and PT as well as soil containing frozen earth, debris, rocks larger than 1-1/2-inches in diameter and other foreign materials. ***Class V materials shall not be used.***

PART 3 EXECUTION

3.1 EXCAVATION

The contractor shall examine the work site and inform himself fully as to the nature of all materials to be encountered during excavation for the construction of the various facilities and related appurtenances. The contractor shall perform excavation of all substances encountered to the depth shown on the drawings.

During excavation, pile excavated materials that are suitable for backfilling in an orderly manner and at a sufficient distance from the trench banks to avoid overloading and prevent slides or cave-ins. Remove and dispose of unsuitable material in a manner acceptable to the JWSC.

Grade work site as necessary to prevent surface water from flowing into trenches or other excavations and remove any water accumulating therein by pumping or other approved methods.

Excavation shall not be carried below the required level. Where excavation is carried below the grade indicated through error, the contractor shall refill to the proper grade with Class I or Class II material as directed by the JWSC to obtain a suitable pipe support.

Where wet or otherwise unsuitable material incapable of properly supporting the pipe, as determined by the JWSC, is encountered in the trench bottom, the Contractor shall remove such soil or unsuitable material, dewater to the depth required and backfill trench to proper grade with a foundation of Class I or Class II material as directed by the JWSC to obtain a suitable pipe support.

3.2 DEWATERING

The contractor shall keep all excavations clear of water while pipe and appurtenances are being installed. All water pumped or bailed from trenches and other excavated areas shall be conveyed to a point of discharge where it will cause no hazard to the safety and protection of the public, to private property or to other work in progress.

Provide all necessary equipment including well points, pumps, piping and temporary drains sufficient to handle both surface and subsurface water. Maintain equipment for the duration of trench exposure to the elements.

3.3 PIPE BEDDING

Pipe bedding shall be Class A, B, C or D as specified below or as shown on the construction plans. Rigid pipe includes ductile iron (DIP), reinforced concrete (RCP), or steel pipes with or without coatings. Flexible pipe includes PVC and HDPE.

3.3.1 Bedding Classifications

The following bedding classifications shall be used as specified below or where shown on the drawings.

Class A:
This bedding class shall consist of a continuous concrete cradle or a concrete arch with granular bedding. Locations shall be as shown on the drawings.

Class B:
Class B Standard - shall consist of granular Class I material placed a minimum of 4-inches below the pipe and continuing to the spring line of the pipe.

Class B Modified - shall consist of granular Class I material placed a minimum of 4-inches below the pipe and continuing to 6-inches above the top of the pipe.

Class C:
This bedding class shall consist of granular Class I material placed a minimum of 4-inches below the pipe with Class II or Class III material continuing to the spring line of the pipe.

Class D:
This bedding class shall consist of a native undisturbed earth trench bottom with an area excavated for the pipe bell. This bedding class may only be used for dry trench conditions. If the trench becomes wet, Class B bedding shall be used.

3.3.2 Bedding Requirements

Bedding requirements for the various piping systems shall be as shown in the following table.

PIPE SYSTEM	BEDDING CLASS
Sanitary & Storm Sewers (Gravity)	
Rigid Pipe	Class C
Flexible Pipe	Class B Modified
Watermains & Forcemains	
Rigid Pipe	Class C
Flexible Pipe	Class B Standard

Bedding material under and around the pipe shall be placed in 6-inch layers and compacted by rodding, spading or with approved vibratory equipment to obtain not less than 98% standard proctor as determined by ASTM Method D698.

3.4 BACKFILLING

If unsuitable materials are encountered, such materials may not be used for backfilling operations and shall be removed from the site. Unsuitable material includes but is not limited to debris, muck,

clay, large clods, stones, wood, stumps, and roots. Prior to backfilling, piping and appurtenances shall be observed by the JWSC's Inspector.

Contractor shall carefully backfill trenches with approved materials. Only Class III (or Class IV if approved by the JWSC/Engineer) materials shall be used. Backfill materials shall be free from large clods of earth or stone and shall be deposited in 6-inch layers and carefully compacted until the following densities are obtained:

Areas under structures	100% Standard Proctor (ASTM D698)
Areas under walks and pavements	98% Standard Proctor (ASTM D698)
Areas under lawns and landscaping	95% Standard Proctor (ASTM D698)

Re-open improperly backfilled trenches (trenches where settlement occurs, or where tests indicate non-compliance with the densities specified above) to depth required for proper compaction. Then refill and compact with surface restored to required grade.

3.5 PAVEMENT REMOVAL AND REPLACEMENT

3.5.1 Removal

Where necessary to cut existing pavements, curbs and gutters, walks, driveways, etc. make cut with neat parallel straight lines at least 12" wider than the required trench width on each side.

3.5.2 Replacement

Replace pavements, curbs and gutters, walks and driveways with the same materials and cross section as the original except when otherwise detailed on the construction plans.

Backfill open trenches across roadways, or other areas to be paved as specified in Paragraph 3.4 above except backfill entire trench depth in 6-inch layers, moisten and compact each layer to density of 100% of standard proctor test, so that paving of area can proceed immediately after backfilling is complete.

3.5.2 Temporary Surfaces

Use temporary road surface of gravel or crushed stone as approved. Maintain one-way traffic at all times and street must be fully opened to traffic as quickly as possible. Completely remove temporary materials and dispose of when permanent pavement is placed.

(End of Section)

SECTION 02555
WATER DISTRIBUTION SYSTEM

PART 1 GENERAL

1.1 WORK INCLUDED

Provide all labor, materials and equipment necessary to install, test, disinfect (where required) and place into operation the water distribution system as shown on the drawings, as specified herein and as required for a complete and operational system.

1.2 SUBMITTALS

Complete shop drawings and product data on all piping and fittings shall be submitted to the Engineer in accordance with the requirements of Section 01340 of these specifications.

1.3 RELATED WORK SPECIFIED ELSEWHERE

01340	Shop Drawings
01600	Substitutions
02220	Trench Excavation, Bedding and Backfill

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

The contractor shall furnish and install water distribution systems in accordance with the material specifications detailed below. All references to industry standards (ASTM, ANSI, AWWA, etc.) shall be to the latest revision unless stated otherwise. All materials shall be new. Chapter 2 of the JWSC's Standards for Water and Sewer Design and Construction includes a list of acceptable manufacturers for the various water system components. The contractor may choose freely from the manufacturers list and ***material submittals for such items are not required.*** Only products and materials from the acceptable manufacturer's lists herein may be used in the work.

Any item required but not specified herein, or any product or manufacturer other than those listed will be considered a substitution. ***Material submittals are required for such items.*** Substitutions will not be allowed without the prior written approval of the JWSC. Substitutions, if allowed, shall meet all criteria delineated in Section 01600 of these technical specifications. The burden of proof of compliance for any proposed substitution rests with the Contractor. The JWSC will be the sole judge as to the acceptance of a proposed substitution and such decisions will be final.

2.2 POTABLE WATER PIPE

Pipe sizes and applications shall be as indicated on the plans and shall conform to the following table.

Pipe Material	Pipe Size	Joint Types	Applications
Ductile Iron	≥4-inch	Mechanical Joint Push-on Joint Flanged Joint*	Water Mains Above Ground Below Ground
PVC DR 18	≥4-inch	Push-on Joint	Water Mains Below Ground
PVC (ASTM D2241 SDR-21)	2-inch	Push-on Joint – Below Ground	Potable Water Below Ground
Polyethylene Tubing	≤2-inch	See Specifications Below	Water Services
HDPE	≥2-inch	Fused	Water Mains Water Services Below Ground
Steel	≥4-inch	Welded	Casings Only

***** Flanged joints for above ground applications only

2.2.1 Ductile Iron Pipe

Ductile iron pipe wall thicknesses and pressure class shall conform to ANSI A21.50 (AWWA C150) and ANSI A21.51 (AWWA C151) with pressure class 150 as a minimum. Each length shall be clearly marked with the name of the manufacturer, pressure rating, thickness or pressure class and nominal pipe diameter.

All ductile iron pipe shall be externally coated with a bituminous coating per ANSI A21.51. In areas of corrosive soils as defined in AWWA C105, Appendix A, all bolts, nuts, studs and other uncoated parts of joints for underground installations shall be coated with asphalt or coal tar prior to backfilling.

The interior of all ductile iron pipe, fittings and specials shall be cement lined with a seal coat. The lining shall comply with ANSI A21.4 (AWWA C104). In areas of severely aggressive soils, provide polyethylene encasement for all ductile iron piping systems in accordance with AWWA C105.

2.2.2 Polyvinyl Chloride (PVC) Pipe

Pipe shall be virgin polyvinyl chloride (PVC) pipe for potable water and shall have a bell type coupling with a thickened wall section integral with the pipe barrel in accordance with ASTM D3139. Provisions must be made for expansion and contraction at each joint with flexible ring gaskets made of rubber or other suitable material. Elastomeric seals shall meet ASTM F477.

PVC water pipe four (4) inches through twelve (12) inches in diameter shall conform to AWWA C900 Pressure Class (PC) 235 DR-18. PVC water pipe fourteen (14) inches and larger shall conform to AWWA C905 Pressure Class (PC) 235 DR-18. Pipe is to be manufactured to ductile iron pipe equivalent outside diameters. Pipe for water mains shall be blue in color with each length marked with name of the manufacturer, pressure rating, nominal pipe diameter and the seal of the National Sanitation Foundation (NSF).

PVC water pipe two (2) inches in diameter and smaller shall conform to ASTM D2241, Pressure Rating (PR) 200 SDR-21 with push-on type jointing. Glued or Solvent weld joints

shall not be used. Pipe for water mains shall be blue in color (preferred) with each length marked with name of the manufacturer, pressure rating, nominal pipe diameter and the seal of the National Sanitation Foundation (NSF). If blue is not available, white may be used.

2.2.3 Polyethylene Tubing

All water services two (2) inches in diameter and smaller shall be manufactured of PE 3408, high density polyethylene in accordance with AWWA C901, ASTM D1248, ASTM D2239, ASTM D2737 and ASTM D3350. Tubing shall have a minimum working pressure of 200 PSI, shall be copper tube size SDR-9 and shall be blue in color. Couplings shall be made of bronze with compression fittings on both ends suitable for connection to polyethylene tubing with inserts.

Tubing shall be approved for use with potable water by the National Sanitation Foundation and shall be continuously marked at intervals of not more than four (4) feet with the nominal size, pressure rating, NSF seal, manufacturer's name, standard dimension ratio and ASTM specification.

2.2.4 High Density Polyethylene (HDPE) Pipe

Materials used for the manufacturing of polyethylene pipe and fittings shall be PE3408 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.

HDPE pipe four (4) inches in diameter and larger shall conform to AWWA C906, DR-11, ductile iron pipe size and NSF 61 Standard. HDPE 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. Pipe sizes are nominal and may require up-sizing so that the inside pipe diameter is approximately the same as the PVC pipe diameter where applicable. HDPE pipe used for potable water shall be permanently identified by multiple co-extruded blue color stripes equally spaced into the outside surface of the pipe.

Electro fusion branch saddles for wet tap applications shall meet AWWA C906 and be designed and manufactured in accordance with ASTM F1055 for use with HDPE pipe. Outlets shall be in accordance with ASTM D3261 specifically manufactured for HDPE pipe.

Polyethylene flange adaptors shall be made with sufficient through bore length to be clamped in a butt fusion joining machine without the use of a stub end holder. The sealing surface of the flange adaptor shall be machined with a series of small v-shaped grooves to provide gasket-less sealing or to restrain the gasket against blow out. Flange adaptors shall be fitted with convoluted type ductile iron back up rings meeting ASTM A536, Grade 65/45/12. Flange bolts and nuts shall be grade 2 or higher.

Polyethylene mechanical joint adaptors used for connections of HDPE pipe to ductile iron or PVC piping, mechanical joint fittings or valves shall be self-restraining, fusible

mechanical joint adaptors and shall be of the same SDR rating as the pipe. Adaptors shall include longer T-bolts or all thread rods with nuts at the mechanical joint bell.

2.2.5. Steel Casing Pipe

Steel casing pipe shall conform to either ASTM A139 for *Electric Fusion (arc) Welded Steel Pipe* with a minimum yield strength of 35,000 PSI or API-5LX, Grade X-42.

Wall thicknesses shall meet the requirements of the American Railway Engineering Association Manual of Recommended Practice or the Georgia (GDOT) Standard Specifications. For street or highway crossings which are not under railroad or GDOT jurisdiction, the GDOT standards shall be used. Pipe inside diameter shall be in accordance the JWSC standard water construction details. Pipe lengths shorter than eight (8) feet long may not be used unless approved by the JWSC.

2.3 FITTINGS

Fittings for PVC and ductile iron pipe 4-inches in diameter and larger shall be ductile iron with mechanical joints for below ground applications and flanged joints for above ground installations. Fittings for PVC piping two (2) inches in diameter and smaller shall be push-on bell type.

2.3.1 Ductile Iron Fittings

Ductile iron fittings shall conform to ANSI A21.10 (AWWA C110), ANSI A21.11 (AWWA C111), A21.15 (AWWA C115), and/or A21.53 (AWWA C153). ***Compact fittings shall normally be used*** but this does not preclude the use of standard or long body fittings where shown on the plans or at the direction of the JWSC. All ductile iron fittings shall be externally coated and internally lined as specified in paragraph 2.2.1 of this section.

Fittings shall have cast on them the pressure rating, nominal diameter, manufacturer's name, foundry location and type of fitting (degrees or fraction of a circle). Cast letters and figures shall be on the outside body of the fitting. Fittings shall have a minimum working pressure of 250 PSI.

2.3.2 PVC Fittings

PVC 1120, SDR-21 fittings shall be injection molded, push-on bell type with elastomeric rubber seals in accordance with ASTM D3139. Seals shall conform to ASTM F477.

2.3.3 Non-Standard Fittings and Wall Castings

The JWSC shall approve all fittings having non-standard dimensions and cast specifically for a particular project. Such fittings shall meet the requirements of the same standards listed in paragraph 2.3.1 and shall have the same diameter and thickness as standard fittings. Laying lengths and types of ends shall be determined by the particular application and the piping to which they connect.

Wall castings shall be as indicated on the drawings. Flanges shall be faced and drilled to 125-pound ANSI Standards. Flanges shall be tapped for studs.

2.4 JOINTS

The type of joints used for piping and fittings shall be in accordance with the following specifications. Joints shall be made in accordance with the manufacturer's printed instructions.

2.4.1 Mechanical Joints

Mechanical joint materials, assembly and bolting shall be in accordance with ANSI A21.11 (AWWA C11). All glands shall be epoxy coated ductile iron.

2.4.2 Flanged Joints

Flanged joints for ductile iron piping shall conform to ANSI A21.10 (AWWA C110), and ANSI A21.15 (AWWA C115). Flanges shall be in accordance with ANSI B16.1, Class 125. Gaskets shall be used on all flanges. Gaskets shall be rubber ring type with cloth inserts and a minimum thickness of one eighth (1/8) inches. Bolts and nuts shall be Grade B conforming to ASTM A307. The number and size of bolts shall be in accordance with the same ANSI Standard as the flanges.

2.4.3 Restrained Joints

On ductile iron fittings, mechanical joint restraints shall be incorporated into the design of the follower gland. Restraint devices shall consist of multiple gripping wedges incorporated into the follower gland and meeting the requirements of ANSI A21.10 (AWWA C110). Gland body, wedges and wedge actuating components shall be ductile iron in accordance with ASTM A536. Dimensions of the gland shall be such that it can be used with the standard mechanical joint bell and tee head bolts. Twist off nuts (same size as the tee head bolts) shall be used to ensure proper actuation of the restraining device. The mechanical joint restraint shall be designed to accommodate the full working pressure of the pipe with a minimum safety factor of 2.0.

Where called for on the plans, joints on ductile iron piping may be restrained by utilizing a joint restrained gasket which includes a stainless steel locking segment vulcanized into the rubber gasket. The gasket shall be rated for operating pressures up to 250 PSI in accordance with ANSI A21.11 (AWWA C111).

Where it is necessary to restrain PVC pipe bells adjacent to valves and fittings, a harness restraint device shall be used in lieu of thrust blocking. The restraint shall be manufactured of ductile iron in accordance with ASTM A536. A split ring shall be used behind the pipe bell with a serrated ring to grip the pipe. A sufficient number of steel tie rods/bolts shall be used to connect the bell ring and the gripping ring. The harness restraint device shall accommodate the full working pressure of the pipe with a minimum safety factor of 2.0.

The use of concrete thrust blocks as a method of joint restraint shall be limited to situations such as ties to or work associated with existing systems where exposing several joints of pipe is not feasible due to existing ground conditions. In such cases other restraining devices may be required at the direction of the JWSC. Concrete thrust blocks may be used in combination with tie rods in accordance with the JWSC standard construction details. Where used concrete shall be 2,500 PSI minimum.

Where tie rods are used as a method of restraint at mechanical joint fittings and valves, offset eyebolts shall be used to connect tie rods to the fitting. Tie rods shall be steel, threaded as required and installed with a washer and nut (same material as the rod) on either side of the joint. The size and number of tie rods shall be in accordance with the following table.

Tie Rod Size and Number Table

Pipe Size	No. of Rods	Rod Size
4"	2	3/4"
6"	2	3/4"
8"	2	3/4"
10"	4	3/4"
12"	4	3/4"
14"	6	3/4"
16"	6	3/4"
>16"	*	*

* Contact JWSC

2.5 WATER VALVES AND APPURTENANCES

Water valves shall be of the size and type shown on the approved construction plans. All valves shall open by turning left or "counter-clockwise". Extension stems on buried valves will be used only at the direction of the Engineer.

2.5.1 Gate Valves

Gate valves four (4) inches in diameter and larger shall be resilient seat wedge type conforming to applicable sections of AWWA C509 or C515 designed for a minimum working pressure of 250 PSI. When fully open, gate valves shall have a clear port equal to the nominal diameter of the pipe on which it is installed.

Buried gate valves shall be non-rising stem type, epoxy coated, iron body, bronze mounted with all exterior mounted bolts and nuts of 316 stainless steel. Buried gate valves shall have mechanical joint ends and be equipped with a two (2) inch square operating nut and adjustable valve boxes and covers. Valve boxes shall be as specified in paragraph 2.4.4.3 below.

