

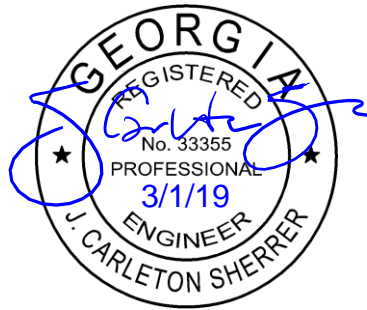
Construction Documents
For
West Side Loop Section 2
36-Inch Water Main Replacement

Owner:

Cobb County-Marietta Water Authority
1170 Atlanta Industrial Drive
Marietta, Georgia 30066

March 2019

Engineer:



Freese and Nichols, Inc.
360 Interstate North Parkway, Suite 250
Atlanta, GA 30339
(404) 334-4310

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DIVISION 00
GENERAL PROVISIONS

SECTION 00 11 13
ADVERTISEMENT FOR BID

Sealed Bids will be received by the Cobb County-Marietta Water Authority at 1170 Atlanta Industrial Drive, Marietta, Georgia 30066 until:

11:00 AM, local prevailing time
on
Tuesday, April 2, 2019

for the Project known as:

WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT

at which time and place the Bids will be publicly opened and read aloud. Bids received after the designated time will not be considered. The Owner of the project is Cobb County-Marietta Water Authority. The Engineer for the Project is Freese and Nichols, Inc. Bid opening time is subject to extension pursuant to O.C.G.A Section 36-91-20(d).

Only those contractors that are pre-qualified with the Cobb County-Marietta Water Authority to construct 36" diameter water mains at the time of the first publication of this notice will be allowed to receive plans and specifications and bid this project.

The approximate extent and character of the Work is generally described as follows:

Installation of approximately 20,000 LF of 36-inch zinc-coated ductile iron pipe (DIP) to replace an existing 36-inch prestressed concrete cylinder pipe and DIP main.

Bidders shall inform themselves concerning Georgia Laws and comply with same.

A mandatory Pre-Bid Conference will be held for all Bidders at the Cobb County-Marietta Water Authority at 1170 Atlanta Industrial Drive, Marietta, Georgia 30066 on Tuesday, March 19, 2019, at 11:00 AM.

Advertisement and bid phase information for the Project can be found at the following web site:

<http://construction.freese.com>

Contract Documents may be downloaded or viewed free of charge at this web site. It is the downloader's responsibility to determine that a complete set of documents, as defined in the Instructions to Bidders are received. Printed copies of the Contract Documents may be purchased at the website for the cost of printing. The cost for printed Contract Documents is not refunded.

This web site will be updated periodically with addenda, plan holders list, bid tabulations, additional reports or other information relevant to bidding the Project. All questions must be submitted on this site, on or before March 21, 2019. Any questions regarding distribution of

Contract Documents for this project should be directed to Freese and Nichols, Mr. Forest Hunt (Forest.Hunt@freese.com).

By obtaining the Contract Documents, purchaser agrees to have its company name, address, phone and fax numbers published as a plan holder.

The Owner is not obligated to consider a Bidder's proposal, if Bidder is not on record with the Issuing Office as having received a complete set of Bidding Documents from the Issuing Office.

The time allowed for Substantial Completion is 760 consecutive calendar days, and the time allowed for final completion and readiness for final payment is 850 consecutive calendar days from the date of commencement.

Each bid must be submitted on the bid form in the contract documents, in accordance with the Instructions to Bidders. No interlineations, additions or deletions shall be made in the bid form by the Bidder. Each bid must be accompanied by a Bid Bond with good and sufficient surety or sureties approved by the Owner for faithful acceptance of the contract, payable to, in favor of, and for the protection of the Owner in an amount equivalent to five percent (5%) of the total amount payable by the terms of the contract or, in lieu thereof, a certified check, cashier's check, or cash in equal amount. Each Bid must also be accompanied by a notarized non-collusion affidavit for the Bidder. Out-of-state corporations and other entities must submit evidence of authority to conduct business in Georgia as an out-of-state entity.

Each Bidder must be a State of Georgia licensed Utility Contractor at the time of the Bid.

The Owner will in no way be liable for any costs incurred by any Bidder in the preparation of its Bid in response to this Advertisement for Bid.

The successful Bidder will be required to furnish performance and payment bonds with the executed Agreement meeting the requirements of the Contract Documents and executed on the forms attached to the Agreement. The successful Bidder will also be required to furnish an oath pursuant to O.C.G.A. §36-91-21 from every person who procures the Agreement. The terms and time for payment are set forth in the Agreement.

All Bids will remain subject to acceptance for sixty days after the day of the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to that date.

The Owner reserves the right to reject all Bids, to waive informalities and re-advertise.

Cobb County-Marietta Water Authority
Glenn M. Page, P.E.
General Manager

****END OF SECTION****

**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

1. Defined Terms

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions.

Certain additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.

1.1. Bidder - one who submits a Bid directly to Owner as distinct from a sub-bidder, who submits a bid to a Bidder.

1.2. Issuing Office - the office named in the Advertisement for Bid from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

1.3. Successful Bidder - the lowest, responsible and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

1.4. Owner - Cobb County-Marietta Water Authority (CCWMA), party of the first part to the Contract Agreement, or its authorized and legal representatives.

1.5. Engineer - The individual or entity named as such in the Advertisement for Bids and Agreement.

1.6. Contractor - the party of the second part to the Contract Agreement or the authorized and legal representative of such party.

1.7. Work and Project - shall mean the entire complete construction required to be furnished under the Contract Documents.

1.8. Products - shall mean materials or equipment permanently incorporated into the Project.

1.9. Provide - shall mean to furnish and install.

2. Copies of Bidding Documents

2.1. Complete sets of the Bidding Documents may be obtained from the Issuing Office. Bidding Documents are open for inspection to prospective bidders at the Issuing Office for the purpose of review in order to determine if the prospective bidders wish to obtain Bidding Documents.

2.2. Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, whether obtained from the Owner, Engineer, Issuing Office, or other sources.

2.3. Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

3. Qualifications of Bidders

3.1. Owner reserves the right to reject any Bidder who does not satisfy the Owner as to its ability to successfully perform the Work.

3.2. Previous pre-qualification notwithstanding, the Owner reserves the right to require submittal of Contractor's updated financial data, work load, key personnel, etc., and to reject any Bidder who fails to satisfy

the Owner as to its ability to successfully perform the Work.

3.3. The Bidder will be required to provide evidence of compliance with the requirements of O.C.GA 43 – 14 and O.C.GA 43-41 (Construction Industry Licensing Board Acts and Rules and Regulations) with respect to the requirements of the code.

3.4. The Owner may make such investigations as it deems necessary to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request, including information on subcontractors that are intended to perform work on the project. By submission of his bid the Bidder acknowledges the right of the Owner to make such investigations, to contact references and utilize this information as a basis of determining award of the contract. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

4. Examination of Contract Documents and Site

4.1. It is the responsibility of each Bidder before submitting a Bid:

4.1.1. To examine thoroughly the Contract Documents and other related data identified in the Bidding Documents (including "technical data" referred to below);

4.1.2. To visit the site to become familiar with and satisfy Bidder as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work;

4.1.3. To consider federal, state and local Laws and Regulations that may affect cost,

progress, performance or furnishing of the Work;

4.1.4. To study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data; and

4.1.5. To promptly notify Engineer of all conflicts, errors, ambiguities or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents.

4.2. Reference is made to the Supplementary Conditions for identification of:

4.2.1. Those reports of explorations and tests of subsurface conditions at or contiguous to the site which have been utilized by Engineer in preparation of the Contract Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such reports but not upon other data, interpretations, opinions or information contained in such reports or otherwise relating to the subsurface conditions at the site, nor upon the completeness thereof for the purposes of bidding or construction.

4.2.2. Those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the site that have been utilized by Engineer in preparation of the Contract Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such drawings but not upon other data, interpretations, opinions or information shown or indicated in such drawings or otherwise relating to such structures, nor upon the completeness thereof for the purposes of bidding or construction.

4.2.3. Copies of such reports and drawings will be made available for review to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data"

contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph SC-4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.3. Information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities or others, and Owner and Engineer do not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.

4.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to sub-surface conditions, other physical conditions and Underground Facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in Paragraphs 4.02 and 4.03 of the General Conditions.

4.5. Before submitting a Bid each Bidder will be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

4.6. On request, Owner will provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests and studies as each Bidder deems necessary for submission of a Bid. Bidder must fill all drilled or augured holes with a neat cement grout and clean up and restore the site to its former conditions upon completion of such explorations, investigations, tests and studies.

4.7. Reference is made to the Supplementary Conditions for the identification of the general nature of any work that is to be performed at the site by Owner or others (such as utilities and other prime contractors) that relates to the work for which a Bid is to be submitted. On request, Owner will provide to each Bidder for examination access to or copies of Contract Documents (other than portions thereof related to price) for such work.

4.8. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Contract Documents and the written resolutions thereof by Engineer is acceptable to Bidder, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

4.9. The provisions of ITB-4.1 through 4.8, inclusive, do not apply to Asbestos, Polychlorinated biphenyls (PCBs), Petroleum, Hazardous Waste or Radioactive Material covered by Paragraph 4.06 of the General Conditions.

5. Availability of Lands for Work, etc.

The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

6. Interpretations and Addenda

6.1. All questions about the meaning or intent of the Bidding Documents are to be directed to Engineer. Every request for such interpretation and all questions must be made in writing and addressed to Freese and Nichols, Inc., Attention: Carleton Sherrer, P.E., 360 Interstate North Parkway, Suite 250 Atlanta, GA 30339. In lieu of mail, questions may be made by e-mail to carleton.sherrer@freese. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addendum mailed or delivered to all parties recorded by Issuing Office as having received the Bidding Documents. Questions received less than five days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6.2. Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner or Engineer.

6.3. Failure of any Bidder to receive any such addendum or interpretations shall not relieve such bidder from any obligation under his Bid as submitted.

6.4. Failure of any Bidder to acknowledge any such addendum or

interpretations shall not relieve such Bidder from any obligation under his Bid as submitted, if Bidder has knowledge of any such addendum, or interpretations. If Bidder has knowledge of any such addendum or interpretation but fails to acknowledge, this will be considered an informality.

7. Bid Security

7.1. Each Bid must be accompanied by a Bid Bond (on the form attached) with good and sufficient surety or sureties approved by the Owner and meeting the requirements of Paragraph 5.01 of the General Conditions, for faithful acceptance of the contract, payable to, in favor of, and for the protection of the Owner in an amount equivalent to five percent (5%) of the total amount payable by the terms of the contract, in lieu thereof, in the form of a certified check, cashier's check, or cash in equal amount. Bidders who submit Bid Security in the form of a certified check, cashier's check, or cash are bound by the "Terms of Bid Bond" as if submitted on the attached "Bid Bond" form.

7.2. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement, furnished the required contract security and Certifications of Insurance and met the other conditions of the Notice of Award, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within fifteen days after the Notice of Award, Owner may annul the Notice of Award and Bid Security of that Bidder will be forfeited. The Bid Security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the Effective Date of the Agreement or the sixtieth day after the Bid opening whereupon Bid Security furnished by such Bidders will be returned. Bid Security with Bids which are not competitive will be returned within seven days after the Bid opening, if requested by the respective Bidder.

7.3. Failure of Bidder to provide qualification information, if requested, within 10 days of notification of request, shall be grounds for forfeiting of the Bid Security of that Bidder.

8. Contract Times

The number of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the term "Contract Times" is defined in paragraph 1.01. A.14. of the General Conditions) are set forth in the Agreement and incorporated therein by reference in the attached Bid Form.

9. Liquidated Damages

Provisions for liquidated damages are set forth in the Agreement.

10. Substitute and "Or Equal" Items

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items which have not received approval of the Engineer. The procedure and timing for submission of any substitution by Contractor and consideration by Engineer is set forth in Paragraph 6.05 of the General Conditions.

11. Subcontractors, Suppliers and Others

11.1. If the General Conditions or Supplementary Conditions require the identity of certain Subcontractors, Suppliers and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening (or other date as may be specified by General Conditions or Supplementary Conditions)

submit to Owner a list of all such Subcontractors, Suppliers and other persons and organizations proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, person or organization if requested by Owner. Owner or Engineer who after due investigation has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, may before the Notice of Award is given request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit an acceptable substitute, provided that Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution and Owner may consider such price adjustment in evaluating Bids and making the contract award.

11.2. If apparent Successful Bidder declines to make any such substitution, Owner may award the contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the Bid security of any Bidder. Any Subcontractor, Supplier, other person or organization submitted to Owner and Engineer by Bidder and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06B of the General Conditions.

12. Bid Form

12.1. The Bid Form is included with the Bidding Documents.

12.2. All blanks on the Bid Form must be completed by printing in ink or by typewriter.

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

12.4. 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 below the signature.

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

12.6. The Bid shall contain an acknowledgement of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).

12.7. The address and telephone number for communications regarding the Bid must be shown.

12.8. Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed shall be provided with the bid form. State utility contractor license number and State general contractor license number must also be shown on the Contractor's License Certificate.

12.9. Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid form. Any bid which is not properly prepared and accompanied by required certifications may be rejected by the Owner.

13. Submission of Bids

Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted) and name and address of Bidder, and accompanied by the Bid security, Contractor's License Certification, Non-collusion Affidavit of Bidder, Bid Form, Corporate Certificate, and other required documents for a complete, responsive and responsible bid. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

14. Modification of Bids

14.1. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the closing time.

15. Opening of Bids

15.1. Bids will be opened and (unless obviously non-responsive) read aloud publicly at the place where Bids are to be submitted. An abstract of the amounts of the base Bids and major alternates (if any) will be made available to Bidders after the effective date of the Contract.

15.2. The Owner is not obligated to consider a Bidder's proposal, if Bidder is not on record with the Issuing Office as having attended the Pre-Bid Conference and received complete Bidding Documents from the Issuing Office.

15.3. No bid shall be considered unless a proper bid bond or other security authorized in Paragraph 7 of these Instructions To Bidders is submitted.

16. Bids to Remain Subject to Acceptance

All Bids will remain subject to acceptance for sixty days after the day of the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to that date. Owner shall release any Bid and return the Bid Security if a Bidder requests the withdrawal of its Bid and basis of withdrawal is in accordance with O.C.G.A. § 36-91-52.

17. Award of Contract

17.1. Owner reserves the right to reject all Bids, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional Bids and to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. Owner also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful Bidder. In the event a Bid is rejected by Owner or a Bidder is permitted by Owner to withdraw its Bid, Owner reserves the right to preclude such Bidder from resubmitting a Bid at any subsequent re-bidding of the Work. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

17.2. In evaluating Bids, Owner will consider the qualifications of Bidders, whether or not the Bids comply with the prescribed requirements as indicated in the Advertisement for Bid, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the

Notice of Award. Conditional Bids will not be accepted.

17.3. Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

17.4. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

17.5. If the contract is to be awarded, it will be awarded to the responsible and responsive Bidder submitting the lowest Bid whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

17.6. If the contract is to be awarded, Owner will give Successful Bidder a Notice of Award within sixty days after the day of the Bid opening.

18. Contract Security

Paragraph 5.01 of the General Conditions and the Supplementary Conditions set forth Owner's requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by the required Performance and Payment Bonds in the form

as shown on Exhibits B and C of the Contract Documents.

19. Signing of Agreement

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within fifteen days thereafter Contractor shall sign and deliver the required number of counterparts of the Agreement, Contractor Affidavit and Agreement, Subcontractor Affidavit(s) and Agreement(s) and attached documents to Owner with the required Bonds and Certification of Insurance. Within fifteen days of the Owner's receipt from the Contractor of the following documents in proper form: the required number of executed counterparts of the Agreement, the Bonds, the oath pursuant to O.C.G.A. § 36-91-21(e), the Certification of Insurance, and any other documents required by the Bidding Requirements, Owner shall deliver one fully signed counterpart to the Contractor. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

20. Laws and Regulations

All applicable federal and state laws, municipal ordinances, and rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

21. Security and Immigration Act

21.1 Contractors and Subcontractors who enter into contracts with public employers are required to register and participate in the Federal Work Authorization Program to verify work eligibility information of new employees. Bidders are required to fill out the following forms located in the Bidding Documents attesting to their status under

this program and that they will pass on the same requirements to their Subcontractors as required by OCGA 13-10-90 and 13-10-91; GA Department of Labor 300-10-1:

21.1.1 Affidavit Verifying Status for Cobb County-Marietta Water Authority;

21.1.2 Security and Immigration Compliance Act Certification.

21.2 Pursuant to Code of Georgia 13-10-90 et. seq., the Georgia Security and Immigration Compliance Act of 2006, the following forms located in the Bidding Documents shall be completed prior to Award:

21.2.1 Contractor Affidavit and Agreement;

21.2.2 Subcontractor and Sub-subcontractor Affidavit and Agreement.

21.3 Contractor understands and agrees that compliance with the requirements of OCGA 13-10-90, OCGA 13-10-91, and Georgia Department of Labor Rule 300-10-1 are conditions of this Agreement.

21.4 Contractor further agrees that such compliance shall be attested by Contractor and its Subcontractors and Sub-subcontractors by execution of the appropriate Contractor Affidavit and Agreement and Subcontractor Affidavit forms included in the Contract Documents.

****END OF SECTION****

**SECTION 00 31 46
PERMITS AND EASEMENTS**

1 GENERAL

1.1 GENERAL

The following tables contain information about the status of the permits and easements that are to be obtained by the Owner for this project. Refer to Project Manual appendices for additional information.

Permits

Item No.	Permit or Easement	Status	Expected Approval or Acquisition Date
1	Cobb County Community Development	Submitted 02/11/19. Final approval will not be given until Contractor's submittal of Stormwater NOI.	Upon contract award and Contractor submittal of NOI to Georgia EPD and Cobb County Community Development.
2	Cobb County Department of Transportation	Road, lane closure, MOT, utility and other permits to be prepared and submitted by Contractor.	By Contractor.
3	US Army Corps of Engineers – Nationwide 404 Permit	Pre-construction notification submitted 01/30/19.	No approval required.
4	Georgia EPD	Pre-construction notification submitted 01/30/19.	No approval required.
5	Kinder Morgan-Plantation Pipeline	Permit submitted 2/14/19.	Completed 2/28/19

Easements

Parcel No.	Owner	Tax ID	Status	Stipulations	Address
1	James Ferguson II & Regina M Ferguson	18025900110	Signed easement 1/3/2019	1) CCMWA to replace all concrete 12' wide driveway from Cardell Rd RW across CCMWA 20' easement area and extended about 21' into property to repair badly crumbled area after construction. Owners have granted CCMWA to do this on their property off of the easement area.	2055 Cardell Road, Austell, GA 30168
2	Rigoberto Nava Rubio	18030900070	Signed easement 1/1/2019	1) Owner to remove existing red shed from existing location away from RW easement before April 1, 2019. 2) CCMWA has reimbursed owner for a new replacement 10'x12' metal shed elsewhere on property. 3) CCMWA to replace all asphalt driveway within Cardell Rd RW and new CCMWA 20' easement area after construction. 4) Ok to cut any trees needed to install new water line. 5) Replace water meter in current sodded front yard location near driveway. Current location of meter will be in construction/excavation area.	2039 Cardell Road, Austell, GA 30168
3	Cobb County	N/A	Awaiting approval.	None.	South Gordon Road, Austell, GA 30168
4	Cayetano Garcia & Rosa E. Ramirez	18038200040	Signed easement 12/15/18.	None.	1098 South Gordon Road, Austell, GA 30168
5	The Hughes Children's Trust	18041300250	Signed easement 2/12/2019	None.	Factory Shoals Road, Austell, GA 30168

END OF SECTION

**SECTION 00 41 13
BID FORM**

PROJECT IDENTIFICATION:

Cobb County-Marietta Water Authority
West Side Loop Section 2, 36-Inch Water Main Replacement

THIS BID IS SUBMITTED TO:

Cobb County-Marietta Water Authority
1170 Atlanta Industrial Drive
Marietta, Georgia 30066

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. Bidder accepts all of the terms and conditions of the Advertisement for Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty days after the day of Bid opening. Bidder will sign and deliver the required number of counterparts of the Agreement with the Bonds, Certifications of Insurance, and other documents required by the Bidding Requirements within fifteen days after the date of Owner's Notice of Award.

3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

- (a) Bidder has examined and carefully studied the Bidding Documents and the following Addenda receipt of all of which is hereby acknowledged: (List Addenda by Addendum Number and Date)

- (b) Bidder has visited the site and is familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work, and bidder has not relied upon any oral representations by employees or agents of Owner or Engineer.
- (c) Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- (d) Bidder has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site which have been identified in the Supplementary Conditions as provided in paragraph 4.02.A of the General Conditions. Bidder accepts the determination, if any, set forth in paragraph SC-4.02. A of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which Bidder is entitled to rely as provided in paragraph 4.02 of the

General Conditions. Bidder acknowledges that such reports and drawings are not Contract Documents and may not be complete for Bidder's purposes. Bidder acknowledges that Owner and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by Bidder and safety precautions and programs incident thereto. Bidder does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

- (e) Bidder is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
 - (f) Bidder has correlated the information known to Bidder, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
 - (g) Bidder has given Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Bidder has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
 - (h) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.
4. Instructions for unit price bid form: For each Bid item, Bidders shall enter a price for each single unit, then multiply by the estimated quantity shown and enter the total amount in the space indicated in numerals. Also write out in words each Bid Item Unit Price in the space provided. Bidder acknowledges that estimated quantities are not guaranteed, and final payment will be based on actual quantities determined in accordance with the Contract Documents. The Project will be awarded in one contract on the basis of the lowest Total Bid or lowest Alternate Bid if requested in the Bid Form, as determined by Owner to be in Owner's best interest.
5. As defined in Division 01, General Requirements, Bidder shall complete the Work in accordance with the Contract Documents for the following bid prices:

**COBB COUNTY - MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT
BID PROPOSAL**

ITEM NO.	M&P ITEM	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE BID	EXTENDED AMOUNT
UNIT PRICE ITEMS						
1	2.1	Water Mains 6" DIP, Zinc Coated, PC 350	500	LF	\$	\$
2	2.1	Water Mains 8" DIP, Zinc Coated, PC 350	550	LF	\$	\$
3	2.1	Water Mains 10" DIP, Zinc Coated PC 350	500	LF	\$	\$
4	2.1	Water Mains 12" DIP, Zinc Coated, PC 350	650	LF	\$	\$
5	2.1	Water Mains 16" DIP, Zinc Coated, PC 350	100	LF	\$	\$
6	2.1	Water Mains 20" DIP, Zinc Coated, PC 250	200	LF	\$	\$
7	2.1	Water Mains 36" DIP, Zinc Coated, PC 200	8,990	LF	\$	\$
8	2.1	Water Mains 36" DIP, Zinc Coated, PC 250	12,430	LF	\$	\$
9	2.2	Restrained Joints / Manufacturer's Pipe Restraint 20"	13	EA	\$	\$
10	2.2	Restrained Joints / Manufacturer's Pipe Restraint 36"	270	EA	\$	\$
11	2.2	Restrained Joints / Manufacturer's Pipe Gasket 6"	25	EA	\$	\$
12	2.2	Restrained Joints / Manufacturer's Pipe Gasket 8"	25	EA	\$	\$
13	2.2	Restrained Joints / Manufacturer's Pipe Gasket 10"	25	EA	\$	\$
14	2.2	Restrained Joints / Manufacturer's Pipe Gasket 12"	25	EA	\$	\$
19	2.2	Restrained Joints / MJ Fitting, Retainer Gland 6"	10	EA	\$	\$
20	2.2	Restrained Joints / MJ Fitting, Retainer Gland 8"	20	EA	\$	\$
21	2.2	Restrained Joints / MJ Fitting, Retainer Gland 10"	10	EA	\$	\$
15	2.2	Restrained Joints / MJ Fitting, Retainer Gland 12"	60	EA	\$	\$
16	2.2	Restrained Joints / MJ Fitting, Retainer Gland 16"	5	EA	\$	\$
17	2.2	Restrained Joints / MJ Fitting, Retainer Gland 20"	10	EA	\$	\$
18	2.2	Restrained Joints / MJ Fitting, Retainer Gland 36"	130	EA	\$	\$
19	2.3	Ductile Iron Fittings, Zinc Coated	175,700	LB	\$	\$

ITEM NO.	M&P ITEM	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE BID	EXTENDED AMOUNT
20	2.4	Valves 8" Gate Valve, MJ x MJ	19	EA	\$	\$
21	2.4	Valves 10" Gate Valve, MJ x MJ	2	EA	\$	\$
22	2.4	Valves 12" Gate Valve, MJ x MJ	6	EA	\$	\$
23	2.4	Valves 16" Gate Valve, MJ x MJ	1	EA	\$	\$
24	2.4	Valves 20" Gate Valve, MJ x MJ	1	EA	\$	\$
25	2.4	Valves 36" Gate Valve, MJ x MJ	9	EA	\$	\$
26	2.5	Air & Vacuum Valve, 6" FLG Combination AVV with 6" FLG Gate Valve on 36" Line	13	EA	\$	\$
27	2.6	Valve Markers	10	EA	\$	\$
28	2.7	Valve Boxes	10	EA	\$	\$
29	2.8	DIP MJ x PCCP Adapters (16" - One Set)	1	EA	\$	\$
30	2.9	Pipe Outlets 4" Flanged Radial Welded-on Outlet on 36" DIP	16	EA	\$	\$
31	2.10	Polyethylene Encasement, 6" Double Encasement	500	LF	\$	\$
32	2.10	Polyethylene Encasement, 8" Double Encasement	550	LF	\$	\$
33	2.10	Polyethylene Encasement, 10" Double Encasement	500	LF	\$	\$
34	2.10	Polyethylene Encasement, 12" Double Encasement	650	LF	\$	\$
35	2.10	Polyethylene Encasement, 16" Double Encasement	100	LF	\$	\$
36	2.10	Polyethylene Encasement, 20" Double Encasement	200	LF	\$	\$
37	2.10	Polyethylene Encasement, 36" Double Encasement	21,420	LF	\$	\$
38	2.11	Bonded Joints, Two Cables Each	1,430	EA	\$	\$
39	2.12	Cathodic Test Station	40	EA	\$	\$
40	2.13	Sample Test Connection	16	EA	\$	\$
41	2.14	Connection #1 STA 1+00 (Old Alabama, 20"/36" DIP Main)	1	LS	\$	\$
42	2.14	Connection #2 STA 46+54 (Brandemere, 16" PCCP Main)	1	LS	\$	\$
43	2.14	Connection #3 STA 95+91 (Pisgah, 8" CCWS Main)	1	LS	\$	\$
44	2.14	Connection #4 STA 142+25 (Factory Shoals, CCWS 8" Main)	1	LS	\$	\$
45	2.14	Connection #6 STA 176+61 (Hillcrest, CCWS 12" Main)	1	LS	\$	\$

ITEM NO.	M&P ITEM	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE BID	EXTENDED AMOUNT
46	2.14	Connection #7 STA 195+44 (Mableton Parkway, 36" DIP Main)	1	LS	\$	\$
47	2.14	Connection #8 STA 10+19 (Factory Shoals, 20" DIP Main)	1	LS	\$	\$
48	2.15	Marker Ball Locator Instrument	1	EA	\$	\$
49	2.16	Marker Ball Installation on Existing Water Main to be Abandoned	210	EA	\$	\$
50	2.17	Marker Ball Installation on Existing Water Main to Remain in Service	40	EA	\$	\$
51	2.18	Marker Ball and Installation on New Water Main	420	EA	\$	\$
52	2.19	Concrete Manhole Assembly, 4' Diameter, for Double MH BOV	12	EA	\$	\$
53	2.19	Concrete Manhole Assembly, Extra Payment for Sections Exceeding Ten VF, 4' Diameter	30	VF	\$	\$
54	2.19	Concrete Manhole Assembly, 6' Diameter, for Air Valves and Single MH BOV	14	EA	\$	\$
55	2.19	Concrete Manhole Assembly, Extra Payment for Sections Exceeding Ten VF, 6' Diameter	30	VF	\$	\$
56	2.19	Concrete Manhole Assembly, 8' Diameter, for Gate Valves	9	EA	\$	\$
57	2.19	Concrete Manhole Assembly, Extra Payment for Sections Exceeding Ten VF, 8' Diameter	30	VF	\$	\$
58	2.20	Flowable Fill Encasement	100	CY	\$	\$
59	2.21	Subgrade Stabilizer Stone	32,500	TON	\$	\$
60	2.22	Miscellaneous Concrete	50	CY	\$	\$
61	2.23	Miscellaneous Reinforcing Steel	2,000	LB	\$	\$
62	2.24	Remove and Replace Fence (All Sizes and Types)	500	LF	\$	\$
63	2.25	Temporary Silt Fence (Sd1-S)	1,570	LF	\$	\$
64	2.26	Hay Bale Barrier	100	EA	\$	\$
65	2.27	Rip-Rap (12" Thick)	500	SY	\$	\$
66	2.28	Construction Exit (Co)	4	EA	\$	\$
67	2.29	Straw Mulch Stabilization (Dsl)	5,000	SY	\$	\$
68	2.30	Grassing, Temporary (Ds2)	5,000	SY	\$	\$
69	2.30	Grassing, Permanent (Ds3)	5,000	SY	\$	\$
70	2.31	Erosion Control Matting (Slopes)	2,500	SY	\$	\$
71	2.32	Inlet Sediment Trap (Sd2)	75	EA	\$	\$

ITEM NO.	M&P ITEM	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE BID	EXTENDED AMOUNT
72	2.33	Storm Drain Outlet Protection (St)	5	EA	\$	\$
73	2.34	Turbidity Curtain (Tc)	4	EA	\$	\$
74	2.35	NPDES Permit Compliance	1	LS	\$	\$
75	2.36	Remove & Replace Guard Rail	100	LF	\$	\$
76	2.37	Remove and Replace Fire Hydrant on Existing CCWS Main	5	EA	\$	\$
77	2.38	Remove & Replace Asphalt Driveways and Parking Lots	500	SY	\$	\$
78	2.39	Remove & Replace Concrete Driveways and Parking Lots	500	SY	\$	\$
79	2.40	Remove & Replace Gravel Driveways and Parking Lots	500	SY	\$	\$
80	2.41	Remove & Replace Concrete Sidewalks	4,400	SY	\$	\$
81	2.42	Remove & Replace Concrete Curb and Gutter	14,880	LF	\$	\$
82	2.43	Paving Sugrade 12" GDOT GAB	26,400	SY	\$	\$
83	2.43	Paving 4" of 25 mm GDOT Superpave	26,400	SY	\$	\$
84	2.43	Paving 3.5" of 19 mm GDOT Superpave	26,400	SY	\$	\$
85	2.44	Asphalt Pavement Milling (1.5" Depth)	64,900	SY	\$	\$
86	2.45	Paving 1.5 inches of GDOT 12.5 mm Superpave	64,900	SY	\$	\$
87	2.46	Thermoplastic Pavement Marking 6" Skip (2:6) White or Yellow	1,180	LF	\$	\$
88	2.46	Thermoplastic Pavement Marking 6" Solid White or Yellow	19,590	LF	\$	\$
89	2.46	Thermoplastic Pavement Marking Hatching White or Yellow	690	SY	\$	\$
90	2.46	Thermoplastic Pavement Marking, Arrow	10	EA	\$	\$
91	2.46	Thermoplastic Pavement Marking 8" Cross Walks	6	PER LANE	\$	\$
92	2.47	Cut and Plug Existing 36" Water Main	4	EA	\$	\$
93	2.48	Abandon Existing CCMWA Valve Manhole and Valve	15	EA	\$	\$
94	2.49	Abandon Existing CCMWA Valve Box and Valve	9	EA	\$	\$
95	2.50	Abandon Existing CCMWA Blowoff Valve	11	EA	\$	\$
96	2.51	Remove and Dispose of Existing Water Main (PCCP/DIP)	1,000	LF	\$	\$
97	2.52	Remove and Dispose of Abandoned AC Pipe 6"	1,600	LF	\$	\$

ITEM NO.	M&P ITEM	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE BID	EXTENDED AMOUNT
98	2.52	Remove and Dispose of Abandoned AC Pipe 8"	11,100	LF	\$	\$
99	2.53	Replace Existing 8" CCWS Sanitary Sewer	500	LF	\$	\$
100	2.53	Replace Existing 10" CCWS Sanitary Sewer	500	LF	\$	\$
101	2.53	Replace Existing 12" CCWS Sanitary Sewer	500	LF	\$	\$
102	2.54	Doghouse Manhole for Sanitary Sewer Connection	5	EA	\$	\$
103	2.55	Remove and Replace 15" Concrete Storm Drain	100	LF	\$	\$
104	2.55	Remove and Replace 18" Concrete Storm Drain	100	LF	\$	\$
105	2.55	Remove and Replace 24" Concrete Storm Drain	100	LF	\$	\$
106	2.55	Remove and Replace 48" Concrete Storm Drain	100	LF	\$	\$
107	2.56	Remove and Replace 12" CMP Storm Drain	100	LF	\$	\$
108	2.56	Remove and Replace 15" CMP Storm Drain	100	LF	\$	\$
109	2.56	Remove and Replace 18" CMP Storm Drain	100	LF	\$	\$
110	2.56	Remove and Replace 24" CMP Storm Drain	100	LF	\$	\$
111	2.56	Remove and Replace 36" CMP Storm Drain	100	LF	\$	\$
112	2.57	Remove and Replace Catch Basin/Curb Inlet	5	EA	\$	\$
113	2.58	Project Signs	3	EA	\$	\$
114	2.59	Traffic Control	1	LS	\$	\$
115	2.60	Mobilization	1	LS	\$	\$
UNIT PRICE SUB-TOTAL (ITEMS 1 THROUGH 115)						

ITEM NO.	M&P ITEM	DESCRIPTION	EST. QTY	UNIT	UNIT PRICE BID	EXTENDED AMOUNT
ALLOWANCES						
116	A1	Allowance for Force Account Work	1	LS	\$ 1,500,000.00	\$ 1,500,000.00
117	A2	Allowance for Matierals Testing	1	LS	\$ 150,000.00	\$ 150,000.00
118	A3	Allowance for Utility Relocation by Others	1	LS	\$ 400,000.00	\$ 400,000.00
119	A4	Allowance for Landscaping	1	LS	\$ 100,000.00	\$ 100,000.00
120	A5	Allowance for Traffic Control	1	LS	\$ 150,000.00	\$ 150,000.00
121	A6	Allowance for Corrosion Control	1	LS	\$ 100,000.00	\$ 100,000.00
122	A7	Allowance for Water Main Disinfection and Dechlorination	1	LS	\$ 100,000.00	\$ 100,000.00
ALLOWANCE SUB-TOTAL (ITEMS A1 THROUGH A7)						\$ 2,500,000.00
TOTAL BASE BID AMOUNT (UNIT PRICE SUB-TOTAL PLUS ALLOWANCE SUB-TOTAL) - Numbered Here (Written in Words Below):						
_____ dollars and _____ cents						

6. Bidder agrees that the Work will be **substantially complete** within **760 consecutive calendar days** after the date when the Contract Times commence to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within **850 consecutive calendar days** after the date when the Contract Times commence to run.

Bidder accepts the provisions of the Agreement as to **Liquidated Damages** in the event of failure to complete the Work within the time(s) specified in the Agreement.

7. The following documents are attached to this Bid Form and are made a condition of this Bid:

(a) **Bid Bond.** The required bid security in the form of bid bond, certified check, cashier's check or cash must be included and attached to the Bid Bond form. Bidders who submit Bid Security in the form of a certified check, cashier's check or cash are bound by the "Terms of Bid Bond".

(b) **Corporate Certificate.**

(c) **Contractor's License Certification.**

(d) **Noncollusion Affidavit of Bidder.**

8. Communications concerning this Bid shall be addressed to:

The address of Bidder indicated below.

BIDDER'S NAME _____

Primary Contact Person _____

Secondary Contact Person _____

Bidder's Street Address _____

Bidder's Phone # _____

Bidder's Fax # _____ (optional)

9. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

THIS BID SUBMITTED on _____, 20__.

**SECTION 00 43 13
BID BOND**

PENAL SUM FORM

BIDDER *(Name and Address):*

SURETY *Name and Address of Principal Place of Business):*

OWNER:

Cobb County-Marietta Water Authority
1170 Atlanta Industrial Dr.
Marietta, Georgia 30066

BID

BID DUE DATE: 04/02/2019, 11:00 AM

PROJECT:
WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT

Installation of approximately 20,000 LF of 36-inch zinc-coated ductile iron pipe (DIP) to replace an existing 36-inch pre-stressed concrete cylinder pipe and DIP main.

BOND

BOND NUMBER _____

DATE: *(Not later than Bid Due Date):* _____

PENAL SUM: **5 PERCENT OF BASE BID**

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the following terms hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

TERMS OF BID BOND

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents, any performance and

payment bonds, and Certification of Insurance required by the Bidding Documents and Contract Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents, any performance and payment bonds and Certification of Insurance required by the Bidding Documents and Contract Documents, or

3.2 All bids are rejected by Owner, or

3.3 Owner fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the time for issuing notice of award including extensions shall not in the aggregate exceed 60 days from the Bid Due Date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety, and in no case later than one year after Bid Due Date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notice required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirements of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of the Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "bid" as used herein includes a bid, offer or proposal as applicable.

Witness as to Principal:

Principal

(signature)

By: _____(SEAL)
(signature)

Title: _____

Witness as to Surety:

Surety

(signature)

By: _____
Attorney-in-Fact (signature)

Address of Attorney-in-Fact

END OF SECTION

SECTION 00 45 19
Non-Collusion Affidavit of Bidder

STATE OF GEORGIA

COUNTY OF COBB

_____, being first duly sworn, deposes and says that:

He or she is _____ of
(Owner, Partner, Officer, Representative or Agent)

_____, the Bidder that has submitted the attached Bid;

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

Such Bid is genuine and is not a collusive or sham Bid;

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

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

(Signed) _____

(Title) _____

Subscribed and Sworn before me this _____ day of _____, 20__.

(Notary Public) *(signature)* My Commission Expires: _____

(SEAL)

**SECTION 00 45 43
CORPORATE CERTIFICATE**

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

This _____ day of _____, 20__.

Corporate
Secretary:

(name signed)

(name printed or typed)

(SEAL)

END OF SECTION

**SECTION 00 45 44
CONTRACTOR LICENSE CERTIFICATION**

Bidder/Contractor's Name: _____

Georgia Utility Contractor's License Number: _____

Expiration Date of License: _____

Georgia General Contractor's License Number: _____

Expiration Date of License: _____

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

BIDDER: _____

By: _____
(name signed)

(name printed or typed)

Title: _____

Date: _____

END OF SECTION

SECTION 00 45 46
Affidavit Verifying Status
For Cobb County-Marietta Water Authority
Public Benefit Application

By executing this affidavit under oath, as an applicant for a Cobb County-Marietta Water Authority contract or other public benefit as referenced in O.C.G.A. § 50-36-1, I am stating the following with respect to my application for a Cobb County-Marietta Water Authority contract or other public benefit:

1) _____ I am a United States citizen

OR

2) _____ I am a legal permanent resident 18 years of age or older or I am an otherwise qualified alien or non-immigrant under the Federal Immigration and Nationality Act 18 years of age or older and lawfully present in the United States.*

In making the above representation under oath, I understand that any person who knowingly and willfully makes a false, fictitious, or fraudulent statement or representation in an affidavit shall be guilty of a violation of Code Section 16-10-20 of the Official Code of Georgia.

Signature of Applicant:

Date:

Printed Name:

*

Alien Registration Number for non-citizens

SUBSCRIBED AND SWORN BEFORE
ME ON THIS THE _____ DAY OF
_____, 20____

Notary Public

My Commission Expires:

*Note: O.C.G.A. § 50-36-1(e)(2) requires that aliens under the federal Immigration and Nationality Act, Title 8 U.S.C., as amended, provide their alien registration number. Because legal permanent residents are included in the federal definition of "alien", legal permanent residents must also provide their alien registration number. Qualified aliens that do not have an alien registration number may supply another identifying number below:

SECTION 00 45 47
SECURITY AND IMMIGRATION COMPLIANCE ACT CERTIFICATION

Pursuant to the Georgia Security and Immigration Compliance Act of 2006, Contractor understands and agrees that compliance with the requirements of OCGA 13-10-91 and Georgia Department of Labor Rule 300-10-1 et. seq. are conditions of Agreement. Contractor further agrees that such compliance shall be attested through execution of Contractor Affidavit and Agreement required by Georgia Department of Labor Rule 300-10-1-.07, or a substantially similar contractor affidavit. Contractor's fully executed affidavit is attached and is incorporated into this Agreement by reference herein.

By initialing in the appropriate line below, Contractor certifies that the following employee number category as identified in OCGA 13-10-91 is applicable to Contractor:

- 1. _____ 500 or more employees;
- 2. _____ 100 or more employees;
- 3. _____ Fewer than 100 employees.

Contractor understands and agrees that, in the event Contractor employs or contracts with Subcontractor in connection with this Agreement, Contractor shall:

- 1. Secure from each Subcontractor an indication of the employee-number category as identified in OCGA 13-10-91; and
- 2. Secure from each Subcontractor an attestation of Subcontractor's compliance with OCGA 13-10-91 and Georgia Department of Labor Rule 300-10-1-.02 by causing each Subcontractor to execute the attached Subcontractor Affidavit required by Georgia Department of Labor Rule 300-10-1-.08, or a substantially similar subcontractor affidavit. Contractor further understands and agrees that Contractor shall require the executed Subcontractor Affidavit to become a part of the agreement between Contractor and each Subcontractor. Contractor agrees to maintain records of each Subcontractor attestation required hereunder for inspection by Owner.

BY: Authorized Officer or Agent

Date

Title of Authorized Officer or Agent if Contractor

Printed Name of Authorized Officer or Agent

Subscribed and Sworn Before Me on this
_____ day of _____, 20____

Notary Public
My Commission Expires:

SECTION 00 45 48
Contractor Affidavit under O.C.G.A. § 13-10-91(b)(1)

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 engaged in the physical performance of services on behalf of THE COBB COUNTY-MARIETTA WATER AUTHORITY has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Contractor

West Side Loop Section 2, 36-Inch Water Main Replacement
Name of Project

Cobb County-Marietta Water Authority
Name of Public Employer

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

Executed on _____, ____, 20__ in _____(city), _____(state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____, 20__.

NOTARY PUBLIC

My Commission Expires: _____

SECTION 00 45 49
Subcontractor Affidavit under O.C.G.A. § 13-10-91(b)(3)

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ on behalf of THE COBB COUNTY-MARIETTA WATER AUTHORITY has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. § 13-10-91(b). Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five business days of receipt. If the undersigned subcontractor receives notice of receipt of an affidavit from any sub-subcontractor that has contracted with a sub-subcontractor to forward, within five business days of receipt, a copy of such notice to the contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Subcontractor

West Side Loop Section 2, 36-Inch Water Main Replacement
Name of Project

Cobb County-Marietta Water Authority
Name of Public Employer

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

Executed on _____, ____, 20__ in _____ (city), _____ (state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____, 20__.

NOTARY PUBLIC

My Commission Expires: _____

SECTION 00 45 50
Sub-subcontractor Affidavit under O.C.G.A. § 13-10-91(b)(4)

By executing this affidavit, the undersigned sub-subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract for _____ (insert name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract) and _____ (insert name of contractor) on behalf of THE COBB COUNTY-MARIETTA WATER AUTHORITY has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned sub-subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned sub-subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the sub-subcontractor with the information required by O.C.G.A. § 13-10-91(b). The undersigned sub-subcontractor shall submit, at the time of such contract, this affidavit to _____ (insert name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Additionally, the undersigned sub-subcontractor will forward notice of the receipt of any affidavit from a sub-subcontractor to _____ (insert name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Sub-subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification Number

Date of Authorization

Name of Sub-subcontractor

West Side Loop Section 2, 36-Inch Water Main Replacement
Name of Project

Cobb County-Marietta Water Authority
Name of Public Employer

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

Executed on _____, __, 20__ in _____ (city), _____ (state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE _____ DAY OF _____, 20__.

NOTARY PUBLIC

My Commission Expires: _____

**SECTION 00 51 50
NOTICE OF AWARD**

Date: _____

TO BIDDER: _____

ADDRESS: _____

PROJECT OR CONTRACT NAME: WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT (Insert name of Project (Contract) as it appears in the Agreement)

OWNER's Contract No. 9005-10-18-0000

You are notified that your Bid dated _____ for the above Project has been considered. You are the apparent Successful Bidder and have been awarded a Contract for

West Side Loop Section 2, 36-Inch Water Main Replacement

(Indicate total Work, alternates or sections or Work awarded)

The Contract Price of this Contract is _____

_____ Dollars. (\$_____ Dollars).

Six (6) copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award. Six sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within fifteen days of the date of this Notice of Award:

1. Deliver to the Owner six (6) fully executed counterparts of the Contract Documents. Each of the Contract Documents must bear your signature on the Agreement, Payment Bond, Performance Bond, Pre-Construction Oath, Certification of Contractor's Attorney, Contractor Affidavit and Agreement, and required Subcontractor Affidavit and Agreements.
2. Deliver with the executed Contract Documents the Contract security (Bonds) as specified in the Instructions to Bidders and General Conditions (paragraph 5.01).
3. Execute the Performance and Payment Bonds, but DO NOT DATE. Cobb County-Marietta Water Authority will date the bonds with the same date as the Agreement.

4. Deliver with the executed Contract Documents evidence of all insurance which Contractor is required to provide under the Contract Documents.
5. Deliver with the executed Contract Documents the Insurance Certificate Checklist filled out by Contractor's insurance agent.
6. (List other conditions.)

Failure to comply with these conditions within the time specified will entitle OWNER to consider your Bid in default, to annul this Notice of Award and to declare your Bid security forfeited.

Within ten days after you comply with the above conditions, OWNER will return to you one fully executed counterpart of the Contract Documents.

COBB COUNTY-MARIETTA WATER AUTHORITY

By: _____
(AUTHORIZED SIGNATURE)

(TITLE)

Copy to ENGINEER

SECTION 00 52 00
AGREEMENT BETWEEN OWNER AND CONTRACTOR

AGREEMENT made by and between the **Cobb County-Marietta Water Authority** (hereinafter called Owner) and _____ (hereinafter called Contractor).

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

Article 1. WORK.

The Project for which the Work under the Contract Documents may be the whole or only a part is identified with the following Project Name:

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Installation of approximately 20,000 LF of 36-inch zinc-coated ductile iron pipe (DIP) to replace an existing 36-inch prestressed concrete cylinder pipe and DIP main.

Article 2. ENGINEER.

The Project has been designed by Engineering Strategies, Inc. who is hereinafter called Engineer and who is to act as Owner's representative, assume all duties and responsibilities and have the rights and authority assigned to Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIMES.

3.1 The Work will be substantially completed within **760 consecutive calendar days** after the date when the Contract Times commence to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within **850 consecutive calendar days** after the date when the Contract Times commence to run. Construction sequencing constraints and limitations are described in Section 01 31 13, Coordination of Work.

3.2 *Liquidated Damages.* Owner and Contractor recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Any delays in completing this work will have significant impacts on the Owner. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner one thousand five hundred dollars (\$1,500) for each day that expires after

the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by Owner, Contractor shall pay Owner five hundred dollars (\$500) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4. CONTRACT PRICE.

Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 4.1, 4.2 and 4.3 below:

4.1 For all Work other than Unit Price Work, an amount equal to the sum of the established Lump Sum item(s) of Work as indicated in the Contractor's Bid. All specific cash allowances are included in the appropriate items of work and have been computed in accordance with paragraph 11.02.A of the General Conditions;

plus

4.2 For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work multiplied by the quantity of the item as indicated in CONTRACTOR's Bid;

plus

4.3 For all additional Work authorized by the Owner to be compensated from the Contingency Allowance(s).

**SUM OF ALL LUMP SUM PRICES, ALL UNIT PRICES AND CONTINGENCY ALLOWANCES:
(in words) _____ DOLLARS.**

(Total Contract Price to be written in words)

As provided in paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classification are to be made by ENGINEER as provided in paragraph 9.07 of the General Conditions. Unit prices have been computed as provided in paragraph 11.03.A of the General Conditions.

Article 5. PAYMENT PROCEDURES.

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

5.1. *Progress Payments; Retainage.* Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as recommended by Engineer, on or about the 25th day of each month during construction as provided in paragraphs 5.1.1 and 5.1.2 below.

5.1.1. All such payments will be measured by values of work completed as provided by the schedule established in paragraph 2.07 of the General Conditions, plus the value of materials and equipment suitably stored, insured, and protected at the construction site, and with the Owner's consent, such materials and equipment suitably stored, insured, and protected off-site at a location approved by the Engineer, less a retainage of ten percent (10%) of each progress payment requested; provided, however, when fifty percent (50%) of the Contract Price, including change orders and other additions to the Contract, is due and the manner of completion of the contract work and its progress is reasonably satisfactory to the Engineer, in the Engineer's sole discretion, the Owner shall withhold no more retainage on additional work completed.

5.1.2 The Contractor shall be entitled to withhold retainage from subcontractors in accordance with this Agreement and Georgia Law. Provided that the value of each subcontractor's work complete and in place equals fifty percent (50%) of his or her subcontract value, including approved change orders and other additions to the subcontract value, and provided that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work including any warranty work as the Contractor in its reasonable discretion may require, including but not limited to a payment and performance bond, then the Contractor shall reduce or discontinue each subcontractor's retainage in the same manner as the Contractor's retainage is reduced or discontinued by the Owner. At the discretion of the Owner, upon recommendation of the Engineer and with consent of the Contractor, the retainage of each subcontractor may be released separately as the subcontractor completes his work. If the Contractor does not give such consent, the Contractor shall promptly give the Owner a written explanation of its reason.

5.1.3. If, after discontinuing the retainage, the Engineer determines that the work is unsatisfactory or has fallen behind schedule, retention shall be resumed at the previous level. If retention is resumed, the Contractor shall be entitled to resume withholding retainage from any affected subcontractors.

5.2. *Final Payment.*

5.2.1 At substantial completion of the contract work and as the Engineer determines the work to be reasonably satisfactory, the Owner shall within 60 days after presentation of Application and other appropriate documentation as required by Article 14 of the General Conditions are provided, pay the retainage to the Contractor. If at that time there are any remaining incomplete minor items, an amount equal to 200 percent of the value of each item, as determined by the Engineer, shall be withheld until such item or items are completed. The reduced retainage shall be shared by the Contractor and subcontractors as their interests may appear. The Contractor shall, within ten (10) days from Contractor's receipt of retainage from the Owner, pass through payments to subcontractors and shall reduce each subcontractor's retainage in the same manner as the Contractor's retainage is reduced by the Owner provided that the value of each subcontractor's work complete and in place equals fifty percent (50%) of his subcontract value, including approved change orders and other additions to the subcontract value and provided, further, that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as

the Contractor in his reasonable discretion may require, including, but not limited to a payment and performance bond.

- 5.2.2 If pursuant to paragraph 14.04 of the General Conditions Engineer issues a certificate of Substantial Completion for a part of the Work prior to the Substantial Completion of all of the Work, the Owner shall within 45 days after presentation of Application and other appropriate documentation as required by Article 14 of the General Conditions are provided, pay the retainage for such part of the Work to the Contractor. If at that time there are any remaining incomplete minor items for such part of the Work, an amount equal to 200 percent of the value of each item, as determined by the Engineer, shall be withheld until such item or items are completed. The reduced retainage shall be shared by the Contractor and subcontractors as their interests may appear. The Contractor shall, within ten (10) days from Contractor's receipt of retainage from the Owner, pass through payments to subcontractors and shall reduce each subcontractor's retainage for such part of the Work in the same manner as the Contractor's retainage for such part of the Work is reduced by the Owner provided that the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as the Contractor in his reasonable discretion may require, including, but not limited to a payment and performance bond.
- 5.2.3 The subcontractor shall, within ten (10) days from the subcontractor's receipt of retainage from the Contractor, pass through payments to the lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the subcontractor's retainage is reduced by the Contractor, provided that the value of each lower tier subcontractor's work complete and in place equals fifty (50%) percent of his subcontract value, including approved change orders and other additions to the subcontract value and provided, further, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as the subcontractor in his reasonable discretion may require, including, but not limited to, a payment and performance bond.
- 5.2.4 All prior certificates or estimates upon which payments have been made are approximate only, and subject to correction in the final payment.

5.3 In the event of a conflict, O.C.G.A. Sections 13-10-80 through 13-10-83 shall supercede and control any provisions to the contrary in this Article 5.

5.4. Contractor's Agreements with Subcontractors.

The Contractor hereby covenants and agrees with Owner to obtain written agreements from each subcontractor setting forth payment procedures in accordance with the foregoing provisions of this Section. Nothing contained herein shall preclude the Contractor, prior to making payment to a subcontractor, from requiring the payee to submit satisfactory evidence that all payrolls, material bills, and other indebtedness connected with the work have been paid.

Article 6. INTEREST.

6.1 The Current Market Rate will be the rate of interest stipulated in Article 14.02.E of Section 00 72 00, "Standard General Conditions of The Construction Contract" (General Conditions) of this agreement.

6.2 All moneys not paid by Owner to Contractor when due as provided in Article 14 of the General Conditions shall bear interest at the Current Market Rate.

6.3 On contracts relating to installation, extension, improvement, maintenance or repair of any water or sewer facility, retainage shall be invested at the Current Market Rate and any interest earned on the retained amount shall be paid to the Contractor when the project has been completed within the Contract Times and for the Contract Price specified in the Contract, or in any amendments or change orders approved in accord with the terms of the Contract.

Article 7. CONTRACTOR'S REPRESENTATIONS.

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

7.1. Contractor has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."

7.2. Contractor has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3. Contractor is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

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

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

7.6. Contractor has given Engineer written notice of all conflicts, errors, ambiguities or discrepancies that Contractor has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Contractor, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between Owner and Contractor concerning the Work consist of the following:

- 8.1 This Agreement (pages 1 to 8, inclusive).
- 8.2 Advertisement for Bids
- 8.3 Instructions to Bidders
- 8.4 Permits and Easements
- 8.5 Bid Form
- 8.6 Bid Bond
- 8.7 Non-Collusion Affidavit of Bidder
- 8.8 Corporate Certificate
- 8.9 Contractor's License Certification
- 8.10 Affidavit Verifying Status for Cobb County-Marietta Water Authority Public Benefit Application
- 8.11 Security and Immigration Compliance Act Certification
- 8.12 Contractor Affidavit and Agreement
- 8.13 Subcontractor Affidavit and Agreement
- 8.14 Sub-Subcontractor Affidavit and Agreement
- 8.15 Notice of Award
- 8.16 Pre-Construction Oath
- 8.17 Notice to Proceed
- 8.18 Performance Bond
- 8.19 Payment Bond
- 8.20 Certification of Contractor's Attorney
- 8.21 Certification of Owner's Attorney
- 8.22 Insurance Checklist
- 8.23 Contract Completion Affidavit

- 8.24 General Conditions
- 8.25 Supplementary Conditions
- 8.26 Statement of Bidder's Qualifications (where applicable)
- 8.27 Specifications bearing the name WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT, as listed in table of contents thereof, bound separate from this Agreement.
- 8.28 Drawings consisting of a cover sheet and sheets as listed in the Drawing Index thereof with each sheet bearing the name WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT, bound separate from this Agreement.
- 8.29 Addenda number(s) _____, incorporated herein,
- 8.30 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.04.A and 3.04.B of the General Conditions.

The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.04.A and 3.04.B of the General Conditions.

Article 9. MISCELLANEOUS.

9.1. Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.

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

9.3. Owner and Contractor each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

9.4. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such

stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in triplicate. One counterpart each has been delivered to Owner, Contractor and Engineer. All portions of the Contract Documents have been signed, initialed or identified by Owner and Contractor or identified by ENGINEER on their behalf.

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

IN WITNESS WHEREOF, the parties hereto have made and executed this Agreement under seal as of the day and year first above-written.

OWNER:
Cobb County-Marietta Water Authority

CONTRACTOR:

By: _____
(for Cobb County – Marietta Water Authority)

By _____

Title: _____
[SEAL]

Title: _____
[SEAL]

Attest:

Attest:

Assistant Secretary

Secretary

Witness

Witness

Address for giving notices:

Address for giving notices:

Cobb County-Marietta Water Authority
1170 Atlanta Industrial Drive
Marietta, Georgia 30066

(Attach evidence of authority to sign and resolution or other documents authorizing execution of Agreement.)

**SECTION 00 54 14
PRE-CONSTRUCTION OATH**

PROJECT NAME: WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT

CCMWA PROJECT NUMBER: 9005-10-18-0000

DATE: _____

STATE OF GEORGIA

COUNTY OF COBB

In accordance with O.C.G.A. 36-91-21(e), each of the undersigned persons affiliated with

(Contractor)

being first duly sworn, deposes and says that:

I have not directly violated O.C.G.A. 36-91-21(d), and more specifically, I have not

- prevented or attempted to prevent competition in such bidding or proposals by any means whatever,
- prevented or endeavored to prevent anyone from making a bid or proposal thereof by any means whatever, nor
- caused or induced another to withdraw a bid or proposal for the work.

Each undersigned, to the best of his/her knowledge, affirms that no other officers, agents or other persons acted for or represented the Contractor in the bidding for and procurement of this Contract.

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

Subscribed and Sworn to before me this _____ day of _____, 20_____.

_____ My Commission Expires: _____

(Notary Public)

(SEAL)

**SECTION 00 55 00
NOTICE TO PROCEED**

Dated: _____

TO CONTRACTOR: _____

ADDRESS: _____

PROJECT NAME: WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT

OWNER's Contract No. 9005-10-18-0000

You are hereby notified that the Contract Times under the above contract will commence to run _____ . By that date you are to begin performing the Work and your obligations under the Contract Documents. In accordance with Article 3 of the Agreement, the date of Substantial Completion is _____ and the date of readiness for final payment is _____ .

Before you may start any Work at the Site, paragraph 2.01 of the General Conditions provides that you and OWNER must each deliver to the other (with copies to ENGINEER and other identified additional insureds) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:
(add other requirements)

COBB COUNTY-MARIETTA WATER AUTHORITY

By: _____
(AUTHORIZED SIGNATURE)

(TITLE)

Copy to ENGINEER

SECTION 00 61 14
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS _____ (hereinafter called the "Principal") and _____ (hereinafter called the "Surety"), are held and firmly bound unto Cobb County-Marietta Water Authority (hereinafter called the "Owner") and its successors and assigns, in the penal sum of DOLLARS (\$_____), lawful money of the United States of America, for the payment of which the Principal and the Surety bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with the Owner, dated _____, which is incorporated herein by reference in its entirety (hereinafter called the "Construction Contract"), for the WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT, more particularly described in the Construction Contract (hereinafter called the "Project"); and

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

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

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

In addition to performing as required in the above paragraphs, the Surety shall indemnify and hold harmless the Owner from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, which the Owner may incur, sustain or suffer by reason of the failure or

default on the part of the Principal in the performance of any or all of the terms, provisions, and requirements of the Construction Contract, including any and all amendments and modifications thereto, or incurred by the Owner in making good any such failure of performance on the part of the Principal.

The Surety shall commence performance of its obligations and undertakings under this Bond promptly and without delay, after written notice from the Owner to the Surety.

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

The Surety hereby agrees that this Bond shall be deemed amended automatically and immediately, without formal or separate amendments hereto, upon any amendment to the Construction Contract, so as to bind the Principal and the Surety to the full and faithful performance of the Construction Contract as so amended or modified, and so as to increase the penal sum to the adjusted contract price of the Construction Contract.

No right of action shall accrue on this Bond to or for the use of any person, entity or corporation other than the Owner and any other obligee named herein, or their executors, administrators, successors or assigns.

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

{THIS SPACE LEFT BLANK INTENTIONALLY}

IN WITNESS WHEREOF the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed by their duly authorized representatives this _____ day of _____, 20____.

Principal

By: _____

Its: _____

Witness

Typed name of witness

Typed address of witness

(Surety)

By: _____

Its: Attorney-in-Fact

Typed name of Attorney-in-Fact

Witness

Type name of witness

Type address of witness

(Address of Surety's Home Office)

Note: Date of Bond must not be prior to date of contract.

**SECTION 00 61 15
PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS that _____
(hereinafter called the "Principal") and _____
_____ (hereinafter called the "Surety"), are held and firmly bound unto Cobb County-Marietta
Water Authority (hereinafter called the "Owner"), its successors and assigns as obligee, in the penal sum
of _____
_____ DOLLARS (\$ _____),
lawful money of the United States of America, for the payment of which the Principal and the Surety
bind themselves, their administrators, executors, successors and assigns, jointly and severally, firmly by
these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written contract with
the Owner, dated _____, which is incorporated herein by reference in its entirety
(hereinafter called the "Construction Contract"), for the construction of a project known as WEST SIDE
LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT as more particularly described in the
Construction Contract (hereinafter called the "Project");

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

1. A "Claimant" shall be defined herein as any subcontractor, person, party, partnership,
corporation or other entity furnishing labor, services or materials used, or reasonably
required for use, in the performance of the Construction Contract, without regard to whether
such labor, services or materials were sold, leased or rented, and without regard to whether
such Claimant is or is not in privity of contract with the Principal or any subcontractor
performing work on the Project, including, but not limited to, the following labor, services,
or materials: water, gas, power, light, heat, oil, gasoline, telephone service or rental of
equipment directly applicable to the Construction Contract.
2. In the event a Claimant files a lien against the property of the Owner, and the Principal fails
or refuses to satisfy or remove it promptly, the Surety shall satisfy or remove the lien
promptly upon written notice from the Owner, either by bond or as otherwise provided in the
Construction Contract.
3. The Surety hereby waives notice of any and all modifications, omissions, additions, changes,
alterations, extensions of time, changes in payment terms, and any other amendments in or
about the Construction Contract and agrees that the obligations undertaken by this Bond shall
not be impaired in any manner by reason of any such modifications, omissions, additions,
changes, alterations, extensions of time, changes in payment terms, and amendments.
4. The Surety hereby agrees that this Bond shall be deemed amended automatically and
immediately, without formal or separate amendments hereto, upon any amendment or
modification to the Construction Contract, so as to bind the Principal and Surety, jointly and
severally, to the full payment of any Claimant under the Construction Contract, as amended
or modified, provided only that the Surety shall not be liable for more than the penal sum of
the Bond, as specified in the first paragraph hereof.

5. This Bond is made for the use and benefit of all persons, firms, and corporations who or which may furnish any materials or perform any labor for or on account of the construction to be performed or supplied under the Construction Contract, and any amendments thereto, and they and each of them may directly sue the Principal and the Surety hereon.
6. No action may be maintained on this Bond after one (1) year from the date the last services, labor, or materials were provided under the Construction Contract by the Claimant prosecuting said action.
7. This bond is given pursuant to and in accordance with the provisions of O.C.G.A. Section 36-91-1 *et.seq.* and all the provisions of the law referring to this character of Bond as set forth in said Sections or as may be hereinafter enacted, and these are hereby made a part hereof to the same extent as if set out herein in full.