Gate valves installed above ground may be hand wheel operated, non-rising stem type with flanged ends meeting the same general construction as buried valves. Hand wheels shall not be used inside structures or vaults.

Gate valves two (2) inches to three (3) inches in diameter shall be non-rising stem, resilient seat wedge type with epoxy coated iron body and two (2) inch square operating nut. Valve shall conform to the applicable requirements of AWWA C509 and ASTM A126 Class B with threaded ends and designed for 200 PSI working pressure.

2.5.2 Fire Hydrants

Fire hydrants shall be of the compression type, closing with line pressure, and conforming to AWWA C502. Fire hydrants shall have a minimum valve opening of five and one-fourth (5 ¼) inches with two and one-half (2 ½) inch hose nozzles and one four and one-half (4 ½) inch pumper nozzle. Hydrants shall open left or counterclockwise. The nozzle caps shall be securely chained to the hydrant barrel and be constructed of heavy duty corrosion resistant material.

Fire hydrants shall be fully bronze mounted. All nuts and bolts shall be 304 stainless steel. All working parts, including the valve seat ring, shall be removable through the top of the hydrant without disturbing the barrel. The operating threads shall be totally enclosed in an operating chamber separated from the hydrant barrel by a rubber o-ring stem seal and lubricated by a grease or oil reservoir. The hydrant operating nut shall be pentagon shaped (5-sided) measuring one and one-half (1 ½) inches from point to flat. The inlet connection shall be six (6) inch mechanical joint type.

Fire hydrants shall be traffic type such that the barrel will break away from the standpipe at a point above grade to prevent damage to the barrel and stem. Fire hydrants shall be of a non-freezing type design and shall be provided with a simple and positive automatic drain which will be fully closed whenever the main valve is opened.

The entire outside surfaces of the fire hydrant barrel above grade shall be factory primed and then painted with Koppers GLAMORTEX 501 red enamel paint. The base shoe shall be painted with a minimum 4 mils thick epoxy and the lower barrel shall be asphaltic or epoxy coated.

2.5.3 Valve Boxes

Valve boxes shall be cast iron, heavy duty roadway, screw type adjustable to six (6) inches up and down from the nominal required cover over the pipe. Six (6) inch PVC C900 Pipe shall be used to extend valve boxes to grade. Cast iron castings shall be manufactured of clean, even grain, gray cast iron conforming to ASTM A48, Class 20B. Valve boxes shall have cast iron drop covers with the word "WATER" stamped on it.

2.5.4 Tapping Valves and Sleeves

Tapping sleeves shall be used for live tap applications or where directed by the JWSC. Tapping sleeves shall be stainless steel wrap around type conforming to ASTM A126 and shall accommodate the full working pressure of the system.

Tapping valves shall meet the requirements of paragraph 2.5.1 of this section. Tapping valves shall be flanged on one end for connection to the tapping saddle and mechanical joint on the other end. MJ tapping saddles and valves shall be used where the main to be tapped is not level so that the valve operator may be installed in a vertical position.

2.5.5 Yard Hydrants

Yard hydrant shall be high capacity freeze proof type hydrants as Merrill Manufacturing C-1000 Series or approved equal with the following features:

- Inlet – 1" NPT in no lead brass casting
- Outlet – ¾" no-lead hose thread & outside of nozzle has 1" pipe thread
- Stainless steel operating rod
- Teflon packing
- Stainless steel and molded rubber plunger made of self-lubricating material
- 1" no-lead galvanized pipe

2.6 WATER SERVICES AND APPURTENANCES

2.6.1 Corporation Stops

Corporation stops are required on all water services. Corporation stops shall be made of brass conforming to AWWA C800, ASTM B62 and/or ASTM B584 and shall accommodate the full working pressure of the system. The inlet connection shall be AWWA standard iron pipe (IPT) thread. The outlet connection shall be compression type for polyethylene tubing.

2.6.2 Curb Stops

Curb stops shall be ball valve type conforming to AWWA C800. Curb stops shall be made of brass conforming to AWWA C800, ASTM B62 and/or ASTM B584 and shall accommodate the full working pressure of the system. Service line connections shall be compression type for polyethylene tubing.

2.6.3 Double Strap Tapping Saddles

Double strapped tapping saddles shall be epoxy coasted ductile iron body type with NPT service outlet. The saddles shall have a self- energizing, o-ring rubber gasket, two alloy steel straps, and a female iron pipe tap conforming to AWWA C800.

2.6.4 Meter Boxes

Meter boxes for residential services shall be furnished and installed by the contractor/developer. Boxes shall be oval in shape, of cast iron construction with minimum dimensions of 20" L x 10¼" W x 9¾" D suitable for a one (1) inch meter set.

Meter boxes for two (2) inch meters shall be rectangle in shape. Boxes shall be constructed of a light weight plastic composite material with a minimum tensile strength of 3400 PSI. Dimensions shall be suitable for the meter installed.

2.7 BACKFLOW PREVENTION DEVICES

Provide reduced pressure zone backflow preventers or double check valve assemblies where shown on the drawings. Backflow preventers shall be rated for operation with inlet water pressures up to 175 psig and water temperatures up to 140°F.

2.7.1 Double Check Valve (DCV) Assemblies

The backflow preventer shall feature modular check assemblies with center stem guiding. Each check module shall have a captured spring and be accessible through a bolted cover plate. Seats shall be replaceable without special tools. The device shall be completely factory assembled and include, in addition to the check modules, tight closing resilient seated shut off valves, test cocks and strainer.

The assembly shall meet the requirements of USC Manual 8th Edition, ASSE No. 1015, AWWA C510, CSA B64.5, IAPMO PA31 and UL Classified File No. EX3185.

2.7.2 Reduced Pressure Zone (RPZ) Assemblies

The RPZ shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check modules and the relief valve. There shall be no threads or screws in the waterway exposed to line fluids. Service of all internal components shall be through a single access cover secured with stainless steel bolts. The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting.

The assembly shall meet the requirements of USC Manual 8th Edition, ASSE Std. 1013, AWWA C511, IAPMO File No. 1563 and CSA B64.4.

2.8 MISCELLANEOUS ITEMS

2.8.1 Detection Tape

Detection tape shall be composed of a solid aluminum foil encased in a protective plastic jacket. The tape shall be safety blue in color, shall be at least two and half (2-1/2) inches wide and will bear the printed identification "CAUTION: BURIED WATER LINE BELOW".

2.8.2 Tracer Wire

Water pipe tracer wire shall be AWG 12/1, single conductor solid copper with blue jacket, UL rated suitable for direct burial, temperature range -20° C to 60° C, 600 Volts RMS.

2.8.3 Casing Spacers

Casing spacers shall be a two piece shell per carrier pipe and made from T-304 stainless steel of a minimum 14 gauge thickness. Each shell section shall be lined with a 0.090" thick, ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. Bearing surfaces (runners) shall be ultra-high molecular weight polyethylene to provide abrasion resistance and a low coefficient of friction. The runners shall be attached to support structures (risers) at appropriate positions to properly support the carrier pipe within the casing pipe. The runners shall be mechanically bolted to the riser. Risers shall be made of T-304 stainless steel of a minimum 10 gauge. All risers shall be MIG welded to the shell. Bottom risers six (6) inches and over in height shall be reinforced. All reinforcing plates shall be 10 gauge T-304 stainless steel and shall be MIG welded to mating parts. All nuts, bolts and washers shall be 304 stainless steel.

2.8.4 Casing End Seals

Unless dictated otherwise by GDOT or railroad specifications, casing and seals shall be pull-over type made from neoprene with T-304 stainless steel bands for securing to the carrier and casing pipe.

PART 3 EXECUTION

3.1 PRODUCT DELIVERY, STORAGE AND HANDLING

The contractor shall inspect all materials delivered to the job site for damage. Materials shall be unloaded and stored with a minimum of handling. Materials shall be stored above ground and the interior of pipe and fittings shall be kept free of dirt and debris. Store non-metallic piping and rubber gaskets under cover and protect from exposure to sunlight.

Valves, hydrants, and other appurtenances shall be handled to ensure delivery at the point of installation in sound, undamaged condition. If coating or linings of pipe or fittings are damaged, such pipe and fittings shall be removed from the site and new materials furnished. Pipe shall not be dragged.

3.2 INSTALLATION OF WATER MAINS

The contractor shall install all pipe, valves, hydrants and other appurtenances in accordance with the specifications detailed below. All references to industry standards (ASTM, ANSI, AWWA, etc.) shall be to the latest revision unless stated otherwise. Requirements for trench excavation, dewatering, bedding, backfill and compaction may be found in Section 02220 of these specifications.

3.2.1 Pipe Installation

All PVC C900/C905 pipe shall be laid in accordance with AWWA C605. All ductile iron pipe and fittings shall be laid in accordance with the manufacturer's recommendations and AWWA C600. Each section of pipe shall rest upon the pipe bed for the full length of its barrel, with recesses excavated to accommodate bells and joints.

Excavation, cleaning, laying, jointing and backfilling shall follow as closely as possible during prosecution of the work. In no case shall pipe be left in the trench overnight without completing the jointing. All precautions shall be taken to prevent sand, dirt and debris from entering the pipe during installation. Any time that pipe installation is not in progress, open pipe ends shall be closed by a watertight plug or other method approved by the JWSC.

Plugs shall remain in pipe ends until all water has been removed from the trench and any foreign material that enters the pipe shall be removed immediately. No pipe shall be installed when trench or weather conditions are unsuitable for such work.

3.2.2 Pipe Alignment

Pipe alignment and gradient shall be straight or shall follow true curves as near as practicable. Curvature in pipe lines, where required, shall be well within (no more than 80% of) the manufacturer's allowable joint deflection or laying radius for the pipe supplied. Otherwise fittings shall be required.

Water mains shall be installed in locations shown on the plans. New water mains in residential subdivisions shall generally be located five (5) feet behind the curb where curb and gutter is used. Where roadside ditches are used in lieu of curb and gutter, the water mains should be placed at the edge of the road shoulder no closer than four (4) feet from the edge of pavement. The placement of water lines, valves and hydrants within the ditch shall require the approval of the JWSC.

3.2.3 Pipe Cover

Pipe shall be laid with a minimum cover of forty two (42) inches in paved areas and thirty six (36) inches in unpaved areas with an allowable maximum of sixty (60) inches. Cover in all areas shall be measured from crown of pipe to finish grade. Reductions in pipe cover requirements require the approval of the JWSC. Cover requirements are shown on the ***JWSC Standard Details.***

Greater depths are permissible when required to clear obstructions, conflicts, etc. The contractor shall contact the JWSC in advance for instructions as to the modifications necessary. A detail for utility conflicts is shown on the ***JWSC Standard Details.***

3.2.4 Separation Requirements

Water lines shall not be laid closer than ten (10) feet horizontally from a sanitary sewer main unless otherwise indicated on the drawings or directed by the JWSC/Engineer. Sanitary sewer lines shall pass beneath water lines with the top of the sewer being at least eighteen (18) inches below the bottom of the water line, Where sewer lines cross water lines, no joints in the sewer line shall be located closer than ten (10) feet horizontal distance from the water line.

3.2.5 Thrust Restraints

All non-flanged fittings and valves shall be restrained. This shall be accomplished using mechanical restraints at fittings and mechanical restraint along adjacent joints of pipe in accordance with the ***JWSC Standard Details.*** Restraining devices and tie rods, where required, shall be in accordance with paragraph 2.4.3 above.

The use of concrete thrust blocks as a method of joint restraint shall be limited to situations such as point repair where exposing several joints of pipe is not feasible due to existing ground conditions. In such cases other restraining devices may be required at the direction of the JWSC. Concrete thrust blocks may be used in combination with tie rods in accordance with the JWSC standard construction details. Where used concrete shall be 2,500 PSI minimum.

All joints within steel casing pipe shall be restrained with mechanical restraining devices. Harness restraints on PVC (caps) pipe installed within casings may require larger casing pipes.

3.2.6 Tracer Wire and Detection Tape

Contractor shall furnish and install locate wiring on all non-metallic water mains in accordance with the ***JWSC Standard Details.*** Locate wire shall be brought to grade outside a valve box or locating station box, as required, at four hundred and seventy five (475) foot intervals (maximum). In addition, all water mains shall have detection tape installed two (2) feet above the pipe. Tracer wire and detection tape shall be as specified in paragraphs 2.8.1 and 2.8.2 above.

Installed locate wiring shall be tested by the contractor as part of the inspection process, using a qualified tester and suitable testing equipment. The contractor shall notify the JWSC Inspector at least 48 hours in advance of the locate wire field testing schedule.

3.2.7 Casing Spacers

All carrier pipes located within steel casings shall be installed utilizing casing spacers in accordance with the ***JWSC Standard Details.*** Casing spacers shall be installed one (1) foot on either side of each carrier pipe joint and at no more than ten (10) foot intervals along the pipe. A casing spacer shall also be installed within two feet of the ends of the casing pipe. See paragraph 2.8.3 for material specifications.

3.3 VALVES AND APPURTENANCES

3.3.1 Valves

All buried valves shall be carefully mounted in their respective positions free from distortion and strain. Valves shall be placed as shown on the drawings. Gate valves shall be installed as near as possible to tee and cross fittings. The contractor shall check all exposed bolts on all valves to ensure that they are tight prior to installation. Where required, extension stems shall be furnished and located as directed by the Engineer.

Adjustable valve boxes shall be installed with each buried valve, placed vertically and concentric with the valve stem. 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.

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 poured in place collar shall be level with the top of the cast iron valve box and level with the ***final grade.***

3.3.2 Fire Hydrants

Immediately before installation of the fire hydrant, the hydrant shall be thoroughly inspected and cleaned; and shall be opened and closed to determine if all parts are in working order with valves seating properly and drain valve operating freely. All fire hydrants shall have a minimum cover of 36-inches over the branch supply line and shall be restrained as shown on the ***JWSC Standard Details.*** The hydrant assembly includes the hydrant tee, six (6) inch hydrant supply pipe, six (6) inch gate valve and valve box, tie rods and all other appurtenances as shown on the aforementioned detail.

Hydrant drainage shall be provided by installing at least seven (7) cubic feet of No.57 gravel around the hydrant and below the top of the hydrant supply pipe. The barrel of the hydrant shall be set plumb with the lowest discharge outlet at least fifteen (15) inches and no more than twenty four (24) inches above ***final grade***.

The minimum spacing for fire hydrants shall be 500 feet unless directed otherwise by the JWSC. No fire hydrant shall be installed within ten (10) feet of any private or commercial driveway unless directed by the JWSC.

3.3.3 Backflow Prevention Devices

Backflow prevention devices shall be installed in accordance with applicable state and local ordinances. Double check valve assemblies shall be used in low to medium (non-health) hazard locations such as restaurants, lawn sprinkler systems, swimming pools, fire sprinkler systems, etc.

For high (health) hazard locations such as hospitals, medical clinics, car wash facilities, wastewater treatment plants, pumping stations, etc., a reduced pressure zone (RPZ) assembly shall be used. Fire suppression systems utilizing reclaimed water or other chemicals and additives are also considered high hazard locations. Typical installation requirements are shown on the ***JWSC Standard Details.***

3.4 SYSTEM CONNECTIONS

Unless otherwise approved, all connections and ties to the existing public water system shall be performed by the JWSC upon payment of applicable fees. No taps shall be made within 5 pipe diameters or five (5) feet (whichever is smaller) of a joint. The contractor/developer shall coordinate the tap with the JWSC and pay all applicable fees.

The contractor/developer shall furnish and install the required tapping saddle and tapping valve in accordance with JWSC Standards, after which JWSC personnel will make the actual tap to the main. A typical water main connection is shown on the ***JWSC Standard Details.***

3.4.1 Water Service Connections (1-inch Meter)

All water service connections to mains within new developments under construction and not yet accepted by the JWSC shall be performed in accordance with the JWSC Standards and shall include service tap, corporation stop, service tubing, curb stop and meter box. Water meters will be installed by the JWSC. Water service connections to existing mains shall be made by the JWSC upon payment of all operational, impact and account setup fees. No service taps shall be made within 5 pipe diameters or 5-feet (whichever is smaller) of a joint. Service tubing shall be as specified in paragraph 2.2.3 above. Typical residential water service details for single, double or multiple service lines are shown on the ***JWSC Standard Details.***

3.4.2 Water service Connections (2-inch and Larger Meter)

Water service connections to existing mains shall be made by the JWSC. The contractor/developer shall coordinate the tap with the JWSC and pay all applicable fees. The contractor/developer shall furnish and install the required tapping saddle and tapping valve in accordance with JWSC standards, after which JWSC personnel will make the actual tap to the main. No service taps shall be knowingly made within five (5) pipe diameters or five (5) feet (whichever is smaller) of a joint. Water meters will be obtained from the JWSC but may be installed by a licensed plumber or utility contractor. Unless otherwise approved, meters shall be installed in vaults below ground. Above ground installations may be approved on a case by case basis. Meters two (2) inches and larger shall be installed with a bypass. Typical large meter installation details are shown on the ***JWSC Standard Details.***

3.5 PRESSURE AND LEAKAGE TESTING

Upon completion of backfilling operations and prior to disinfection, all completed water lines shall be subject to hydrostatic (pressure and leakage) testing in accordance with AWWA C600 or AWWA C605 as appropriate and as outlined below. Pressure and leakage testing shall be

conducted simultaneously. The contractor shall test all new water lines in the presence of a JWSC Inspector.

The test pressure shall be measured at the lowest point. All required blow offs shall be installed by the contractor prior to the hydrostatic test. See also paragraph 3.6 below for required sampling locations for bacteriological testing.

The contractor shall furnish clean water as well as temporary plugs, caps, bulkheads, test pump and all other necessary equipment and labor for the test. The section of water main to be tested shall be filled with water of approved quality and all air shall be expelled from the pipe. Water for testing may be obtained from any existing fire hydrant or special wet tap of an existing water line provided that the method of backflow prevention used is approved by the JWSC Inspector.