{THIS SPACE LEFT BLANK INTENTIONALLY}

IN WITNESS WHEREOF, the Principal and the Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized representatives this _____ day of _____, 20 _____. (Date of Bond must not be prior to date of contract.)

Name of Contractor as Principal

Name of Surety

By: _____
(Signature)

By: _____
(Signature)

(Typed name and title)

(Typed name) *Attorney-in-Fact*

Witness to Principal (Signature)

(Typed address of Surety's home office)

(Typed name and address of witness)

Witness to Surety (signature)

(Typed name and address of witness)

**SECTION 00 62 14
CERTIFICATION OF CONTRACTOR'S ATTORNEY**

The undersigned Contractor hereby certifies one of the following:

_____ (initial) Prior to execution and delivery of the contract contained herein, the attorney has examined the attached contract, any applicable performance and payment bonds and the manner of execution thereof, as well as all other documents attached hereto and is of the opinion that upon the execution and delivery of these documents, same will constitute a valid and legally binding obligation of the undersigned contractor in accordance with the terms, conditions and provisions thereof.

Typed Name of Attorney

Signature of Attorney

Date: _____

_____ (initial) The undersigned contractor has an attorney but has not obtained any legal opinion regarding the execution and delivery of these documents.

_____ (initial) The undersigned contractor does not have an attorney and has elected not to engage an attorney regarding the execution and delivery of this contract and attached documents.

CONTRACTOR

Name of Contractor: _____

By: _____

Title: _____

Attest: _____

Title: _____

[SEAL]

**SECTION 00 62 15
CERTIFICATION OF OWNER'S ATTORNEY**

The duly authorized and acting legal representatives of the OWNER do hereby certify as follows:

Prior to execution and delivery thereof by OWNER, I have examined the attached contract and any applicable performance and payment bonds and the manner of execution thereof, and I am of the opinion that upon the correction of any matters noted hereon, the foregoing contract will be ready for execution and upon execution and delivery will constitute a valid and legally binding obligation of OWNER in accordance with the terms, conditions, and provisions thereof.

Attorney For:
Cobb County - Marietta Water Authority:

By:
(Signature)

Douglas R. Haynie
(Typed name)

Date:

SECTION 00 62 16
INSURANCE CERTIFICATE CHECKLIST

Name of Vendor/Contractor: _____
 Contract Name/Number: WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT
 Contract Number: 9005-10-18-000
 Reviewed by: _____ Date Reviewed: _____

Workers' Compensation and Employers Liability

Effective Date: _____ Expiration Date: _____
 Are Effective Dates Current? Yes No
 Insurance Carrier: _____ A.M. Best Rating: (A- or better) _____

Coverage A: Workers' Compensation: Statutory Limits Provided Yes No
 Coverage B: Employers Liability: Limits of \$1,000,000 Provided Yes No
 Does policy provide coverage for leased employees, temporary staff and
 Part-time employees? Yes No
 Are officer's/owner's included for coverage? Yes No

Commercial Automobile Liability

Effective Date: _____ Expiration Date: _____
 Are Effective Dates Current? Yes No
 Insurance Carrier: _____ A.M. Best Rating: (A- or better) _____

Combined Single Limit for BI/PD of at least \$1,000,000? Yes No
 Is liability coverage provided for owned/leased, hired and non-owned
 vehicles? Yes No

Commercial General Liability

Effective Date: _____ Expiration Date: _____
 Are Effective Dates Current?
 Insurance Carrier: _____ A.M. Best Rating: (A- or better) _____

Are the following policy limits provided:

\$2,000,000 General Aggregate	Yes	No
\$1,000,000 Each Occurrence	Yes	No
\$2,000,000 Products/Completed Operations	Yes	No
\$1,000,000 Personal/Advertising Injury	Yes	No
\$ 100,000 Fire Damage/Fire Legal Liability	Yes	No
\$ 5,000 Medical Expense any one person	Yes	No

Contractual Liability provided at full policy limits? Yes No
 Aggregate Limits apply Per Project/Per Job? Yes No
 Coverage stipulated for Products/Completed Operations? Yes No
 Occurrence Form or Claims Made Form? _____
 If Claims-Made is continuity date at least the start date of the project? Yes No
 Is the care, custody, control exclusion for property other than
 Contractor's property deleted? Yes No

Excess/Umbrella Liability:

Effective Date: _____ Expiration Date: _____

Are Effective Dates Current?

Insurance Carrier: _____ A.M. Best Rating: (A- or better) _____

Are the following policy limits provided:

\$5,000,000 Aggregate Yes No

\$5,000,000 Each Occurrence Yes No

Does the excess/umbrella liability policy provide additional limits above the following:

General Liability Yes No

Automobile Liability Yes No

Employers Liability Yes No

Is Contractual Liability coverage included at full policy limits? Yes No

Coverage stipulated for Products/Completed Operations? Yes No

Occurrence Form or Claims Made Form? _____

If Claims-Made is continuity date at least the start date of the project? Yes No

Property/Builder's Risk-Installation Floater:

Effective Date: _____ Expiration Date: _____

Are Effective Dates Current?

Insurance Carrier: _____ A.M. Best Rating: (A- or better) _____

Are policy limits provided at least equal to the value of the project? Yes No

Is a replacement cost valuation provided? Yes No

Is coverage provided for "all-risk" or special perils? Yes No

Is coverage provided for personal property in transit? Yes No

Is coverage provided for damage to property and "soft costs"? Yes No

Is boiler and machinery coverage provided? Yes No

Is coverage provided for testing and start-up? Yes No

General Requirements:

Are the Owners and Engineer included as additional insured? Yes No

Is the certificate issued to Cobb County-Marietta Water Authority? Yes No

Does the cancellation clause provide at least 30 day notice? Yes No

Is a waiver of subrogation rights included? Yes No

Is the Insurance Company's name listed on the certificate? Yes No

Does the certificate list the policy numbers next to each coverage? Yes No

Note: Continuous coverage is required for products and completed operations for a minimum of two years following completion of the job. The contractor must furnish an updated certificate of insurance for a period of two years following the completion of the job. Therefore, new certificates which show continuous general liability (including products and completed operations) or "tail liability" for claims-made policies (where the policy is not renewed/maintained) must be submitted to Cobb County-Marietta Water Authority on an annual basis for the two years following completion of the job.

Specific Requirements:

1) Insurance certificate must include the following affirmative statement: "Coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty (30) days prior written notice has been given to Owner and to each other additional insured to whom a certificate of insurance has been issued." Language stating that the Insurance Company is not responsible if the notice is not sent is not acceptable.

2) Insurance certificate must also show the following:

Owner name:	Cobb County-Marietta Water Authority
Address:	1170 Atlanta Industrial Drive Marietta, Georgia 30066

**SECTION 00 65 19
CONTRACT COMPLETION AFFIDAVIT**

STATE OF _____

COUNTY OF _____

(1) I, _____, being duly sworn do hereby affirm that I am duly authorized to make this affidavit on behalf of _____ (hereinafter called "Contractor") as _____ of Contractor in connection with the contract dated _____, between Cobb County-Marietta Water Authority (hereinafter called "Owner") and Contractor, for construction of WEST SIDE LOOP SECTION 2, 36-INCH WATER MAIN REPLACEMENT (hereinafter called the "Project").

(2) I affirm under oath that all work has been completed in accordance with contract provisions, and all laborers, sub-contractors and material supplier have been paid in full, and there are no suits or liens outstanding in connection with said contract or the Project.

(3) I affirm under oath that the agreed price for all of the labor, services and materials to be furnished for the Project is \$_____, and that \$_____ has been previously paid by Owner as progress payments for the Project.

(4) I affirm under oath that the balance of \$_____ on said total contract price of \$_____ is simultaneously being paid to Contractor as a final disbursement on the Project. I hereby acknowledge receipt of the same on behalf of Contractor, and I hereby acknowledge that this affidavit is made under the provisions of Official Code of Georgia Annotated Section 44-14-316.2 for the purpose of inducing Owner to pay said balance to Contractor.

(5) I affirm under oath that all of the agreed price or reasonable value of the labor, services or materials for the Project has now been paid by Owner.

(Signature of Affiant)

Sworn to and subscribed before me this _____ day of _____, 20____.

NOTARY PUBLIC

My commission expires _____.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

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**STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT**

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 01 of the Specifications. The General Requirements are applicable to all Sections of the Specifications and to the entire Work.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

- 25.1 *Liquidated Damages* – amounts shall be as stipulated in the Agreement. Liquidated damages shall apply to the Contract Times for the Project. Liquidated Damages shall be both additive and cumulative. Liquidated Damages shall end upon Substantial Completion, Completion of the Work associated with each Milestone Date, and upon final completion of the Work.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents to provide the following: (i) the Owner full time, uninterrupted, continuous operation of the work; and (ii) all required functional, performance, and operational or startup testing has been successfully demonstrated for all components, devices, equipment, and systems to the satisfaction of the Engineer in accordance with the requirements of the Specifications; and (iii) all required inspections and other work necessary for the Engineer to certify “substantially complete” have been completed. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof. See General Conditions Paragraph 14.04 for additional provisions.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements

containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed,” “as required” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and the information in the Contract Documents and compliance with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

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

D. *Defective:*

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

E. *Furnish, Install, Perform, Provide:*

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

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

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

- A. When Contractor delivers the executed Agreements to Owner, Contractor shall also deliver to Owner such Bonds and Certifications of Insurance as Contractor may be required to furnish in accordance with Article 5.
- B. Contract, Performance Bond and Payment Bond shall not be dated prior to submittal to the Owner so that all three can be filled in by the Owner with the same date.
- C. Certified copy of Power of Attorney for Performance Bond and Payment Bond must be dated prior to submittal to the Owner with a date which is within the previous fifteen days.

- D. Performance Bond, Payment Bond and Certified Copy of Power of Attorney must have corporate seal of surety.
- E. Signature of attorney-in-fact for surety company on Performance Bond and Payment Bond must be one of persons authorized to sign on certified copy of Power of Attorney.
- F. The copy of Contract Documents to be kept by the Owner must have original signed certificate version of the certified Power of Attorney. Other copies may have copies of the certificate.
- G. If Contractor is a corporation, Contract, Performance Bond and Payment Bond must have corporate seal of Contractor affixed, must show title of person signing on behalf of Contractor and must be attested by Secretary or Assistant Secretary.
- H. The Payment Bond and the Performance Bond must be on Owner's forms, included herein.
- I. Surety company must be shown on the current Department of the Treasury Circular 570, Surety Companies Acceptable on Federal Bonds, with an underwriting limitation greater than the amount of the Contract.

2.02 *Copies of Documents*

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

(See Supplementary Conditions 2.02.B.1)

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. Contract Times will commence to run on the date established in the Notice to Proceed. A Notice to Proceed may be given at any time within 60 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the one-hundred and twentieth day after the Owner receives copies of the Agreement properly executed by the Contractor and the Bonds, evidence of proper insurance and other materials required by the Notice of Award.

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

- A. Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
- B. *Preliminary Schedules:* Within 10 days after the Commencement of the Contract Time (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals which indicates each required Submittal and the dates for submitting, time for reviewing and processing each Submittal (periodic Submittals may be listed by a common monthly date); and
 - 3. a preliminary Schedule of Values for all of the Work in a format acceptable to the Engineer and in accordance with the requirements specified in the General Requirements.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. Within ten days after the preconstruction conference a conference attended by Contractor, Owner, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and

resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer as being the Contractor's schedule for the orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor. The Progress Schedule may subsequently be adjusted in accordance with Paragraph 6.04 and applicable provisions of the General Requirements.
2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals. The Schedule of Submittals may subsequently be adjusted in accordance with Paragraph 6.04 and applicable provisions of the General Requirements.
3. Contractor's Schedule of Values will be acceptable to the Engineer as to form and substance if it is provided in accordance with the requirements specified in the General Requirements..

2.08 *Licensing*

Before any work at the site is started which is governed by the Construction Industry Licensing Board of Georgia (O.C.G.A. Section 43-14-1 et seq and Section 43-41 et seq), or its rules or regulations, Contractor shall inform himself of those rules and regulations, and qualifications for licensure, and if requested shall deliver proof of compliance to the Owner and Engineer.

ARTICLE 3 – CONTRACT DOCUMENTS; INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The individual components of the Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.
- D. Where the word "similar" occurs in the Contract Document, it shall have a general meaning and not be interpreted as being identical, and all details shall be worked out in relation to their location and their connection with other parts of the Work.
- E. Each and every clause or other provision required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though

it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be amended to make such insertion.

- F. “Imperative” or “Command” type language is used in the Contract Documents. This command language refers to and is directed to the Contractor.
- G. Emphasis, such as italics or quotes, has been used throughout the Contract Documents. Use of emphasis shall not change the meaning of the term emphasized.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor’s Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor’s Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by

Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).
2. In resolving inconsistencies within the Contract Documents, precedence shall be given in the following descending order:
 - a. Change Orders.
 - b. Work Change Directives.
 - c. Field Orders.
 - d. Engineer's written interpretations and clarifications.
 - e. Notice to Proceed.
 - f. Addenda.
 - g. Contract Agreement.
 - h. Supplementary Conditions.
 - i. General Conditions.
 - j. Specifications.
 - k. Drawings:
 - i. Figure dimensions on Drawings shall take precedence over scaled dimensions.

- ii. Detailed drawings shall take precedence over general drawings.
- iii. In case of discrepancy between small-scale detail and large-scale detail, the large-scale detail shall govern. On any of the Drawings where a portion of the Work is drawn out and the remainder is shown in outline, the portion drawn out shall apply also to all other like portions of the Work.

1. Bidding Requirements.

3. In cases where products or quantities are omitted from the Specifications, the description and quantities on the Drawings shall govern.

3.04 *Amending and Supplementing Contract Documents*

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

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of

text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

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

4.01 Availability of Lands

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.
- D. The Owner has begun to obtain all lands, rights-of-way and easements as indicated in the Contract Documents however, delays obtaining such lands may occur. If the Owner is unable to obtain lands as indicated in the Contract Documents, the Owner will notify the Contractor of those lands which are not yet acquired and those areas where lands are available. Contractor shall begin the Work upon such land and rights-of-way as Owner has acquired.

4.02 Subsurface and Physical Conditions

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by the Engineer in preparing the Contract Documents; and
 2. those drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been utilized by the Engineer in preparing the Contract Documents.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

[See Supplementary Conditions 4.02.C, 4.02.D and 4.02.E]

4.03 *Differing Subsurface or Physical Conditions*

- A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 2. is of such a nature as to require a change in the Contract Documents; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site are based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

- C.** The dimensions and descriptions given on the Drawings for adjacent work by others, if any, (including any existing facilities or utilities previously constructed for Owner) are based on the design drawings and not as-built drawings. Prior to commencing the Work, the Contractor shall verify all as-built conditions and information whenever existing facilities or utilities may impact the Work. Failure of Contractor to so verify all as-built conditions prior to commencing the Work shall bar Contractor from later seeking additional compensation for conflicts with existing facilities or utilities.

- D. Prior to the construction or installation of any proposed facility or pipeline, the Contractor shall expose all existing utilities true to their vertical and horizontal location, within the vicinity of the Work. In order to avoid conflicts between existing and proposed facilities or utilities, the Contractor shall either relocate the existing or proposed utility on a temporary or permanent basis, or shall take whatever means necessary to protect the existing facilities or utilities during the installation of proposed utilities, as approved by the Engineer. No additional payment will be made for the relocation of existing utilities or for any work associated with the protection of existing facilities or utilities.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Engineer. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.
- B. Engineer may check the lines, elevations, and reference marks set by Contractor, and Contractor shall correct any errors disclosed by such check. Such a check shall not be considered as approval of Contractor's work and shall not relieve Contractor of the responsibility for accurate construction of the entire Work.
- C. The Contractor shall review the Contract Documents and the Project site to determine the presence and location of any property or rights-of-way monuments or markers, and to assess the possibility of disruption to these monuments or markers. It will be the Contractor's responsibility to flag, erect guard posts, or provide offset references for the protection or the re-monumentation of these property or rights-of-way monuments or markers. In the event these monuments or markers are covered over or disturbed, it will be the Contractor's responsibility to employ a surveyor licensed in the state of Georgia to re-establish those monuments or markers of property or rights-of-way, which were present prior to Work on the Project.
- D. It shall be the Contractor's responsibility to verify all reference points shown on the Contract Documents prior to beginning Work on the site. This verification shall be conducted by professionally qualified personnel in a manner which will verify the accuracy of the information shown in the Contract Documents. On projects which involve the connection to, or additions to existing structures, the elevations of these existing structures shall also be verified. Any findings which differ from those shown on the Contract Documents shall be submitted in writing to the Engineer for resolution.
- E. Additional surveys necessary for the construction staking shall be performed by the Contractor, the cost of which shall be incorporated into the appropriate items of Work. On projects in which payment is classified by depth of cut, the construction staking shall be performed in a manner that will allow for the determination of cut classification. During construction of the project, the Contractor shall keep a daily log and record of the location of all underground pipes, all structures, and any deviation from the Drawings. The Contractor shall keep and furnish this

daily log and record in a manner which will allow the Engineer to incorporate these items into the Contract Documents.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under

which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may issue a Work Change Directive or Change Order as appropriate. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment is made by the Owner or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers [See Supplementary Conditions SC-5.02]*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as provided below:
 - 1. Surety shall be in good standing with Georgia's Insurance Commissioner's Office.
 - 2. Surety and Insurers must have an A.M. Best Financial Strength Rating and a Financial Size Category as stated in the insurance requirements specified elsewhere in these Contract Documents.
 - 3. The surety shall have an underwriting limitation in Circular 570 in excess of the Contract Price.

5.03 *Certificates of Insurance [See Supplementary Conditions SC-5.03]*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain, if any.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance [See Supplementary Conditions SC-5.04]*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.
- C. The limits of liability for the insurance required by paragraph 5.04.B.2 of the General Conditions shall provide coverage specified in the Supplementary Conditions or greater where required by Laws and Regulations.
- D. Any renewal of a policy shall have an original retroactive date no later than the date of the Contract.

5.05 *Owner's Liability Insurance*

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

5.06 *Property Insurance [See Supplementary Conditions SC-5.06]*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain property insurance as required in the Supplementary Conditions.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 by Contractor will protect Owner, Contractor, Subcontractors, and Engineer, and all other

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

5.08 *Receipt and Application of Insurance Proceeds*

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

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

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

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

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

ARTICLE 6 –CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, provide quality control, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. Contractor shall also designate, in writing, a representative, hereinafter referred to as Project Manager, assigned to the Project on a full-time basis during execution of the Work who shall have the authority to act on behalf of Contractor, including executing the orders or directions of the Engineer without delay. This Superintendent and/or Project Manager shall have full authority to promptly supply products, tools, plant equipment, and labor as may be required to diligently prosecute the Work. All communications given to or received from the Superintendent and/or the Project Manager shall be binding on Contractor.
- C. If at any time during the Project the Superintendent or Project Manager leaves the Project site while Work is in progress, Engineer shall be notified and provided with the name of Contractor’s representative having responsible charge.
- D. Contractor shall also designate the person responsible for Contractor’s quality control while Work is in progress. Engineer shall be notified in writing prior to any change in quality control representative assignment.
- E. Prior to the Commencement of the Contract Times, Contractor shall furnish to the Owner and Engineer the names, resumes, 24-hour contact information and other relevant information associated with the Project Manager and the Superintendent that are to be assigned to this project. The Project Manager and Superintendent must be acceptable to the Owner and Engineer.

6.02 *Labor; Working Hours [See Supplementary Conditions SC-6.02]*

- A. Contractor shall provide competent, skilled, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site. Contractor shall, upon demand from the Engineer, immediately remove any manager, superintendent, foreman or workman whom the Engineer or Owner may consider incompetent or undesirable.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the

performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

- C. Regular working hours may be Monday through Friday, excluding holidays, occurring between the hours of 7:00 AM and 7:00 PM, unless restricted otherwise. Contractor shall establish a 40-hour work week with regular scheduled work times, e.g., four 10-hour days or five 8-hour days, within the hours and days allowed above. Approval for specific work outside regular scheduled work times shall be requested no less than 48 hours prior to the requested work period. Contractor shall request approval of changes in regular scheduled work times no less than one week prior to the desired change. Occasional unscheduled overtime on weekdays may be permitted provided reasonable notice is given to Engineer.
- D. Contractor shall pay all extra costs incurred by the Owner associated with work, outside of regular working hours, including additional support services, inspection services, testing services, utilities or other applicable costs. The cost associated with the Owner's inspection overtime will be the amounts as provided in the Supplementary Conditions per hour per individual, depending upon individuals assigned to the Project, the type of work being inspected, and the date of the invoice; i.e., allowing for salary escalation. Contractor will not be responsible for extra costs associated with inspection overtime for work in excess of 50 hours per week when such overtime work is explicitly required by the Contract Documents.
- E. Except in the case of emergencies or other unusual circumstances, no work shall be permitted on the project on Sunday.
- F. The Engineer will determine to what extent extraordinary onsite personnel work is required during Contractor's overtime work or working hours outside regular scheduled work hours.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, quality control, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All products (material and equipment) provided on this Project shall be new and unused and provided by the Contractor unless specified otherwise, shall be products currently manufactured by the manufacturer, i.e., products shall not be discontinued or out-of-date products nor shall they be of the last production run of the product. Contractor shall incorporate the previous sentence in any contract or agreement between Contractor and subcontractor or supplier supplying products provided on this Project. All special warranties and guarantees required by the Contract Documents shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.
- D. Without limiting the responsibility or liability of the Contractor pursuant to this agreement, all warranties given by manufacturers on materials or equipment incorporated in the work are hereby assigned by the Contractor to the Owner. Such assignment shall be effective upon completion of Contractor's warranty period. If requested, the Contractor shall execute formal assignments of said manufacturer's warranties to the Owner. All such warranties shall be directly enforceable by the Owner. Such assignment shall in no way affect the Contractor's responsibilities and duties during the warranty period.

6.04 *Progress Schedule*

- A. The Contractor shall proceed with the Work at a rate of progress which will ensure completion within the Contract Time. It is expressly understood and agreed by and between the Contractor and the Owner, that the Contract Times for the Work described herein are reasonable times, taking into consideration the average climatic and economic conditions, and other factors prevailing in the locality of the Work.
- B. Contractor shall provide all resources, labor, materials, equipment, services, etc. necessary to adhere to the Progress Schedule established in accordance with Paragraph 2.07 and the General Requirements as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07 and the General Requirements) an updated Progress Schedule and an updated Schedule of Submittals with each partial payment request, but no less than monthly. Contractor's failure to provide acceptable updated Progress Schedule and Schedule of Submittals will delay processing of the pay request until receipt of the acceptable updated Progress Schedule and/or an updated Schedule of Submittals. Such updates and adjustments shall comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.
 - 3. Number of anticipated days associated weather conditions, as defined in the General Requirements, shall be included on the critical path of Project Schedule.
- C. If the Progress Schedule reflects a completion date prior to the completion date established by the Agreement, this shall afford no basis to claim for delay should Contractor not complete the Work prior to the projected completion date. Instead, all "float" between the completion date in Contractor's schedule and the completion date established in the Agreement shall belong to and is exclusively available to the Owner. Should a change order be executed with a revised completion date, the Progress Schedule shall be revised to reflect the new completion date.
- D. Project Coordination Meetings: The Contractor shall participate in Project Coordination Meetings to be held on the site monthly, or more often if conditions warrant, to establish the

current state of completion and revise the schedule as necessary. The Project Coordination Meeting will be conducted by the Owner and/or the Engineer.

- E. The Contractor shall implement the detailed schedule of activities to the fullest extent possible between Project Coordination Meetings.
- F. The Contractor shall prepare its daily report by 10:00 a.m. of the day following the report date. This daily report will contain, as a minimum, the weather conditions; number of workers by craft, including supervision and management personnel on site; active and inactive equipment on site; work accomplished by schedule activity item; problems; and visitors to the jobsite.
- G. If a current activity or series of activities on the overall project schedule is behind schedule and if the late status is not due to an excusable delay for which a time extension would be forthcoming, the Contractor shall attempt to reschedule the activity to be consistent with the overall Project Schedule so as not to delay any of the Contract milestones. The Contractor agrees that:
 - 1. The Contractor shall attempt to expedite the activity completion so as to have it agree with the overall progress schedule. Such measures as the Contractor may choose shall be made explicit during the Project Coordination Meeting.
 - 2. If, within two weeks of identification of such behind-schedule activity, the Contractor is not successful in restoring the activity to an on schedule status, the Contractor shall:
 - a. Carry out the activity with the scheduled crew on an overtime basis until the activity is complete or back on schedule.
 - b. Increase the crew size or add shifts so the activity can be completed as scheduled.
 - c. Commit to overtime or increased crew sizes for subsequent activities, or some combination of the above as deemed suitable by the Engineer.
 - 3. These actions shall be taken at no increase in the Contract Price.
- H. The Contractor shall maintain a current copy of all construction schedules on prominent display in the Contractor's field office at the Project site.
- I. The Contractor shall cooperate with the Owner and Engineer in all aspects of the Project scheduling system. Failure to implement the Project scheduling system or to provide specified schedules, diagrams and reports, or to implement actions to re-establish progress consistent with the overall progress schedule may be causes for withholding of payment.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or

material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *“Or-Equal” Items:* If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
2. *Substitute Items:*
 - a. If in Engineer’s sole discretion an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
 - b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
 - c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
 - d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:

- a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
- 2) will state:
- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- 3) will identify:
- a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Acceptance of any Subcontractor, other person or organization by Owner shall not constitute a waiver of any right of Owner to reject defective Work. Contractor shall not be required to employ any Subcontractor, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection. If more than twenty-five percent of the work (as measured by dollar value and not including specialty work that is customarily subcontracted) is to be performed by one or more subcontractors then Contractor is obligated to notify Owner in writing of this intent with the submission of the Bid and to provide such supplemental information within five days of the bid as outlined under section 11 of INSTRUCTIONS TO BIDDERS.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- H. Owner or Engineer may furnish to any Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid on their behalf to Contractor in accordance with Contractor's Applications for Payment.
- I. Specialty Subcontractors: Contractor shall utilize the services of Specialty Subcontractors on those parts of the Work which is declared as specialty work in Specifications and which, under normal contracting practices, is best performed by Specialty Subcontractors, as required by the Engineer in Engineer's sole discretion, at no additional cost to the Owner. If Contractor desires to self-perform specialty work, Contractor shall submit a request to the Owner, accompanied by evidence that Contractor's own organization has successfully performed the type of work in question, is presently competent to perform the type of work, and the performance of the work by Specialty Subcontractors will result in materially increased costs or inordinate delays.
- J. The Contractor shall perform a minimum of 50 percent of the onsite labor with its own employees.
- K. All pipe installation must be performed by the general contractor or subcontractor that has been prequalified by the Cobb County-Marietta Water Authority for the installation of 48" ductile iron pipe.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its

use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents

6.08 *Permits [See Supplementary Conditions SC-6.08]*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner

and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

- D. The Contractor shall keep fully informed of all laws, ordinances and regulations of the federal, state, county, city and municipal governments or authorities in any manner affecting those engaged or employed in the Work or the materials used in the Work or in any way affecting the conduct of the Work and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same.

1. Security and Immigration Act: Contractor and its Subcontractors shall register and comply with OCGA 13-10-90 et. seq. and Georgia Department of Labor Chapter 300-10-1.

- E. Contractor shall perform those duties as they relate to O.C.G.A. Section 36-91-92, including filing the Notice of Commencement. Contractor shall provide Owner and Engineer with proof of having performed these duties before any progress payments or final payment shall be considered due and payable to the Contractor.
- F. Where professional engineering and/or architectural services are required in connection with any of the components required by the Contract, all Bidders and component suppliers must make certain that there is full compliance with all applicable laws of the State of Georgia and any other state governing professional engineering and/or architecture. The Owner and Engineer do not warrant that any entity listed as an acceptable manufacturer is or will be in compliance with such laws.
- G. Any fines levied against the Owner for failure of Contractor to properly maintain required NPDES erosion and sediment control measures or any other related requirements will be deducted as set-offs from payments due Contractor.

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
 - D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings shall be delivered to Engineer for Owner. See General Requirements for additional requirements.

6.13 *Safety and Protection [See Supplementary Conditions SC-6.13]*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all precautions for the safety of, and shall provide the protection to prevent pollution of or damage, injury or loss to:
 1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
 - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
 - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
 - E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
 - F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
 - G. The property, improvements or facilities at the Site shall be replaced or restored to a condition as good as when Contractor entered upon the Site. In case of failure on the part of Contractor to restore such property, or make good such damages or injury, the Owner may, after 48 hours written notice, or sooner in the case of an emergency, proceed to repair, rebuild, or otherwise restore such property, improvements or facilities as may be deemed necessary. The cost thereof will be deducted from any monies due or which may become due Contractor under this Contract.

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

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

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted or adjusted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the Specifications.
- b. Data shown on the Shop Drawings shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each Shop Drawing and Sample submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will return as incomplete or will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval or disapproval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval or disapproval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of

each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

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

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

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

6.18 *Continuing the Work*

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

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;
2. recommendation by Engineer or payment by Owner of any progress or final payment;
3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. use or occupancy of the Work or any part thereof by Owner;
5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person or entity. If through the negligent act or omission on the part of Contractor, any other contractor or any subcontractor shall suffer loss or damage on the Work, Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against Owner and/or Engineer on account of any damage alleged to have been sustained, Owner shall notify Contractor, who shall indemnify and save harmless Owner and Engineer against any such claims.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the

Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the negligent preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. negligently giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.
- D. Contractor, Subcontractors, Suppliers and others on the Project, or their sureties, shall maintain no direct action against the Engineer, their officers, employees, affiliated corporations, consultants, and subcontractors, for any claim arising out of, in connection with, or resulting from the engineering services performed. Only the Owner will be the beneficiary of any undertaking by the Engineer.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract

Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 Coordination

- A. If Owner contracts with others for the performance of other work on the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and
 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination with other contractors.
- C. If Owner contracts with others for the performance of other work on the Site, the Contractor shall attend and participate in coordination meetings with the other on-site contractors.

7.03 *Legal Relationships*

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

7.04 *Claims Between Contractors*

- A. Should Contractor cause damage to the work or property of any separate contractor at the Site, or should any claim arising out of Contractor's performance of the work at the Site be made by any separate contractor against Contractor, Owner, Engineer, or any other person, Contractor shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by mediation, arbitration, or at law.
- B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold Owner, Engineer, and the officers, directors, employees, agents, and other consultants of each and any of them harmless from and against all claims, costs, losses and damages, (including, but not limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) arising directly, indirectly or consequentially out of or resulting from any action, legal or equitable, brought by any separate contractor against Owner, Engineer, or the officers, directors, employees, agents, and other consultants of each and any of them to the extent based on a claim arising out of Contractor's performance of the Work. Should a separate contractor cause damage to the Work or property of Contractor or should the performance of work by any separate contractor at the Site give rise to any other claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the officers, directors, employees, agents, and other consultants of each and any of them or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any mediator or arbitrator which seeks to impose liability on or to recover damages from Owner, Engineer, or the officers, directors, employees, agents, or other consultants of each and any of them on account of any such damage or claim.

- C. If Contractor is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable hereto, Contractor may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, and/or Engineer and the officers, directors, employees, agents, or other consultants of each and any of them for any delay, disruption, interference or hindrance caused by any separate contractor. This Paragraph does not prevent recovery from Owner and Engineer for activities that are their respective responsibilities.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

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

8.03 *Furnish Data*

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

8.04 *Pay When Due*

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

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

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

8.07 *Change Orders*

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

8.08 *Inspections, Tests, and Approvals*

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

8.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits

and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative [See Supplementary Conditions SC-9.03]*

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

9.04 *Authorized Variations in Work*

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

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

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

9.07 *Determinations for Unit Price Work*

- A. Engineer will have authority to determine the actual quantities and classifications of Unit Price Work performed by Contractor. If Engineer exercises such authority, Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

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

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents, except that Owner shall determine whether bonds, certificates of insurance and release of liens comply with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

1. Owner may, in anticipation of possibly ordering an addition, deletion or revision to the Work, request Contractor to prepare a proposal of cost and times to perform Owner's contemplated changes in the Work. Contractor's written proposal shall be transmitted to the Engineer promptly, but not later than fourteen days after Contractor's receipt of Owner's written request and shall remain a firm offer for a period not less than sixty days after receipt by Engineer.
 2. Contractor is not authorized to proceed on an Owner contemplated change in the Work prior to Contractor's receipt of a Change Order (or Work Change Directive) incorporating such change into the Work.
 3. Owner's request for proposal or Contractor's failure to submit such proposal within the required time period will not justify a claim for an adjustment in Contract Price or Contract Times (or Milestones).
 4. The Owner shall not be liable to the Contractor for any costs associated with the preparation of proposal associated with the Owner's contemplated changes in the Work.
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of

executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

B. In signing a Change Order, the Owner and Contractor acknowledge and agree that:

1. The stipulated compensation (Contract Price or Contract Time, or both) set forth in the Change Order includes payment for:
 - a. the Cost of the Work covered by the Change Order,
 - b. Contractor's fee for overhead and profit,
 - c. interruption of Progress Schedules,
 - d. delay and impact, including cumulative impact, on other work under the Contract Documents, and
 - e. extended home office and jobsite overhead;
2. the Change Order constitutes full mutual accord and satisfaction for the change to the Work;
3. No reservation of rights to pursue subsequent claims on the Change Order will be made by either party; and
4. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

10.04 *Notification to Surety*

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

10.05 *Claims and Disputes*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 14 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with written supporting data shall be delivered to the Engineer and the other party to the Contract within 21 days (and monthly thereafter for continuing events) after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those

prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by

Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

1. Full rental cost for rented, leased, and/or owned equipment shall not exceed the rates listed in the Rental Rate Blue Book published by Equipment Watch, a unit of Primedia, Inc., as adjusted to the regional area of the Project. The most recent published edition in effect at the commencement of the actual equipment use shall be used.
2. Rates shall apply to equipment in good working condition. Equipment not in good condition, or larger than required, may be rejected by Engineer or accepted at reduced rates.
3. Equipment in Use: Actual equipment use time documented by the Engineer shall be the basis that the equipment was on and utilized at the Project site. In addition to the leasing rate above, equipment operational costs shall be paid at the estimated operating cost, payment category (and the table below), and associated rate set forth in the Blue Book if not already included in the lease rate.

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

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

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

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

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

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

11.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a lump sum value fixed by the Owner or by unit price values fixed by the Owner (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and where the methods under Paragraph 12.01.B.2. are not selected by the Owner, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:

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

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

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

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

13.01 *Notice of Defects*

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

13.02 *Access to Work*

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

13.03 *Tests and Inspections*

- A. Contractor is responsible for the initial and subsequent inspections of Contractor's Work to ensure that the Work conforms to the requirements of the Contract Documents. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests. Contractor shall establish an inspection program and a testing plan acceptable to the Engineer and shall maintain complete inspection and testing records available to Engineer.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all non-contractor inspections, tests, or approvals required by the Contract Documents except:
1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

G. Tests required by Contract Documents to be performed by Contractor and that require test certificates to be submitted to Owner or Engineer for acceptance shall be made by an independent testing laboratory or agency licensed or certified in accordance with Laws and Regulations and applicable state and local statutes. In the event state license or certification is not required testing laboratories or agencies shall meet the following applicable requirements:

1. "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories.
2. Basic requirements of ASTM E329, "Standard of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction" as applicable.
3. Calibrate testing equipment at reasonable intervals by devices of accuracy traceable to either the National Bureau of Standards or accepted values of natural physical constants.

13.04 *Uncovering Work*

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

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner

to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

- B. If Owner stops Work under Paragraph 13.05.A. Contractor shall not be entitled to an extension of Contract Times or increase in Contract Price.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- C. Contractor shall promptly segregate and remove rejected products from the Site.
- D. If rejected products or Work is not removed within 48 hours, the Engineer will have the right and authority to stop the Work immediately and will have the right to arrange for the removal of said rejected products or Work at the cost and expense of the Contractor.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the

defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.
- F. Repetitive malfunction of an equipment or product item shall be cause for replacement and an extension of the correction period to a date one year following acceptable replacement. A repetitive malfunction shall be defined as the third failure of an equipment or product item following original acceptance.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time as defined by the Engineer after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other

provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

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

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

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

14.02 Progress Payments

A. Applications for Payments:

- 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied

by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Forty-five days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.
4. Items entitling Owner to retain set-offs from the amount recommended, include but are not limited to:
 - a. Owner compensation to Engineer because of the following Contractor-caused events:
 - (1) Delays necessitating a time extension for the performance of Engineer's services;
 - (2) Witnessing retesting of corrected or replaced defective Work;
 - (3) Return visits to manufacturing facilities to witness factory testing or retesting;
 - (4) Submittal reviews in excess of three reviews by Engineer for substantially the same Submittal;
 - (5) Evaluation of proposed substitutes and in making changes to Contract Documents occasioned thereby;
 - (6) Hours worked by Contractor, in excess of normal work hours as defined by Article 6.02 of the General Conditions, necessitating Engineer to work overtime;
 - (7) Return visits to the Project by Engineer for Commissioning Activities not performed on the initial visit;

- b. Fines levied against the Owner for Contractor's performance of NPDES Erosion and Sedimentation Control Measures or other permit violations.
- c. The cost of repair, rebuilding or restoration of property improvements or facilities by the Owner as outlined in Paragraph 6.13.
- d. Liability for liquidated damages incurred by Contractor as set forth in the Agreement.

E. *Prompt Payment Clause*

1. Owner and Contractor agree that all partial payments and final payments shall be subject to the Georgia Prompt Pay Act, as originally enacted and amended, and as set forth in O.C.G.A. 13-11-1 through 13-11-11, except as provided below to the extent authorized by law.
2. Interest Rate: For purposes of computing interest on late payments, the rate of interest shall be the applicable monthly interest rate for the "Georgia Fund 1" investment pool managed by the State of Georgia Office of Treasury and Fiscal Services.
3. Payment Periods:
 - a. When Contractor has performed in accordance with the provisions of these Contract Documents, the Owner shall pay Contractor within 45 days of receipt by the Owner or the Owner's representative of any properly completed Application for Payment, based upon work completed or service provided pursuant to the terms of these Contract Documents.
 - b. When a subcontractor has performed in accordance with the provisions of its subcontract and the subcontract conditions precedent to payment have been satisfied, Contractor shall pay to that subcontractor and each subcontractor shall pay to its subcontractor, within ten days of receipt by Contractor or subcontractor of each periodic or final payment, the full amount received for such subcontractors work and materials based on work completed or service provided under the subcontract, less retainage expressed as a percentage, but such retainage shall not exceed that retainage being held by the Owner, provided that the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete its work as contractor in its reasonable discretion may require, including but not limited to a payment and performance bond.
4. Interest on Late Payment: Except otherwise provided in these Contract Documents and/or in O.C.G.A. 13-11-5, if a periodic or final payment to Contractor is delayed by more than the time allotted in Paragraph 14.02.E.3b, or if a periodic or final payment to a subcontractor is delayed more than ten days after receipt of periodic or final payment by Contractor or Subcontractor, the Owner, Contractor, or subcontractor, as the case may be, shall pay interest to its Contractor, or subcontractor beginning on the day following the due dates as provided

in Paragraph 14.02.E.3b, at the rate of interest as provided herein. Interest shall be computed per month or a pro-rata fraction thereof on the unpaid balance. There shall be no compounded interest. No interest is due unless the person or entity being charged interest received "Notice" as provided in Paragraph 14.02.E.5. Acceptance or progress payments or final payment shall release all claims for interest on said payments.

5. Notice of Late Payment and Request of Interest: Any person or entity asserting entitlement to interest on any periodic or final payment pursuant to the provisions of this Prompt Payment Clause shall provide "notice" to the person or entity being charged interest of the charging party's claim to interest on late payment. "Notice" shall be in writing, served by U.S. Certified Mail – Return Receipt Requested at the time the properly completed Application for Payment is received by the Owner or Owner's representative, and shall set forth the following:
 - a. A short and concise statement that interest is due pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause;
 - b. The principal amount of the periodic or final payment which is allegedly due to the charging party; and
 - c. The first day and date upon which the charging party alleges that said interest will begin to accrue, pursuant to the provisions of the Georgia Prompt Pay Act and this Prompt Payment Clause.
6. These "Notice" provisions are of the essence; therefore, failure to comply with any requirement as set forth in the Prompt Payment Clause precludes the right to interest on any alleged late payment to which said "Notice" would otherwise apply.
7. Integration with the Georgia Prompt Pay Act: Unless otherwise provided in these Contract Documents, the parties hereto agree that these provisions of this Prompt Payment Clause supersede and control all provisions of the Georgia Prompt Pay Act (O.C.G.A. 13-11-1 through 13-11-11 (1994)), as originally enacted and as amended, and that any dispute arising between the parties hereto as to whether or not the provisions of this contract or the Georgia Prompt Pay Act control will be resolved in favor of these Contract Documents and its terms.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.
- B. No materials or supplies for the Work shall be purchased by Contractor or subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that Contractor has good title to all

materials and supplies used by Contractor in the Work, free from all liens, claims or encumbrances.

- C. Contractor shall indemnify and save Owner harmless from all claims growing out of the lawful demands for payment by subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. Contractor shall, at Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then Owner may, after having served written notice on the said Contractor either pay unpaid bills, of which Owner has written notice, direct, or withhold from Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon Owner to either Contractor or to Contractor's Surety. In paying any unpaid bills of Contractor, Owner shall be deemed the agent of Contractor and any payment so made by Owner shall be considered as payment made under the Contract by Owner to Contractor and Owner shall not be liable to Contractor for any such payment made in good faith.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion. Specific items of Work that must be completed prior to the Engineer's issuance of a certificate of Substantial Completion include, but are not limited to, the following:
1. Correction of all deficient Work items listed by all state, local, and other regulatory agencies or departments.
 2. All submittals must be received and approved by the Engineer, including but not necessarily limited to, the following:
 - a. Record documents.
 - b. Factory test reports, where required.
 - c. Equipment and structure test reports.
 - d. Manufacturer's Certificate of Proper Installation.
 - e. Operating and maintenance information, instructions, manuals, documents, drawings, diagrams, and records.
 - f. Spare parts lists.
 3. All additional warranty or insurance coverage requirements have been provided.

4. All manufacturer/vendor-provided operator training is complete and documented.
 5. All occupancy permits required by local building code officials.
 6. Other items of Work specified elsewhere as being prerequisite for Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

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

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments. Under no circumstances will Contractor's application for final payment be accepted by the Engineer until all Work required by the Contract Documents has been completed.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety to final payment;

- c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
 - e. The Contractor's signed and sealed final change order to close the Contract; and
 - f. Any other data reasonably required by the Owner and/or Engineer, including execution of Affidavit of Contractor, establishing payment or satisfaction of all obligations, including releases, waivers of liens, and documents of satisfaction of debts.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance:

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

C. Payment Becomes Due:

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

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment

(for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

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

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer;
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents;

5. If Contractor abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of Owner, or if the Contract or any claim thereunder shall be assigned by Contractor otherwise than as herein specified;
 6. Contractor is adjudged bankrupt or insolvent;
 7. Contractor makes a general assignment for the benefit of creditors;
 8. A trustee or receiver is appointed for Contractor or for any of Contractor's property;
 9. Contractor files a petition to take advantage of any debtor's relief act, or to reorganize under the bankruptcy or applicable laws;
 10. Contractor repeatedly fails to supply sufficient skilled workmen, materials or equipment;
 11. Contractor fails to make satisfactory progress toward timely completion of the work; or
 12. Contractor repeatedly fails to make prompt payments to subcontractors or material suppliers for labor, materials or equipment.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor, unless Contractor otherwise cures the deficiency in accordance with Paragraph 15.02.D.:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its

failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.
- G. Any termination by Owner pursuant to Paragraph 15.02 may result in the disqualification of Contractor for bidding on future contracts of Owner.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate or discontinue, in whole or in part, the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination;
 2. direct expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others;
 4. reasonable expenses directly attributable to termination; and
 5. ten percent overhead and profit for those costs agreed to in Paragraphs 15.03.A.1 through 15.03.A.4 above.
- B. Contractor shall submit within 30 calendar days after receipt of notice of termination a written statement setting forth its proposal for an adjustment to the Contract Price to include only the incurred costs described in this clause. Owner shall review, analyze, and verify such proposal and negotiate an equitable amount and the Contract may be modified accordingly.
- C. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 45 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, or by facsimile transmission and followed by written confirmation, to the last business address known to the giver of the notice.
- B. All notices required of Contractor shall be performed in writing to the appropriate entity.
- C. Electronic mail and messages will not be recognized as a written notice.
- D. If the Contractor does not immediately notify the Owner in writing of the belief that a field order, additional work by other contractors or the Owner, or subsurface, latent, or unusual unknown conditions entitles the Contractor to a Change Order, no consideration for time or money will be given the Contractor.

17.02 Computation of Times

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

17.03 *Cumulative Remedies*

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

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

- A. Each and every provision of this Agreement shall be construed in accordance with and governed by Georgia law. The parties acknowledge that this Contract is executed in Cobb County, Georgia and that the Contract is to be performed in Cobb County, Georgia. Each party hereby consents to the Cobb County Superior Court's sole jurisdiction over any dispute which arises as a result of the execution or performance of this Agreement, and each party hereby waives any and all objections to venue in the Cobb County Superior Court.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

17.07 *Addresses*

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

17.08 *Forms and Record*

- A. The form of all Submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Engineer.

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

17.09 *Assignment*

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

END OF SECTION

SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition, with CCMWA Modifications 01-13-2010). All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

The provisions in this Section of the Specifications shall govern in the event of any conflict between this Section and the General Conditions.

SC-2.02.B.1 Add the following new paragraph immediately after 2.02.B of the General Conditions

1. To receive electronic copies of the Contract Documents, Contractor shall complete and provide to Engineer an Electronic Media Release Form.

SC-4.02 *Subsurface and Physical Conditions*

SC-4.02.C Add the following new paragraph immediately after 4.02.B:

4.02.C In preparation of Drawings or Specifications, Engineer or Related Entities relied on the following reports or explorations and tests of subsurface conditions at the Site:

4.02.C.1 Report dated January 18, 2019, prepared by United Consulting, Inc., entitled "Geotechnical Exploration, CCMWA West Side Loop 36-Inch Water Main, Cardell Road and South Gordon Road Southwest, Austell, Georgia."

4.02.C.2 Report dated January 30, 2019, prepared by Southern Cathodic Protection entitled, "Corrosion Assessment, Cobb County-Marietta Water Authority (CCMWA), West Side Loop Section 2 Project."

4.02.D. In preparation of Drawings and Specifications, Engineer or Related Entities relied upon the following drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the Site:

4.02.D.1 West Side Loop – Section II, Water Main Relocation, 36" Water Transmission Line, CCMWA Drawer 5-3, dated February 20th, 1967, by Hensley – Schmidt, Inc.

4.02.D.2 Chattahoochee Connector Schedule II, CCMWA Drawer 4-1, dated January 1969, by Welker and Associates, Inc.

4.02.D.3 Six Flags Connector, Section II-A, CCMWA Drawer 12-2, dated May 1972, by Welker and Associates, Inc.

4.02.D.4 Gordon Road 36" Water Main Relocation, CCMWA Drawer 4-2, dated November 1986, by Welker and Associates, Inc.

4.02.D.5 Factory Shoals Road and Six Flags Drive, CCMWA Drawer 12-5, dated February 2nd 1988, by Crumbley, Sanders and Associates

4.02.D.6 Old Alabama Road / Maxham Road Utility Relocation, CCMWA Drawer 5-12, dated December 1995, by Welker and Associates, Inc.

4.02.D.7 SR 139/Mableton Parkway Sidewalk Project, Cobb County Project No. E7560-X2762, dated September 14, 2017, by American Engineers, Inc.

4.02.D.8 Cardell Road 36" Water Main, CCMWA Drawer 5-7, by Sanders – Jordan & Associates, P.C.

4.02.D.9 South Gordon Road Water Main Replacement, Cobb County Water System Project No. W2071, by Arcadis.

4.02.D.10 South Gordon Road Water Main Upgrade, Cobb County Water System Project No. W2153, by Arcadis.

4.02.D.11 Cardell Road Water Main Upgrade, Cobb County Water System Project No. W2183, by Arcadis.

4.02.E. Copies of reports itemized in SC 4.02.C that are not included with Bidding Documents may be examined at the office of the Engineer during regular business hours. These reports are not part of the Contract Documents, but the "technical data" contained therein are incorporated therein by reference. Contractor is not entitled to rely upon other information and data utilized by Engineer and Related Entities in the preparation of Drawings and Specifications.

SC-5.02 *Licensed Sureties and Insurers*

SC-5.02.B Add a new paragraph immediately after Paragraph 5.02.A of the General Conditions which is to read as follows:

- B. All Sureties and Insurers must have an A.M. Best Financial Strength Rating of A- or higher, with a Financial Size Category of X or higher.

SC-5.03 *Certificates of Insurance*

SC-5.03 The following shall be added as 5.03.F thru N, following 5.03.E:

- F. Notwithstanding provisions of O.C.G.A., Section 33-23-44, insurance certificate must include the following affirmative statement: "Coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty (30) days prior written notice has been given to Owner and to each other additional insured to whom a certificate of insurance has been issued."
- G. Insurance certificate must show proper name and address of Cobb County-Marietta Water Authority: 1170 Atlanta Industrial Drive, Marietta, Georgia 30066 and show Owner, Engineer, and Engineer's Consultants as additional insureds.

- H. Insurance certificate must show coverage applies for contractual liability for Contractor's indemnity obligations under Paragraphs 6.07, 6.11 and 6.20 of the General Conditions.
- I. In addition to the requirement for the policy limits specified under S.C. 5.04, A.3 – A.5, the applicable insurance certificate must show that the entire aggregate policy limits for general liability coverage will apply specifically for the Project.
- J. Each insurance certificate for coverage other than Worker's Compensation Insurance must show that a waiver of rights of recovery against any of the insureds or the additional insureds is in effect.
- K. Certificate for Contractor's liability insurance must show coverage of claims for damages because of bodily injury, sickness or death of any person or property damage resulting from the ownership, maintenance or use of mobile equipment.
- L. Certificate for Worker's Compensation Insurance must show coverage includes executive officers and Contractor's leased employees, temporary staff and part-time employees.
- M. Owner may waive specific insurance coverages set forth in SC-5.04 where contractor provides equivalent insurance coverage by way of a different combination of policies.
- N. Each insurance certificate must show coverage is underwritten with an insurance carrier which has A.M. Best ratings as stipulated in Paragraph SC-5.02-B.

SC-5.04 *Contractor's Liability Insurance*

The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide the following coverages for not less than the following limits or greater where required by Laws and Regulations:

5.04.A.1 and 5.04.A.2 For coverage as required by General Conditions 5.04.A.1 and 5.04.A.2 (Worker's Compensation):

(1) State	Statutory Limit
(2) Federal	Statutory Limit
(3) Employer's Liability	\$ 1,000,000

5.04.A.3 – A.5 For coverage as required by General Conditions 5.04.A.3, 5.04.A.4 and 5.04.A.5 (General Liability) which shall also include broad form property damage liability, loss of use of tangible property, and loss of use of property that has not been damaged but has been rendered useless nonetheless, completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of CONTRACTOR other than Contractor's work or equipment:

(1) Aggregate	\$ 2,000,000
(2) Each Occurrence	\$ 1,000,000
(3) Products and completed operations, aggregate	\$ 2,000,000
(4) Personal and advertising injury	\$ 1,000,000
(5) Fire Damage/Legal Liability	\$ 100,000
(6) Medical Expense Limit any one person	\$ 5,000
(7) Property damage liability insurance will provide explosion, collapse and underground coverages where applicable.	

(8) Excess/Umbrella Liability:

General Aggregate	\$ 5,000,000
Each Occurrence	\$ 5,000,000

The aggregate policy limits for general liability coverage must be designated to the Project. The excess/umbrella policy must provide additional coverage for policy limits in excess of the general liability (including products and completed operations), automobile liability, contractual liability and employer's liability. Mobile equipment coverage described in S.C. 5.03.G must be included.

5.04.A.6 Automobile Liability:

(1) Combined Single Limit (Bodily Injury and Property Damage): \$ 1,000,000

Coverage must be provided for all owned/leased, hired and non-owned vehicles.

5.04.B.3. *Contractual Liability Insurance:*

The Contractual Liability coverage required by paragraph 5.04.B.3 of the General Conditions shall provide coverage for not less than the following amounts:

- (1) General Aggregate \$ 2,000,000
- (2) Each Occurrence (Bodily Injury and Property Damage) \$ 2,000,000

The aggregate policy limits for Contractual Liability must be designated to the Project. As indicated in S.C. 5.04.A.3 – A.5, the excess/umbrella policy must provide additional coverage in excess of these amounts.

SC-5.04.E After Paragraph D. add Paragraph 5.04.E:

- E. Additional Insureds: The Owner, Engineer, and Engineer's Consultant shall be covered as Additional Insured under any and all Insurance required by this Contract, and such insurance shall be primary with respect to the Additional Named Insured. Confirmation of this shall appear on the Accord Certificate of Insurance, and on any and all applicable Insurance policies. However, this requirement does not apply to Workers' Compensation or Professional Liability Insurance. Copies of endorsements showing that the Owner and each additional insured identified herein have been added to the policies as an additional insured shall be attached to each of the certificates.

SC-5.06 *Property Insurance*

Delete Paragraph 5.06 of the General Conditions in its entirety and insert the following in its place:

5.06.A. Contractor shall purchase and maintain property insurance upon the Work at the site in the amount of the full replacement cost thereof except for flood perils which shall have a \$1,000,000 limit (subject to such deductible amounts as may be provided in these Supplemental Conditions or required by Laws and Regulations). This insurance shall:

- 1. include the interests of Owner, Contractor, Subcontractors, Engineer, Engineer's Consultants and any other person or entities identified in the Supplementary Conditions,

each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk or Installation Floater "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework and Work in transit and shall insure real and personal property against at least the following perils: fire, lightning, extended coverage, theft, vandalism and malicious mischief, explosives and blasting, wind, flood, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions;
3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects, permits, loss and damage to the Work, temporary building and scaffoldings, false work, work in transit, and materials and supplies, fixtures, machinery and equipment);
4. cover materials and equipment in transit for incorporation in the Work or stored at the site or at any other location prior to being incorporated in the Work, provided that such materials and equipment have been recommended by Engineer; and be maintained in effect until final agreed to in writing by Owner, Contractor, and Engineer with thirty days' written notice to each other additional insured to whom a certificate of insurance has been issued;
5. allow for partial utilization of the Work by Owner;
6. include testing and startup;
7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued;
8. contain the following provisions: (1) coverage for property in transit and (2) coverage for building damage as required by ordinance and law including demolition, debris removal and increased cost of construction; and
9. property insurance furnished under this contract shall have deductibles no greater than \$25,000 for all perils.

5.06.B. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions or approved by Owner. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

The policies of insurance required to be purchased and maintained by Contractor in accordance this paragraph 5.06 shall comply with the requirements of GC 5.04.B.5.

SC-6.02

Labor; Working Hours

SC-6.02 Add the following subparagraph 6.02.D.1:

1. The rate of \$135.00/hour will apply for the overtime work performed on behalf of the Owner.

SC-6.08 *Permits*

SC-6.08.B Add the following subparagraph 6.08.B

- B. The Owner will submit Contract Drawings and Specifications to Cobb County Community Development.

SC-6.13 *Safety and Protection*

SC-6.13 Following Paragraph 6.13.G, add the following:

H. Contractor's Plan for Safety Precautions and Programs

1. Before any Work at the site is started, Contractor shall have prepared Contractor's written plan for Project-specific safety precautions and programs, complete with respect to procedures and actions that the Contractor intends Contractor and all others as provided in Paragraphs 6.13.A.1 and 13.02.A, to follow in order for Contractor and all others to comply with all applicable Laws and Regulations. Contractor's plan for safety precautions and programs shall have been approved and endorsed by Contractor's designated safety representative required in Paragraph 6.14.A.
2. Contractor shall revise Contractor's plan for safety precautions and programs at appropriate times to reflect changes in construction conditions, the Work, Contractor's means, methods, techniques, sequences and procedures of construction, and the requirements of paragraph 13.02.A. Contractor shall disseminate the original plan and revisions to all others indicated in Paragraphs 6.13.A and 13.02.A.
3. Contractor's plan for safety precautions and programs will not require more stringent safety requirements, training or other qualifications for all others, including those specified in Paragraph 13.02.A and their employees, than Contractor sets forth for comparable activity and responsibility of Contractor, Subcontractors, and Suppliers and their respective employees.

SC-9.03 *Project Representative*

SC-9.03 Add the following new paragraphs immediately after Paragraph 9.03.A:

- B. The Resident Project Representative (RPR) will be Engineer's or Engineer's Consultant's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall be only through or with the full knowledge and approval of Contractor. The RPR shall:
 1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.

2. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
3. *Liaison:*
 - a. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, assist in providing information regarding the intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
4. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
5. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
6. *Review of Work and Rejection of Defective Work:*
 - a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
7. *Inspections, Tests, and System Startups:*
 - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
 - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

8. *Records:*

- a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
- b. Maintain records for use in preparing Project documentation.
- c. Obtain GPS locations along center line of pipe at every joint of pipe, at fittings and other important locations. Contractor shall assist RPR in holding the GPS rover unit rod on top of the pipe as needed, wait for the GPS unit to obtain an accurate reading (for a reasonable time but not to exceed 15 minutes) and return the equipment to the RPR before safety shoring is removed.

9. *Reports:*

- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.

10. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

11. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

12. *Completion:*

- a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.
- b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.

C. Contractor is hereby advised by Engineer that the RPR is not authorized to:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).
2. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor’s superintendent.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Authorize Owner to occupy the Project in whole or in part.

END OF SECTION

DIVISION 01
GENERAL REQUIREMENTS

SECTION 01 11 00
SUMMARY OF WORK

1 GENERAL

1.1 DESCRIPTION

- A. The work described by these specifications is located in south Cobb County, Georgia, along Cardell Road, South Gordon Road, and Factory Shoals Road between Old Alabama Road and Mableton Parkway. The purpose of the project is to replace an existing 36" prestressed concrete cylinder pipe (PCCP) with approximately 20,000 LF of 36" zinc-coated ductile iron pipe (DIP) water main.

2 PRODUCTS

2.1 SUMMARY OF WORK

- A. The work to be performed consists of furnishing all labor, equipment and materials required to construct the water main and appurtenances as shown in the contract drawings and specified herein.

2.2 MAJOR ITEMS OF CONSTRUCTION

- A. Preparation of traffic control plan for approval by Cobb County DOT's local construction office and inspector. OWNER to obtain a utility permit from CCDOT for installation of the main once contractor is under contract and submits traffic control plan.
- B. Installation of approximately 20,000 LF of 36" zinc-coated, double poly-wrapped, double bonded-joint, DIP water main generally parallel to an existing 36" PCCP main in or close to the pavement.
- C. Installation of combination air and vacuum valves, blowoff valves, and other appurtenances, where shown in the drawings.
- D. Removal and disposal of existing 36" PCCP where shown and as required for installation of the proposed 36" DIP.
- E. Three (3) Stream Crossings (Pine Creek, Gordon Branch, Gordon Creek)
- F. Connection to existing 36" DIP water mains where shown in the Drawings.
- G. Installation of 36" gate valves with two test stations each, unless otherwise specified.
- H. Installation of 3M marker balls along the proposed water main.
- I. Paving and striping of two travel lanes turn lanes and acceleration/deceleration lanes, as necessary.
- J. Installation of 3M marker balls on the existing 36" water main where removed from service and left in place between Old Alabama Road and Mableton Parkway.
- K. Installation of 3M marker balls on the existing 20" water main to remain in service along Factory Shoals Road between South Gordon Road and Riverside Parkway.
- L. Abandonment of the existing 36" water main including outlets to Cobb County, line valves, blowoff valves, and other appurtenances as shown in the plans.

3 EXECUTION

3.1 GENERAL

- A. Coordinate, furnish and install the proposed water main and appurtenances as shown in the contract documents.
- B. Constraints on Construction Scheduling
 - 1. Contractor shall not close any lane to traffic between 6 AM and 9 AM or between 4 PM and 6 PM, unless a road closure permit has been obtained from CCDOT.
 - 2. The extent of the pipeline on South Gordon Road between Factory Shoals Road and Mableton Parkway will be completed in the summer months when Cobb County schools are not in session. The scheduling of this work particularly pertains to Riverside Primary School and Riverside Intermediate School located along the South Gordon Road corridor.
 - 3. Refer to the section on Coordination of Work for other constraints or recommended phasing stages of the project.

END OF SECTION

**SECTION 01 21 16
ALLOWANCES**

1 GENERAL

1.1 DESCRIPTION

- A. The Contractor shall include in his bid the allowances listed in the bid proposal. These allowances shall cover work, manufactured equipment or services that will be provided either by the Contractor or by others who may be selected by the Owner. All work performed under allowances shall be subject to Owner approval and under special terms described herein. The contractor shall coordinate and cause the work covered by these allowances to be performed. In accordance with the Contract General Conditions Paragraph 11.02 Allowances, the Contractor's costs including markup and profit are included in the Contract Price and no additional payment will be made for these costs. The final amount of any allowance item listed in the bid proposal shall be adjusted accordingly by change order to reflect actual cost.

2 SCHEDULE OF ALLOWANCES

2.1 ALLOWANCE FOR FORCE ACCOUNT WORK

- A. The purpose for this allowance is to reimburse the Contractor for force account work as directed by the Owner. Payment under this allowance shall be full compensation for all tools, labor, equipment, materials, traffic control, and any incidentals necessary for the work directed. The Contractor shall coordinate such work with the water main installation. In order to be eligible for payment under this item, the Contractor must submit a written proposal to the Owner for approval before any work begins. Reimbursement to the Contractor will be paid at the actual cost.

2.2 ALLOWANCE FOR MATERIALS TESTING

- A. The purpose for this allowance is to reimburse the Contractor for the services of a testing laboratory to perform required testing of materials on this project. The Contractor must submit a written proposal to the Owner for approval stating the geotechnical or materials testing firm's qualifications before any work begins. In order to be eligible for payment, tests must (a) be ordered by the Engineer, (b) show that the material met specifications, and (c) be performed by an approved testing laboratory. Laboratory fees will be paid by the Contractor. Reimbursement to the Contractor will be made at the actual cost of eligible tests. Test reports will be provided to Engineer and Owner.