The JWSC will operate all valves and hydrants on the existing water distribution system. If blow offs or other outlets are not available at high points for releasing air, the contractor shall make the necessary taps at such points and shall plug such holes at the completion of the test. The Table below lists the approximate amount of water which must be added to the pipe to raise line pressure from 0 to 150 PSI when no air is present.

Water / Pipe Ratio Table

Pipe Diameter	Gallons/1000 LF
6"	0.73
8"	1.31
10"	2.04
12"	2.94
16"	5.22

If the actual field test quantities (additional water amount) is over 4 times greater than the amounts listed in the table above, severe air entrapment is likely and additional efforts should be made to expel air from the pipe prior to testing.

All piping shall be pressure and leakage tested for a minimum of 2-hours duration at 150 PSI. All valved sections shall be hydrostatically tested to ensure sealing (leak allowance) of all line valves. During the 2-hour test period, no pipe will be accepted if pressure loss is greater than 5 PSI regardless of the leakage test results. The allowable testing leakage shall not exceed 11.65 GPD/Mile/inch of nominal diameter at a pressure of 150 PSI. If the initial test results are unsatisfactory, damaged or defective pipe, fittings and valves shall be repaired or replaced and the test repeated until satisfactory results are obtained.

3.6 DISINFECTION OF WATER MAINS

Upon satisfactory completion of the hydrostatic test (where applicable), all new potable water lines and other pipe related installations which may have been contaminated by the work shall be disinfected in accordance with AWWA C651, the Rules for Safe Drinking Water as published by the Georgia Environmental Protection Division, and as outlined below. The contractor shall disinfect all new water lines in the presence of the JWSC Inspector.

Prior to disinfection, water lines shall be thoroughly flushed to remove contaminated materials from the line. The contractor is referred to AWWA C651 for precautions during construction and procedures for flushing.

Disinfection shall be accomplished by introducing chlorine into the main to be disinfected. The disinfection procedure used may be any of the methods or procedures outlined in AWWA C651. A chlorine residual of at least 25 milligrams per liter (mg/l) shall be maintained for 24 hours in the water line to be disinfected. After the 24 hour holding or contact period, the heavily chlorinated water shall be flushed from the main until the chlorine residual within the main reaches the level of chlorine normally carried in the distribution system (1.0 mg/l). De-chlorination of the flushing water may be required if the highly chlorinated water is to be discharged directly to a surface water stream or storm drain system. If the water can be sheet-flowed over a large area or discharged to a holding pond, de-chlorination may be avoided.

After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24-hours apart, shall be collected from the new main.

At least one set of samples shall be collected from every twelve-hundred (1200) linear feet of new water main, plus one set from the end of each line and at least one set from each branch. The JWSC will determine the number and location of the required sampling points to meet the current standards. All required sampling taps shall be installed by the contractor, at his expense, prior to disinfection.

The collection of samples and bacteriological testing will be performed by the JWSC at the Contractor's expense unless noted otherwise on the construction plans. If the bacteriological tests are unsatisfactory, disinfection procedure shall be repeated until satisfactory results are obtained.

(END OF SECTION)

SECTION 2
WATER DISTRIBUTION SYSTEMS

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SECTION 2
WATER DISTRIBUTION SYSTEMS

2.1 GENERAL

This section provides the minimum guidelines for the design and construction of water transmission and distribution systems. The method of design and/or construction shall be in accordance with these Design and Construction Standards and Specifications and the following:

Georgia Rules for Safe Drinking Water Chapter 391-3-5 promulgated under the Georgia Safe Drinking Water Act

Georgia Environmental Protection Division Minimum Standards for Public Water Systems, Latest Edition

American Water Works Association (AWWA)

Applicable Federal, State and Local Requirements

In the event of conflicts among the various sources cited above, the most stringent criteria shall take precedence.

2.2 DESIGN FLOWS

Each water system component shall be designed to meet certain flow requirements to ensure that water will be available in adequate quantities to meet demand characteristics throughout the system. The various flow requirements are described below.

2.2.1 Annual Average Daily Flow (AADF)

The average daily demand expresses the average amount of water used in a system during an average day. One Residential Equivalent Unit (REU) is the equivalent demand that can be expected for one residential connection. The AADF shall be 300 gallons per day per REU. In as much as the AADF will often be exceeded, it is generally not appropriate to use AADF for design purposes.

2.2.2 Maximum Daily Flow (MDF)

The maximum daily demand expresses the maximum amount of water used in a system in one day during peak demand. Normally expressed in gallons per day, the MDF is normally used in the design of water production and storage facilities. For water systems located in the City District, North Mainland District and South Mainland District of Glynn County, the estimated MDF shall be calculated as 1.54 times the AADF. For water systems located on St. Simons Island the MDF shall be calculated as 1.40 times the AADF.

2.2.3 Peak Hourly Flow (PHF)

The peak hourly demand expresses the maximum amount of water used in any hour during a day. Normally expressed in gallons per minute, PHF is used, in conjunction with fire flow requirements, in the design of water distribution systems. For water systems located in the City District, North Mainland District and South Mainland District of Glynn County, the estimated PHF shall be calculated as 2.2 times the AADF. For water systems located in on St. Simons Island, the estimated PHF shall be calculated as 2.0 times the AADF.

2.2.4 Fire Flow Requirements

A minimum fire flow of 500 gallons per minute with a residual pressure of 20 PSI for 2 hours at the fire hydrant shall be required.

2.3 SIZING OF WATER MAINS

Water distribution systems must be designed to maintain a residual pressure of at least 20 PSI at each service connection and at all points in the distribution system under all conditions of flow, including fire flow. All construction plan submittals shall be accompanied by a hydraulic analysis prepared by a Professional Engineer registered in the State of Georgia, demonstrating compliance with these design and construction standards and specifications. The hydraulic analysis shall clearly state the basis for the design flows.

2.3.1 Major Transmission Mains

The size of major transmission mains or extensions to such mains, throughout the system shall be in accordance with JWSC Water and Sewer Master Plan, latest revision. Contact the JWSC for additional information and guidance with regard to this requirement.

2.3.2 Distribution Mains

The minimum water main size in residential subdivisions to which fire hydrants are connected shall be eight (8) inches in diameter. It is preferred that such subdivisions be designed with two feeds from a distribution main external to the project wherever possible. In cases where two feeds are not practical, the size of the single main extension serving the development or looped grid must be verified in the hydraulic analysis.

Distribution mains smaller than eight (8) inches in diameter will be considered on a case by case basis, but in no case shall distribution mains smaller than two (2) inch be used. No more than five (5) REU's may be served by a single two (2) inch main.

2.3.3 Velocities in Water Mains

The hydraulic analysis must demonstrate that expected velocities in new distribution mains do not exceed five (5) feet per second at the PHF.

2.3.4 Hazen Williams Roughness Coefficients

The hydraulic analysis shall use roughness coefficients (C-factors) in the Hazen-Williams formula in accordance with the following:

Pipe	C-factor
Ductile iron pipe (sixteen (16) inches in diameter and above)	120
Ductile iron pipe (Less than sixteen (16) inches in diameter)	130
PVC pipe (All sizes)	140
HDPE pipe (All sizes)	140

2.4 MATERIAL SPECIFICATIONS

The contractor shall furnish potable water piping systems in accordance with the material specifications detailed below. All references to industry standards (ASTM, ANSI, AWWA, etc.) shall be to the latest revision unless stated otherwise. All materials shall be new. These material specifications include a list of acceptable manufacturers for the various water system components (See Appendix 2A). The contractor may choose freely from the manufacturers list and ***material submittals for such items are not required.*** Only products and materials from the acceptable manufacturer's lists herein may be used in the work. Any item required but not specified herein, or any product or manufacturer other than those listed will be considered a substitution. ***Material submittals are required for such items.*** Substitutions will not be allowed without the prior written approval of the JWSC. Substitutions, if allowed, shall meet all criteria of the detailed specifications.

The burden of proof for compliance of any proposed substitution rests with the Contractor/Developer/Owner. The JWSC will be the sole judge as to the acceptance of a proposed substitution and such decisions will be final.

2.4.1 Potable Water Pipe

Pipe for potable water lines shall be ductile iron, polyvinyl chloride (PVC), polyethylene tubing or high density polyethylene (HDPE). Pipe sizes and applications shall conform to the following table.

Figure WD-1
Pipe Size and Application Table

PIPE	PIPE SIZE	JOINT TYPE	APPLICATION
Ductile Iron	4" diameter and larger	Mech. Joint Push-on Joint Flanged Joint*	Water Mains Above Ground Below Ground
PVC DR 14 PVC DR 18 PVC DR 25	4" diameter and larger	Push-on Joint	Water Mains Below Ground
PVC SDR 21	2" diameter	Push-on Joint	Water Mains Below Ground
Polyethylene Tubing	2" diameter and smaller	(See Below)	Water Services
HDPE	2" diameter and larger	Fused	Water Mains Water Services Below Ground
Steel	4" diameter and larger	Welded	Casings Only

* Flanged joints for above ground applications only

2.4.1.1 Ductile Iron Pipe

Ductile iron pipe wall thicknesses and pressure class shall conform to ANSI A21.50 (AWWA C150) and ANSI A21.51 (AWWA C151) with pressure class 150 as a minimum. Each length shall be clearly marked with the name of the manufacturer, pressure rating, thickness or pressure class and nominal pipe diameter.

All ductile iron pipe shall be externally coated with a bituminous coating per ANSI A21.51. In areas of corrosive soils as defined in AWWA C105, Appendix A, all bolts, nuts, studs and other uncoated parts of joints for underground installations shall be coated with asphalt or coal tar prior to backfilling.

The interior of all ductile iron pipe, fittings and specials shall be cement lined with a seal coat. The lining shall comply with ANSI A21.4 (AWWA C104). In areas of severely aggressive soils, provide polyethylene encasement for all ductile iron piping systems in accordance with AWWA C105.

2.4.1.2 Polyvinyl Chloride (PVC) Pipe

Pipe shall be virgin polyvinyl chloride (PVC) pipe for potable water and shall have a bell type coupling with a thickened wall section integral with the pipe barrel in accordance with ASTM D3139. Provisions must be made for expansion and contraction at each joint with flexible ring gaskets made of rubber or other suitable material. Elastomeric seals shall meet ASTM F477.

PVC water pipe four (4) inches through twelve (12) inches in diameter shall conform to AWWA C900 Pressure Class (PC) 235 DR-18. PVC water pipe fourteen (14) inches and larger shall conform to AWWA C905 Pressure Class (PC) 235 DR-18. Pipe is to be manufactured to ductile iron pipe equivalent outside diameters. Pipe for water mains shall be blue in color with each length marked with name of the manufacturer, pressure rating, nominal pipe diameter and the seal of the National Sanitation Foundation (NSF).

PVC water pipe two (2) inches in diameter and smaller shall conform to ASTM D2241, Pressure Rating (PR) 200 SDR-21 with push-on type jointing. Glued or Solvent weld joints shall not be used. Pipe for water mains shall be blue in color (preferred) with each length marked with name of the manufacturer, pressure rating, nominal pipe diameter and the seal of the National Sanitation Foundation (NSF). If blue is not available, white may be used.

2.4.1.3 Polyethylene Tubing

All water services two (2) inches in diameter and smaller shall be manufactured of PE 3408, high density polyethylene in accordance with AWWA C901, ASTM D1248, ASTM D2239, ASTM D2737 and ASTM D3350. Tubing shall have a minimum working pressure of 200 PSI, shall be copper tube size SDR-9 and shall be blue in color. Couplings shall be made of bronze with compression fittings on both ends suitable for connection to polyethylene tubing with inserts.

Tubing shall be approved for use with potable water by the National Sanitation Foundation and shall be continuously marked at intervals of not more than four (4) feet with the nominal size, pressure rating, NSF seal, manufacturer's name, standard dimension ratio and ASTM specification.

2.4.1.4 High Density Polyethylene (HDPE) Pipe

Materials used for the manufacturing of polyethylene pipe and fittings shall be PE3408 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.

HDPE pipe four (4) inches in diameter and larger shall conform to AWWA C906, DR-11, ductile iron pipe size and NSF 61 Standard. HDPE 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. Pipe sizes are nominal and may require up-sizing so that the inside pipe diameter is approximately the same as the PVC pipe diameter where applicable. HDPE pipe used for potable water shall be permanently identified by multiple co-extruded blue color stripes equally spaced into the outside surface of the pipe.

Electro fusion branch saddles for wet tap applications shall meet AWWA C906 and be designed and manufactured in accordance with ASTM F1055 for use with HDPE pipe. Outlets shall be in accordance with ASTM D3261 specifically manufactured for HDPE pipe.

Polyethylene flange adaptors shall be made with sufficient through bore length to be clamped in a butt fusion joining machine without the use of a stub end holder. The sealing surface of the flange adaptor shall be machined with a series of small v-shaped grooves to provide gasket-less sealing or to restrain the gasket against blow out. Flange adaptors shall be fitted with convoluted type ductile iron back up rings meeting ASTM A536, Grade 65/45/12. Flange bolts and nuts shall be grade 2 or higher.

Polyethylene mechanical joint adaptors used for connections of HDPE pipe to ductile iron or PVC piping, mechanical joint fittings or valves shall be self restraining, fusible mechanical joint adaptors and shall be of the same SDR rating as the pipe. Adaptors shall include longer T-bolts or all thread rods with nuts at the mechanical joint bell.

2.4.1.5 Steel Casing Pipe

Steel casing pipe shall conform to either ASTM A139 for *Electric Fusion (arc) Welded Steel Pipe* with a minimum yield strength of 35,000 PSI or API-5LX, Grade X-42.

Wall thicknesses shall meet the requirements of the American Railway Engineering Association Manual of Recommended Practice or the Georgia (GDOT) Standard Specifications. For street or highway crossings which are not under railroad or GDOT jurisdiction, the GDOT standards shall be used. Pipe inside diameter shall be in accordance the JWSC standard water construction details. Pipe lengths shorter than eight (8) feet long may not be used unless approved by the JWSC.

2.4.2 Fittings

Fittings for PVC and ductile iron pipe 4-inches in diameter and larger shall be ductile iron with mechanical joints for below ground applications and flanged joints for above ground installations. Fittings for PVC piping two (2) inches in diameter and smaller shall be push-on bell type.

2.4.2.1 Ductile Iron Fittings

Ductile iron fittings shall conform to ANSI A21.10 (AWWA C110), ANSI A21.11 (AWWA C111), A21.15 (AWWA C115), and/or A21.53 (AWWA C153). ***Compact fittings shall normally be used*** but this does not preclude the use of standard or long body fittings where shown on the plans or at the direction of the JWSC. All ductile iron fittings shall be externally coated and internally lined as specified in paragraph 2.4.1.1 of this section.

Fittings shall have cast on them the pressure rating, nominal diameter, manufacturer's name, foundry location and type of fitting (degrees or fraction of a circle). Cast letters and figures shall be on the outside body of the fitting. Fittings shall have a minimum working pressure of 250 PSI.

2.4.2.2 PVC Fittings

PVC 1120, SDR-21 fittings shall be injection molded, push-on bell type with elastomeric rubber seals in accordance with ASTM D3139. Seals shall conform to ASTM F477.

2.4.2.3 Non-Standard Fittings and Wall Castings

The JWSC shall approve all fittings having non-standard dimensions and cast specifically for a particular project. Such fittings shall meet the requirements of the same standards listed in paragraph 2.4.2.1 and shall have the same diameter and thickness as standard fittings. Laying lengths and types of ends shall be determined by the particular application and the piping to which they connect.

Wall castings shall be as indicated on the drawings. Flanges shall be faced and drilled to 125-pound ANSI Standards. Flanges shall be tapped for studs.

2.4.3 Joints

The type of joints used for piping and fittings shall be in accordance with the following specifications. Joints shall be made in accordance with the manufacturer's printed instructions.

2.4.3.1 Mechanical Joints

Mechanical joint materials, assembly and bolting shall be in accordance with ANSI A21.11 (AWWA C11). All glands shall be epoxy coated ductile iron.

2.4.3.2 Flanged Joints

Flanged joints for ductile iron piping shall conform to ANSI A21.10 (AWWA C110), and ANSI A21.15 (AWWA C115). Flanges shall be in accordance with ANSI B16.1, Class 125. Gaskets shall be used on all flanges. Gaskets shall be rubber ring type with cloth inserts and a minimum thickness of one eighth (1/8) inches. Bolts and nuts shall be Grade B conforming to ASTM A307. The number and size of bolts shall be in accordance with the same ANSI Standard as the flanges.

2.4.3.3 Restrained Joints

On ductile iron fittings, mechanical joint restraints shall be incorporated into the design of the follower gland. Restraint devices shall consist of multiple gripping wedges incorporated into the follower gland and meeting the requirements of ANSI A21.10 (AWWA C110). Gland body, wedges and wedge actuating components shall be ductile iron in accordance with ASTM A536. Dimensions of the gland shall be such that it can be used with the standard mechanical joint bell and tee head bolts. Twist off nuts (same size as the tee head bolts) shall be used to ensure proper actuation of the restraining device. The mechanical joint restraint shall be designed to accommodate the full working pressure of the pipe with a minimum safety factor of 2.0.

Where called for on the plans, joints on ductile iron piping may be restrained by utilizing a joint restrained gasket which includes a stainless steel locking segment vulcanized into the rubber gasket. The gasket shall be rated for operating pressures up to 250 PSI in accordance with ANSI A21.11 (AWWA C111).

Where it is necessary to restrain PVC pipe bells adjacent to valves and fittings, a harness restraint device shall be used in lieu of thrust blocking. The restraint shall be manufactured of ductile iron in accordance with ASTM A536. A split ring shall be used behind the pipe bell with a serrated ring to grip the pipe. A sufficient number of steel tie rods/bolts shall be used to connect the bell ring and the gripping ring. The harness restraint device shall accommodate the full working pressure of the pipe with a minimum safety factor of 2.0.

The use of concrete thrust blocks as a method of joint restraint shall be limited to situations such as ties to or work associated with existing systems where exposing several joints of pipe is not feasible due to existing ground conditions. In such cases other restraining devices may be required at the direction of the JWSC. Concrete thrust blocks may be used in combination with tie rods in accordance with the JWSC standard construction details. Where used concrete shall be 2,500 PSI minimum.