2.3 ALLOWANCE FOR UTILITY RELOCATION BY OTHERS

- A. The purpose for this allowance is to reimburse the Contractor for the work of relocating or adjusting or replacing any required utility as necessary to complete the construction of the proposed water main. In order to be eligible for payment under this item, the Contractor must submit a written proposal to the Engineer for approval for the required relocation or adjustments of the existing utilities before work begins in these areas. Reimbursement to the Contractor will be paid at the actual cost.

2.4 ALLOWANCE FOR LANDSCAPING

- A. The purpose for this allowance is to reimburse the Contractor for the services of a contracting firm specializing in landscape restoration and to pay for the materials required

for such work. Such materials include trees, recreational equipment, and playground equipment. Payment under this allowance shall be full compensation for all tools, labor, equipment, materials, traffic control, and any incidentals necessary for the restoration as required. The Contractor shall coordinate such work with the water main installation such that the restoration work is performed immediately after the water main installation. In order to be eligible for payment under this item, the Contractor must submit a written proposal to the Owner for approval before any work begins. Reimbursement to the Contractor will be paid at the actual cost. Grassing and sodding will be paid under the bid items included in the Bid Proposal.

2.5 ALLOWANCE FOR TRAFFIC CONTROL

- A. This allowance shall be used to reimburse the Contractor for the use of police officers to control traffic if required by Cobb County DOT. This allowance will **not** be used to reimburse Contractor for safety barriers, traffic signal men, and other items required to maintain safety on the project site. In order to be eligible for payment under this item, the Contractor must submit a written proposal to the Owner for approval before any work begins. Reimbursement to the Contractor will be paid at the actual cost.

2.6 ALLOWANCE FOR CORROSION CONTROL

- A. The purpose for this allowance is to reimburse the Contractor for the services of a firm specializing in design of corrosion control for pipelines and for the implementation of that design. Payment under this allowance shall be full compensation for all tools, labor, equipment, materials, and any incidentals. The Contractor shall coordinate all work with the water main installation. In order to be eligible for payment under this item, the Contractor must submit a written proposal to the Owner for approval before any work begins. Reimbursement to the Contractor will be paid at the actual cost. Cathodic test stations and bonded joints will be paid under the bid items included in the Bid Proposal.

2.7 ALLOWANCE FOR WATER MAIN DISINFECTION AND DECHLORINATION OF CHLORINATED WATER

- A. The purpose for this allowance is to reimburse the Contractor for the services of a firm specializing in disinfection and dechlorination of water mains and in the development of disinfection/dechlorination plans necessary to comply with the requirements of the AWWA C651. Payment under this allowance shall be full compensation for all tools, labor, equipment, materials, and any incidentals used during disinfection of the water main and dechlorination of chlorinated water. The Contractor shall coordinate all work with the water main installation. This allowance will **not** be used to reimburse Contractor for cleaning the water main or maintaining a clean water main or for pressure testing the pipe. The Contractor will be responsible for the installation and removal of sample points as required by AWWA C651 on the water main. In order to be eligible for payment under this item, the Contractor must submit a written proposal to the Owner for approval before any work. Reimbursement to the Contractor will be paid at the actual cost or for Contractor's own forces.

END OF SECTION

**SECTION 01 22 00
MEASUREMENT AND PAYMENT**

1 GENERAL

1.1 GENERAL

- A. No quantities shall be measured for payment except items listed in the proposal, unless the Owner has approved "extra" work in accordance with the contract documents and has so advised the Contractor before the work was actually performed.
- B. Any and all other material, labor, etc., furnished and required shall be considered as incidental to the items to be measured and shall be included in the unit price bid for water main.
- C. The unit or lump sum prices bid for the various items shall be full compensation for furnishing all materials, tools, equipment, labor and incidentals necessary and/or required to complete the work as shown on the Drawings and called for in the specifications.
- D. The quantities to be paid for shall be determined by actual measurement of the amounts placed. The Engineer shall make all measurements and the contractor shall make certain all work has been measured before concealing; otherwise, he may be required to uncover or make accessible any work so concealed in order to receive payment for such items.

2 PAY ITEMS

2.1 WATER MAINS

- A. Measurement of the pipe in place will be along the main axis of the pipeline. No deduction in the length of pipe will be made for space occupied by valves, specials, and fittings.
- B. The unit price bid for pipe shall include all materials, labor and incidentals necessary for the completion of the pipeline, including rock excavation, as called for under SECTION 33 11 13, WATER MAIN CONSTRUCTION, except as specifically called for in other pay items herein. Geogrid soil reinforcement as specified in Section 33 11 13 shall be included in the pipe price. Geogrid shall be installed as depicted by the thick black line on Detail 430 on Sheet D-2 between the compacted soil backfill and the GAB.
- C. The unit price bid for water line shall include and cover all clearing and grubbing on the entire pipeline right-of-way or easement and the disposal of excess materials and all debris, and in dressing and finishing after the line is installed. There will be no additional payment where extra depth is incurred due to valve

locations, tie-ins, restrained joint requirements, conflicts with other utilities, or other field conditions.

- D. The Contractor shall be responsible for the reuse of acceptable in-place soils material including the drying or wetting to obtain suitable moisture content for compaction during backfill operations under Pay Item 2.1.
- E. Pipe will be paid for at the unit price bid for various sizes and types.

2.2 RESTRAINED JOINTS / RETAINER GLANDS

- A. Special restrained joints will be counted in place and paid for at the unit price bid per each type and size listed in bid proposal. A restrained joint shall be defined as the separated or loose portion of materials that are installed separately from pipe, fittings, or valves. Portions of restraint that are permanently attached to pipe, fittings, or valves and/or are an integral part of the system, do not qualify for additional payment. The restraint system shall be counted only once and shall be a complete system for each joint that is to be restrained.
- B. In the case of straight pipe, the payment for each restrained joint will be paid separate from the unit price per foot of pipe. In the case of ductile iron fittings, the payment for restrained joints will be paid separately from the payment for fittings. In the case of valves, the payment for each restrained joint will be paid separate from the unit price bid for each valve.

2.3 DUCTILE IRON FITTINGS

- A. Measurement of all diameter fittings shall be measured in place and payment made for approved fitting installation per pound of all diameter fittings installed. The unit price bid for fittings shall include all materials, labor and incidentals necessary for the complete installation of each fitting as called for in these specifications. Weight of iron fittings for payment purposes shall be determined by the AWWA C153 weight for the lightest weight fitting as appropriate for service intended not including joint accessories.
- B. Fittings that will be counted for payment under this item will include: (a) main-line fittings that are labeled on the Drawings, (b) plugs that are shown on stub-outs and on temporary ends for future connections, and (c) fittings on blow-off piping. Fittings installed for the Contractor's convenience or negligence will not be counted for payment.
- C. Additional fittings called for in the bid proposal and not shown on the drawings shall be installed as directed by the Engineer or Owner.
- D. All straight pipe of any length shall be defined as pipe rather than fittings, unless it is listed on the bid proposal as a special pay item.

2.4 VALVES

- A. Measurement of each valve shall be measured in place and payment made for approved valve installation per each valve installed. The unit price bid for valves shall include all materials, labor and incidentals necessary for the complete installation of each valve as called for in these specifications.
- B. Unit price shall include all excavation, furnishing and installing of the valves and valve extensions as required, operator and all necessary incidentals to complete the work. Access manholes or valve boxes shall be paid for under a separate bid item.

2.5 AIR & VACUUM VALVE

- A. Measurement of each air and vacuum valve shall be measured in place and payment made for approved air and vacuum valve per each installed. The unit price bid for air and vacuum valves shall include all materials, labor and incidentals necessary for the complete installation of each air and vacuum valve and associated flanged gate valve as called for in these specifications. Access manholes for valves shall be paid for under a separate bid item. The 36" tee, plug, and/or blind flange required for connection of the water main to the isolation gate valve will be paid for under the Ductile Iron Fittings pay item.

2.6 VALVE MARKERS

- A. Valve Markers will be counted in place and paid for at the unit price bid for each. Unit price shall include all items necessary for the installation of the valve marker.

2.7 VALVE BOXES

- A. Valve boxes will be counted in place and paid for at the unit price bid for each. Unit price shall include all excavation and installation of the box, concrete collar around the box and all necessary incidentals to complete the work. Extension stems will be paid under the bid item for the valve.

2.8 DIP MJ x PCCP ADAPTERS

- A. The tie-ins to the existing 16" PCCP water main will require special adapters to connect DIP to PCCP, as shown on the connection details on the Drawings. Payment will be made for one set of adapters with the correct type installed for the connection.

2.9 PIPE OUTLETS

- A. Measurement of each welded outlet shall be measured in place and payment made for approved welded outlet installation per each welded outlet installed. The unit price bid for welded outlets shall include all materials, labor and incidentals necessary for the complete installation of each welded outlet as called for in these specifications.
- B. Unit price for outlets shall include additional cost for parent pipe wall thickness increase necessary for welding and shall be based on a twenty-foot length of parent pipe. No extra payment for increased parent pipe wall thickness under this item or other bid items shall be paid.
- C. Restrained gaskets, such as Flex Ring, Fast-Grip, or Field Lok, shall be paid under the separate bid item for those gaskets when used on push-on welded outlets.

2.10 POLYETHYLENE ENCASEMENT

- A. Polyethylene encasement will be measured in place along the length of pipe and paid for at the unit price bid per linear foot for double wrap encasement (8-mil white V-Bio and additional black 8-mil tubing) as listed in the bid proposal. Payment will be for the double wrap encasement of all pipes as required by Specification Section 33 11 13.

2.11 BONDED JOINTS

- A. Measurement for the bonding of joints shall be for each pipe joint bonded with two bonding cables.
- B. Continuity testing instrument for testing of pipe joint bonds shall be incidental to the cost of bonded joints.

2.12 CATHODIC TEST STATION

- A. Measurement for the cathodic test stations shall be for each station installed.

2.13 SAMPLE TEST CONNECTION

- A. Measurement of each sample test station shall be measured in place and payment made for approved test station installation per each installed. The unit price bid for sample test station shall include all materials, labor and incidentals necessary for the complete installation of each sample test station at the inline valve locations as called for in these specifications and as shown in contract drawings. Payment will include the cost of the flanged gate valve with handwheel, blind flange, corporation stop, curb stop, Type K copper tubing in the size shown,

copper, brass and iron fittings, as specified, and copper piping supports.

- B. There are two sample test stations or ports for most mainline valve locations. In locations with three valves, the interior ports may be omitted on one or more valves. The test stations are depicted on the drawings as black circles on either side of each isolation valve.

2.14 CONNECTIONS TO EXISTING MAINS

- A. Payment for this item will be at the unit price bid listed in the bid proposal. Payment shall be full compensation for traffic control, locating, cutting-in and connecting to the existing water main and removal of existing piping as necessary to complete the connection. Pipe, sleeves and fittings used to make this connection will be paid for under the Ductile Iron Pipe and Ductile Iron Fittings pay items. Concrete thrust blocking and any thrust collars will be paid for under Miscellaneous Concrete and Miscellaneous Reinforcing Steel pay items.
- B. Connections include:
 - i. Connection #1, STA 1+00 (Old Alabama, 20"/36" DIP Main)
 - ii. Connection #2, STA 46+54 (Brandemere, 16" PCCP Main)
 - iii. Connection #3, STA 95+91 (Pisgah, 8" CCWS Main)
 - iv. Connection #4, STA 142+25 (Factory Shoals, 8" CCWS Main)
 - v. Connection #6, STA 176+61 (Hillcrest, 12" CCWS Main)
 - vi. Connection #7, STA 195+44 (Mableton Parkway, 36" DIP Main)
 - vii. Connection #8, STA 10+19 (Factory Shoals, 20" DIP Main)

2.15 MARKER BALL LOCATOR INSTRUMENT

- A. Payment for this item will be made at the unit price bid for this work and shall be full payment for extra work required for furnishing the number of instruments shown as specified in Section 33 11 13. Marker balls will be paid for separately.

2.16 MARKER BALL INSTALLATION ON EXISTING WATER MAIN TO BE ABANDONED

- A. Contractor shall install marker balls on existing water main to be abandoned in place at an approximate spacing of 100 feet. The marker balls are to be installed after the existing main is located and before the locating crew and traffic control personnel leave each site. The marker ball installation will be paid for at the unit price bid per each installation. The price shall be compensation for all labor, tools, equipment, and materials necessary to complete the installation as shown on the Drawings. The Contractor is responsible for installation of vertical PVC pipe to the top of the existing pipe, installation of backfill after pipe location has been surveyed, furnishing and installation of marker balls with appropriate information, capping of pipe, and backfilling.

B. This unit price bid includes the cost of the marker balls to be installed.

2.17 MARKER BALL INSTALLATION ON EXISTING WATER MAIN TO REMAIN IN SERVICE

A. Contractor shall install marker balls on the existing water main to remain in service at an approximate spacing of 100 feet along Factory Shoals Road between South Gordon Road and the Factory Shoals Tank at Riverside Parkway. The marker balls are to be installed after the existing main is located and before the locating crew and traffic control personnel leave each marker ball site. The marker ball installation will be paid for at the unit price bid per each installation. The price shall be compensation for all labor, tools, equipment, and materials necessary to complete the installation as shown on the Drawings. The Contractor is responsible for installation of vertical PVC pipe to the top of the existing pipe, installation of backfill after pipe location has been surveyed, furnishing and installation of marker balls with appropriate information capping of pipe, and backfilling.

B. This unit price bid includes the cost of the marker balls to be installed.

2.18 MARKER BALL AND INSTALLATION ON NEW WATER MAIN

A. The marker ball installation will be paid for at the unit price bid per each installation. The price shall be compensation for all labor, tools, equipment, and materials necessary to complete the installation as shown on the Drawings. The Contractor is responsible for installation of vertical PVC pipe at the time of construction, maintaining pipe during construction, installation of backfill after pipe location has been surveyed, furnishing and installation of marker balls with appropriate information, capping of pipe, and backfilling.

B. This unit price bid includes the cost of the marker balls to be installed.

2.19 CONCRETE MANHOLE ASSEMBLY

A. Measurement of each concrete manhole assembly shall be measured in place and payment made for approved concrete manhole assembly installation per each installed. The unit price bid for concrete manhole assembly shall include all materials, labor and incidentals necessary for the complete installation of each concrete manhole assembly as called for in these specifications.

B. Unit price for each concrete manhole assembly shall include up to ten vertical feet of complete manhole assembly, as measured from the outside bottom of the pipe to the top of the manhole. A complete manhole assembly at a minimum shall consist of base foundation preparation and materials, a manhole base, riser

sections of the diameter called for on the contract drawings, grade rings, manhole ring, and manhole cover. Manhole rings shall be poured in the top slab unless they are in pavement or sidewalks. The manhole assembly shall provide a means of egress via embedded ladder rungs or other as shown on the Drawings. No extra payment for grade ring adjusters for final grade shall be paid.

- C. Unit price for each vertical foot in excess of ten vertical feet shall be measured and paid per vertical foot installed of the manhole riser section installed.

2.20 FLOWABLE FILL ENCASEMENT

- A. Flowable fill encasement will be measured in place along the length of pipe and paid for at the unit price bid per linear foot for encasement as listed in the bid proposal. Payment will be for the flowable fill encasement of pipes as required by Specification Section 33 11 13.

2.21 SUBGRADE STABILIZER STONE

- A. Measurement for payment for subgrade stabilizer stone will be made by the ton.
- B. Weight for payment will be taken from dray tickets for stone actually placed in accordance with the following limitations:
 - 1. Stone used for stabilizing trench bottom in wet areas will be paid for.
 - 2. Stone used for Type 5 bedding conditions will be paid for.
 - 3. Stone and GAB used for constructing temporary and permanent driveways will be paid for.
 - 4. Stone used for construction haul roads will not be measured for payment, nor will that which is placed contrary to contract requirements.

2.22 MISCELLANEOUS CONCRETE

- A. Miscellaneous concrete will be measured in place and paid for at the unit price bid per cubic yard. Concrete for thrust blocks and anchors will be paid for as Miscellaneous Concrete. Reinforcing steel, where required, will be paid for separately as outlined.

2.23 MISCELLANEOUS REINFORCING STEEL

- A. The unit price shall include all costs associated with the furnishing and installing reinforcing steel of the sizes required for a concrete structure. The amount of reinforcing steel will be measured in place and paid for at the unit price bid per ton. Only work shown on the drawings or directed by the Engineer will be paid for.

2.24 REMOVE AND REPLACE FENCE (ALL SIZES AND TYPES)

- A. Payment for this item will be the bid price per linear foot for all sizes and types of fence as listed in the bid proposal. The length shall be measured in place after replacement. Fencing shall be removed only where necessary for carrying out the work or as directed by the Engineer. Where the existing fence materials are unsuitable for replacement, the Contractor shall furnish new materials, the costs of which are to be included in the bid price. Bid price shall include all labor, material, tools and equipment to carry out the work. No payment will be made except when fence is replaced.

2.25 TEMPORARY SILT FENCE (Sd1-S)

- A. Temporary silt fence shall be paid for at the unit price bid per linear foot and will be measured in place. The quantity shall be field measured and only the quantity installed at the engineer's approval will be measured for payment. The unit price bid shall be full compensation for all material, labor, tools and equipment necessary to install, maintain, and remove the temporary silt fence as specified in the contract documents. Silt fence will only be measured for payment once.

2.26 HAY BALE BARRIER

- A. Hay bale barriers will be measured in place and paid for at the unit price bid per each. Each straw bale shall be a minimum of 14 in. wide, 18 in. in height, 36 in. in length and should have a minimum mass of 50 lbs. The straw bale should be composed entirely of vegetative matter, except for the binding material. Payment shall be full compensation for all labor tools, equipment, materials and any incidentals necessary to install, maintain and remove hay bale barriers. No payment will be made for hay bale barriers placed without the approval of the Engineer.

2.27 RIP-RAP

- A. Rip-rap will be measured in place and paid for at the unit price bid per square yard. Placement of rip-rap will be as shown on the Drawings. Unit price bid shall be full compensation for all labor, materials and equipment required to furnish and install required rip-rap and geotextile filter fabric. Stone smaller than Rip-rap size will be paid under the Subgrade Stabilizer Stone bid item.

2.28 CONSTRUCTION EXIT (Co)

- A. Construction exits will be counted in place and paid for at the unit price bid for each. The unit price bid shall be full compensation for all material, labor, tools and equipment necessary to install, maintain and remove all construction exits as specified in the contract documents. Only exit locations approved by Engineer will be counted for payment.

2.29 STRAW MULCH STABILIZATION (Ds1)

- A. Straw mulch stabilization shall be paid for at the unit price bid per square yard and will be measured in place. Measurement shall be along the centerline of the pipeline multiplied by the average width of the area mulched. The unit price bid shall be full compensation for all material, labor, tools and equipment necessary to install the straw mulch stabilization as specified in the contract documents.

2.30 GRASSING (Ds2/Ds3)

- A. Grassing shall be paid for at the unit price bid per square yard of grassing. Contractor shall be responsible for replacing all grass destroyed during installation of water main. Grassing area measured for payment will be limited to a strip not to exceed 30 feet wide measured along the length of the water main. Where grassing is required in areas adjacent to any residential or commercial lawn, the type of grass to be planted and grown shall match the type of grass growing on the adjacent lawn, unless otherwise shown on the Drawings. No modification shall be made in the unit price.

2.31 EROSION CONTROL MAT (SLOPES)

- A. Payment for erosion mat will be made at the unit price bid per square yard. The unit price bid shall be full compensation for all tools, labor, equipment, materials, protection of erosion mat against weather, and any incidentals necessary for the installation of the erosion mat as required. No payment will be made for erosion control mat placed without the approval of the Engineer.

2.32 INLET SEDIMENT TRAP (Sd2)

- A. Inlet sediment traps will be counted in place and paid for at the unit price bid for each. Payment shall be full compensation for all labor, tools, equipment, materials and any incidentals necessary to install, maintain and remove sediment traps. No payment will be made for sediment traps placed without the approval of the Engineer.

2.33 STORM DRAIN OUTLET PROTECTION (St)

- A. Storm drain outlet protection will be counted in place and paid for at the unit price bid for each. Payment shall be full compensation for all labor, tools, equipment, materials and any incidentals necessary to install, maintain and remove outlet protection. No payment will be made for outlet protection placed without the approval of the Engineer.

2.34 TURBIDITY CURTAIN (Tc)

- A. Turbidity curtain will be counted in place and paid for at the unit price bid for each. Payment shall be full compensation for all labor, tools, equipment, materials and any incidentals necessary to install, maintain and remove outlet protection. No payment will be made for outlet protection placed without the approval of the Engineer.

2.35 NPDES PERMIT COMPLIANCE

- A. Payment for compliance with NPDES permit requirements shall be made under a lump sum bid. The lump sum bid shall be full compensation for compliance with NPDES requirements as described in Specification Section 31 25 00 including the employment of an Environmental Professional for specified services. Fees charged for the Land Disturbance Activity Permit and Notice of Intent by the Georgia Environmental Protection Division (EPD) and Cobb County will be reimbursed to the Contractor under the Allowance for Force Account Work.

2.36 REMOVE AND REPLACE GUARD RAIL

- A. Payment for this item will be made at the unit price bid listed in the proposal and shall be full compensation for all tools, materials, equipment, and labor necessary to remove the existing guard rail along Cardell Road, South Gordon Road and Factory Shoals Road near Stations 16+60 and 20+50, if needed for installation of the water main. No payment will be made for guardrail removal/replacement without the approval of the Engineer.

2.37 REMOVE AND REPLACE FIRE HYDRANT ON CCWS MAIN

- A. The existing water mains owned by CCWS contain several fire hydrants along the route of the proposed water main that may need to be removed and replaced for installation of the water main. No payment will be made for hydrant removal/replacement without the approval of the Engineer.
- B. Payment for this item will be made at the unit price bid listed in the proposal and shall be full compensation for all tools, materials, equipment, and labor necessary to locate utilities, excavate, drain, remove and plug main to the existing hydrant, and reinstall the hydrant. Unit price bid shall be for each location.
- C. All fittings needed will be paid for under separate bid items, pavement replacement will be paid for under the applicable bid item and stone used will be paid for under the Subgrade Stabilizer Stone bid item.

2.38 REMOVE & REPLACE ASPHALT DRIVEWAYS AND PARKING LOTS

- A. Measurement shall be the length of the pavement replaced, measured along the centerline of the pipe multiplied by the trench width. The unit of measurement shall be the square yard.
- B. Asphalt driveways and parking lots replaced will be measured in place and paid for at the unit price bid per square yard. Asphalt driveway or parking lot surfaces damaged or removed due to contractor error or negligence will not be paid for. The unit price bid shall be full compensation for the asphalt, tack, GAB, and all materials, labor, tools and equipment required to complete the replacement as shown on drawings. Maintenance of the driveway and parking lot during construction until replacement shall be included in unit price. No compensation will be allowed for the removal of existing asphalt driveways and parking lots.

2.39 REMOVE & REPLACE CONCRETE DRIVEWAYS AND PARKING LOTS

- A. Measurement shall be the length of the pavement replaced, measured along the centerline of the pipe multiplied by the trench width. The unit of measurement shall be the square yard.
- B. Concrete driveways and parking lots replaced will be measured in place and paid for at the unit price bid per square yard. Concrete driveway or parking lot surfaces damaged or removed due to contractor error or negligence will not be paid for. The unit price bid shall be full compensation for the concrete and all materials, labor, tools and equipment required to complete the replacement as shown on drawings. Maintenance of the driveway and parking lot during construction until replacement shall be included in unit price. No compensation will be allowed for the removal of existing concrete driveways and parking lots.

2.40 REMOVE AND REPLACE GRAVEL DRIVEWAYS AND PARKING LOTS

- A. Gravel driveways will be measured in place and the unit of measurement shall be the square yard.
- B. Gravel driveways will be measured in place and payment will be made at the contract unit price bid per square yard. The unit price will be full compensation for smoothing the driveway bed and leveling a 6" thick layer of graded aggregate base. Maintenance of the driveway during construction shall be included in the unit price for this item.

2.41 REMOVE & REPLACE CONCRETE SIDEWALKS

- A. Sidewalks removed and replaced, as necessary for pipe installation, shall be measured in place and shall be paid for at the unit price bid per square yard.

- B. Concrete sidewalks shall be replaced with a minimum thickness of 4" and of a matching width, unless directed otherwise by the Engineer. The unit price bid shall include the cost of saw cutting and removal and disposal of the existing sidewalk.

2.42 REMOVE & REPLACE CONCRETE CURB AND GUTTER

- A. Curb or curb and gutter completed in place and accepted shall be measured in linear feet along the face of the curb.
- B. Each type of curb and curb and gutter removed and replaced shall be paid for at the contract unit price bid per linear foot. Payment is full compensation for removal of existing curb or curb and gutter, furnishing of materials, preparing subgrade or pavement surface, installing, and maintaining curb or curb and gutter installed.

2.43 PAVING (12 INCHES GAB, 4 INCHES OF 25 MM GDOT SUPERPAVE, 3.5 INCHES OF 19 MM GDOT SUPERPAVE)

- A. Measurement shall be the length of the pavement replaced, measured along the centerline of the pipe multiplied by the trench width plus two feet, per the asphalt pavement replacement detail. Payment will include application of Bitumen Tack Coat at a rate of 0.04-0.06 Gallons per Square Yard and furnishing and installation of 19 and 25 mm Superpave. The unit of measurement shall be the square yard.
- B. Roadways replaced will be measured in place and paid for at the unit price bid per square yard. Asphalt road surfaces damaged or removed due to contractor error or negligence will not be paid for. The unit price bid shall be full compensation for the asphalt, concrete, tack, GAB, and all materials, labor, tools and equipment required to complete the replacement as shown on drawings. Maintenance of the roadway surface during construction until replacement shall be included in this unit price.
- C. Payment for milling and asphalt overtopping will be made under a separate bid item.

2.44 ASPHALT PAVEMENT MILLING

- A. Measurement shall be the length and width of the pavement milled to a depth of 1.5 inches. Payment will include removal and disposal of original materials. The unit of measurement shall be the square yard to include temporary asphalt patch and existing road (generally two travel lanes in width).

2.45 ASPHALT PAVEMENT 1.5-INCHES OF GDOT 12.5 MM SUPERPAVE

- A. Measurement shall be the length of the pavement replaced, measured along the centerline of the pipe multiplied by the full road width unless otherwise directed by the Owner. Payment will include application of Bitumen Tack Coat at a rate of 0.04-0.06 Gallons per Square Yard and furnishing and installation of 12.5 mm Superpave. The unit of measurement shall be the square yard.
- B. Roadways replaced will be measured in place and paid for at the unit price bid per square yard. Asphalt road surfaces damaged or removed due to contractor error or negligence will not be paid for. The unit price bid shall be full compensation for the asphaltic concrete, tack, and all materials, labor, tools and equipment required to complete the replacement as shown on drawings. Maintenance of the roadway surface during construction shall be included in this unit price.

2.46 PAVEMENT MARKING

- A. Pavement marking shall be measured in place and paid by the unit shown on the Bid Proposal. Pavement marking shall be in accordance with GDOT latest specifications for thermoplastic markings.

2.47 CUT AND PLUG EXISTING 36" WATER MAIN

- A. Water mains cut and plugged with mortared brick shall be paid at the unit price bid for each. The unit price bid shall be full compensation for all labor, materials, tools, and equipment necessary to complete the procedure. This item shall also apply to any bulkhead and grout/vent piping used to plug existing main segments that will be abandoned under pavement. For pipes other than PCCP, if a purchased plug is used instead of mortared brick, the plug will be paid under the Ductile Iron Fittings pay item. If concrete is used to plug the ends of PCCP to be abandoned, such concrete will be paid under the Miscellaneous Concrete pay item, however, this will apply only for the concrete necessary to plug the main. Grout or flowable fill shall be paid under the Flowable Fill pay item.

2.48 ABANDON EXISTING CCMWA VALVE MANHOLE AND VALVES

- A. The existing mains owned by CCMWA that will be abandoned also contain several line or air valves that will require removal of the upper section of the manhole, filling in of the manhole with stone or concrete, backfill and surface restoration. Valve to be abandoned in place (in the closed position).
- B. Payment for this item will be made at the unit price bid listed in the proposal and shall be full compensation for all tools, materials, equipment, and labor necessary to locate utilities, provide traffic control (if in the pavement), saw cut existing

pavement (if in the pavement), excavate around the manhole, remove the upper manhole section, fill the manhole with stone (if not in pavement) or concrete (if in pavement), backfill and restore the surface. Unit price bid shall be for each location.

- C. Any fittings needed will be paid for under the Ductile Iron Fittings bid item, pavement replacement will be paid for under the applicable bid item, stone used will be paid for under the Subgrade Stabilizer Stone bid item and concrete used will be paid under the Miscellaneous Concrete bid item.

2.49 ABANDON EXISTING CCMWA VALVE BOX AND VALVE

- A. The existing CCMWA main to be abandoned in place includes several line or air valves that will require removal of the upper section of the valve box, filling in of the valve box with stone or concrete, backfill and surface restoration. Valve to be abandoned in place (in the closed position).
- B. Payment for this item will be made at the unit price bid listed in the proposal and shall be full compensation for all tools, materials, equipment, and labor necessary to locate utilities, provide traffic control (if in the pavement), saw cut existing pavement (if in the pavement), excavate around the valve box, remove the valve box, fill the void with stone (if not in pavement) or concrete (if in pavement), backfill and restore the surface. Unit price bid shall be for each location.
- C. Any fittings needed will be paid for under the Ductile Iron Fittings bid item, pavement replacement will be paid for under the applicable bid item, stone used will be paid for under the Subgrade Stabilizer Stone bid item and concrete used will be paid under the Miscellaneous Concrete bid item.

2.50 ABANDON EXISTING CCMWA BLOWOFF VALVE

- A. The existing CCMWA main to be abandoned in place includes several blowoff valves that will need to be cut below ground and plugged. The only visible components of the blowoff valves are usually the valve box for the valve and a plugged discharge elbow on the riser. The work involves cutting the valve box and blowoff riser at least 24 inches below ground and filling the box and riser with sand or stone below ground.
- B. Payment for this item will be made at the unit price bid listed in the proposal and shall be full compensation for all tools, materials, equipment, and labor necessary to locate utilities, excavate, cut and plug the existing valve box and riser, and restore the surface. Unit price bid shall be for each location.

- C. Any fittings needed will be paid for under separate bid item for Ductile Iron Fittings, any pavement replacement will be paid for under the applicable bid item and any stone used will be paid for under the Subgrade Stabilizer Stone bid item.

2.51 REMOVE AND DISPOSE OF EXISTING WATER MAIN

- A. The unit price bid for pipe shall include all material, labor and incidentals necessary for the complete removal and suitable, offsite disposal of the PCCP/DIP pipe, manholes, and appurtenances for sections of pipe indicated to be removed (same ditch relay). Existing 16", 20" and 36" PCCP/DIP water main will be removed as shown on the Drawings and generally when it is within 6-feet of the centerline of the proposed DIP water main. The unit price bid for removal and disposal of PCCP/DIP shall include all excavation, backfilling and the disposal of all debris, after the line is removed. There will be no additional payment where extra depth is incurred due to valve locations, conflicts with other utilities, or other field conditions.

2.52 REMOVE AND DISPOSE OF ABANDONED AC PIPE

- A. Removal and disposal of existing asbestos concrete water pipes where required for water main installation (and approved in writing by the Owner) will be measured in place and paid for at the unit price bid in linear feet for each size listed in the bid proposal. Payment will include removal and disposal of all AC pipe at a permitted facility and shall not be paid without documentation of lawful disposal. No payment will be made for removal/disposal of AC pipe without the approval of the Engineer.