Where tie rods are used as a method of restraint at mechanical joint fittings and valves, offset eyebolts shall be used to connect tie rods to the fitting. Tie rods shall be steel, threaded as required and installed with a washer and nut (same material as the rod) on either side of the joint. The size and number of tie rods shall be in accordance with the Figure WD-2.

Figure WD-2
Tie Rod Size and Number Table

Pipe Size	No. of Rods	Rod Size
4"	2	3/4"
6"	2	3/4"
8"	2	3/4"
10"	4	3/4"
12"	4	3/4"
14"	6	3/4"
16"	6	3/4"
>16"	*	*

* Contact JWSC

2.4.4 Water Valves and Appurtenances

Water valves shall be of the size and type shown on the approved construction plans. All valves shall open by turning left or "counter-clockwise". Extension stems on buried valves will be used only at the direction of the JWSC.

2.4.4.1 Gate Valves

Gate valves four (4) inches in diameter and larger shall be resilient seat wedge type conforming to applicable sections of AWWA C509 or C515 designed for a minimum working pressure of 250 PSI. When fully open, gate valves shall have a clear port equal to the nominal diameter of the pipe on which it is installed.

Buried gate valves shall be non-rising stem type, epoxy coated, iron body, bronze mounted with all exterior mounted bolts and nuts of 316 stainless steel. Buried gate valves shall have mechanical joint ends and be equipped with a two (2) inch square operating nut and adjustable valve boxes and covers. Valve boxes shall be as specified in paragraph 2.4.4.3 below.

Gate valves installed above ground may be hand wheel operated, non-rising stem type with flanged ends meeting the same general construction as buried valves. Hand wheels shall not be used inside structures or vaults.

Gate valves two (2) inches to three (3) inches in diameter shall be non-rising stem, resilient seat wedge type with epoxy coated iron body and two (2) inch square operating nut. Valve shall conform to the applicable requirements of AWWA C509 and ASTM A126 Class B with threaded ends and designed for 200 PSI working pressure.

2.4.4.2 Fire Hydrants

Fire hydrants shall be of the compression type, closing with line pressure, and conforming to AWWA C502. Fire hydrants shall have a minimum valve opening of five and one-fourth (5 ¼) inches with two and one-half (2 ½) inch hose nozzles and one four and one-half (4 ½) inch pumper nozzle. Hydrants shall open left or counterclockwise. The nozzle caps shall be securely chained to the hydrant barrel and be constructed of heavy duty corrosion resistant material.

Fire hydrants shall be fully bronze mounted. All nuts and bolts shall be 304 stainless steel. All working parts, including the valve seat ring, shall be removable through the top of the hydrant without disturbing the barrel. The operating threads shall be totally enclosed in an operating chamber separated from the hydrant barrel by a rubber o-ring stem seal and lubricated by a grease or oil reservoir. The hydrant operating nut shall be pentagon shaped (5-sided) measuring one and one-half (1 ½) inches from point to flat. The inlet connection shall be six (6) inch mechanical joint type.

Fire hydrants shall be traffic type such that the barrel will break away from the standpipe at a point above grade to prevent damage to the barrel and stem. Fire hydrants shall be of a non-freezing type design and shall be provided with a simple and positive automatic drain which will be fully closed whenever the main valve is opened.

The entire outside surfaces of the fire hydrant barrel above grade shall be factory primed and then painted with Koppers GLAMORTEX 501 red enamel paint. The base shoe shall be painted with a minimum 4 mils thick epoxy and the lower barrel shall be asphaltic or epoxy coated.

2.4.4.3 Valve Boxes

Valve boxes shall be cast iron, heavy duty roadway, screw type adjustable to six (6) inches up and down from the nominal required cover over the pipe. Six (6) inch PVC C900 Pipe shall be used to extend valve boxes to grade. Cast iron castings shall be manufactured of clean, even grain, gray cast iron conforming to ASTM A48, Class 20B. Valve boxes shall have cast iron drop covers with the word "WATER" stamped on it.

2.4.4.4 Tapping Valves and Sleeves

Tapping sleeves shall be used for live tap applications or where directed by the JWSC. Tapping sleeves shall be stainless steel wrap around type conforming to ASTM A126 and shall accommodate the full working pressure of the system.

Tapping valves shall meet the requirements of paragraph 2.4.4.1 of this section. Tapping valves shall be flanged on one end for connection to the tapping saddle and mechanical joint on the other end. MJ tapping saddles and valves shall be used where the main to be tapped is not level so that the valve operator may be installed in a vertical position.

2.4.5 Water Services and Appurtenances

2.4.5.1 Corporation Stops

Corporation stops are required on all water services. Corporation stops shall be made of brass conforming to AWWA C800, ASTM B62 and/or ASTM B584 and shall accommodate the full working pressure of the system. The inlet connection shall be AWWA standard iron pipe (IPT) thread. The outlet connection shall be compression type for polyethylene tubing.

2.4.5.2 Curb Stops

Curb stops shall be ball valve type conforming to AWWA C800. Curb stops shall be made of brass conforming to AWWA C800, ASTM B62 and/or ASTM B584 and shall accommodate the full working pressure of the system. Service line connections shall be compression type for polyethylene tubing.

2.4.5.3 Double Strapped Tapping Saddles

Double strapped tapping saddles shall be epoxy coated ductile iron body type with NPT service outlet. The saddles shall have a self energizing o-ring rubber gasket, two alloy steel straps, and a female iron pipe tap conforming to AWWA C800.

2.4.5.4 Meter Boxes (Residential)

Meter boxes for residential services shall be furnished and installed by the contractor/developer. Boxes shall be oval in shape, of cast iron construction with minimum dimensions of 20" L x 10¼" W x 9¾" D suitable for a one (1) inch meter set.

2.4.5.5 Meter Boxes (1 ½" to 2")

Meter boxes for one and one-half (1½) inch to two (2) inch meters shall be rectangle in shape. Boxes shall be constructed of a light weight plastic composite material with a minimum tensile strength of 3400 PSI. Dimensions shall be suitable for the meter installed.

2.4.6 Backflow Prevention Devices

2.4.6.1 Double Check Valve (DCV) Assemblies

The backflow preventer shall feature modular check assemblies with center stem guiding. Each check module shall have a captured spring and be accessible through a bolted cover plate. Seats shall be replaceable without special tools. The device shall be completely factory assembled and include, in addition to the check modules, tight closing resilient seated shut off valves, test cocks and strainer.

The assembly shall meet the requirements of USC Manual 8th Edition, ASSE No. 1015, AWWA C510, CSA B64.5, IAPMO PA31 and UL Classified File No. EX3185.

2.4.6.2 Reduced Pressure Zone (RPZ) Assemblies

The RPZ shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check modules and the relief valve. There shall be no threads or screws in the waterway exposed to line fluids. Service of all internal components shall be through a single access cover secured with stainless steel bolts. The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting.

The assembly shall meet the requirements of USC Manual 8th Edition, ASSE Std. 1013, AWWA C511, IAPMO File No. 1563 and CSA B64.4.

2.4.7 Miscellaneous Items

2.4.7.1 Detection Tape

Detection tape shall be composed of a solid aluminum foil encased in a protective plastic jacket. The tape shall be safety blue in color, shall be at least two and half (2-1/2) inches wide and will bear the printed identification "CAUTION: BURIED WATER LINE BELOW".

2.4.7.2 Tracer Wire

Water pipe tracer wire shall be AWG 12/1, single conductor solid copper with blue jacket, UL rated suitable for direct burial, temperature range -20° C to 60° C, 600 Volts RMS.

2.4.7.3 Casing Spacers

Casing spacers shall be a two piece shell per carrier pipe and made from T-304 stainless steel of a minimum 14 gauge thickness. Each shell section shall be lined with a 0.090" thick, ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. Bearing surfaces (runners) shall be ultra high molecular weight polyethylene to provide abrasion resistance and a low coefficient of friction. The runners shall be attached to support structures (risers) at appropriate positions to properly support the carrier pipe within the casing pipe. The runners shall be mechanically bolted to the riser. Risers shall be made of T-304 stainless steel of a minimum 10 gauge. All risers shall be MIG welded to the shell. Bottom risers six (6) inches and over in height shall be reinforced. All reinforcing plates shall be 10 gauge T-304 stainless steel and shall be MIG welded to mating parts. All nuts, bolts and washers shall be 304 stainless steel.

2.4.7.4 End Seals

Unless dictated otherwise by GDOT or railroad specifications, casing and seals shall be pull-over type made from neoprene with T-304 stainless steel bands for securing to the carrier and casing pipe.

2.5 INSTALLATION OF WATER MAINS AND APPURTENANCES

The contractor shall install potable water piping systems in accordance with the specifications detailed below. All references to industry standards (ASTM, ANSI, AWWA, etc.) shall be to the latest revision unless stated otherwise.

2.5.1 Product Delivery, Handling and Storage

The contractor shall inspect all materials delivered to the job site for damage. Materials shall be unloaded and stored with a minimum of handling. Materials shall be stored above ground and the interior of pipe and fittings shall be kept free of dirt and debris. Store non-metallic piping and rubber gaskets under cover and protect from exposure to sunlight.

Pipe, fittings, valves, hydrants and other appurtenances shall be handled to ensure delivery at the point of installation in sound, undamaged condition. If coating or linings of pipe or fittings are damaged, such pipe and fittings shall be removed from the site and new materials furnished. Pipe shall not be dragged.

2.5.2 Excavation and Backfilling

2.5.2.1 General Excavation

The contractor shall examine the work site and inform himself fully as to the nature of all materials to be encountered during excavation for the construction of the various facilities and related appurtenances. The contractor shall perform excavation of all substances encountered to the depth shown on the drawings. Trench width and/or depth shall be as shown on the ***JWSC Standard Details.***

Excavation shall not be carried below the required level. Where excavation is carried below the grade indicated through error, the contractor shall refill to the proper grade with AASHTO Class A-3 soil or granular backfill if directed by the JWSC Inspector and compact to obtain a suitable pipe support.

All excavation work shall be in accordance with OSHA safety standards, including OSHA Excavation Standards (29 CFR Subpart P 1926.650).

2.5.2.2 Dewatering

The contractor shall keep all excavations clear of water while pipe and appurtenances are being installed. All water pumped or bailed from trenches and other excavated areas shall be conveyed to a point of discharge where it will cause no hazard to the safety and protection of the public, to private property or to other work in progress.

2.5.2.3 Backfilling and Compaction

If unsuitable materials are encountered, such materials may not be used for backfilling operations and shall be removed from the site. Unsuitable material includes but is not limited to debris, muck, clay, large clods, stones, wood, stumps, and roots.

Generally piping and appurtenances shall be observed by the JWSC Inspector prior to backfilling. Should it be necessary to backfill trenches, prior to observation by JWSC inspector, pipe joints shall be left exposed for observation. Backfill and compaction shall be performed to achieve the densities specified below. Methods for the placement of backfill and compaction shall be subject to the approval of the JWSC.

For excavation under pavement, backfill shall be placed in uniform, six (6) inch compacted layers and compacted to 98% of its maximum density as determined by Laboratory Modified Proctor Test, ASTM D1557 to an elevation of one (1) foot above the top of the pipe. The remainder of the trench backfill shall be placed in twelve (12) inch compacted layers and compacted to 98% of its maximum density as determined by Laboratory Modified Proctor Test, ASTM D1557.

When excavating under existing pavement, such pavement shall be removed to clean straight lines by saw cutting. Backfill shall be placed in uniform, six (6) inch compacted layers and compacted to 98% of its maximum density as determined by ASTM D1557 to an elevation of one (1) foot above the top of the pipe.

The remainder of the trench backfill shall consist of graded aggregate to be placed in six (6) inch compacted layers and compacted to 98% of its maximum density as determined by ASTM D1557. The in-place density is to be tested by ASTM D2922 or ASTM D1556. See the ***JWSC Standard Details*** for additional information.

For excavation not under pavement, backfill shall be placed in uniform layers, six (6) inch compacted layers and compacted to 98% of its maximum density as determined by Laboratory Modified Proctor Test, ASTM D1557 to an elevation of one (1) foot above the top of the pipe.
The remainder of the trench backfill shall be placed in twelve (12) inch compacted layers and compacted to 98% of its maximum density as determined by Laboratory Modified Proctor Test, ASTM D1557.

If deemed necessary by the JWSC, the contractor shall, at his expense, retain the services of an independent testing laboratory to make in place density tests of backfilled trenches to confirm compaction as specified herein.

2.5.3 Water Mains

2.5.3.1 Pipe Installation

All PVC C900/C905 pipe shall be laid in accordance with AWWA C605. All ductile iron pipe and fittings shall be laid in accordance with the manufacturer's recommendations and AWWA C600. Each section of pipe shall rest upon the pipe bed for the full length of its barrel, with recesses excavated to accommodate bells and joints.

Excavation, cleaning, laying, jointing and backfilling shall follow as closely as possible during prosecution of the work. In no case shall pipe be left in the trench overnight without completing the jointing. All precautions shall be taken to prevent sand, dirt and debris from entering the pipe during installation. Any time that pipe installation is not in progress, open pipe ends shall be closed by a watertight plug or other method approved by the JWSC Inspector.

Plugs shall remain in pipe ends until all water has been removed from the trench and any foreign material that enters the pipe shall be removed immediately. No pipe shall be installed when trench or weather conditions are unsuitable for such work, as determined by JWSC.

2.5.3.2 Pipe Alignment

Pipe alignment and gradient shall be straight or shall follow true curves as near as practicable. Curvature in pipe lines, where required, shall be well within (no more than 80% of) the manufacturer's allowable joint deflection or laying radius for the pipe supplied. Otherwise fittings shall be required.

Water mains shall be installed in locations shown on the plans. New water mains in residential subdivisions shall generally be located five (5) feet behind the curb where curb and gutter is used. Where roadside ditches are used in lieu of curb and gutter, the water mains should be placed at the edge of the road shoulder no closer than four (4) feet from the edge of pavement. The placement of water lines, valves and hydrants within the ditch shall require the approval of the JWSC.

2.5.3.3 Pipe Cover

Pipe shall be laid with a minimum cover of forty two (42) inches in paved areas and thirty six (36) inches in unpaved areas with an allowable maximum of sixty (60) inches. Cover in all areas shall be measured from crown of pipe to finish grade. Reductions in pipe cover requirements require the approval of the JWSC. Cover requirements are shown on the ***JWSC Standard Details.***

Greater depths are permissible when required to clear obstructions, conflicts, etc. The contractor shall contact the JWSC in advance for instructions as to the modifications necessary. A detail for utility conflicts is shown on the ***JWSC Standard Details.***

2.5.3.4 Separation Requirements

Water lines shall not be laid closer than ten (10) feet horizontally from a sanitary sewer main or septic tank line. Exceptions require the approval of the JWSC Planning and Construction Division. Sanitary sewer lines shall pass beneath water lines with the top of the sewer being at least eighteen (18) inches below the bottom of the water line, where sewer lines cross water lines. No joints in the sewer line shall be located closer than ten (10) feet horizontal distance from the water line.

2.5.3.5 Thrust Restraints

All non-flanged fittings and valves shall be restrained. This shall be accomplished using mechanical restraints at fittings and mechanical restraint along adjacent joints of pipe in accordance with the ***JWSC Standard Details.*** Restraining devices and tie rods, where required, shall be in accordance with paragraph 2.4.3.3 above.

The use of concrete thrust blocks as a method of joint restraint shall be limited to situations such as point repair where exposing several joints of pipe is not feasible due to existing ground conditions. In such cases other restraining devices may be required at the direction of the JWSC. Concrete thrust blocks may be used in combination with tie rods in accordance with the JWSC standard construction details. Where used concrete shall be 2,500 PSI minimum.

All joints within steel casing pipe shall be restrained with mechanical restraining devices. Harness restraints on PVC (caps) pipe installed within casings may require larger casing pipes.

2.5.3.6 Tracer Wire and Detection Tape

Contractor shall furnish and install locate wiring on all non-metallic water mains in accordance with the ***JWSC Standard Details.*** Locate wire shall be brought to grade outside a valve box or locating station box, as required, at four hundred and seventy five (475) foot intervals (maximum). In addition, all water mains shall have detection tape installed two (2) feet above the pipe. Tracer wire and detection tape shall be as specified in paragraphs 2.4.7.1 and 2.4.7.2 above.

Installed locate wiring shall be tested by the contractor as part of the inspection process, using a qualified tester and suitable testing equipment. The contractor shall notify the JWSC Inspector at least 48 hours in advance of the locate wire field testing schedule.

2.5.3.7 Casing Spacers

All carrier pipes located within steel casings shall be installed utilizing casing spacers in accordance with the ***JWSC Standard Details.*** Casing spacers shall be installed one (1) foot on either side of each carrier pipe joint and at no more than ten (10) foot intervals along the pipe. A casing spacer shall also be installed within two feet of the ends of the casing pipe. See paragraph 2.4.7.4 for material specifications.

2.5.3.8 Pressure and Leakage Testing

Upon completion of backfilling operations and prior to disinfection, all completed water lines shall be subject to hydrostatic (pressure and leakage) testing in accordance with AWWA C600 or AWWA C605 as appropriate and as outlined below. Pressure and leakage testing shall be conducted simultaneously. The contractor shall test all new water lines in the presence of a JWSC Inspector.

The test pressure shall be measured at the lowest point. All required blow offs shall be installed by the contractor prior to the hydrostatic test. See also paragraph 2.5.7.10 below for required sampling locations for bacteriological testing.

The contractor shall furnish clean water as well as temporary plugs, caps, bulkheads, test pump and all other necessary equipment and labor for the test. The section of water main to be tested shall be filled with water of approved quality and all air shall be expelled from the pipe. Water for testing may be obtained from any existing fire hydrant or special wet tap of an existing water line provided that the method of backflow prevention used is approved by the JWSC Inspector.

The JWSC will operate all valves and hydrants on the existing water distribution system. If blow offs or other outlets are not available at high points for releasing air, the contractor shall make the necessary taps at such points and shall plug such holes at the completion of the test. The Table below lists the approximate amount of water which must be added to the pipe to raise line pressure from 0 to 150 PSI when no air is present.