2.53 RELOCATE EXISTING CCWS SANITARY SEWER

- A. Relocation of existing sanitary sewer pipes where required for water main installation (and approved in writing by the Owner) will be measured in place after replacement and paid for at the unit price bid in linear feet for each size listed in the bid proposal. All new sewer pipes shall be ductile iron. Payment will include removal and disposal of original materials and installation of new pipe of the same type and size as the pipe removed. No payment will be made for sanitary sewer relocation without the approval of the Engineer.

2.54 DOGHOUSE MANHOLE FOR SANITARY SEWER CONNECTION

- A. Removal and Replacement of existing doghouse sewer manholes will be measured in place after replacement and paid for at the unit price bid. Payment will include removal and disposal of original materials and installation of new manhole of the same type and size as the manhole removed.

2.55 REMOVE AND REPLACE CONCRETE STORM DRAIN

- A. Removal and Replacement of existing concrete storm drain pipes where required for water main installation (and approved in writing by the Owner) will be measured in place after replacement and paid for at the unit price bid in linear feet for each size listed in the bid proposal. Payment will include removal and disposal of original materials and installation of new concrete pipe of the same type and size as the pipe removed. No payment will be made for storm drain removal/replacement without the approval of the Engineer.

2.56 REMOVE AND REPLACE CORRUGATED METAL PIPE STORM DRAIN

- A. Removal and Replacement of existing corrugated metal storm drain pipes where required for water main installation (and approved in writing by the Owner) will be measured in place after replacement and paid for at the unit price bid in linear feet for each size listed in the bid proposal. Payment will include removal and disposal of original materials and installation of new corrugated metal storm drain pipes of the same type and size as the pipe removed. No payment will be made for storm drain removal/replacement without the approval of the Engineer.

2.57 REMOVE AND REPLACE CATCH BASIN/CURB INLET

- A. Removal and Replacement of existing storm catch basin where required for water main installation (and approved in writing by the Owner) will be measured in place after replacement and paid for at the unit price bid individually. Payment will include removal and disposal of original materials and installation of new catch basins of the same type and size as the catch basin removed. No payment will be made for catch basin/curb inlet removal/replacement without the approval of the Engineer.

2.58 PROJECT SIGNS

- A. The unit price shall include all materials, labor and incidentals necessary for the Contractor to furnish and install project signs at the unit price bid for each made of 4' x 8' plywood or sheet metal, painted with white background and blue letters and containing the name and contact information of the Contractor, Owner, and Engineer (including logos).

2.59 TRAFFIC CONTROL

- A. The unit price shall include all materials, labor and incidentals necessary for the Contractor to prepare a traffic control plan, road or lane closure permits as required, and obtain approval from Cobb County DOT and provide personnel and equipment to implement the approved plan, including traffic barriers, message boards, and all signs. The Allowance for Traffic Control shall only be used to reimburse the Contractor for the use of police officers to control traffic, if

required by CCDOT.

2.60 MOBILIZATION

- A. The amount bid for mobilization shall not exceed two percent (2%) of the total contract bid price. The amount bid shall include furnishing the required Insurance, Bonds, Schedule of Values, Construction Schedule, and Shop Drawings for materials used during the first thirty (30) days of construction. The amount bid shall be payable to the Contractor on the first application for payment following approval of these documents.

****END OF SECTION****

SECTION 01 29 00
APPLICATIONS FOR PAYMENT

1 GENERAL

- 1.1 Submit applications for Payment to the Engineer in accordance with the schedule established by General Conditions of the Contract and the Agreement between Owner and Contractor.
- 1.2 Related Requirements in other parts of the Project Manual:
 - A. Lump Sum and Unit Prices: Agreement between Owner and Contractor.
 - B. Progress payments, retainages and final payment: General Conditions of the Contract.
- 1.3 Related Requirements specified in other Sections:
 - A. Contract Closeout: Section 01 77 00

2 FORMAT AND DATA REQUIRED

- 2.1 Submit applications on the form approved by Engineer, with itemized data typed in proper format.
- 2.2 Contractor shall submit Cash Flow Projections with each application for payment, in Microsoft Excel format. The projection shall show estimated billing from the time the pay application is submitted through project completion.

3 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- 3.1 When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:
 - A. Project.
 - B. Application number and date.
 - C. Detailed list of enclosures or attachments.
 - D. For stored products:
 - 1. Item number and identification as shown on application.
 - 2. Description of specific material.
 - E. Dray tickets for materials paid by ticket.
 - F. Copy of Contractor's field notes showing as-built information of the water main.

- G. Submit one copy of data and cover letter for each copy of application.
- 3.2 Submit application for payment to the Engineer at the times stipulated in the Agreement.
- A. Number: Three copies of each application.
 - B. When the Engineer finds the application properly completed and correct, he will transmit a certificate for payment to Owner, with a copy to Contractor.

****END OF SECTION****

SECTION 01 31 13
COORDINATION OF WORK

1 GENERAL

1.1 GENERAL

- A. Management of the project shall be through the use of a logical method of construction planning, scheduling, and cost value documentation as further described in Section 01 32 16, CONSTRUCTION SCHEDULES, of these Specifications.
- B. Contractor should be aware that the Cobb County-Marietta Water Authority (Water Authority or CCMWA) provides water to the Cobb County Water System (CCWS), which actually bills customers for the use of water. CCMWA is governed by a Board of Directors that is independent of CCWS, which is an agency of Cobb County and is therefore governed by the Cobb County Board of Commissioners.

1.2 EXISTING UTILITIES

- A. The existing 36" & 20" PCCP water main that runs along Cardell Road, South Gordon Road, and Factory Shoals Road may be taken out of service for construction of the proposed 36" DIP main, in phasing. It may become necessary to put the main in service if an emergency occurs. Should this happen, the Contractor will cooperate and coordinate with the Water Authority to put the existing main in service as soon as practicable and will require the Contractor to work 24 hours a day until the existing main (including any new main installed) is operational.
- B. The existing water main owned by CCWS (6", 8", 10" and 12" in diameter) that parallels and crosses the existing CCMWA PCCP Water Mains serves customers on both sides of the road and must remain in service at all times. Therefore, the Contractor must avoid damaging this water main.
- C. The Contractor shall coordinate his work with the Owner so that the construction will not restrain or hinder the operation of the existing CCWS, City of Austell, DDCWSA or CCMWA facilities. If, at any time, any portion of these facilities are out of service, the Contractor must obtain approval from the owner as to the date, time and length of time that portion of the facilities will be out of service.
- D. Connections to the existing facilities or alteration of existing facilities will be made at times when the piping is not in use or at times, established by the Owner, when the use of the piping can be conveniently interrupted for the period of time needed to make the connection or alteration.
- E. After having coordinated his work with the Owner, the Contractor shall notify the Engineer of the time, time limits and methods of each connection or alteration and have the approval of the Engineer before any work is undertaken on the connections or alterations.

1.3 OTHER UTILITIES

- A. Information regarding underground utilities on the contract drawings is not guaranteed as to accuracy or completeness. Prior to beginning work, the Contractor shall request a field location through the Utilities Protection Center and any utility owners thought to have facilities in the area. The Contractor shall promptly compare these field-marked locations with the project plans and then notify the Engineer of any anticipated problems or need for contract changes. It is the Contractor's responsibility to excavate for the purpose of determining exact elevations or locations at utility crossings and other critical locations well in advance of the work under this contract.

1.4 CONSTRAINTS ON CONSTRUCTION SCHEDULING

- A. Contractor shall not close any lane to traffic between 6 AM – 9 AM and 4 PM – 6 PM. A full road closure permit will need to be obtain by the Contractor from CCDOT.
- B. Water main construction on South Gordon Road between Factory Shoals Road and Mableton Parkway (STA 143+00 to STA 188+00) must be completed when Cobb County schools are not in session (generally between Memorial Day and August 1st). The scheduling of this work particularly pertains to the following:
 - i. Bryant Intermediate School (entrances on South Gordon Road and Factory Shoals Road);
 - ii. Riverside Primary School (entrances on South Gordon Road); and
 - iii. Riverside Intermediate School (entrances on South Gordon Road).

Contractor shall sequence the work to accommodate this requirement and include any additional cost as part of the bid. No separate payment will be made.

****END OF SECTION****

SECTION 01 32 16
CONSTRUCTION SCHEDULES

1 GENERAL

1.1 GENERAL

- A. Promptly after award of the contract, the Contractor shall prepare and submit to the Engineer estimated construction progress schedules for the Work, with sub-schedules of related activities which are essential to its progress.
- B. Submit revised progress schedules as necessary.

2 PRODUCT

2.1 FORM OF SCHEDULES

- A. As determined by the Contractor and acceptable to the Engineer.

2.2 CONTENT OF SCHEDULES

- A. Construction Progress Schedule:
 - 1. Show the complete sequence of construction by activity.
 - 2. Show the dates for the beginning, and completion of, each major element of construction.
- B. Products Delivery Schedule Dates.
- C. Provide sub-schedules to define critical portions of prime schedules.

2.3 PROGRESS REVISIONS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedules:
 - 1. Major changes in scope.
 - 2. Activities modified since previous submission.
 - 3. Revised projections of progress and completion.
 - 4. Other identifiable changes.
- C. Provide a narrative report as needed to define:
 - 1. Problem areas, anticipated delays, and the impact on the schedule.
 - 2. Corrective action recommended, and its effect.

3 EXECUTION

3.1 SUBMISSIONS

- A. Submit initial schedules within 15 days after award of Contract.
 - 1. The Engineer will review schedules and return review copy within 15 days after receipt.
 - 2. If required, resubmit within 7 days after return of review copy.
- B. Submit revised progress schedules with each application for payment.
- C. Submit one reproducible transparency and one opaque reproduction.

3.2 DISTRIBUTION

- A. Distribute copies of the reviewed schedules to:
 - 1. Job site file.
 - 2. Subcontractors.
 - 3. Other concerned parties.
- B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

****END OF SECTION****

**SECTION 01 32 23
FIELD ENGINEERING**

1 GENERAL

1.1 GENERAL

- A. The Contractor shall provide, at no additional cost to the owner, field engineering services required for the construction of the proposed water main.
 - 1. Survey work required in execution of the Project.
 - 2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.
- B. Prior to construction or site work the Engineer will identify existing control points indicated on the drawings, as needed.

2 PRODUCTS

2.1 SURVEY REFERENCE POINTS

- A. Existing basic horizontal and vertical control points for the project are those designated on drawings. At the beginning of the project, Contractor shall stake or mark the centerline of the proposed pipeline every 100 feet.
- B. The contractor shall locate and protect control points prior to starting any clearing, grubbing or construction, and preserve all permanent reference points during construction. The Contractor shall provide, at his expense, any temporary staking, including necessary off-set staking to preserve the control points.
 - 1. Make no changes or relocation without prior written notice to Engineer.
 - 2. Report to Engineer when any reference point is lost or destroyed or requires relocation due to changes in the scope of the project.
 - 3. Require a surveyor to replace project control points which may be lost or destroyed. Establish replacements based on original survey control.

2.2 PROJECT SURVEY REQUIREMENTS

- A. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means.
- B. Construction Staking
- C. Stakes for pipeline alignment.
- D. Invert elevations.
- E. From time to time, verify layouts by the same methods.

3 EXECUTION

3.1 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.

3.2 SUBMITTALS

- A. On request of the Engineer, submit documentation to verify accuracy of field engineering work.

****END OF SECTION****

SECTION 01 33 00
SUBMITTAL PROCEDURES

1 GENERAL

1.1 GENERAL

- A. Submit shop drawings, product data and samples required by the Contract Documents.
- B. Designate in the construction schedule, or in a separate coordinated schedule, the dates for submission and the dates that reviewed shop drawings, product data and samples will be needed.

1.2 SHOP DRAWINGS

- A. Shop drawings shall be submitted in a clear and thorough manner to the Engineer. Copies returned to the Contractor will be marked as follows:
 - 1. "No Exceptions Noted" - Indicates the drawings have been reviewed for conformance with the contract documents and no exceptions have been taken. Proceed with the work.
 - 2. "Make Corrections Noted" - Indicates the drawings have been reviewed for conformance with the contract documents and work may proceed in accordance with all comments. Resubmittal will not be required.
 - 3. "Revise and Resubmit" - Indicates the drawings have been reviewed for conformance with the contract documents, and work may not proceed. After items to which exceptions have been taken are corrected, Contractor shall again submit copies for review.
 - 4. "Rejected" - Indicates the drawings have been reviewed for conformance with the contract documents and are too incomplete or in an unacceptable condition for review. A notation will be made on the shop drawings as to the exceptions taken. Drawings shall be revised and resubmitted for review before proceeding with the work.
 - 5. "Submit Specified Item" - Indicates that one or more items in the submittal were missing or incomplete. Work may commence on any items to which no exceptions were taken; missing or incomplete items must be submitted as noted.
- B. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Contract Drawings.

1.3 PRODUCT DATA

A. Preparation

1. Clearly mark each copy to identify pertinent products or models.
2. Show performance characteristics and capacities.
3. Show dimensions and clearances required.
4. Show wiring or piping diagrams and controls.

B. Manufacturer's standard schematic drawings and diagrams:

1. Modify drawings and diagrams to delete information which is not applicable to the work.
2. Supplement standard information to provide information specifically applicable to the work.

1.4 SAMPLES

A. Office samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product, with integrally related parts and attachment devices.
2. Full range of color, texture and pattern.

1.5 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, product data and samples prior to submission.

B. Determine and verify:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance with specifications.

C. Coordinate each submittal with requirements of the work and of the contract documents.

D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the contract documents.

E. Begin no fabrication or work which requires submittals until return of submittals with Engineer approval.

1.6 SUBMISSION REQUIREMENTS

- #### A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the work or in the work of any other contractor. Shop Drawings shall be submitted in a folder for each set of drawings. The folder

shall contain one drawing for each item submitted. The folder shall be labeled with the full project name. All submittals shall be indexed.

- B. Number of submittals required:
 - 1. Shop drawings: Submit the number of opaque reproductions which the Contractor requires plus three copies which will be retained by the Engineer. An electronic copy in PDF format and on DVD shall also be provided.
 - 2. Product data: Submit the number of copies which the Contractor requires, plus three which will be retained by the Engineer. An electronic copy in PDF format and on DVD shall also be provided.
 - 3. Samples: Submit the number stated in each specification section.
- C. Submittals shall contain:
 - 1. The date of submission and the dates of any previous submissions.
 - 2. The project title and number.
 - 3. Contract identification.
 - 4. The names of:
 - a. Contractor.
 - b. Supplier.
 - c. Manufacturer.
 - 5. Identification of the product, with the specification section number.
 - 6. Field dimensions, clearly identified as such.
 - 7. Relation to adjacent or critical features of the work or materials.
 - 8. Applicable standards, such as ASTM or Federal Specifications numbers.
 - 9. Identification of deviations from contract documents.
 - 10. Identification of revisions on resubmittals.
 - 11. An 8 in. x 3 in. blank space for Contractor and Engineer stamps.
 - 12. Contractor's stamp, initialed or signed, certifying his review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents.

1.7 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required by the Engineer and resubmit until approved.
- B. Shop Drawings and Product Data:
 - 1. Revise initial drawings or data and resubmit as specified for the initial submittal.

2. Indicate any changes which have been made other than those requested by the Engineer.
- C. Samples: Submit new samples as required for initial submittal.

****END OF SECTION****

SECTION 01 35 13
SPECIAL PROJECT PROCEDURES

1 GENERAL

1.1. PROJECT MANAGEMENT

- A. The Contractor shall schedule and coordinate all work by his forces and subcontractors and others involved to maintain the accepted progress schedule. The Contractor's duties also include the planning of work, including traffic control, the scheduling or ordering and delivery of materials, and checking and control of all work under this contract. Construction schedules shall be submitted to the Engineer for review prior to the start of any work. Schedules shall be verified or updated as necessary.
- B. The Contractor shall be responsible for complete supervision and control of his subcontractors as though they were his own forces. Notice to the Contractor shall be considered notice to all affected subcontractors.
- C. The Contractor shall appoint a qualified representative to act as the "Project Coordinator, Project Manager or Project Superintendent" who shall be responsible for coordinating all work and providing liaison with the Engineer and the Owner. This person shall be responsible for all duties described above and in all matters represent the Contractor regarding this project in the absence of a Corporate Officer or Principal of the firm. This person will be on the Project site for the duration of the project.
- D. The Contractor shall employ only competent and skilled personnel on the work. At all times when the work is in progress, the Contractor shall have a competent Superintendent or Foreman present with authority to receive orders, execute the work and to promptly supply materials, tools, plant equipment and labor as may be required. The person must be fluent and literate in the English language. Should the Engineer so demand, the Contractor shall immediately remove any Superintendent, Foreman or worker whom the Engineer considers incompetent, undesirable, or both.

1.2 CREW SUPERVISION

- A. The contractor's laborers, pipelayer(s) and equipment operator(s) must be supervised by a non-operator certified foreman and/or non-operator certified superintendent experienced in installation of 36" ductile iron pressure water main. The foreman's and superintendent's résumé, including OSHA certification status, must be submitted to the Engineer and Owner for review prior to award of the contract.

1.3 WORK HOURS

- A. Except in the case of an emergency or other unusual circumstance, no work shall be performed on the project outside of Owner-approved work hours. Except in an emergency, the Contractor must obtain approval of the Owner before scheduling additional work hours.

- B. There shall be no traffic lane closures during weekdays between the hours of 6 AM to 9 AM and 4 PM to 6 PM. Exception to this requirement will only be made with the approval of the Cobb County DOT.

1.4 CLOSING VALVES

- A. Except in an emergency, the Contractor shall not close or open valves on any water main without first gaining approval from the Owner of the water main.

1.5 TRENCH SAFETY ORDINANCE

- A. Cobb County has enacted a local ordinance which requires strict adherence to OSHA regulations Subpart P, Part 1926 pertaining to trenching and excavation. All bidders are advised to be familiar with both the OSHA regulations and the local ordinance before bidding this project.

1.6 ACCESS TO ADJACENT PROPERTY

- A. The Contractor shall be responsible for ensuring vehicular access, including access to school bus stops and routes, public bus stops, businesses, residences, and mailboxes adjacent to the pipeline route. If site conditions allow, the contractor will construct a temporary gravel driveway for access; in this case, gravel will be paid for at the unit price bid, but site grading will not be considered for separate payment.
- B. The Contractor will not be permitted to deny access to any property along the route. If two drives are available, only one drive may be closed at a time. If one drive is available, the drive can only be closed one half at a time while access is maintained on the other half. The work on a drive must be completed within one day's time. The drive must be repaved within 10 working days of disturbance due to construction.

1.7 OWNER FURNISHED MATERIALS

- A. There are no Owner-furnished materials on this project. Contractor shall supply all materials.

1.8 TIE-INS

- A. All tie-ins to the CCMWA, DDCWSA and CCWS existing water mains shall be performed in a timely and efficient manner in order to minimize down-time to the system. If necessary, the Water Authority may require two crews working simultaneously at each end of the relocation section during the tie-in operations to minimize the system down-time.

1.9 EROSION CONTROL

- A. It is the Contractor's responsibility to furnish, install and maintain any and all erosion control devices and silt fencing as may be required by any County, State or Federal agency that may have jurisdiction over the area in which work is being performed in the execution of this contract. In the event there are conflicting requirements, the most stringent regulations shall apply. It will be the responsibility of the Contractor to remove all erosion control devices and silt

fencing upon completion of the work at such time that a suitable ground cover has been established and final stabilization has been reached. See Section 31 25 00 for further details on erosion control methods.

1.10 WORK ZONE TRAFFIC CONTROL

- A. The Contractor shall provide, erect and maintain all necessary barricades, message boards, suitable and sufficient warning lights, danger signals, and signs, provide sufficient number of watchmen, and take all necessary precautions for the protection of the work and the safety of the public. Contractor shall comply with all local and state ordinances concerning traffic control. No road closings will be allowed without prior approval of the local governing authority.
- B. All personnel involved in traffic control and doing any flagging must have received training and a certificate upon completion of the training from a GDOT approved training program. All costs for providing certified flaggers will be borne by the Contractor. Failure to provide certified flaggers as required above shall be reason for suspending work regarding the flagger(s) until a certified flagger can be provided. Flagging personnel shall be equipped with radio communication.
- C. It is the Contractor's responsibility to submit and obtain approval for traffic control from the appropriate governing authority. Contractor shall prepare a Traffic Control Plan and shall be solely responsible for all planning, permitting and implementation of all traffic control measures and procedures. Owner and Engineer assume no liability for traffic control.
- D. The Contractor shall have on-site a Certified Traffic Control Supervisor. The Certified Traffic Control Supervisor shall have completed Temporary Traffic Control Design and Supervision instruction by the National Safety Council or equivalent training. Proof of such training will be provided. The Certified Traffic Control Supervisor shall be on-site during all times traffic is interrupted by construction activities; during normal work times and during emergencies outside normal work times. The Certified Traffic Control Supervisor shall have the authority to direct necessary work activities to maintain a safety work environment for the public and for the workers.

1.11 CREEK CROSSING

- A. Upon award of the project, the Contractor shall submit, to the engineer and Owner, his detailed plans for any creek crossing within the scope of this project. These plans will also be reviewed by the Cobb County Community Development Department for erosion control methods. The Contractor will be responsible for furnishing and incorporating any additional erosion control methods required by the Cobb County Community Development Department.

1.12 PIPE CLOSURES

- A. Pipe closures shall be made in straight sections of pipe using a solid long body restrained mechanical joint sleeve. Installation shall include a filler/spacer ring to compensate for the final lap joint. Fit shall be as tight as practical. Closure shall

be at least one pipe length away from an adapter. Closing with no spacer ring or by "bucking" pipe sections together with no sleeve will not be allowed.

1.13 ACCEPTANCE AND FINAL PAYMENT

- A. When the project provided for under this contract has been completed by the Contractor, and all parts of the work have been approved by the Engineer according to the contract, the Engineer shall, within ten (10) days unless otherwise provided, make final inspection and advise the Contractor to prepare a final estimate, showing the value of work as soon as the necessary measurements and computations can be made.
- B. Contractor and Owner acknowledge that all progress certificates or estimates upon which payments shall have been made, will have been based on approximations only, and will be subject to correction in the final payment. Contractor shall prepare the final estimate and submit the same for payment within ninety (90) days of notification of final acceptance of the project by the Engineer.
- C. If Contractor fails to submit a final estimate and bill within said ninety (90) day period, the Contractor will be deemed to have conclusively waived, relinquished and forfeited any amounts remaining due under this contract, and the Owner may defund the project and re-appropriate said funds with no further liability under this contract or otherwise to Contractor. The amount of the final estimate, less any sums that may have been deducted or retained under the provisions of this contract, will be paid to the Contractor within sixty (60) days after approval by the Engineer, provided that the Contractor has properly maintained and operated the project as specified under the attached specifications, and provided that he has furnished to the Owner a sworn affidavit to the effect that all bills are paid and no suits are pending in connection with the work performed or labor and material furnished under this contract.

1.14 MATERIALS STORAGE

- A. Material storage shall be restricted to the limits of disturbed area as designated on the Drawings and coordinated with the Work to minimize disruption to traffic and maintain public safety. Storage of materials is subject to approval by the Owner and the Cobb County DOT. Contractor may, at their option, secure other locations for storage of materials, staging, or other use. Any such agreements shall be the sole responsibility of the Contractor. Copies shall be provided to the Owner as part of the project record.

1.14 PIPE STORAGE

- A. Pipe storage is subject to approval by the Cobb County Department of Transportation in areas adjacent to County roads and by the Georgia Department of Transportation along Mableton Parkway. Contractor shall obtain all necessary permits.

1.15 TEST REQUIREMENTS

- A. The Contractor is responsible for providing temporary pipe restraint necessary to restrain the water main during hydrostatic test. The hydrostatic test pressure is as specified in Section 33 11 13 of these specifications. Water mains shall be tested independently of any existing water main prior to connection.

1.16 ROADWAY MAINTENANCE

- A. The Contractor shall maintain the surface of the roadway in a suitable condition for the safe traverse by traffic. The Contractor shall install asphalt base material when the extent of temporary gravel travel surface following the pipe installation exceeds 500 linear feet.

1.17 DISPOSAL OF MATERIALS

- A. The Owner reserves the right to retain ownership of existing materials; ductile iron pipe, valves, and fittings. The Contractor shall make Owner-designated materials available for recovery by the Owner. All other materials shall become the responsibility of the Contractor for disposal.

END OF SECTION

**SECTION 01 35 25
CONFINED SPACE ENTRY**

1 GENERAL

1.1 GENERAL

- A. Whenever it is necessary for the Engineer to enter a confined space to perform inspection or other functions necessary to the project, the Contractor shall provide two trained personnel to assist and equipment appropriate to the type of confined space to be entered.

2 PRODUCTS

2.1 EQUIPMENT

- A. The Contractor shall follow all the requirements provide stipulated in 29 CFR 1910.146 and shall provide all equipment necessary to perform confined space entry in accordance with 29 CFR 1910.146. Equipment shall include but not be limited to the following:
 - 1. Tripod, Hoist and Harness
 - 2. Gas Monitor
 - 3. Two Way Radios
 - 4. Cellular Telephone

2.2 PERSONNEL

- A. The Contractor shall provide two personnel trained in confined space entry (to the level of attendant) to assist the engineer with confined space entry.

2.3 TRAINING

- A. If the equipment provided by the contractor is different from equipment the engineer is accustomed to, then the contractor shall provide training in the use of that equipment. The contractor, however, is not responsible for providing confined space entry training to engineer.

3 EXECUTION

3.1 GENERAL

- A. The Contractor will be provided with a list of the Owner's and Engineer's personnel that are trained in confined space entry as entrants or attendants. Persons not trained in confined space entry will not be allowed entry.
- B. The Contractor shall be responsible for providing, filling out, and filing confined space entry permits.

END OF SECTION

SECTION 01 35 55
JOB SITE SECURITY

1 GENERAL

1.1 BARRICADES, LIGHTS AND WATCHMEN

- A. The Contractor shall furnish and erect such barricades, fences, message boards, lights, and danger signals, shall provide such watchmen, and shall provide such other precautionary measures for the protection of persons or property and of the work as are 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 shall furnish watchmen in sufficient numbers to protect the work if determined to be necessary by the Owner.
- B. The Contractor will be held responsible for all damage to the work due to failure of barricades, signs, lights, and watchmen to protect it and whenever evidence is found of such damage, the Contractor shall immediately remove the damaged portion and replace it at his cost and expense. The Contractor's responsibility for the maintenance of barricades, signs, lights, and for providing watchmen shall not cease until the project shall have been accepted by the Owner.

1.2 PROJECT SITE SECURITY

- A. The Owner will not be responsible for security of the Contractor's equipment, materials, and other items on the Project site.

** END OF SECTION **

**SECTION 01 41 00
REGULATORY REQUIREMENTS**

1 GENERAL

1.1 GENERAL

- A. The Contractor shall, without additional expense to the Owner, be responsible for obtaining any necessary licenses, permits and complying with any and all applicable Federal, State and Municipal laws, codes and regulations in connection with the prosecution of the work included in this contract.

1.2 SAFETY AND HEALTH

- A. The Contractor shall take proper safety and health precautions to protect the Work, the workers, the public, and the property of others.

1.3 NPDES PERMIT

- A. The Contractor shall be required to become the primary permittee under the General Permit GAR100002 “Storm Water Discharges Associated with Construction Activity.” The Contractor shall be responsible for the filing of the Notice of Intent (NOI) and the Notice of Termination (NOT) for this project in accordance with the regulations and requirements of the Georgia Environmental Protection Division (GA EPD). Prior to the commencement of any land disturbance activities, a copy of the “NOI” must be received by the Engineer, Owner, and the GA EPD. Prior to any final payment, a copy of the “NOT” must be received by the Engineer, the Owner, and the GA EPD.

1.4 DEFINITIONS:

- A. Design Professional: The term Design Professional shall mean a professional licensed by the State of Georgia in the field of: engineering, architecture, landscape architecture, forestry, geology, or land surveying and is a Certified Professional in Erosion and Sediment Control.

2 PRODUCTS (NOT USED)

3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The Contractor shall be required to become the primary permittee under the General Permit GAR100002 “Storm Water Discharges Associated with Construction Activity.”

3.2 FILING REQUIREMENTS

- A. The Contractor shall be responsible for the filing of the Notice of Intent (NOI) and the Notice of Termination (NOT) for this project in accordance with the regulations and requirements of the Georgia Environmental Protection Division (GA EPD). Prior to the commencement of any land disturbance activities, a copy of the “NOI”

must be received by the Engineer, Owner, and the GA EPD. Prior to any final payment, a copy of the “NOT” must be received by the Engineer, the Owner, and the GA EPD.

3.3 EMPLOYMENT OF DESIGN PROFESSIONAL

- A. The Contractor shall employ the services of a Design Professional for erosion and sediment control. The Contractor shall submit to the Owner and Engineer the qualifications of the Design Professional for review. The Design Professional or an individual under the direct supervision of the Design Professional shall perform the following duties:
- B. To perform inspection and site monitoring as required by the General Permit GAR100002 “Storm Water Discharges Associated with Construction Activity”. Within 24 hours of any inspection or site monitoring, electronic copies of any report shall be submitted to the Engineer and the Owner. Within 7 days of any inspection or site monitoring, written reports shall be submitted to the Engineer and the Owner. Copies of all reports will be maintained on the project site by the Contractor.

3.4 DUTIES OF CONTRACTOR

- A. The Contractor as a minimum shall perform the following duties:
 - 1. Maintain the Erosion, Sedimentation and Pollution Control Plans and the Comprehensive Monitoring Plan on the project site.
 - 2. Install and maintain the erosion and sedimentation control devices and practice best management practices to comply with the requirements and intent of the Erosion, Sedimentation and Pollution Control Plans and the Comprehensive Monitoring Plan.

****END OF SECTION****

SECTION 01 45 29
TESTING LABORATORY SERVICES

1 GENERAL

1.1 GENERAL

A. Materials furnished for all construction shall be subject to test at all times by the Engineer, and any samples or specimens selected for test shall be furnished at no cost. The cost of all such tests shall be borne by the Owner. All tests shall be made by a recognized testing laboratory, acceptable to the Engineer. The following minimum testing will be required:

1. Soils compaction control.
2. Disinfection.
3. Cement.
4. Fine Aggregate.
5. Coarse Aggregate.
6. Concrete.
7. Reinforcing Steel.
8. Brick.
9. Ductile Iron Pipe.
10. Joint Materials.
11. Asphaltic Concrete.

2 PRODUCT

2.1 REQUIREMENTS

- A. Meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E 329, "Standards of Recommended Practice for Inspection and Testing Agencies for concrete and steel as used in construction."
- C. Be authorized to operate in the State in which the Project is located.
- D. Be on the Georgia DOT list of prequalified consultants for the Soils, Foundation & Materials Testing Category before any testing is required.

2.2 LABORATORY DUTIES

- A. Promptly submit written report of each test and inspection: One copy each to the Engineer, Owner, Contractor, and one copy to Record Documents file. Each report shall include:

1. Date issued.
2. Project title and number.
3. Testing laboratory name, address and telephone number.
4. Name and signature of laboratory inspector.
5. Date and time of sampling or inspection.
6. Record of temperature and weather conditions.
7. Date of test.
8. Identification of product and specification section.
9. Location of sample or test in the project.
10. Type of inspection or test.
11. Results of tests and compliance with contract documents.
12. Interpretation of test as required by the Engineer or the Owner.
13. Perform additional tests as required by the Engineer or the Owner.