Figure WD-3
Water / Pipe Ratio Table

Pipe Diameter	Gallons/1000 LF
6"	0.73
8"	1.31
10"	2.04
12"	2.94
16"	5.22

If the actual field test quantities (additional water amount) is over 4 times greater than the amounts listed in the table above, severe air entrapment is likely and additional efforts should be made to expel air from the pipe prior to testing.

All piping shall be pressure and leakage tested for a minimum of 2-hours duration at 150 PSI. All valved sections shall be hydrostatically tested to ensure sealing (leak allowance) of all line valves. During the 2-hour test period, no pipe will be accepted if pressure loss is greater than 5 PSI regardless of the leakage test results. The allowable testing leakage shall not exceed 11.65 GPD/Mile/inch of nominal diameter at a pressure of 150 PSI. If the initial test results are unsatisfactory, damaged or defective pipe, fittings and valves shall be repaired or replaced and the test repeated until satisfactory results are obtained.

2.5.3.9 Disinfection of Water Mains

Upon satisfactory completion of the hydrostatic test, all new water lines and other pipe related installations which may have been contaminated by the work shall be disinfected in accordance with AWWA C651, the Rules for Safe Drinking Water as published by the Georgia Environmental Protection Division, and as outlined below. The contractor shall disinfect all new water lines in the presence of a JWSC Inspector.

Prior to disinfection, water lines shall be thoroughly flushed to remove contaminated materials from the line. The contractor is referred to AWWA C651 for precautions during construction and procedures for flushing.

Disinfection shall be accomplished by introducing chlorine into the main to be disinfected. The disinfection procedure used may be any of the methods or procedures outlined in AWWA C651. A chlorine residual of at least 25 milligrams per liter (mg/l) shall be maintained for 24 hours in the water line to be disinfected. After the 24 hour holding or contact period, the heavily chlorinated water shall be flushed from the main until the chlorine residual within the main reaches the level of chlorine normally carried in the distribution system (1.0 mg/l). De-chlorination of the flushing water may be required if the highly chlorinated water is to be discharged directly to a surface water stream or storm drain system. If the water can be sheet-flowed over a large area or discharged to a holding pond, de-chlorination may be avoided.

After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24-hours apart, shall be collected from the new main.

At least one set of samples shall be collected from every twelve-hundred (1200) linear feet of new water main, plus one set from the end of each line and at least one set from each branch. The JWSC Water Compliance Coordinator, in conjunction with the JWSC inspector, will determine the number and location of the required sampling points to meet the current standards. All required sampling taps shall be installed by the contractor, at his expense, prior to disinfection.

The collection of samples and bacteriological testing will be performed by the JWSC at the Contractor's expense unless noted otherwise on the construction plans. If the bacteriological tests are unsatisfactory, disinfection procedure shall be repeated until satisfactory results are obtained.

2.5.4 Valves and Appurtenances

2.5.4.1 Valves

All buried valves shall be carefully mounted in their respective positions free from distortion and strain. Valves shall be placed as shown on the drawings. Unless noted otherwise in line valve spacing shall be every eight-hundred (800) feet (maximum) in residential/rural locations and every five-hundred (500) feet (maximum) in commercial and industrial areas. Gate valves shall be installed as near as possible to tee and cross fittings. The contractor shall check all exposed bolts on all valves to ensure that they are tight prior to installation.

Where required, extension stems shall be furnished and located as directed by the JWSC.

Adjustable valve boxes shall be installed with each buried valve, placed vertically and concentric with the valve stem. 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.

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 poured in place collar shall be level with the top of the cast iron valve box and level with the ***final grade.*** A typical buried valve installation is shown on the ***JWSC Standard Details.***

2.5.4.2 Fire Hydrants

Immediately before installation of the fire hydrant, the hydrant shall be thoroughly inspected and cleaned; and shall be opened and closed to determine if all parts are in working order with valves seating properly and drain valve operating freely. All fire hydrants shall have a minimum cover of 36-inches over the branch supply line and shall be restrained as shown on the ***JWSC Standard Details.*** The hydrant assembly includes the hydrant tee, six (6) inch hydrant supply pipe, six (6) inch gate valve and valve box, tie rods and all other appurtenances as shown on the aforementioned detail.

Hydrant drainage shall be provided by installing at least seven (7) cubic feet of No.57 gravel around the hydrant and below the top of the hydrant supply pipe. The barrel of the hydrant shall be set plumb with the lowest discharge outlet at least fifteen (15) inches and no more than twenty four (24) inches above ***final grade***.

The minimum spacing for fire hydrants shall be 500 feet unless directed otherwise by the JWSC. No fire hydrant shall be installed within ten (10) feet of any private or commercial driveway unless directed by the JWSC.

2.5.5 System Connections

Unless otherwise approved, all connections and ties to the existing public water system shall be performed by the JWSC upon payment of applicable fees.

2.5.5.1 Water Main Connections

No taps shall be made within 5 pipe diameters or five (5) feet (whichever is smaller) of a joint. The contractor/developer shall coordinate the tap with the JWSC and pay all applicable fees.

The contractor/developer shall furnish and install the required tapping saddle and tapping valve in accordance with JWSC Standards, after which JWSC personnel will make the actual tap to the main. A typical water main connection is shown on the ***JWSC Standard Details.***

2.5.5.2 Water Service Connections

(5/8-inch Meter):

All water service connections to mains within new developments under construction and not yet accepted by the JWSC shall be performed in accordance with the JWSC Standards and shall include service tap, corporation stop, service tubing, curb stop and meter box. Water meters will be installed by the JWSC. Water service connections to existing mains shall be made by the JWSC upon payment of all operational, impact and account setup fees. No service taps shall be made within 5 pipe diameters or 5-feet (whichever is smaller) of a joint. Service tubing shall be as specified in paragraph 2.4.1.3 above. Typical residential water service details for single, double or multiple service lines are shown on the ***JWSC Standard Details.***

(1-1/2-inch and larger):

Water service connections to existing mains shall be made by the JWSC. The contractor/developer shall coordinate the tap with the JWSC and pay all applicable fees. The contractor/developer shall furnish and install the required tapping saddle and tapping valve in accordance with JWSC standards, after which JWSC personnel will make the actual tap to the main. No service taps shall be knowingly made within five (5) pipe diameters or five (5) feet (whichever is smaller) of a joint. Water meters will be obtained from the JWSC but may be installed by a licensed plumber or utility contractor. Unless otherwise approved, meters shall be installed in vaults below ground. Above ground installations may be approved on a case by case basis. Meters one and one-half (1 ½) inches and larger shall be installed with a bypass. Typical large meter installation details are shown on the ***JWSC Standard Details.***

2.5.5.3 Backflow Prevention Devices

Backflow prevention devices shall be installed in accordance with applicable state and local ordinances. Double check valve assemblies shall be used in low to medium (non-health) hazard locations such as restaurants, lawn sprinkler systems, swimming pools, fire sprinkler systems, etc.

For high (health) hazard locations such as hospitals, medical clinics, car wash facilities, wastewater treatment plants, pumping stations, etc., a reduced pressure zone (RPZ) assembly shall be used. Fire suppression systems utilizing reclaimed water or other chemicals and additives are also considered high hazard locations. Typical installation requirements are shown on the ***JWSC Standard Details.***

APPENDIX 2A
ACCEPTABLE MANUFACTURERS

APPENDIX 2A

WATER DISTRIBUTION SYSTEM
ACCEPTABLE MANUFACTURERS

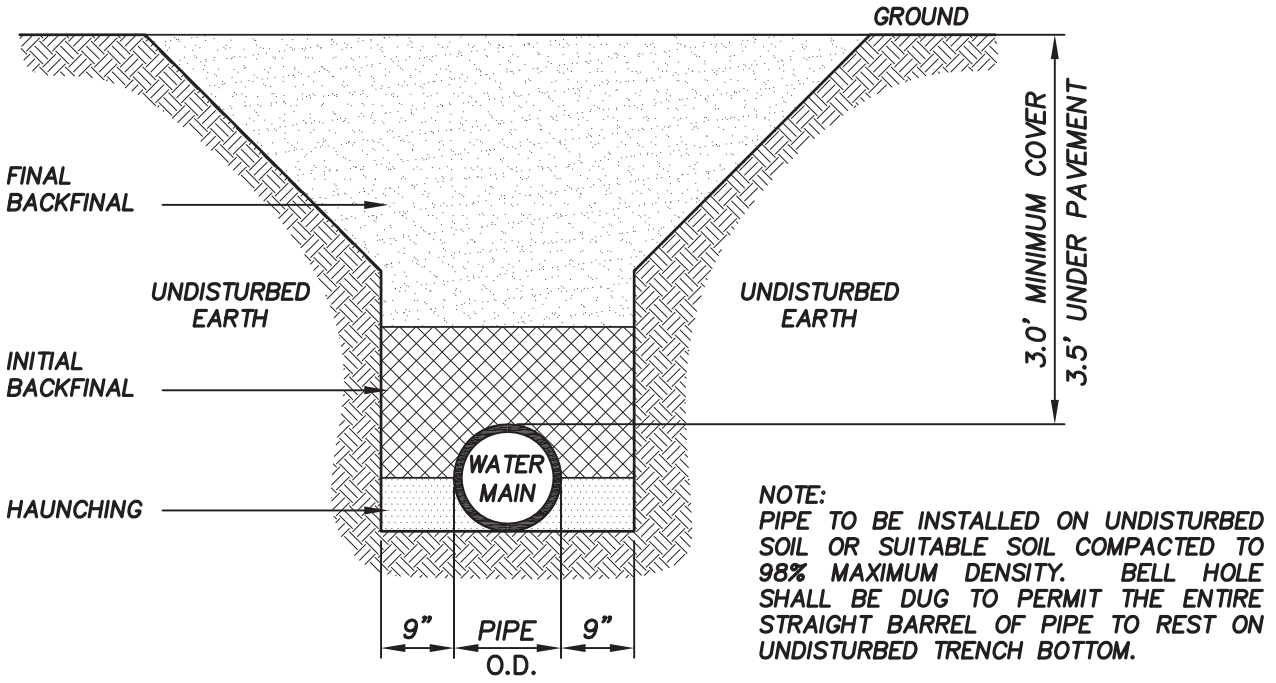
PARAGRAPH	PRODUCT	MANUFACTURERS
2.4.1	**Potable Water Pipe**	
2.4.1.1	*Ductile Iron Pipe*	American Cast Iron Pipe Company U.S, Pipe and Foundry Clow McWane
2.4.1.2	*Polyvinyl Chloride (PVC) Pipe*	J.M. Eagle Blue Brute Diamond Plastics Corporation North American Pipe Corporation National Pipe and Plastics Vulcan
2.4.1.3	*Polyethylene Tubing*	Charter, ADS
2.4.1.4	*High Density Polyethylene (HDPE) Pipe*	Performance, JM, Lamson
2.4.1.5	*Steel Casing Pipe*	See note 1 N/A
2.4.2	**Fittings**	
2.4.2.1	*Ductile Iron*	American Cast Iron Pipe Company U.S, Pipe and Foundry Clow McWane
2.4.2.2	*PVC*	J.M. Eagle Blue Brute Diamond Plastics Corporation North American Pipe Corporation National Pipe and Plastics Vulcan
2.4.2.3	*Non-Standard Fittings and Wall Castings*	See note 1
2.4.3	**Joints**	
2.4.3.3	*Mechanical Joint Restraints*	EBAA Iron Sales
	Harness (Bell) Restraints	EBAA Iron Sales
2.4.4	**Valves and Appurtenances**	
2.4.4.1	*Gate Valves (4" and Larger)* *Gate Valves (2")*	Clow Mueller Matco
2.4.4.2	*Fire Hydrants*	Clow Medallion Mueller Supercenturian
2.4.4.3	*Valve Boxes*	Star Segma
2.4.4.4	*Tapping Sleeves*	JCM Smith Blair
2.4.5	**Water Services and Appurtenances**	
2.4.5.1	*Corporation Stops*	Mueller Ford

PARAGRAPH	PRODUCT	MANUFACTURERS
2.4.5.2	*Curb Stops*	Mueller Ford
2.4.5.3	*Double Strapped Tapping Saddles*	JCM
2.4.5.4	*Meter Boxes (Residential)*	Pentair
2.4.5.5	*Meter Boxes (1-1/2" and 2" Meters)*	Pentair
2.4.6	**Backflow Prevention Devices**	
2.4.6.1	*Double Check Valve (DCV) Assemblies*	Watts, Hersey, Febco
2.4.6.2	*Reduced Pressure Zone (RPZ) Assemblies*	Watts, Hersey, Febco
2.4.7	**Miscellaneous Items**	
2.4.7.1	*Detection Tape*	Omega, Proline
2.4.7.2	*Tracer Wire*	Copperhead, Apex
2.4.7.3	*Polyethylene Wrap*	Trumbull
2.4.7.4	*Casing Spacers*	BWM, Cascade
2.4.7.5	*End Seals*	BWM, Cascade

Note:

1. Where no manufacturer is listed for a particular item of material or equipment, the contractor may select the manufacturer provided that all requirements of these standards for that particular item of material or equipment are met. Submittals of such items are required.

APPENDIX 2B
STANDARD CONSTRUCTION DETAILS



NOTE:
PIPE TO BE INSTALLED ON UNDISTURBED SOIL OR SUITABLE SOIL COMPACTED TO 98% MAXIMUM DENSITY. BELL HOLE SHALL BE DUG TO PERMIT THE ENTIRE STRAIGHT BARREL OF PIPE TO REST ON UNDISTURBED TRENCH BOTTOM.

NOT TO SCALE

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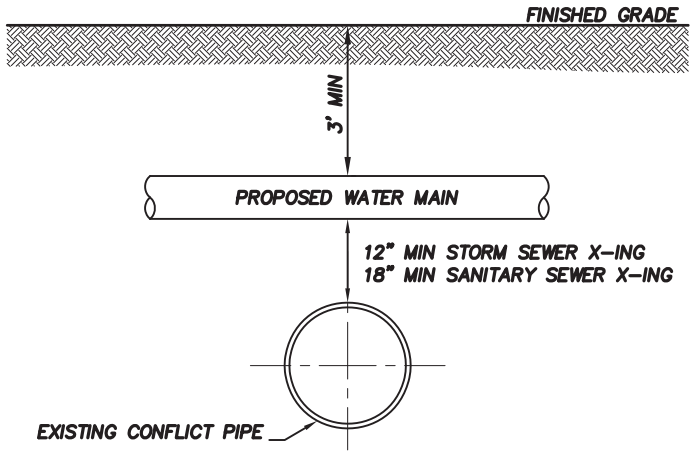
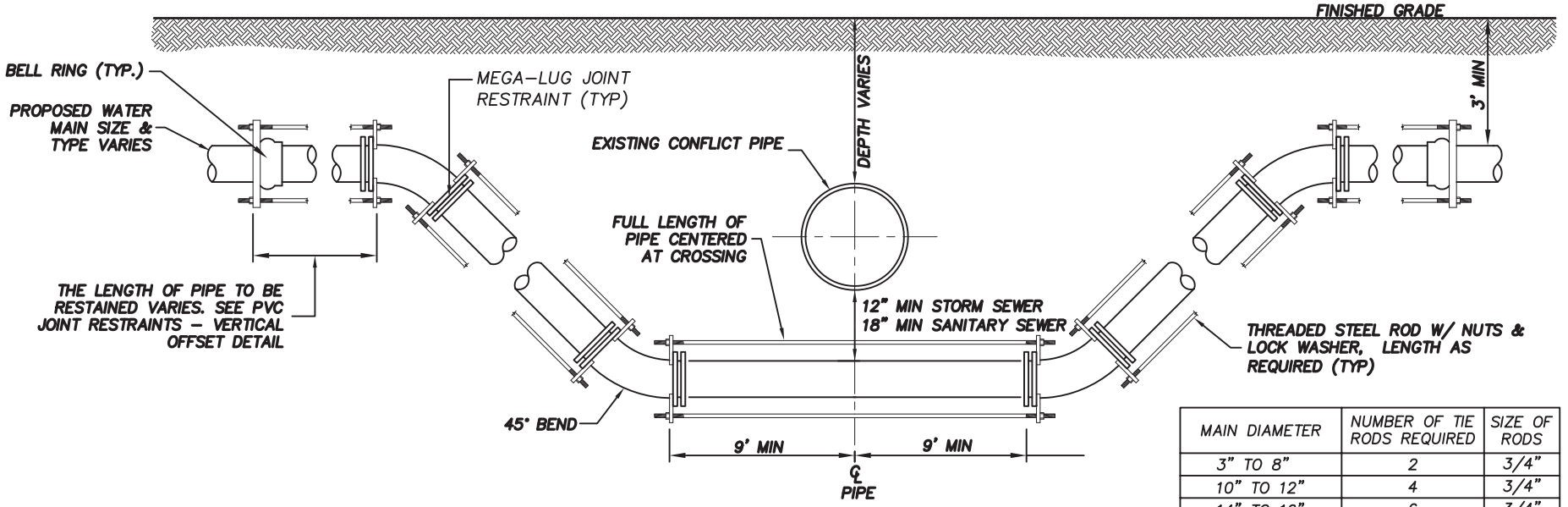
PRESSURE PIPE TRENCH DETAIL

JWSC STANDARD DETAIL 2-1

Date: AUGUST 2011



OVER



UNDER

MAIN DIAMETER	NUMBER OF TIE RODS REQUIRED	SIZE OF RODS
3" TO 8"	2	3/4"
10" TO 12"	4	3/4"
14" TO 16"	6	3/4"