2.3 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 2. Approve or accept any portion of the work.
 3. Perform any duties of the contractor.

3 EXECUTION

3.1 GENERAL

- A. Cooperate with laboratory personnel to provide access to work.
- B. Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.
- D. Furnish copies of products test reports as required.
- E. Furnish incidental labor and facilities:
 1. To provide access to work to be tested.
 2. To obtain and handle samples at the project site or at the source of the product to be tested.
 3. To facilitate inspections and tests.

4. For storage and curing of test samples.
- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
- G. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.
- H. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required:
 1. For the Contractor's convenience.
 2. When initial tests indicate work does not comply with Contract Documents.

END OF SECTION

SECTION 01 51 00
TEMPORARY UTILITIES

1 GENERAL

1.1 DESCRIPTION

- A. Furnish, install and maintain temporary utilities required for construction, remove on completion of work.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code.
- B. Comply with Federal, State and local codes and regulations and with utility company requirements.

2 PRODUCTS

2.1 MATERIALS, GENERAL

- A. Materials may be new or used but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.2 TEMPORARY ELECTRICITY AND LIGHTING

- A. Arrange with utility company, provide service required for power and lighting, and pay all costs for service and for power used.
- B. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.

2.3 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to facilitate progress of the work, to meet specified minimum conditions for the installation of materials, and to protect materials and finishes from damage due to temperature or humidity.
- B. Provide adequate forced ventilation for enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
- C. Portable heaters shall be standard approved units complete with controls.
- D. Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.

2.4 TEMPORARY WATER

- A. Arrange to provide metered water for construction purposes; CCMWA provides water one time at no charge after which Contractor shall pay for additional water used. Contractor shall pay all costs for installation, maintenance and removal, and service charges for water used after the first time.

- B. Water service must have a backflow preventer sized for the line installed. Backflow preventer must be a "reduced pressure zone" type (Watts Series 009QT) or an alternate approved by the local water authority.

2.5 TEMPORARY SANITARY FACILITIES

- A. Provide sanitary facilities in compliance with laws and regulations.
- B. Service, clean and maintain facilities and enclosures.

3 EXECUTION

3.1 GENERAL

- A. Maintain and operate systems to assure continuous service.
- B. Modify and extend system as work progress requires.

3.2 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.

****END OF SECTION****

SECTION 01 56 17
DUST CONTROL AND PROPERTY PROTECTION

1 GENERAL

1.1 DUST CONTROL

- A. Limit blowing dust caused by construction operations by applying water or employing other appropriate means or methods to maintain dust control, subject to the approval of the Owner.

1.2 PROTECTION OF ADJACENT PROPERTY

- A. The bidders shall visit the site and note the buildings, landscaping, roads, parking areas and other facilities near the work site that may be damaged by their operations. The Contractor shall make adequate provision to fully protect the surrounding area and will be held fully responsible for all damages resulting from his operations.

** END OF SECTION **

**SECTION 01 77 00
CONTRACT CLOSEOUT**

1 GENERAL

1.1 GENERAL

- A. Comply with requirements stated in conditions of the contract and in specifications for administrative procedures in closing out the work.
- B. Related requirements in other parts of the contract documents.
 - 1. Fiscal provisions, legal submittals and additional administrative requirements: Conditions of the Contract.
- C. Related requirements specified in other sections:
 - 1. N/A.

1.2 SUBSTANTIAL COMPLETION

- A. When contractor considers the work is substantially complete, he shall submit to Engineer:
 - 1. A written notice that the work, or designated portion thereof, is substantially complete.
 - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, the Engineer will make a construction review to determine the status of completion.
- C. Should Engineer determine that the work is not substantially complete:
 - 1. Engineer will promptly notify the contractor in writing giving the reasons therefore.
 - 2. Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the Engineer.
 - 3. Engineer will again review the work for completion status.
- D. When the Engineer finds that the work is substantially complete, he will:
 - 1. Prepare and deliver to Owner a tentative certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment.
 - 2. After consideration of any objections made by the Owner as provided in conditions of the contract, and when Engineer considers the work substantially complete, he will execute and deliver to the Owner and the Contractor a definitive Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.3 FINAL CONSTRUCTION REVIEW

- A. When Contractor considers the work is complete, he shall submit written certification that:
 - 1. Contract documents have been reviewed.
 - 2. Work has been reviewed for substantial compliance with contract documents.
 - 3. Work has been completed generally in accordance with contract documents.
 - 4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
 - 5. Work is completed and ready for final construction review.
- B. Engineer will perform a review to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should Engineer consider that the work is incomplete or defective:
 - 1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to Engineer that the work is complete.
 - 3. Engineer will again review the work.
- D. When the Engineer finds that the work is acceptable under the contract documents, he shall request the contractor to make closeout submittals.

1.4 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

- A. Operating and maintenance data, instructions to Owner's personnel:
- B. Evidence of Payment and Release of Liens: To requirements of General and Supplementary Conditions.

1.5 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Engineer.
- B. Statement shall reflect all adjustments to the Contract Sum:
 - 1. The original Contract Sum.
 - 2. Additions and deductions resulting from:
 - a. Previous change orders.
 - b. Allowances.

END OF SECTION

DIVISION 02
EXISTING CONDITIONS

**SECTION 02 27 10
STREAM CROSSINGS**

1 GENERAL

1.1 DESCRIPTION

- A. Contractor shall construct pipelines across streams in a manner that will
 1. minimize erosion and siltation during construction;
 2. restore the streambed, stream banks and buffer areas to their original grade and profile;
 3. produce a stable, erosion-free and maintenance-free condition for both the stream area and the pipeline.
- B. The work at stream crossings shall be scheduled, to the extent practicable, during periods of low stream flow. After the work commences, it shall be pursued in a continuous manner from day to day in order to minimize the duration of the work.

1.2 CLEARING OF TREES AND OTHER VEGETATION

- A. Clearing for all stream crossings shall be minimized and shall be limited to no more than a 40-foot width through the stream buffer area unless otherwise approved.

1.3 CONSTRUCTION PROCEDURE

- A. Typical Procedure: Contractor shall construct a cofferdam or temporary dam of crushed stone covered with plastic tarps. The cofferdam shall extend from the stream bank to a point beyond the centerline of the stream. Alternately, a bypass within the stream may be built by constructing the cofferdam completely across the stream and installing culverts between the dams over the trench. The pipeline shall then be installed in a trench excavated below the stream bed within the dammed area. All excavated material shall be removed to an offsite disposal area, and not allowed to contaminate the stream. A uniform bedding of No. 57 stone shall be placed on the trench bottom before placing the pipe in the trench. The entire trench shall be backfilled with no. 57 stone unless otherwise shown on plans. The trench shall be deep enough to ensure at least four feet of cover between the top of the pipe and the normal stream bed profile. All streambed and bank restoration within the cofferdam area shall be completed prior to removal of the dams.
- B. Alternate Procedure: Contractor may, after obtaining Engineer's approval, utilize a construction procedure other than the typical procedure outlined above. If Contractor proposes an alternate procedure, then a full and detailed submittal of the proposed procedure shall be submitted in writing, with appropriate drawings, well in advance of the scheduled work. No work shall commence under any alternate procedure until after obtaining Engineer's written approval of Contractor's proposed plan.
- C. Pumping in the cofferdam area shall be carried out as needed to maintain a workable pipe trench. Pumped water containing sediment shall not be returned directly to the stream but shall be pumped to a temporary sediment pond or filter system for removal of sediment before water is returned to the stream.

1.4 STREAMBANK RESTORATION:

- A. Excavated areas. Stream bank stabilization shall include backfilling and grading of excavated areas and covering with rip-rap to produce a finished grade that matches the original grade and blends in with adjacent stream banks. Backfill shall be compacted dry material. Filter fabric of an approved type shall be placed over the compacted material, followed by a thick layer of rip-rap as shown on the plans.
- B. Non-excavated areas. Disturbed areas outside of the excavated area shall, unless otherwise directed by Engineer, be restored by re-vegetating with grass. Temporary erosion protection blankets shall be placed on sloped areas to minimize erosion.

1.5 BUFFER AND WETLAND RESTORATION

- A. The top 24 inches of soil material within stream buffer zones and any wetlands adjacent to the stream shall be temporarily stored and shall be placed back after construction so that the original surface soil type is restored in these buffer and wetland areas. Grading within these areas shall be accomplished so that surface contours after construction are restored to the original contours, unless otherwise approved.
- B. At the stream bank and at the limits of wetlands, stone bedding in the pipe trench shall be interrupted with a two-foot thick plug of clayey soil placed and compacted completely around the pipe for the full trench depth to serve as an anti-seep collar to prevent unnatural drainage of buffers and wetlands.

1.6 CLEANING OF PIPELINE

- A. Immediately after each stream crossing and before pipe installation proceeds more than 50 feet beyond the limits of the stream crossing, Contractor must clean the pipe of all mud, sand, gravel, etc. Cleaning of the pipe using high-pressure water jets or other means will be required as necessary to accomplish thorough cleaning. Contractor shall verify that cleaning has been accomplished by inspecting the interior of the pipe for the full length of the crossing plus at least 50 additional feet each side. Inspection of the pipe will be performed in presence of the Engineer.

****END OF SECTION****

SECTION 02 32 13
SUBSURFACE CONDITIONS

1 GENERAL

1.1 GENERAL

The following soils investigation report has been prepared for the site:

Geotechnical Exploration
West Side Loop Section 2, 36-inch Water Main Replacement
CCMWA Project Number 9005-10-18-0000
United Consulting Project Number FRENI-18-GA-02170-03
Dated: January 18, 2019
By: United Consulting.

2 PRODUCTS

2.1 REPORT

The soils investigation report is included as Appendix A to these specifications.

END OF SECTION

**DIVISION 31
EARTHWORK**

**SECTION 31 11 00
SITE PREPARATION**

1 GENERAL

1.1 DEFINITIONS

- A. The terms "Clearing" and "Grubbing" used in these specifications will be as defined in the Georgia Department of Transportation Specifications, Latest Edition, Section 201.1.01.

1.2 WORK INCLUDED

- A. Furnish all labor, equipment and materials as required to prepare the construction site for the required work as shown on the drawings or as specified herein. Site preparation required for this project includes, but is not necessarily limited to:
 - 1. Observation of clearing limits - clearing at construction sites shall be limited to the disturbed area as shown on the Drawings, generally following the right-of-way and temporary or permanent easements.
 - 2. Contractor shall be extremely careful while working in the CCDOT right-of-way areas and observe strict safety procedures and practices. There is limited Ingress/ Egress access to these areas, and careful, prudent practices shall be observed at all times.

1.3 QUALITY ASSURANCE

- A. The Contractor, in conducting the work required on this project, is to cause no damage to property, soils or vegetation outside the limits of construction defined in this and other sections of these Specifications, as shown on the Drawings, or required by the Engineer. Any damage to property soil or vegetation outside the limits of construction shall be repaired immediately, by the Contractor, as defined herein at no additional cost to the Owner.

2 PRODUCTS (Not Used)

3 EXECUTION

3.1 WORKMANSHIP

- A. Clear and grub all trees, shrubs, and ground vegetation from the site as necessary to install the proposed water main. These cleared materials shall be removed from the site or burned in accordance with Georgia DOT Specifications and local laws. Pits for burning must be approved by the Engineer.
- B. Those areas that are cleared beyond specified limits shall be restored to their original state at the expense of the Contractor. Trees damaged during construction shall be replaced by the Contractor; or at the Engineer's discretion, trees that are damaged during construction may have any wounds dressed and coated with an approved pruning paint.

3.2 ENVIRONMENTAL PROTECTION

- A. Defined in Section 31 25 00.
- B. During construction the Contractor shall provide preventive measures as may be required by governing laws or ordinances to prevent siltation and soil erosion.

****END OF SECTION****

SECTION 31 23 19
CONSTRUCTION DEWATERING

1 GENERAL

1.1 SCOPE

- A. The Contractor shall be responsible for controlling groundwater in a manner that will preserve the strength of the bedding soils, will not cause instability of the excavation slopes, will not result in damage to existing structures and will not allow ground water or siltation to enter the water main while under construction.
- B. Where permeable soils are encountered at subgrade elevations, the Contractor shall maintain the groundwater level a minimum of 3-feet below the bottom of the trench.
- C. Open pumping from sumps and ditches, if it results in boils, loss of fines, softening of the ground, or instability of slopes, will not be permitted.
- D. The Contractor shall submit for the Engineer's approval a construction dewatering plan. The plan shall indicate the method of dewatering to be used, the location of any wells or pumps, and where pumped groundwater is to be discharged. No excavation will be allowed without an approved dewatering plan.

2 PRODUCTS

2.1 EQUIPMENT

- A. Equipment used for dewatering is optional to the Contractor.
- B. Mechanical equipment used shall be in good working order and suitable for use under the anticipated conditions.
- C. Wells and well points, if used, shall be installed with suitable screens and filters so that continuous pumping of fines does not occur.

3 EXECUTION

3.1 GENERAL

- A. The Contractor shall maintain and operate his dewatering equipment until the water main is installed in areas where ground water is present.
- B. No compensation for removal of unstable material below the subgrade shall be allowed if, in the opinion of the Engineer, modified dewatering techniques would solve the problem and result in a suitable subgrade.
- C. Dewatering discharge shall be accessible for collection of samples by the Engineer or testing company.

- D. Water shall be disposed of in accordance with applicable US Environmental Protection Agency, US Army Corps of Engineers, Georgia Environmental Protection Division standards and permits, and County and City ordinances.

****END OF SECTION****

SECTION 31 25 00
EROSION AND SEDIMENT CONTROL

1 GENERAL

1.1 SCOPE OF WORK

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

1.2 RELATED WORK

- A. Erosion and Sediment Control Plan
- B. Section 32 92 00 – Grassing and Mulching

1.3 REFERENCES

- A. Cobb County Soil Erosion and Sedimentation Control Ordinance.
- B. Cobb County Comprehensive Stormwater Management and Stormwater Quality Ordinance.
- C. Manual for Erosion and Sediment Control in Georgia, as published by the Georgia Soil and Water Conservation Commission (current edition).
- D. Federal Clean Water Act.
- E. Georgia Erosion and Sedimentation Act of 1975, as amended.

1.4 QUALITY ASSURANCE

- A. The Contractor shall provide at least one representative involved in the project's land disturbing activities that has successfully completed the erosion and sediment control education and certification program as administered by the Georgia Soil and Water

Conservation Commission; this “certified person” must have completed as a minimum, the Level 1A (Fundamentals) course. A “certified person” must be present onsite at all times when work is being performed. Failure to maintain a certified person onsite at all times may result in a stop work order or other appropriate enforcement action.

1.5 SUBMITTALS

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

2 PRACTICES AND PRODUCTS

2.1 GENERAL

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

2.2 STRUCTURAL PRACTICES

A. CONSTRUCTION EXIT - Co

- 1. A construction exit consists of a stone-stabilized pad with a geotextile underliner located at any point where traffic will be leaving a construction site to a public right-of-way, street, alley, sidewalk, or parking area.
- 2. Construction exits are used to reduce or eliminate transport of mud from the construction area.
- 3. Construction exits shall consist of graded 1.5- to 3.5-inch stone meeting National Stone Association Grade R-2. The geotextile underliner shall be a non-woven fabric equal to No. C-45NW as manufactured by Contech Construction Products, Inc. or equal.

B. CHANNEL STABILIZATION (RIP-RAP) - Ch

- 1. Channel stabilization consists of structures to stabilize an open channel for water conveyance. Such stabilization is typically applied in these locations where the channel banks and bed have been disturbed by excavation for a pipeline crossing.

2. Channels will be stabilized using a rock rip-rap lining. The lining shall consist of filter bedding stone and graded rip-rap stone. Sizes of stone shall be as classified by either the National Stone Association (N.S.A.) or the Department of Transportation (D.O.T.). Rip-rap stone shall be equal to Georgia Department of Transportation Type 1 or Type 3. Filter bedding stone shall be graded stone not exceeding 6-inches in diameter. An appropriate geotextile fabric may be substituted for filter stone.

C. CHECK DAMS - Cd

1. Check dams are barriers composed of stone or hay bales placed across a natural or constructed drainage-way to prevent erosion in areas of concentrated flows.
2. Stone check dams shall not be utilized where the drainage area exceeds five acres. Hay bale check dams should not be used where drainage areas exceed 2 acres. Check dams shall not be installed in live streams.
3. Stone check dams should be constructed of graded size 2- to 10-inch stone.

D. SEDIMENT BARRIER

1. STAKED HAYBALES - Sd1

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

2. SILT FENCE - Sd1

- a. Silt fences are temporary measures to retain suspended silt particles carried by sheet flow.
- b. Silt fence consists of silt fabric, as specified in the Georgia Department of Transportation list #36, wood or steel posts, and wire or nail fasteners.
- c. Type Sd1-S silt fence is a woven 36-inch wide filter fabric with wire reinforcement. Sediment barriers being used as Type S for sensitive areas shall have a support spacing of no greater than 4 feet on center, with each driven into the ground 18 inches.

E. INLET SEDIMENT TRAP - Sd2

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

F. ROCK FILTER DAM - Rd

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

for additional filtering affect.

G. TURBIDITY CURTAIN - Tc

1. Turbidity Curtain is installed to minimize turbidity and silt migration from work occurring within the water or as a supplement to perimeter control BMPs at the water's edge.
2. Silt or turbidity is confined to the area within the boundary created by the installation, such that suspended particles drop out of the water column over time. The turbidity curtain shall not be used as sediment storage.

2.3 VEGETATIVE PRACTICES

A. GENERAL

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

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

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

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

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

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

1. See Section 32 92 00 – Grassing and Mulching

E. DISTURBED AREA STABILIZATION (WITH SODDING) - Ds4

1. See Section 32 92 00 – Grassing and Mulching

F. EROSION CONTROL MATTING AND BLANKETS - Mb

1. This practice is a protective covering (blanket) or soil stabilization mat used to stabilize disturbed areas until permanent vegetation on steep slopes, channels, or shorelines can be established.
2. Concentrated flow areas, all slopes steeper than 2.5:1 and with a height of ten feet or greater, and cuts and fills within stream buffers, shall be stabilized with the appropriate erosion control matting or blankets.
3. All blanket and matting materials shall be on the Georgia Department of Transportation Qualified Products List (QPL #62 for Blankets, QPL #49 for Matting).

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

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

3 EXECUTION

3.1 GENERAL

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

temporary seeding, shall be taken immediately to the extent feasible and justified.

- F. The Contractor shall incorporate all permanent erosion control features (grassing and sodding) into the project at the earliest practicable time.

3.2 INSTALLATION

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

3.3 INSPECTION

- A. Upon completion of installation, the Owner or local government authority shall inspect the erosion and sediment control devices for proper installation, flaws, defects, or other damage. The Contractor shall repair or replace the unacceptable portions as directed by the Owner or local government authority.
- B. All erosion and sediment control devices shall be inspected by the Contractor at least weekly and after each rainfall occurrence.

3.4 MAINTENANCE

- A. The Contractor shall maintain the erosion and sediment control devices until the project is completed and all disturbed areas are stabilized. Maintenance of the devices shall include: removal and disposal of silt accumulation; replacement of damaged or deteriorated devices; other repairs; and the installation of additional devices should those devices installed prove to be inadequate at no additional cost to the Owner.
- B. Silt shall be cleaned out once it has accumulated to 1/2 the height of the device or when 1/2 of the available sediment storage capacity has been attained.

3.5 REMOVAL

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

****END OF SECTION****

SECTION 31 37 00
RIP-RAP

1 GENERAL

1.1 DESCRIPTION

- A. The work of this section consists of furnishing and hand placing stone rip-rap for embankment and stream bed protection.

1.2 SUBMITTALS

- A. As specified in Section 01 33 00.
- B. Submit Manufacturer's installation instructions for geotextile fabric.

2 PRODUCTS

2.1 GEOTEXTILE FABRIC

- A. Fabric shall be permeable synthetic material, having the following properties:
 - 1. Grab tensile strength, shall be 200 pounds minimum, tested by ASTM D1682-64.
 - 2. Grab elongation shall be 15-50% as tested by ASTM D1682-64.
 - 3. Burst strength shall be 500 lbs. as tested ASTM D751-79.

2.2 FILTER STONE

- A. Filter stone shall be crushed stone consisting of sound, durable particles of rock in the gradation specified. Stone shall be Georgia D.O.T. Standard Specification, Section 800, size #57.

2.3 RIP-RAP

- A. Rip-rap shall be well-graded angular quarry stones, sound and hard, resistant to water and weathering. Rock shall be Georgia D.O.T. Standard Specification, Section 805 Type 3. Maximum size shall be 1.0 cubic foot. At least 35% of the mass shall be comprised of pieces which weigh 15 pounds or more.

3 EXECUTION

3.1 EXCAVATION

- A. Excavate foundation as shown and as specified in Section 603.3 of the Georgia D.O.T. Standard Specifications, Latest Edition. Obtain Engineer's approval of foundation before placing geotextile fabric or rip-rap. Repair or replace fabric that has been damaged due to stone placement. Re-lay fabric that becomes displaced during stone placement.

3.2 GEOTEXTILE FABRIC

- A. Place on smooth, uniform slope, loosely enough to conform to minor surface irregularities. Follow manufacturer's recommendations for making laps and for fastening and securing

3.3 HAND-LAID RIPRAP

- A. Place largest rocks at bottom of slope. Arrange by hand to interlock and form a substantial bond. Rip-rap shall be reasonably uniform and free from bulges, humps, or cavities. Use spalls to fill voids.

****END OF SECTION****

DIVISION 32
EXTERIOR IMPROVEMENTS

SECTION 32 12 16
ASPHALT CONCRETE PAVING

1 GENERAL

1.1 WORK INCLUDED

- A. All labor equipment and materials required to furnish and install asphalt concrete paving for roadways and parking areas as shown on the Drawings.

1.2 RELATED WORK

- A. Testing Laboratory Services: Section 01 45 29

1.3 PAVING CONTRACTOR REQUIREMENTS

- A. A GDOT prequalified General Contractor shall provide all the work described under this specification.
- B. The name of the Paving Contractor shall be submitted to the Owner at least ten (10) business days prior to any construction within any roadway.

2 PRODUCTS

2.1 GRADED AGGREGATE BASE COURSE

Section 815, GDOT Standard Specifications, latest edition.

2.2 BITUMINOUS PRIME COAT

Section 821, GDOT Standard Specifications, latest edition. Viscosity grade MC-70.

2.2 SUPERPAVE ASPHALTIC CONCRETE MIXTURES

Section 828, GDOT specifications, latest edition. 25 mm Superpave, 19 mm Superpave and 12.5 mm Superpave.

2.3 ASPHALTIC CONCRETE BINDER COURSE

Section 828, GDOT Specifications, latest edition.

2.4 BITUMINOUS TACK COAT

Section 822, GDOT Standard Specifications, latest edition. Grade SS-1 or SS-1h.

2.5 ASPHALTIC CONCRETE SURFACE COURSE

Section 828, GDOT Standard Specifications, latest edition, 12.5mm.

2.6 PAINT TRAFFIC STRIPING

Section 652, GDOT Standard Specifications, latest edition.

2.7 THERMOPLASTIC TRAFFIC STRIPE

Section 653, GDOT Standard Specifications, latest edition.

3 EXECUTION

- 3.1 Construct graded aggregate base course in accordance with Section 310, GDOT Standard Specifications, latest edition.
- 3.2 Apply bituminous prime coat in accordance with Section 412, GDOT Standard Specifications, latest edition.
- 3.3 Construct asphaltic concrete binder course in accordance with Section 400, GDOT Standard Specifications, latest edition.
- 3.4 Apply bituminous tack coat in accordance with Section 413, GDOT Standard Specifications, latest edition.
- 3.5 Construct asphaltic concrete surface course in accordance with Section 400, GDOT Standard Specifications, latest edition.
- 3.6 Apply traffic striping course in accordance with Section 652, GDOT Standard Specifications, latest edition or Section 653, GDOT Standard Specifications, latest edition as appropriate.
- 3.7 Omit all references to measurement and payment in the GDOT Specifications.
- 3.8 Final pavement will be subject to Cobb County DOT acceptance for smoothness and trafficability.

END OF SECTION

**SECTION 32 92 00
GRASSING AND MULCHING**

1 GENERAL

1.1 GENERAL

- A. This work shall consist of ground preparation, furnishing and planting, seeding, fertilizing, sodding and mulching of all disturbed areas.
- B. Areas to be grassed or permanently mulched:
- C. Any areas which were grassed prior to the start of construction shall be grassed after completion. These areas include but are not limited to pipeline trenches, fill and topsoil storage areas and structure excavation.

1.2 JOB CONDITIONS

Schedule work to comply with Section 31 25 00, Erosion and Sedimentation Control.

2 PRODUCTS

2.1 SEED

The seed shall be an approved mixture for the required type of grass and time of planting.

2.2 FERTILIZER

Commercial grade

2.3 AGRICULTURAL LIME

GDOT Section 882.2

2.4 MULCH

GDOT Section 893.2

3 EXECUTION

3.1 STAND OF GRASS REQUIRED

It is the intent of this specification that the Contractor is obliged to deliver a satisfactory stand of perennial grass before final payment will be made. If it is necessary to repeat any or all of the work, including plowing, fertilizing, watering and seeding, the Contractor shall nevertheless repeat these operations as a part of this contract until a satisfactory stand is obtained. For the purpose of seeding, a satisfactory stand of grass is herein defined as a full cover, over the areas to be seeded, with grass that is alive and growing, leaving no bare spots larger than one square foot. Bare spots shall be scattered, and the total bare areas should not comprise more than 1/100 of any given area.

3.2 LIMING AND GROUND PREPARATION

After the area to be seeded has been brought to finished grade, lime, if it is required, shall be uniformly distributed at a rate of 1 to 2 tons per acre over the seeding area, depending on soil test, with a mechanical spreader. The ground shall be prepared by plowing, disking and harrowing to a depth of at least 4 inches until these areas are friable, well pulverized and the lime is uniformly mixed with the soil. All irregularities in the surface shall be smoothed out. All roots and stones larger than 3 inches to any dimension, and all other foreign material detrimental to final grading, proper bonding or the proper growth of the planting, shall be removed.

3.3 FIRST APPLICATION OF FERTILIZER

Commercial fertilizer grades 4-12-12, 6-12-12 or 5-10-15 shall then be distributed uniformly at the rate of 1,500 pounds per acre and shall be uniformly mixed with the soil to a depth of at least 4 inches by disking, harrowing or by other methods acceptable to the Engineer. Fertilizer shall not be applied when the wind makes it difficult to get satisfactory distribution.

3.4 SEEDING

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

APPLICATION		
<u>Season</u>	<u>Kinds of Seed</u>	<u>Pounds Per Acre</u>
Jan. 1-May 15	Unhulled Common Bermuda	45
	Kentucky 31 Fescue	150
May 16-Sept. 1	Hulled Common Bermuda	75
Sept. 2-Dec. 31	Unhulled Common Bermuda	45
	Kentucky 31 Fescue	150

The seed shall be uniformly sown by approved mechanical power drawn drills or, in small areas, by mechanical hand seeders. The seeds shall be covered and compacted to a depth of 1/8 to 1/2 inch by means of a cultipacker and an empty traffic roller or another roller weighing less than 3 tons. Broadcast seeding shall not be done when the wind makes it difficult to get satisfactory distribution.

3.5 MOISTURE

Seed shall not be sown unless the soil has the optimum moisture content or more through a depth of at least 4 inches, nor shall it be sown when there is frost in the ground. The Engineer has the authority to postpone seeding at any time when weather and moisture conditions are not favorable.

3.6 MULCH

All areas to be seeded (except those to be sprigged and over-seeded) shall be uniformly mulched in a continuous blanket immediately after seeding using the quantities per acre listed below for each type of mulching material.

Straw, Hay, Forest Litter, Hulls	1.5 tons
Stalks	2 tons
Manure	4 tons
Peat or Mulch	135 C.Y.

The rate of application will correspond to a depth of at least one inch and not more than one and one half inches, according to the texture and moisture content of the mulch material. It is intended that mulch shall allow some sunlight to penetrate and air to circulate, at the same time shading the ground, reducing erosion and conserving soil moisture. The contractor shall take steps necessary to prevent loss of mulch or bunching of mulch as caused by the wind.

3.7 WATERING

After the seeds have been sown, the soil will be maintained in a moist state until seed germination has occurred. After germination, if there is not enough moisture in the soil to insure adequate plant growth, water shall be applied until an adequate moisture content has been reached. Water shall not be applied when there is danger of freezing.

3.8 MAINTENANCE

The Contractor will be required to do all maintenance necessary to keep all seeded areas in a satisfactory condition until the work is finally accepted. This includes mowing, repairing washes that occur, and additional seed, fertilizer and water if they are needed. Mowing will be required at most four weeks apart during growing season.

3.9 STAND OF GRASS

If, after a suitable growth period, a satisfactory stand of grass is not evident, the unsatisfactory areas shall be reseeded, including any additional ground preparation and fertilizing necessary, using the type of seed specified.

3.10 SEEDING SCHEDULE

The Contractor shall grass disturbed areas as construction progresses. Not more than 1,000 feet of line shall be left un-grassed at any time.

****END OF SECTION****

DIVISION 33
UTILITIES

SECTION 33 05 16.13
PRECAST CONCRETE STRUCTURES

1 GENERAL

1.1 DESCRIPTION

- A. Section Includes: Requirements for providing precast concrete structures, manholes, wet wells, vaults, and other miscellaneous structures or members.

1.2 REFERENCE STANDARDS

- A. All work hereinafter shall comply with current and applicable portions of the following:
1. American Concrete Institute (ACI) Publications.
 2. American Society for Testing and Materials (ASTM) Publications.
 3. American Welding Society (AWS) Publications.
 4. ACI 318, Building Code Requirements for Reinforced Concrete.
 5. Precast/Prestressed Concrete Institute (PCI).

1.3 QUALITY ASSURANCE

- A. Acceptable Manufacturers and Erectors shall have had a minimum of 5 years of experience in precast structural concrete work of the quality and scope required on this project. The producer shall have an established written quality assurance program in effective operation at their plant attested to be a current enrollment of the plant in the PCI "Certification Program for Quality Control" or a Quality Control Program acceptable to the Engineer. The written Quality Control Program will be furnished to the Engineer upon request.
- B. Design
1. Structural members have been indicated on the drawings by general size and depth. The structural analysis and design of these items as well as lifting devices for all precast concrete members shall be performed by the manufacturer of the precast materials and subject to review of Engineer.
 2. Design shall be in accordance with ACI 318, latest edition, and under the supervision of a Professional Engineer registered in the state where the project is located.
 3. Design loads shall consist of dead load, live load, impact load, and loads due to water table and any other loads which may be imposed upon the structure. Unless noted otherwise, live loads shall be for HS-20 per AASHTO standard specifications for highway bridges and design wheel loads shall be 16 kips. The live load shall be that which produces the maximum shear and bending moments on the structure.