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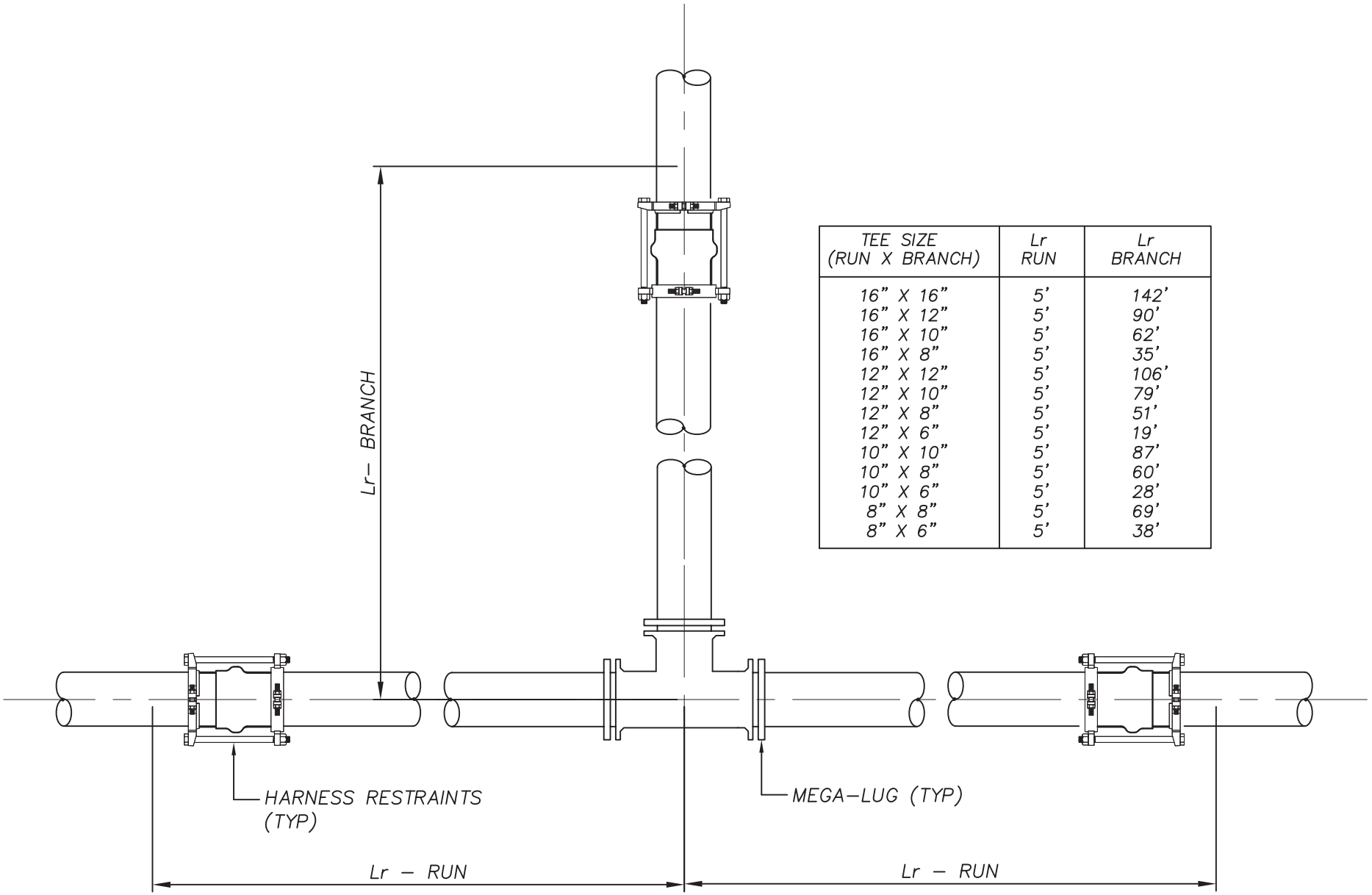
UTILITY CONFLICT DETAIL

JWSC STANDARD DETAIL 2-2

Date: AUGUST 2011



TEE SIZE (RUN X BRANCH)	Lr RUN	Lr BRANCH
16" X 16"	5'	142'
16" X 12"	5'	90'
16" X 10"	5'	62'
16" X 8"	5'	35'
12" X 12"	5'	106'
12" X 10"	5'	79'
12" X 8"	5'	51'
12" X 6"	5'	19'
10" X 10"	5'	87'
10" X 8"	5'	60'
10" X 6"	5'	28'
8" X 8"	5'	69'
8" X 6"	5'	38'

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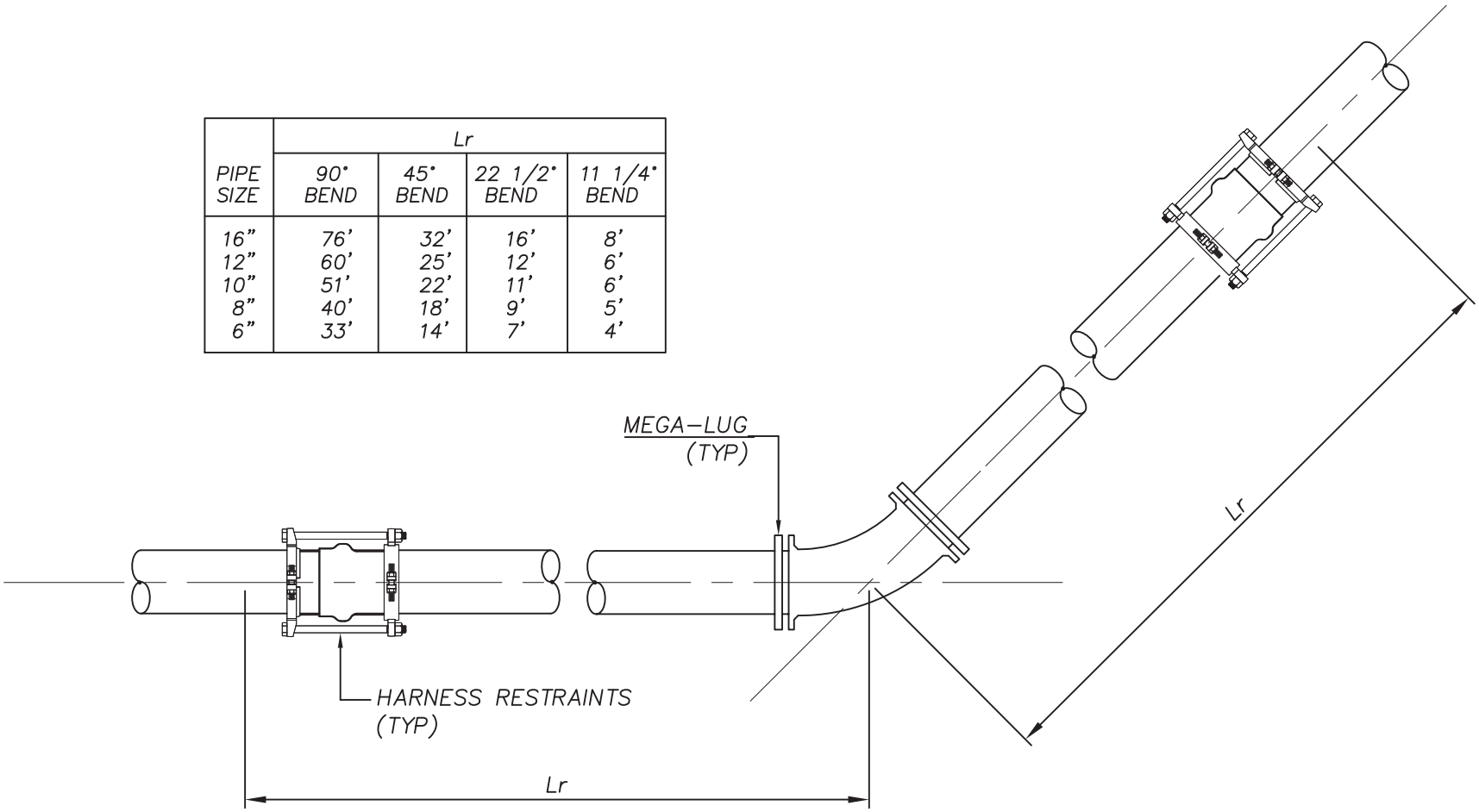
PVC JOINTS RESTRAINTS - TEE

JWSC STANDARD DETAIL 2-3

Date: AUGUST 2011

PIPE SIZE	Lr			
	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
16"	76'	32'	16'	8'
12"	60'	25'	12'	6'
10"	51'	22'	11'	6'
8"	40'	18'	9'	5'
6"	33'	14'	7'	4'



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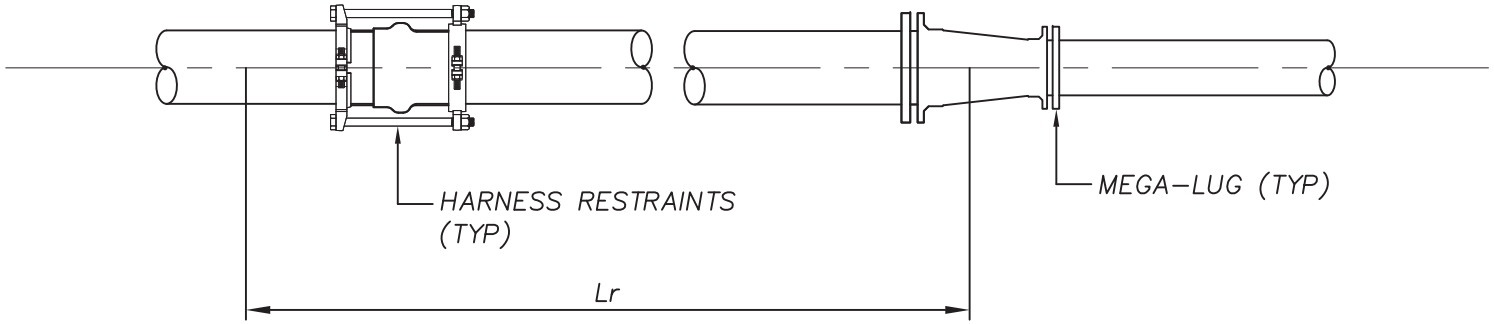
PVC JOINTS RESTRAINTS - HORIZONTAL BEND

JWSC STANDARD DETAIL 2-4

Date: AUGUST 2011

REDUCER SIZE	Lr
16" X 12"	75'
16" X 10"	104'
16" X 8"	128'
16" X 6"	147'
12" X 10"	40'
12" X 8"	72'
12" X 6"	99'
10" X 8"	39'
10" X 6"	71'
8" X 6"	41'
8" X 4"	69'
6" X 4"	38'



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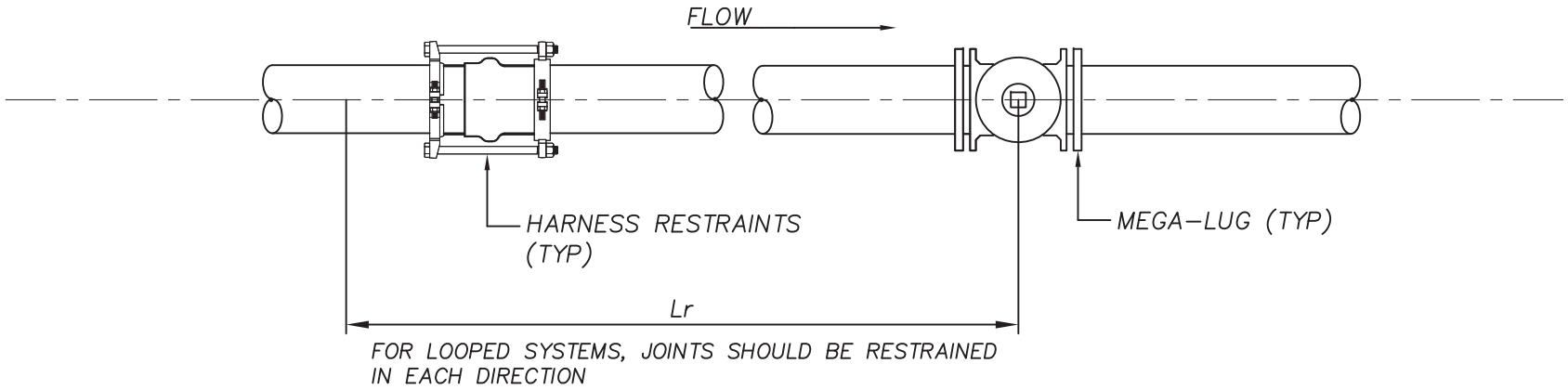
PVC JOINTS RESTRAINTS - REDUCER

JWSC STANDARD DETAIL 2-5

Date:AUGUST 2011

LINE SIZE	Lr
16"	175'
12"	136'
10"	115'
8"	96'
6"	74'
4"	52'



FOR LOOPED SYSTEMS, JOINTS SHOULD BE RESTRAINED IN EACH DIRECTION

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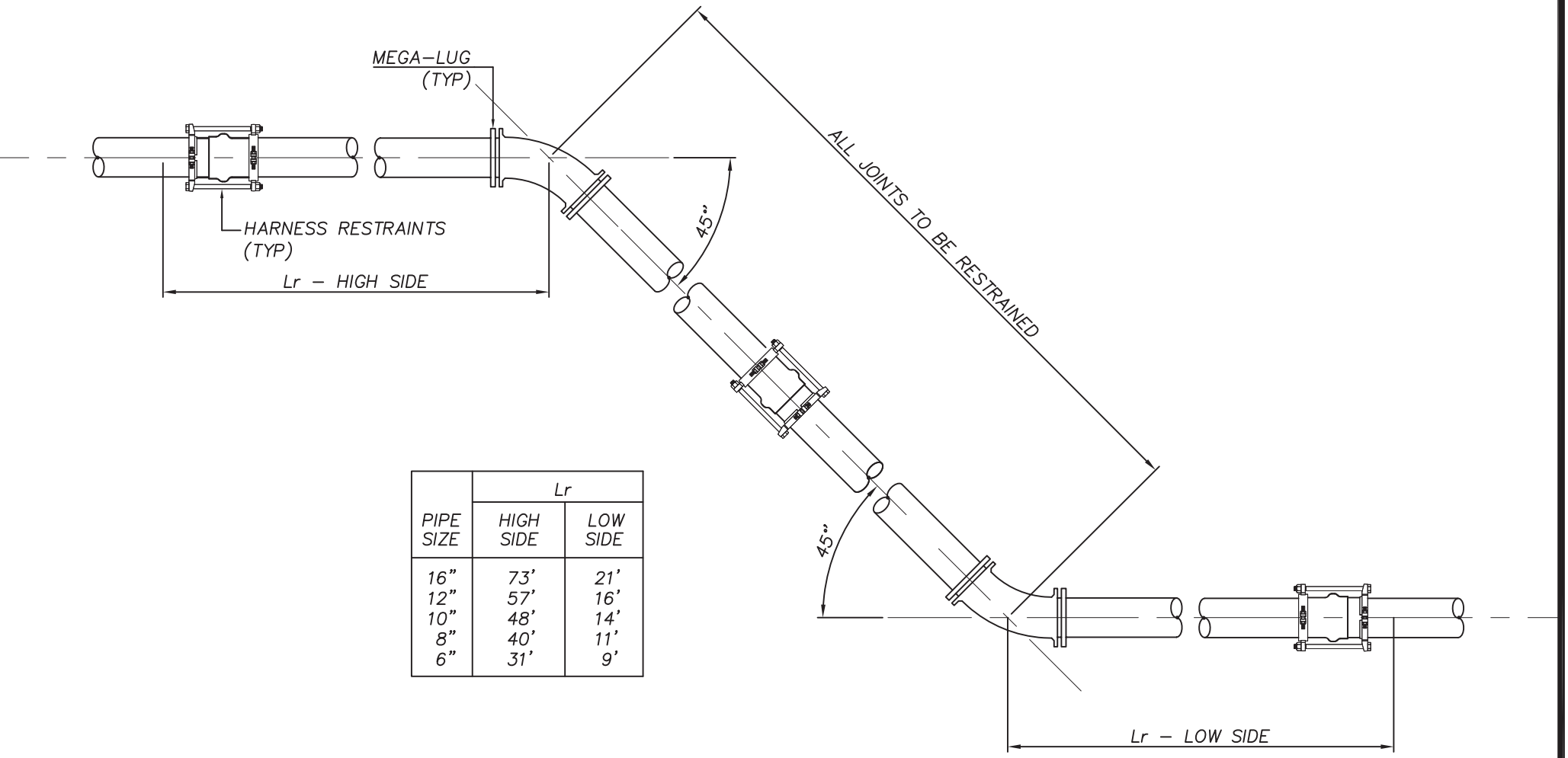
PVC JOINTS RESTRAINTS - IN-LINE VALVE

JWSC STANDARD DETAIL 2-6

Date: AUGUST 2011



PIPE SIZE	Lr HIGH SIDE	Lr LOW SIDE
16"	73'	21'
12"	57'	16'
10"	48'	14'
8"	40'	11'
6"	31'	9'

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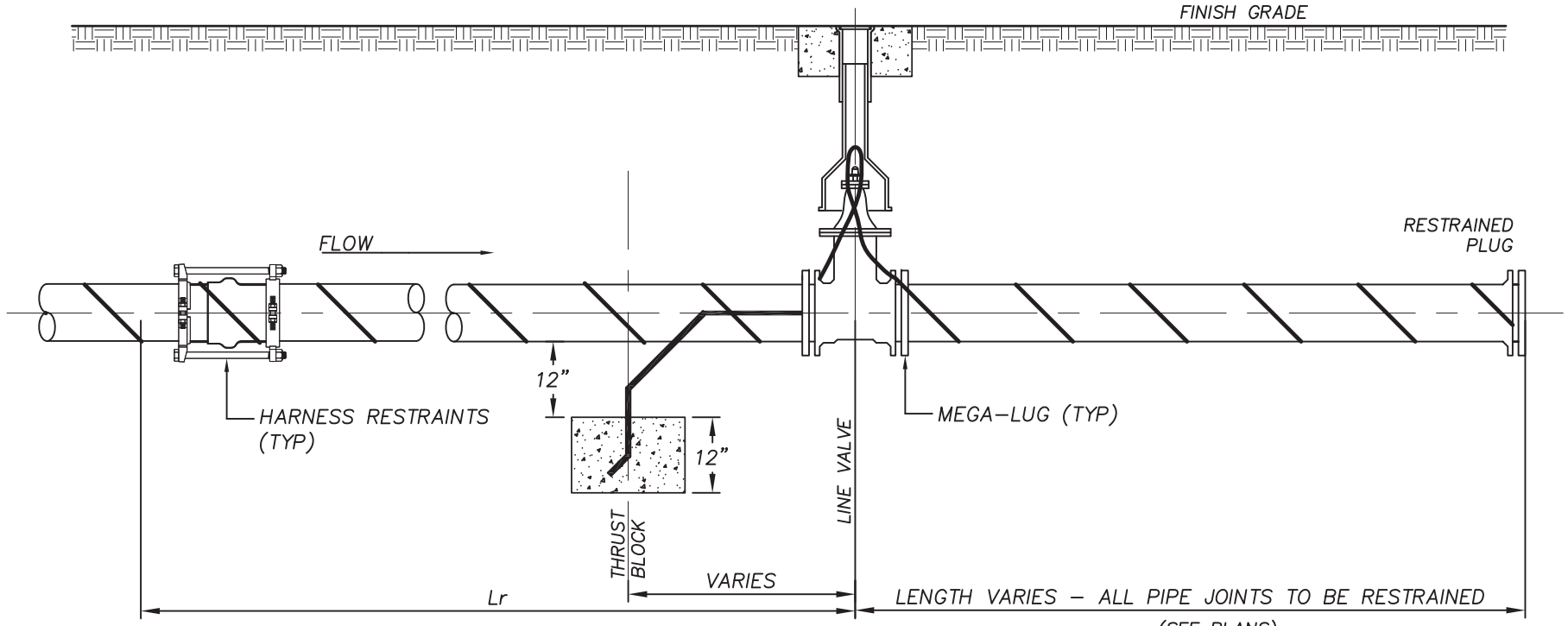
PVC JOINTS RESTRAINTS - VERTICAL OFFSET

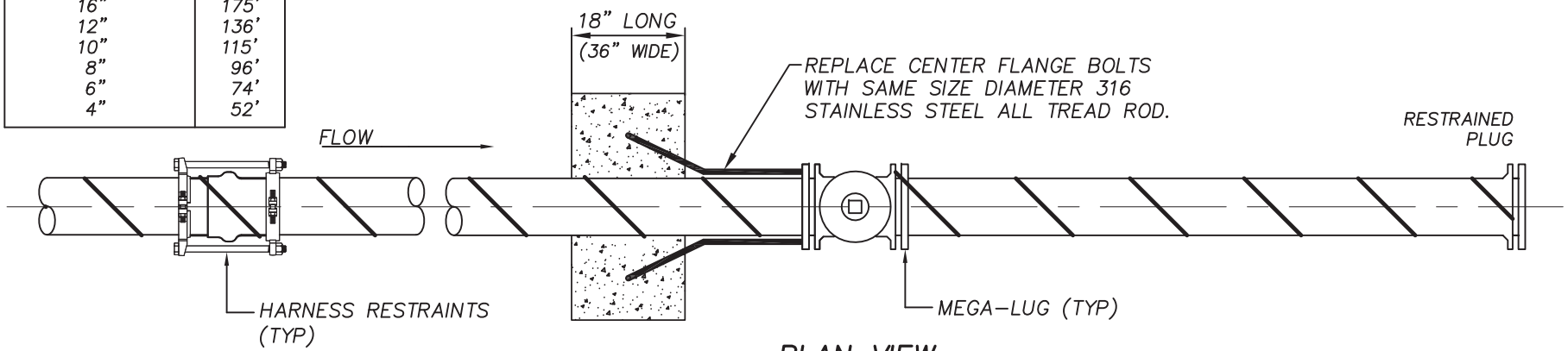
JWSC STANDARD DETAIL 2-7

Date: AUGUST 2011



PROFILE VIEW

LINE SIZE	Lr
16"	175'
12"	136'
10"	115'
8"	96'
6"	74'
4"	52'



PLAN VIEW

NOT TO SCALE

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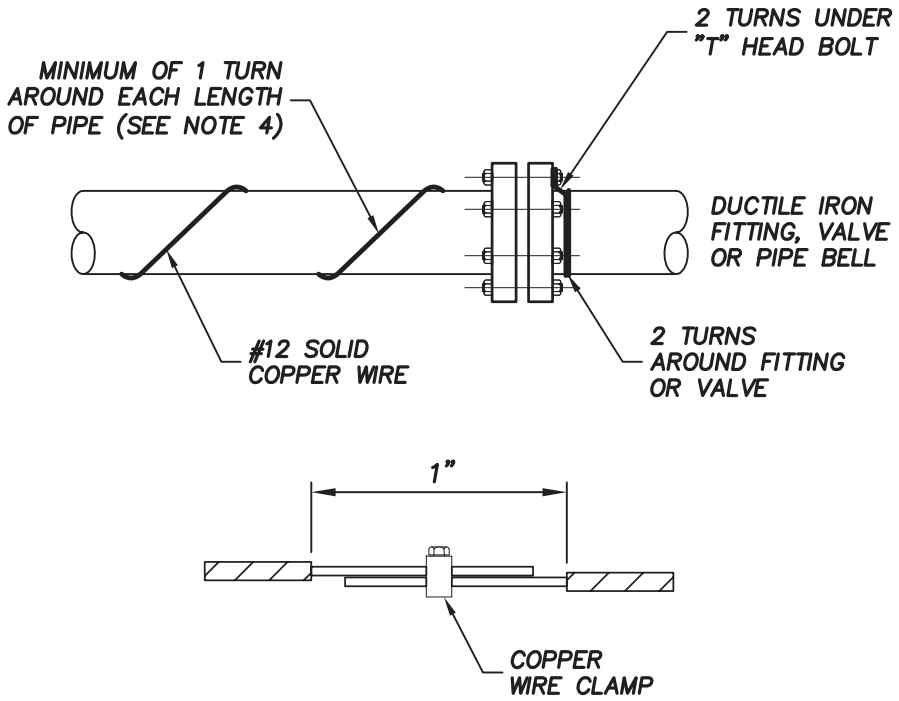
PVC JOINTS RESTRAINTS - TEMPORARY DEAD END

JWSC STANDARD DETAIL 2-8

Date: AUGUST 2011



NOTE:

1. USE #12 AWG SOLID PLASTIC COATED COPPER WIRE.
2. STRIP 2" OF COATING & WRAP WIRE 2 TURNS UNDER "T" HEAD BOLT ON TOP OF DUCTILE IRON FITTING (VALVE). NEXT WRAP WIRE 2 TURNS AROUND BELL OF FITTING (VALVE) AND WIND WITH A CONTINUOUS LENGTH OF AT LEAST 4 WRAPS PER LENGTH OF PVC PIPE TO THE NEXT DUCTILE IRON FITTING. TERMINATE AT FITTING IN A SIMILAR MANNER AS NOTED ABOVE.
3. ALL SPLICES MUST BE MADE BY USING COPPER WIRE SPLICE, "U" BOLT ASSEMEBLIES AND THEN WRAPPING WITH ELECTRICAL TAPE.
4. IN LIEU OF "WRAPPING" TRACER WIRE AROUND PVC PIPE, WIRE MAY BE STRUNG ALONG THE TOP OF PIPE, PROVIDED IT IS TAPED TO THE PIPE EVERY 5'–0" TO INSURE ACCURATE POSITION MAINTAINED DURING BACKFILL.

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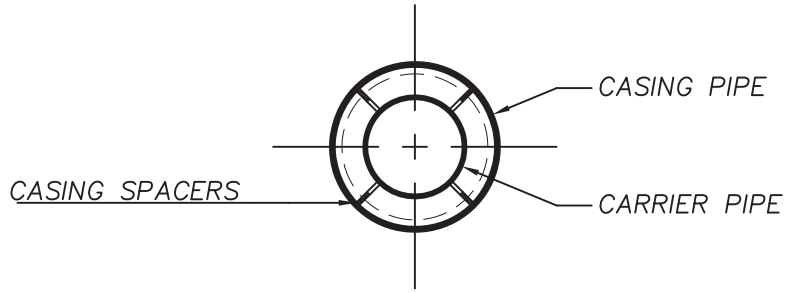
TRACER WIRE INSTALLATION

JWSC STANDARD DETAIL 2-9

Date: AUGUST 2011

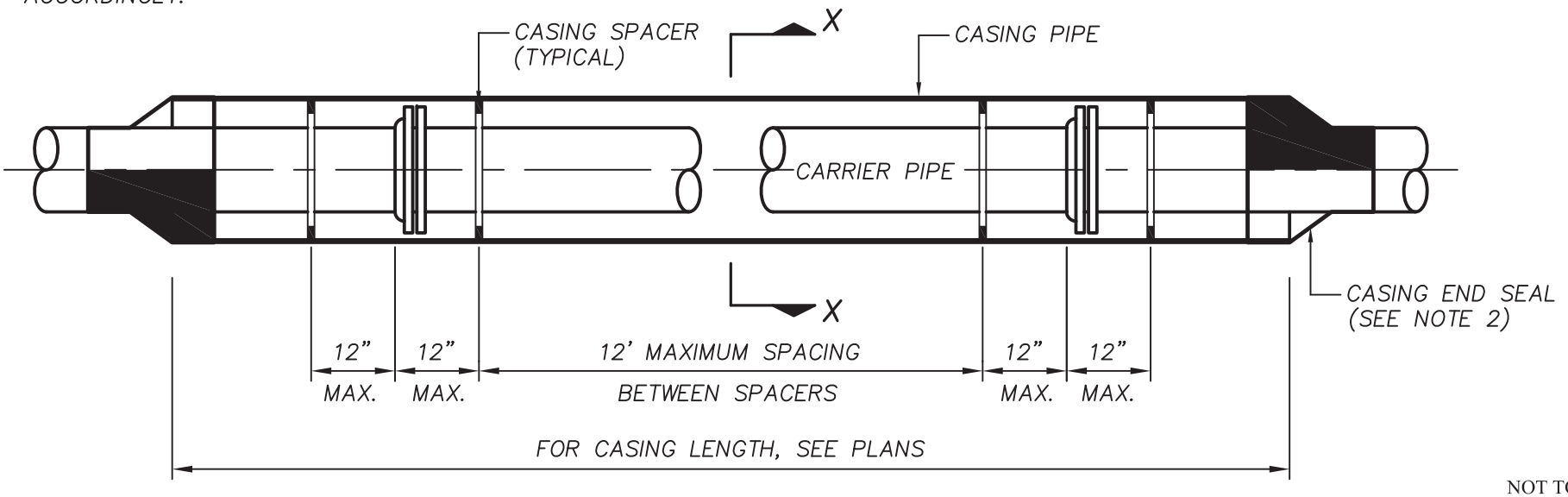


SECTION X–X

CARRIER PIPE DIAMETER (INCHES)	CASING PIPE DIAMETER (INCHES)	WALL THICKNESS* (INCHES)
6	12	0.375
8	16	0.375
10	16	0.375
12	20	0.375
14	22	0.375
16	24	0.375
18	30	0.375
20	30	0.375
24	36	0.375
30	42	0.375
* SEE NOTE 2		

GENERAL NOTES:

1. DETAIL SHOWN IS FOR CITY AND COUNTY ROADWAY CROSSINGS.
2. INSTALLATIONS UNDER STATE ROADS AND RAILROADS MAY HAVE REQUIREMENTS DIFFERENT FROM THOSE SHOWN. SUCH INSTALLATIONS SHALL MEET ALL APPLICABLE REQUIREMENTS OF THE GEORGIA DEPARTMENT OF TRANSPORTATION OR THE PARTICULAR RAILROAD INVOLVED.
3. SEE BGJWSC STANDARD CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. CASING SIZE SHOWN ARE FOR DUCTILE IRON PIPE. FOR PVC PIPE AND HARNESS RESTRAINTS, ADJUST CASING PIPE DIAMETER ACCORDINGLY.



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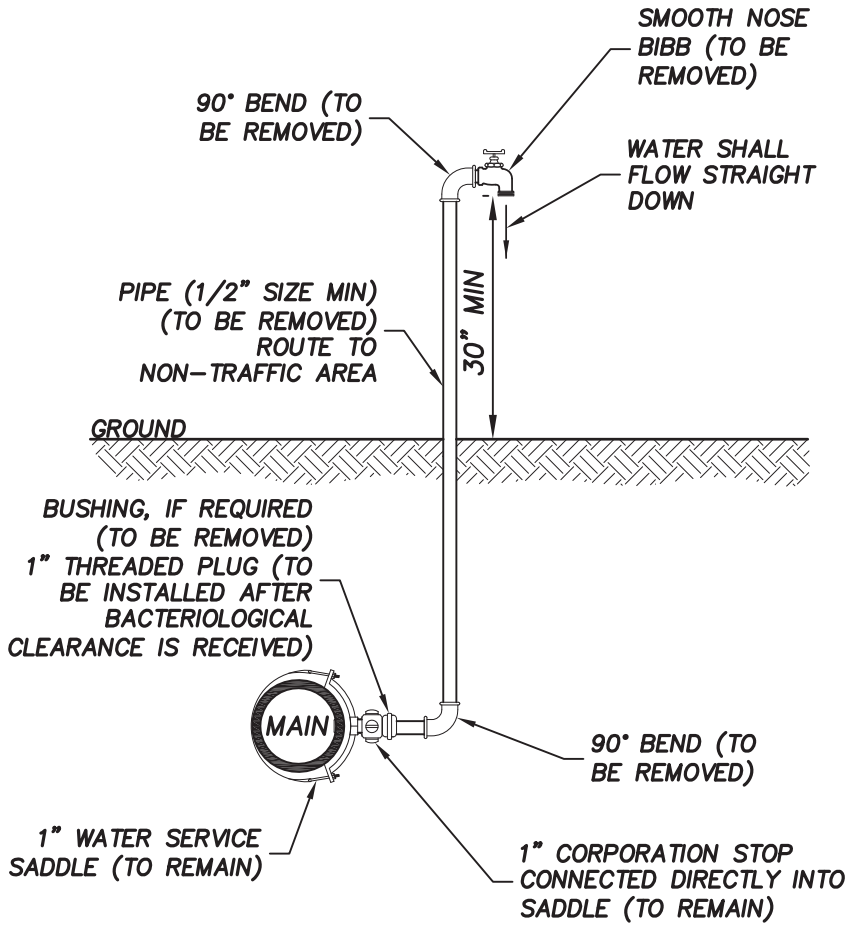
STEEL CASING AND CARRIER PIPE INSTALLATION

JWSC STANDARD DETAIL 2-10

Date: AUGUST 2011



NOTE:

1. LOCATION OF SAMPLE POINT BIBB SHALL BE ROUTED TO NON-TRAFFIC AREAS, IF REQUIRED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTINGS, AS NOTED, AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.
3. PIPE AND FITTINGS SHALL BE PVC (SCH 40) OR GALVANIZED.

NOT TO SCALE

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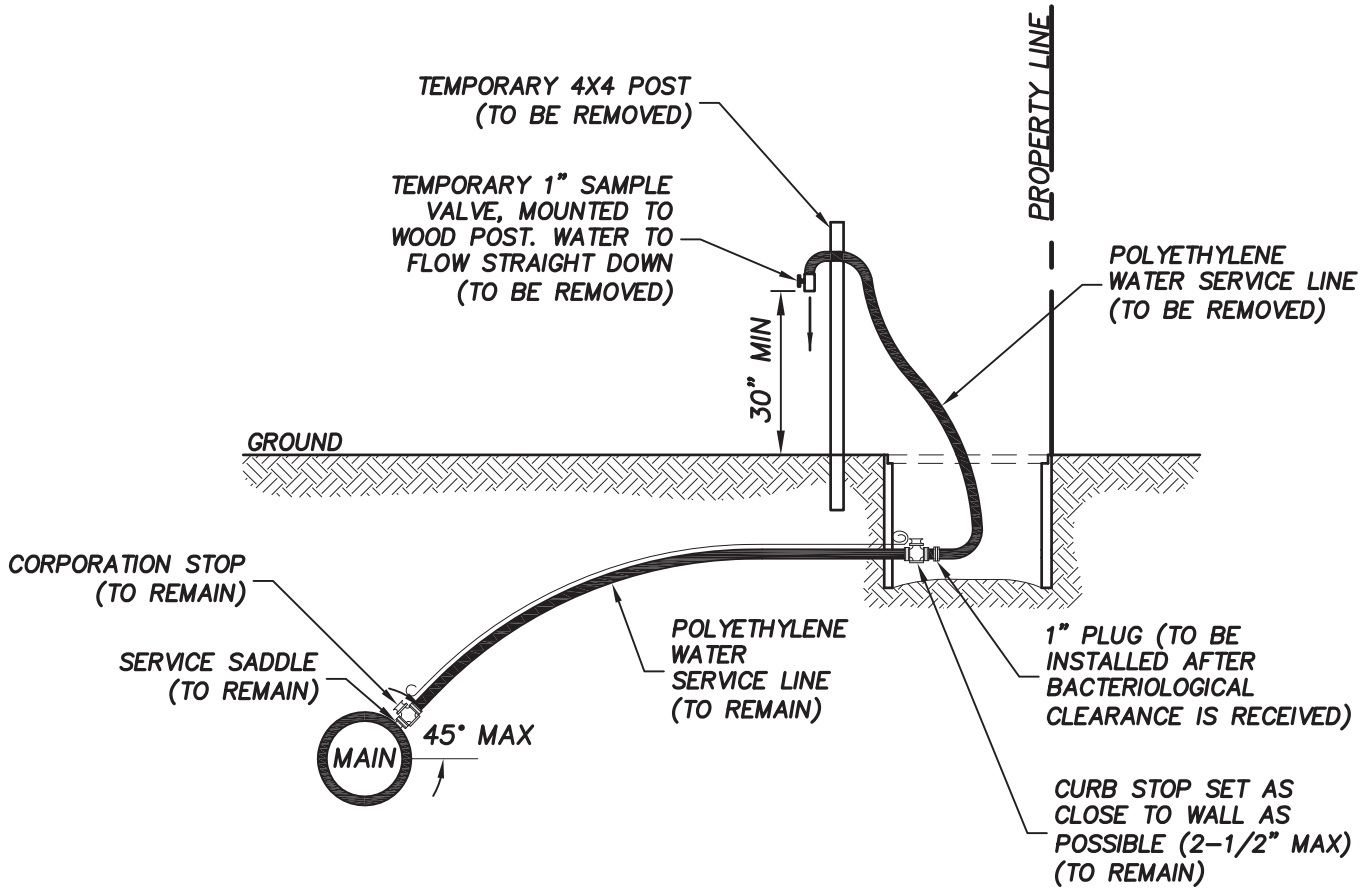
TEMPORARY SAMPLE TAP

JWSC STANDARD DETAIL 2-11

Date: AUGUST 2011



NOTE:

1. WATER SERVICE CONNECTION MAY BE USED FOR TEMPORARY SAMPLE TAP IF LOCATED NEAR REQUIRED SAMPLING POINT.
2. WATER SERVICE TO BE INSTALLED PER "WATER SERVICE DETAIL"
3. LOCATION OF SAMPLE POINT BIBB SHALL BE ROUTED TO NON–TRAFFIC AREAS IF REQUIRED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY PIPING & FITTINGS, AS NOTED, AFTER BACTERIOLOGICAL CLEARANCE IS RECEIVED.

BRUNSWICK-GLYNN COUNTY
JOINT WATER & SEWER
COMMISSION

700 Gloucester Street, Suite 300
Brunswick, Georgia 31520
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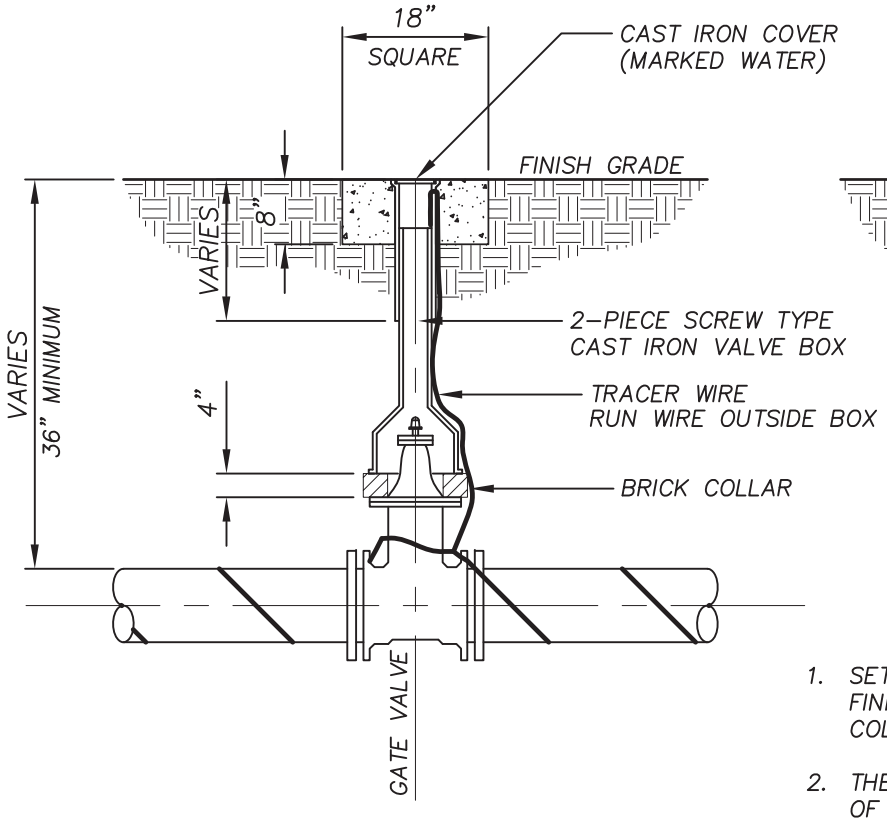
Fax: (912) 261-7178
Website: www.bgjwsc.org

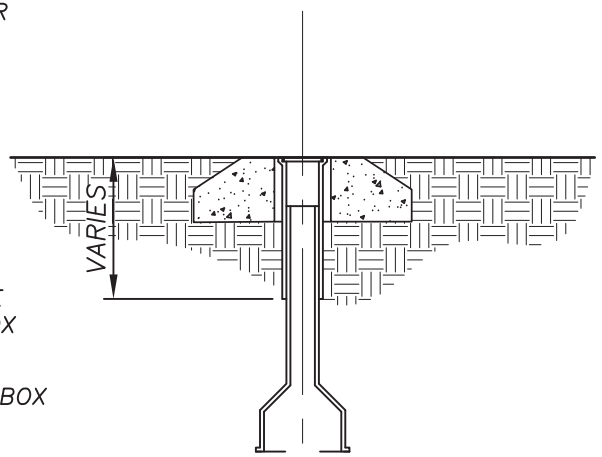
TEMPORARY SAMPLE TAP USING WATER SERVICE

JWSC STANDARD DETAIL 2-12

Date: AUGUST 2011



POURED–IN–PLACE COLLAR



PRECAST COLLAR

1. SET TOP OF CONCRETE COLLAR FLUSH WITH FINISH GRADE (OR LANDSCAPING). NO CONCRETE COLLAR IS REQUIRED IN PAVED AREAS.
2. THE VALVE BOX SHALL NOT REST ON TOP OF VALVE.
3. PRECAST CONCRETE COLLARS MAY BE USED UPON APPROVAL OF THE BGJWSC REPRESENTATIVE. SEE ALTERNATE DETAIL ABOVE.

NOT TO SCALE

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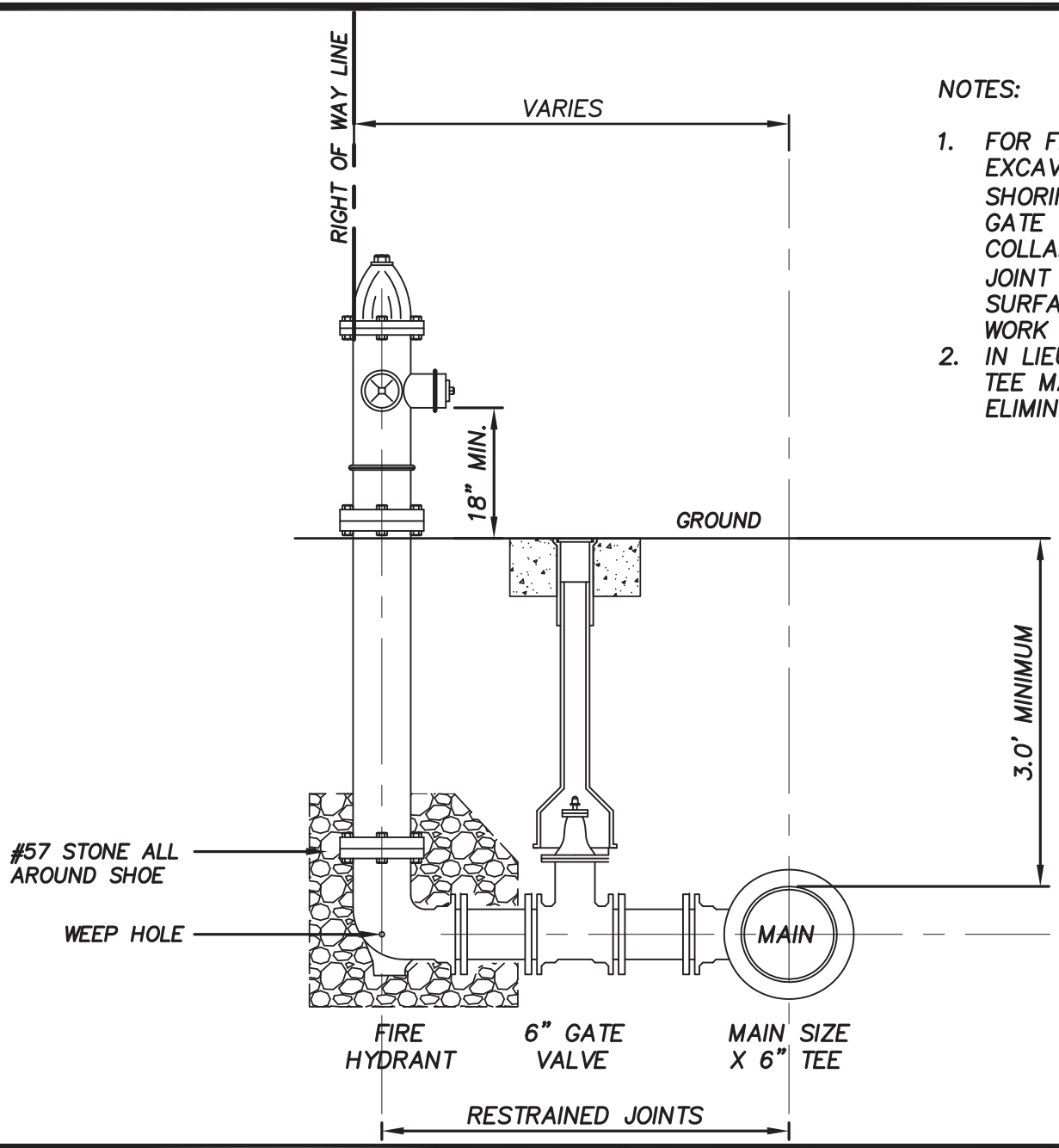
WATER VALVE DETAIL

JWSC STANDARD DETAIL 2-13

Date: AUGUST 2011



NOTES:

1. FOR FIRE HYDRANT ASSEMBLIES INCLUDE EXCAVATION, BACKFILL, NECESSARY SHORING AND SHEETING, 6" LEAD PIPE, 6" GATE VALVE AND VALVE BOX, VALVE BOX COLLAR, FIRE HYDRANT, GRAVEL, TIE ROD JOINT RESTRAINTS (NOT SHOWN), COMPLETE SURFACE RESTORATION AND ALL OTHER WORK AND APPURTENANCES REQUIRED.
2. IN LIEU OF AN ALL MJ TEE, A HYDRANT TEE MAY BE USED AND SPOOL PIECE ELIMINATED.

NOT TO SCALE

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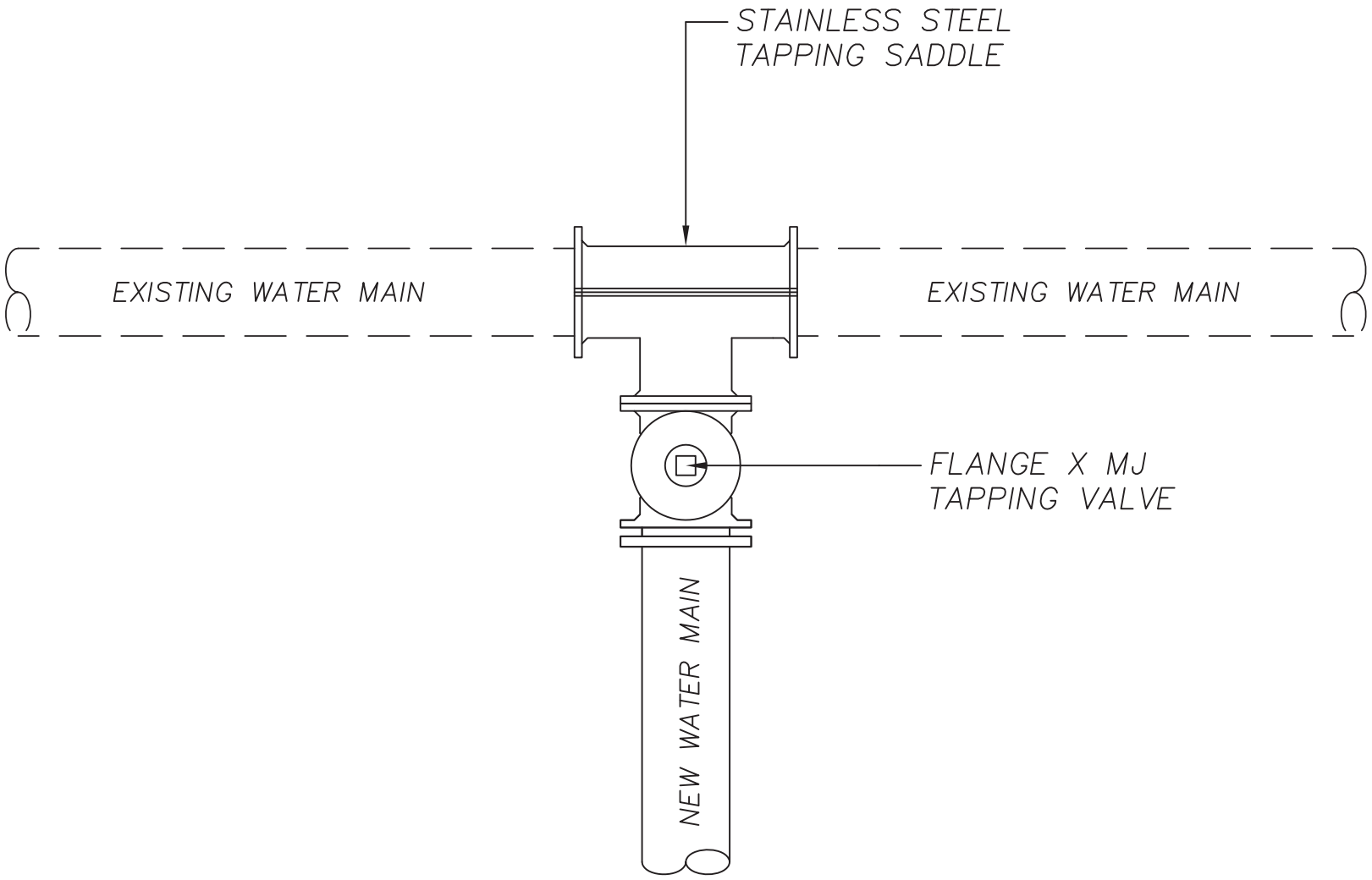
FIRE HYDRANT DETAIL

JWSC STANDARD DETAIL 2-14

Date: AUGUST 2011



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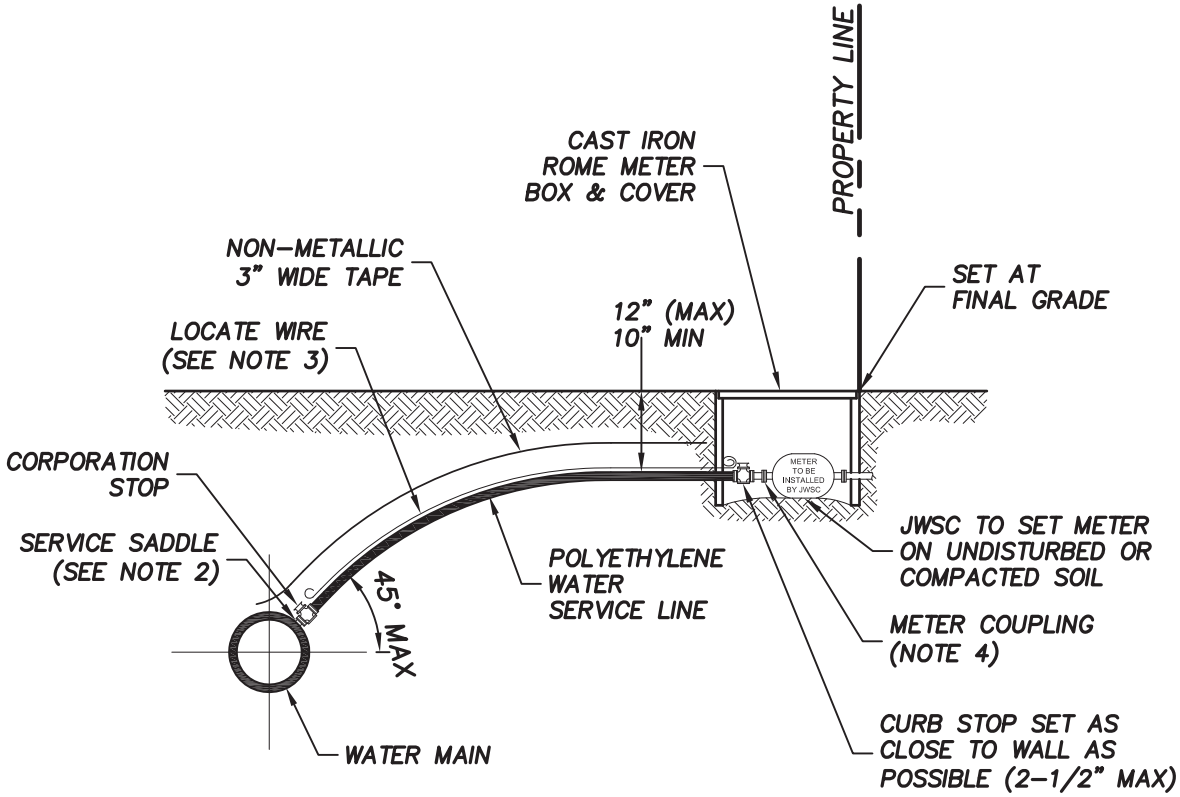
CONNECTION TO EXISTING WATER MAIN

JWSC STANDARD DETAIL 2-15

Date: AUGUST 2011



NOTE:

1. CONTRACTOR SHALL INSTALL METER AND METER BOX. METER IS TO BEPURCHASED THROUGH BGJWSC.
2. ALL FITTINGS IN LATERAL SHALL BE COMPRESSION TYPE.
3. A MINIMUM OF TWO FULL THREADS ARE REQUIRED FOR TAPPING SLEEVE TO GO INTO THE PIPE WALL.
4. INSULATED SINGLE STAND COPPER WIRE SHALL BE STRAPPED TO THE PIPE AND ATTACHED TO THE CORPORATION AND CURB STOPS.
5. INSTALL PVC PLUG IN ALL CURB STOPS IF WATER SERVICE IS "NOT IN USE" (NO METER IS INSTALLED).
6. WATER SERVICES SERVING VACANT LOTS (SERVICE NOT IN USE), SHALL INCLUDE A "W" CUT INTO THE CURB. FOR NEW DEVELOPMENT AREAS WHERE THE WATER SERVICE IS "NOT IN USE", A #4 REBAR STAKE PAINTED BLUE.
7. POLYETHYLENE WATER SERVICE LINE SHALL BE PERPENDICULAR TO THE MAIN UNLESS APPROVED OTHERWISE BY BGJWSC.

NOT TO SCALE

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SINGLE WATER SERVICE DETAIL

JWSC STANDARD DETAIL 2-16

Date: AUGUST 2011