4. Before shipment, all concrete members shall be inspected to determine that materials and workmanship conform to the requirements of these specifications and the manufacturer/vendor quality control program.
- C. Allowable Tolerances
1. Dimensions and cambers shall be within the tolerances as described in PCI MNL-116, Division V, Section 5.
 2. Deflection: Deflection under design live load shall not exceed calculated deflection by more than 10 percent.
- D. Sampling and Testing
1. General
 - a. Samples and tests required below and other tests are to be made by and at the Contractor's expense. The tests shall be performed by an independent commercial testing laboratory or by the manufacturer's lab subject to review by the Engineer. Compressive strength tests for initial prestress may be performed in the manufacturer's plant laboratory. Certified copies of test reports shall be furnished as required in this Specification, and shall include all test data and results.
 2. Concrete Testing
 - a. During the progress of the work, plastic concrete, as delivered to the casting site, shall be sampled and tested for slump, air content and compressive strength in accordance with ACI 381, Part 2, Chapter 3, and Part 3, Chapter 4. No fewer than 6 cylinders shall be made during each concreting cycle. Not more than 1 test in 10 shall fall below the specified strength.
 3. Slump Tests
 - a. Slump tests shall be in accordance with ASTM C 143.
 4. Failure to Meet Strength Requirements
 - a. If compressive strength tests fail to meet the above requirements, the Engineer may require load tests to be made in accordance with ACI 318. Units failing to meet requirements of the load tests shall not be used. Load tests shall be performed at the expense of the Contractor.

1.4 SUBMITTALS

- A. Shop Drawings
1. Furnish complete details of design, manufacture, fabrication, installation and erection in accordance with the contract conditions. Location of all inserts and openings shall be shown.

- B. Design computations shall be submitted with shop drawings for review prior to manufacture of any units and shall bear the seal of the Professional Engineer who performed or approved the design and is registered in the state where the project is located. All design loads shall be clearly shown.
- C. Each precast concrete unit shall be properly identified by a specific mark, to appear both on the shop drawings and on the manufactured unit. These identifying marks are to be clearly visible to facilitate proper erection and installation.
- D. All connections, bearings, and anchorage details shall be shown on the shop drawings. The precast concrete manufacturer, subject to review of Engineer, will be permitted to modify any details shown on the drawings provided such modifications will be equally or more efficient and more consistent with the latest recommended practices of the Precast/Prestressed Concrete Institute, and at no additional cost to the Owner. All cast-in connection components shall be designed with positive anchorage which shall be accomplished by having the anchors attached to or around reinforcing steel wherever possible.
- E. Design loads, used in design of the precast concrete section, shall be indicated on the shop drawings.
- F. Certificates of Conformance
 - 1. Before delivery of materials and equipment, four (4) notarized certificates attesting that materials and equipment meet the requirements specified shall be submitted to the Engineer for review.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery
 - 1. Precast structures and members shall be inspected upon delivery to the erection site and stored in a manner that will prevent staining and damage.
 - 2. Substantially damaged, cracked, or broken units which are deemed unsuitable for the intended use shall be rejected and removed from the site at no cost to the Owner.
 - 3. The Engineer's decision will be final in determining unsuitable units.
- B. Handling
 - 1. Precast concrete members shall be lifted and supported during transportation only at the lifting and/or support points shown on the Shop Drawings. Only lifting devices embedded in these sections by the manufacturer shall be used, unless specific authorization to use other lifting points is received in writing from the manufacturer.
 - 2. Proper equipment shall be used to transport the precast concrete sections to the job site. Trucks and trailers with sufficient capacity to handle the heaviest sections specified, without overloading the access routes, must be

used. Units damaged due to racking or twisting will be rejected whether damaged on site and route or at the plant.

3. Proper access on the job site shall be provided by the contractor to permit transportation units to proceed under their own power to a location accessible to erection units.

C. Storage

1. Store precast structures or members off the ground on wooden blocking, pallets, or other appropriate means away from brush, and in areas accessible for inspection.

D. Repair or Replacement

1. Repair damage or defects if Engineer deems repairable and at his direction.
2. Remove and replace at no cost to the Owner if Engineer deems damage or defects are not repairable by Contractor.

2 PRODUCTS

2.1 MATERIALS

- A. Reinforced Concrete Materials: As modified herein, except that slump requirement shall not apply to manholes.
- B. Precast Concrete Manholes: ASTM C478 except:
 1. Compressive Design Strength of Concrete
 - a. Minimum 5,000 psi using Type II cement.
 - b. Minimum compression cylinder test of 4,000 psi at time of shipment.
 2. Configurations: Follow Drawings and Standard Details.
 3. Joints: ASTM C443.
 4. Appurtenances.
 - a. Steps: Manufacturer standard details.
 - b. Bolt inserts: Follow Standard Details.
 - 1) Embed one of following a minimum of 3 inches, to accommodate $\frac{3}{4}$ -inch diameter bolts.
 - a) Heckmann Building Products Corporation, No. 444 Star Threaded Inserts.
 - b) Pennsylvania Insert Corporation, the Liberator.
 - c) Atlantic Concrete Products Co., Bolt Slot Insert System.
 - d) Strut Service Company inserts.

5. Manhole Identification: Clearly marked on inside near top where applicable.
 - a. ASTM Specification designation.
 - b. Manhole setting number (bases only) and Owner project number.
 - c. Date of manufacture.
 - d. Production control number for tracking manufacture phases of item and name or trademark of manufacturer.
 - e. Lined manholes: Stenciled with waterproof paint or ink markings as noted herein that cannot be easily removed from lining or epoxy coated surfaces.
6. Precast Manhole Sections
 - a. Approved Manufacturers:
 - 1) Tindall
 - 2) Oldcastle
 - 3) Or approved equal
7. Precast Concrete Grade Rings: ASTM C478, except:
 - a. Compressive Design Strength of Concrete: Minimum 5,000 psi using Type II cement.
 - b. Configurations: Follow Standard Details.
 - c. Rings: Drilled with holes 1½- to 2-inch diameter to accommodate frame anchor bolts.
 - 1) Grade rings with cracks or fractures passing through height of ring and any continuous crack extending for length of 3 inches or more will be rejected.
 - 2) Rings with damaged edges which will prevent making satisfactory joint in the opinion of the Engineer will be rejected.
 - 3) Planes of ring surfaces: Within limits of plus or minus ¼ inch of horizontal and vertical, except for sloped adjusting grade ring to be within ¼ inch of Standard Detail.
 - d. Approved manufacturers:
 - 1) Atlantic Concrete Products Company
 - 2) Americast
 - 3) Contractors Precast Corporation
 - 4) Hanson Concrete Products
 - 5) Dal-Col Products, Inc.

- 6) Prism Precast Products, Inc.
 - 7) Frederick Precast Concrete, Inc.
 - 8) Or approved equal
8. Miscellaneous Materials
 - a. Granular Bedding: ASTM C33 coarse aggregate size number 4.
 - b. Weep holes: Service weight cast iron covered with non-erodible filter on earth side.
 9. Precast Concrete Vaults – NOT USED
 10. Manhole Ring and Cover
 - a. Manhole covers shall be of cast iron or ductile iron. The ring and cover shall provide a 30-inch diameter access opening. The cover shall have two pickbars; each pickbar shall be 1-inch diameter and made from stainless steel. The ring cover shall be East Jordan B-30 Frame with 1810B4 Cover, or approved equal. The word "WATER" shall be cast on the cover in letters approximately two (2) inches high. All manhole covers shall be vented with twenty-four (24) one (1) inch diameter holes, six in each quadrant.
 - b. All rings not located in paved areas shall be cast-in the “flat top”.
 - c. These castings are manufactured to withstand highway traffic loads, exceeding AASHTO H-20/HS-20 specifications (wheel loads of 16,000 pounds with a tire contact area of 8” x 20”).
 - d. Grey Iron castings shall conform to the requirements of AASHTO M 105 Class 35 B or ASTM A 48 Class 35 B, unless otherwise specified.

2.2 SOURCE QUALITY CONTROL

- A. Test Equipment: Instruments, gages, and other testing and measuring equipment of proper range, type, and accuracy to verify conformance with specification requirements.
 1. Ensure equipment is calibrated and certified at annual intervals.
 2. Calibrate against measurement standards with known relationship to existing national standards.
 3. Calibrate and certify gages on equipment to which they belong, and keep them on equipment following certification.
 4. Do not use instruments, gages, testing, and measuring equipment found to be out of calibration or adjustment until applicable requirements have been met.
 5. Calibration by agency regularly engaged in this type of activity.
- B. Precast Manhole Testing

1. Joint and Barrel Testing: ASTM C443.
 2. Plant vacuum testing: ASTM C1244.
- C. Acceptance Procedure for Concrete Strength of Precast Manhole Sections:
Procedure applies to acceptance and approval of precast manhole bases, riser, and cone sections, flat top slabs, and grade rings.
1. Concrete Design Mix Approval: Based on submittal specified above herein.
 - a. The Owner will issue approval for up to 3 years, provided design mix materials and sources are not changed and in-plant concrete testing of manhole sections continues to be accepted without rejection of more than 2 days' production in a row.
 - 1) Every 3 years thereafter, and under failure conditions stated above resubmit concrete design mix for approval.
 - 2) Production from mixes other than those approved will be rejected.
 - b. Compressive strength test: ACI 301 and ACI 318.
- D. Vaults and Other Precast Concrete Structures
1. Determination of concrete compressive strength: from compressive tests made on concrete cylinders.
 2. Unless otherwise specified, retain independent testing facility approved by Engineer for molding, capping, and testing concrete cylinders following appropriate ASTM requirements or, at Engineer's option, make cylinders and use own equipment to test.
 - a. Furnish test results to Engineer.
 - b. Engineer may require core samples of finished product.
 - c. When requested by Engineer, furnish compressive test specimens for testing in addition to requirements above, and continue to monitor quality of concrete.
 3. Notify Engineer at least 10 working days prior to pouring any structure.
 4. The Owner may perform random or full inspections of manufacture of boxes, vaults, and precast structures to inspect:
 - a. Steel placement and size.
 - b. Overall fabrication.
 - c. Workmanship.
 - d. Other general or specific aspects of production and specification compliance.

3 EXECUTION

3.1 EARTHWORK

- A. The Contractor shall prepare an excavation large enough to accommodate the structure and permit grouting of openings and backfilling operations.
- B. The bottom of the structure shall be placed on 6 inches of compacted, crushed rock subbase, and graded level to the elevation as shown on the plans.
- C. Vault excavations shall be backfilled with imported granular material to a minimum relative density of 95 percent standard proctor method as determined by ASTM D-698.

3.2 INSTALLATION

- A. Openings or “knockouts” in precast concrete vaults shall be located as shown on the drawings and shall be sized sufficiently to permit passage of the largest dimension of pipe and/or flange.
- B. Upon completion of installation, all voids or openings in the vault walls around pipes shall be filled with 3,000 psi non-shrink grout.
- C. After the structure and all appurtenances are in place and approved, backfill shall be placed to the original ground line or to the limits designated on the plans.
- D. All joints between precast concrete vault sections shall be made watertight. The plastic joint sealing compound shall be installed according to the manufacturer’s recommendations to provide a watertight joint which remains impermeable throughout the design life of the structure.
- E. Access doors shall be built up such that the hatch is flush with the surrounding surface unless otherwise specified on the drawings or by the Engineer. The Contractor is responsible for placing the cover at the proper elevation where paving is to be installed and shall make all necessary adjustments so that the cover meets these requirements.

3.3 FIELD QUALITY ASSURANCE

- A. Perform field testing of precast concrete structures required under other sections of these specifications.

*** END OF SECTION ***

SECTION 33 11 13
WATER MAIN CONSTRUCTION

1 GENERAL

1.1 SCOPE OF WORK

- A. The work includes furnishing all material, labor, tools, equipment, skills, and incidentals necessary to construct expansions of the Cobb County-Marietta Water Authority's supply system in Cobb County, Georgia.

1.2 ORDER OF WORK

- A. The Engineer will designate the starting point, or points, for construction and the order in which the work shall be constructed, completed, and placed into operation.

1.3 SINGLE SOURCE OF PIPE AND FITTINGS

- A. A single pipe and a single fitting manufacturer will be responsible for providing all 6" through 36" pipe, and 6" through 36" fittings on this project. These manufacturers will be responsible for the quality of all materials and shall provide a one-year warranty for all materials supplied for this project. Pipe and fittings shall bear the stamp, label or other designation from the single source manufacturer.

1.4 SUBMITTALS

- A. The Contractor shall submit for review a pipe laying schedule and pipe laying drawings for the project. Both the schedule and drawings shall be provided by the pipe manufacturer. Both the schedule and drawing shall include all pipe, fittings, and valves to be installed for this project.

2 PRODUCTS

2.1 GENERAL

- A. The Contractor shall furnish all materials and incidental items (whether or not they are specifically described herein) necessary to complete all work called for under the contract, except for any items that are specifically listed in these contract documents as being furnished by the Owner.

2.2 PIPE FOR WATER MAINS

- A. Pipe for water mains shall be ductile iron (DIP) designed and manufactured in accordance with the latest revision of ANSI/AWWA C151/A21.51. Each pipe shall be subjected to a hydrostatic test pressure of at least 500 psi at the time and place of manufacture. Pipe wall thickness shall be sufficient to meet the above conditions, and in accordance with the Pressure Class listed in the Bid Proposal or shown on the contract drawings.

- B. The Pressure Class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the manufacturer's mark, country where cast, year in which the pipe was produced and the letters "DI" or "Ductile" shall be cast or stamped on each length of pipe.
- C. Ductile Iron Pipe shall have an outside asphaltic coating in accordance with the latest revision of ANSI A21.51-81. The exterior of ductile iron pipe shall be coated with a layer of arc-sprayed zinc. The mass of the zinc applied shall be 200 grams per square meter of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The mean dry film thickness of the finishing layer shall not be less than 3 mils with a local minimum not less than 2 mils. All pipe shall be zinc-coated at the pipe manufacturer's facility. The Ductile Iron Pipe shall also have an inside cement lining and asphaltic seal coat in accordance with the latest revision of ANSI/AWWA C104/A21.4.
- D. Owner has found that pipe manufactured by American Cast Iron Pipe Company, US Pipe, and McWane Ductile meets the requirement of this specification. Therefore, pipe shall be as manufactured by the above named manufacturers. No substitution is permitted.
- E. Pipe joints shall be as the type specified on the project plans. Restrained Joint Pipe shall be:
 - 1. For 20" and larger DIP water main, restrained by Flex-Ring joints, TR Flex joints or approved equal. Field Flex-Ring, or similar device by other pipe manufacturers approved in this section of the specifications, which is a boltless and glandless way of restraining field connections and does not require a factory weldment, is acceptable for cut sections of pipe only.
 - 2. For DIP water main smaller than 20", restrained by Fast-Grip gaskets inserted in Push-On Joints or approved equal.
 - 3. For all mechanical joints, restrained according to Section 2.9 of this specification titled "Mechanical Joint Restraint Devices."
 - 4. Standard "Push-On" type joints shall be in accordance with the latest revision of ANSI/AWWA C111/A21.11 and furnished complete with gaskets.
- F. Inspection and written certification that the pipe meets all applicable specifications will be required in accordance with section 51-4 of ANSI A21.51-81. A written transcript of foundry acceptance tests must be furnished in accordance with section 51-14 of ANSI A21.51-81. These documents must be forwarded to the engineer prior to shipping of pipe.
- G. Fittings shall be ductile iron. Fittings shall have a coating consisting of Tnemec Series 94H20 Hydro-Zinc primer and Tnemec Series 22 Epoxoline Finish Coat Polyamine Epoxy. Both primer and finish coat shall be ANSI/NSF Std. 61 Certified. The coating system as applied shall have a zinc level of at least 200 grams per square meter of surface area. Fittings shall have a standard asphaltic coating on the exterior. Fittings shall also have a cement-mortar lining and asphaltic seal coat on the interior in accordance with ANSI/AWWA C104/A21.4,

latest revision. Fittings shall have the word “zinc” stenciled on the exterior. Fittings without the word “zinc” on the exterior shall be removed from the site.

- H. Fittings and accessories shall be furnished with Mechanical Type Joints in accordance with ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53, latest revision.
- I. Owner has found that fittings and restraint devices manufactured by American Cast Iron Pipe Company, Metalfit Incorporated, Sigma Corporation, or Star Pipe Products, meet the requirements of this specification. Therefore, fittings and restraint devices shall be as manufactured by the above named manufacturers. No substitution is permitted.
- J. Outlets shall be of the type shown on plans and shall be furnished by the pipe manufacturer.

2.3 POLYETHYLENE ENCASEMENT

- A. Polyethylene tubing shall be manufactured of virgin polyethylene material conforming to the requirements specified in AWWA C105 and shall consist of two distinct tubes.
- B. The first tubing touching the pipe shall be 8-mil, white in color, consisting of three layers of co-extruded linear low density polyethylene (LLDPE) film that are fused into one. The inside surface shall be infused with a blend of an anti-microbial biocide to mitigate microbiologically influenced corrosion (“MIC”) and a volatile corrosion inhibitor (“VCI”) to control galvanic corrosion. The tubing shall be V-Bio as developed by the Ductile Iron Pipe Research Association (DIPRA), or approved equal.
- C. The second tubing, installed on top of the V-Bio, shall be 8-mil polyethylene tubing (LLD) for water mains and shall be black in color.
- D. Tape for polyethylene tubing shall be as provided by the manufacturers for this specific purpose.

2.4 BUTTERFLY VALVES

- A. NOT USED.

2.5 GATE VALVES

- A. Valves 4” to 36” diameter shall be of the Resilient Wedge Gate Valve type design. All gate valves shall be rated for 250 psig cold water working pressure, with zero leakage. The rating shall be indelibly marked on the casting. The valves shall comply fully, in all applicable sizes, with the latest edition of ANSI/AWWA C-515, as well as all requirements detailed herein. The manufacturer shall provide drawings and/or an affidavit detailing compliance with all applicable standards and specifications. All valves shall be of the same manufacturer and shall clearly bear the manufacturer’s name and valve size.

- B. Valve body, bonnet and resilient wedge shall be cast, machined, assembled and tested in the United States. Manufacturer must furnish certification that it meets this requirement.
- C. All ferrous components of the valve shall be constructed of ductile iron. All valves shall be cast with the words “DI” or “Ductile Iron”. The wrench nut shall be constructed of ductile iron, shall have four flats at the stem connection to insure even transfer of torque to the stem.
- D. The wedge shall be ductile iron. It shall be fully encapsulated with EPDM rubber, symmetrical in design, and shall seat equally well with flow in either direction. In sizes 4” to 36”, the wedge shall incorporate the use of guides encapsulated with an engineered plastic. The valve body guide track shall be of shallow rectangular trough-style design. The wedge-to-stem design on 4” to 36” valves shall employ the use of an independent stem nut.
- E. All body to body bolting material shall be Type 304 SS, develop the physical strength characteristics of ASTM A307 and shall have the dimensional requirements of AWWA C-515 and ANSI 18.2.1. All body to bonnet bolting shall be of the same size and length. All bolts shall have square or hexagonal heads.
- F. All stem diameters and the prescribed number of turns to open shall be as detailed in the applicable portions of Table 4, of AWWA C-515. The stem O-rings above the thrust collar shall be replaceable with the valve fully open and while subjected to full working pressure. Valve shall be equipped with thrust washers above and below the thrust collar to reduce the operating torque of the valve. All valves shall open when turned to the left.
- G. All internal and external surfaces of the valve shall be coated prior to assembly, with epoxy. All valve body gaskets shall be of a pressure energized O-ring design.
- H. All valves 14” and larger shall be equipped with lifting lugs or eyebolts for lifting. All valves 16” and larger shall be equipped with spur gearing for vertical installation to reduce operating torque. Valves shall be installed in the vertical position.
- I. Gate valves that are to be installed on ductile iron pipe shall have Mechanical Joint (MJ) ends which must be restrained on each end with restraining glands. Valves used to isolate air and vacuum valves and installed in a manhole shall be flanged. Flange dimensions are to be per B16.1, Class 125 and ANSI/AWWA C110/A21.10. All flange thickness shall be per ANSI/AWWA C110/A21.10.
- J. Resilient Wedge Gate Valves shall be American Flow Control Series 2500, Mueller Series 2360 or 2361, or approved equal.

2.6 VALVE BOXES

- A. Valve boxes shall be used on isolation valves 12” and smaller and shall be cast-iron with cast iron covers. The barrel shall be multiple-piece, screw type, having

5-1/4-inch shaft. Covers shall have "WATER" cast into the top. Valves which have operating nut at depths greater than 5 feet or valves specifically designated by the drawings shall be composed of a valve box and extension stem. All moving parts of the extension stem shall be enclosed in the valve box housing to prevent contact with the soil. Valve box and extension assembly shall be adjustable to accommodate variable trench depths. A debris cap or seal shall be integral to the assembly to prevent debris, silt, etc. from entering the barrel of the valve box.

- B. The stem assembly shall be of a telescoping design that allows for variable adjustment length. The material shall be galvanized square steel tubing. The stem assembly shall have a built-in device that prevents the stem assembly from disengaging at its fully extended length. The extension stem must be capable of surviving a torque test to 1000 ft-lb without failure. Where the valve and extension stem are located in a manhole, wall support brackets shall be provided at a vertical spacing as recommended by the manufacturer and shall be suitable for installation in a circular manhole.
- C. The valve box shall be as manufactured by Tyler Union, Pentek, or pre-approved equal. The extension stem shall be as manufactured by Trumbull Industries, or pre-approved equal.

2.7 VALVE MARKER

- A. One concrete valve marker shall be furnished and set at each line valve that uses a valve box. The marker shall be made of 3000 psi concrete and shall be four (4) feet long and 4" on each side, with #4 reinforcing bars as shown on the detail.
- B. The markers shall be set an even number of feet between the center line of the valve and the center line of the aluminum disc in the top of the marker, and the distance in feet between the valve and marker shall be stamped in the marker at the time of setting.

2.8 AIR AND VACUUM RELEASE VALVES

- A. Air release and vacuum break valve shall be of the compact single chamber design with solid cylindrical HDPE control floats housed in a tubular stainless steel body with epoxy powder coated cast iron or steel ends secured by stainless steel tie rods. The valve shall have an integral orifice mechanism, which shall operate automatically to limit transient pressure rise induced by closure to twice the valve rated working pressure. The intake orifice shall be equal to the nominal size of the valve. The flat face of the control float seating against an EPDM "O" ring housed in a dovetail groove circumferentially surrounding the orifice shall effect large orifice sealing. The seating and unseating of a small orifice nozzle on a natural rubber seal affixed into a control float shall control discharge of the pressurized air. The nozzle shall have a flat seating land surrounding the orifice so that damage to the rubber seat is prevented. All components shall be easily replaced. Connection to valve inlet shall be as shown on the plans. The valve

shall be Vent-O-Mat series RBX (Vent-O-Mat US, Phone 410-850-4404). No substitution is permitted.

2.9 MECHANICAL JOINT RESTRAINT DEVICES (MEGALUGS)

- A. Restraint devices for nominal pipe sizes 3 inch through 36 inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10. The devices shall have a working pressure rating of 350 psi for 3-16 inch and 250 psi for 18-36 inch. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes. Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536. Ductile iron gripping wedges shall be heat treated within a range of 370 to 470 BHN. Three (3) test bars shall be incrementally poured per production shift as per Underwriter's Laboratory (U.L.) specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8. Chemical and nodularity tests shall be performed as recommended by the Ductile Iron Society, on a per ladle basis.
- B. Restraint devices shall be listed by Underwriters Laboratories (3" through 24" inch size) and approved by Factory Mutual (3" through 12" inch size).
- C. Owner has found that restraint devices manufactured by EBBA Iron Sales, Inc., Sigma Corporation, and Star Pipe Products meet the requirements of this specification. Therefore, restraint devices shall be as manufactured by the above named manufacturers. No substitution is permitted.

2.10 STEEL CASING

- A. NOT USED.

2.11 CASING SPACERS

- A. NOT USED.

2.12 SUBGRADE STABILIZER

- A. Subgrade stabilizer shall consist of crushed stone meeting size and gradation requirements for Georgia DOT, Section 800, Size #57.

2.13 CONCRETE

- A. Concrete for blocking, replacing curb and gutter, replacing sidewalks and miscellaneous concrete shall have a minimum compressive strength of 3,000 psi at 28 days with air entrainment.

2.14 CONCRETE AND GROUT

- A. A mix design, showing amounts of each ingredient for each type mix, shall be submitted for approval.

2.15 SAND FOR BACKFILL

- A. Sand for backfilling over water mains, when required, shall be coarse, well-graded sand relatively free from dirt and other foreign matter. Sand shall be approved by Engineer.

2.16 BRICK

- A. All brick shall be best grade. All hard burned common, acceptable to the Engineer and giving a ringing sound when struck and presenting a regular and smooth face, shall be used. When submerged in water for 24 hours, brick shall not absorb more than 10% of its weight in water.
- B. Bricks shall be culled when delivered on the site and all imperfect brick shall be immediately removed from the work. All salmon, soft or arch brick or brick made of alluvial soil will be rejected. All brick used in the work shall be of uniform size.

2.17 BITUMINOUS PAVEMENT REPLACED

- A. Pavement shall be replaced in accordance with the details shown on the drawings and as set out under "Removing and Replaced Pavement - Bituminous Paving" under section for construction methods. All bituminous materials and workmanship shall conform to the latest standard specifications of the Georgia Department of Transportation for the type called for in these specifications.

2.18 FLOWABLE FILL

- A. Controlled low-strength flowable fill (100 psi maximum) shall comply with GDOT Specification Section 600. A concrete mix design shall be submitted to the Engineer for approval prior to use. The flowable fill shall consist of Portland cement, fine aggregate, air-entraining admixtures, and water proportioned to provide low strength, self-leveling backfill material.
- B. Flowable fill shall encase the newly installed water main as shown on the plans.

2.19 LOCATOR BALLS AND LOCATOR INSTRUMENT

- A. Locator balls shall be 3M Series EMS iD Ball Markers for water. The model number shall be 1423-XR/iD.
- B. Contractor shall furnish one locator instrument, which shall be programmable, 3M Dynatel Pipe/Cable/iD Locator 2550-iD/U12 with carrying bag and rechargeable battery.

2.20 BORROW MATERIAL

- A. Borrow material may be either:
 - 1. Material hauled from borrow areas outside the project area.
 - 2. Suitable material that is excavated from the pipe trench and is unsuitable for immediate use as backfill due to moisture content.

- B. The Contractor shall identify the source of borrow material, have performed the geotechnical testing of the material to determine its suitability as a backfill material, transport the material to the project, and place the material to the specified soil density. The Contractor may choose to stockpile suitable material from the pipe trench that is too wet for immediate use as backfill material. The Contractor shall identify a procedure for drying the material to the optimum moisture content; either through air drying or the addition of lime. This procedure is subject the review of the Engineer and acceptance by the Engineer. The Contractor shall transport the material to the project, and place the material to the specified soil density. Final determination of the suitability of the material is the responsibility of the Engineer.

2.21 GEOGRID SOIL REINFORCEMENT

- A. Geogrid soil reinforcement shall be Tensar TriAx TX 170 Geogrid soil reinforcement or approved equal.

2.22 TEST STATION APPURTENANCES

- A. Each test station shall consist of one 4" flanged welded-on-outlet, one 4" flanged gate valve with handwheel, one blind flange with threaded tap (coated for corrosion protection) for a 2" corporation stop, 2" curb stop, 2" copper tubing, and one brass hose connection, 2 1/2" NSFT with attached cap and chain. All components shall be rated for a minimum working pressure of 250 psi. The copper tubing must be supported to prevent placing a cantilever weight or force on the welded on outlet and associated components.

2.23 FLEXIBLE (TRANSITION) COUPLINGS

- A. Flexible couplings for pipe 12" and smaller shall be Catalog No. 441 as manufactured by Smith-Blair or approved equal.

2.24 PIPE CONNECTION COUPLINGS

- A. Pipe connections between new pipe and existing pipe shall be made with Dresser Style 90 long steel couplings for pipe sizes 2" and below; for pipe sizes above 2", Mechanical Joint solid sleeves (long style) shall be used. Spacer rings must be used at all solid sleeve locations. A spacer ring is defined as a short section of pipe cut to fit into the gap between the two plain ends of pipe at the sleeve location.
- B. For pipes 30" in diameter and larger, the maximum length of the gap inside long style MJ solid sleeves where the space ring will be located shall be 7 inches; therefore, the maximum length of the spacer ring shall be 7 inches. The maximum gap between the spacer ring and each adjoining pipe shall be one-half inch.

2.25 COPPER PIPE FOR SERVICES

- A. Pipe for test stations shall be copper service pipe, Type K, soft temper, seamless copper tubing, conforming to ASTM B-88 and AWWA 7S-CR and may be used in 20-foot straight lengths or 60/100-foot coils. Flared joints shall be used.

Copper pipe shall be rated for a minimum working pressure of 250 psi and shall withstand the test pressure for this project.

2.26 CORPORATION STOPS AND VALVES

- A. The stop or valve assembly shall be made of heavy brass components constructed of 85-5-5-5 ASTM B62 brass for strength and durability and shall be rated for a working pressure of 300 psi. The valve shall be operated with a tee head and shall open when turned counter-clockwise. The valve seat seal shall be stainless steel reinforced to ensure a reliable seal under full flow and pressure. The stop or valve shall be Mueller 300 Ball Type Corporation Valve, or approved equal.

2.27 WELDED-ON OUTLETS

- A. Welded-on outlets shall be fabricated from centrifugally cast ductile iron pipe, manufactured and tested in accordance with ANSI/AWWA C151/A21.51. The outlets shall be fabricated at the manufacturer's facilities and shall not be fabricated or modified in the field.
- B. Welded-on outlets shall be produced using qualified procedures and welders as per guidelines contained in ANSI/American Welding Society (AWS) D11.2, Guide for Welding Iron Castings.
- C. Welded-on outlets, including radial outlets and tangential outlets, shall have a minimum safety factor of 2.0 based on the rated working pressure rating.
- D. Proof of design testing for the Ductile Iron to Ductile Iron welding process shall, at a minimum, include a four-point bending test which places the weld bead in tension. The test sample shall be comprised of a beveled and butt welded coupon from which test strips are taken. These test strips of the welded Ductile Iron coupon shall be cut such that the weld bead is perpendicular to the longitudinal axis of the test strip. The test strip shall be fashioned such that the weld bead is located at the mid-point of a Talbot Strip test apparatus. The test strip shall demonstrate a minimum observed engineering stress of 80 ksi at failure. Additionally, this testing shall demonstrate a failure through the Ductile Iron pipe wall and not along a path defined by the heat affected zone of the weld. This testing shall be conducted in a manner similar to the Talbot Strip test method described in ANSI/AWWA C106/A21.6.
- E. After the outlets are welded together and prior to finishing, the assembly shall be subjected to a 15 psi air test for leakage. Any outlet failing this test shall be scrapped. No rework is allowed. Upon completion of this test, the outlet shall be stamped to indicate it was successfully tested. Copies of all test reports shall be available for the owner upon request.
- F. The minimum Ductile Iron pipe thickness for fabrication of welded outlet pipe shall be Special Thickness Class 53.

2.28 PVC PIPING

- A. As-built/Locator pipe shall be 6" Polyvinyl Chloride (PVC) designed and manufactured in accordance with ASTM D-1785. Pipe shall be Schedule 80 under pavement and Schedule 40 outside pavement.

2.29 EROSION CONTROL MATS

- A. Erosion control mats for slopes and waterways shall comply with the requirements stated on the Contract Drawings.
- B. Turf reinforcement mat for slopes and water ways shall withstand a maximum velocity of 10 ft/s in an un-vegetative state, and 20 ft/s in a vegetative state. The mat shall be designed to be installed on a 1:1 or greater slope. The turf reinforcement mats shall be PYRAMAT High Performance Turf Reinforcement Mat produced by LANDLOK, Permanent Turf Reinforcement Mat produced by Vmax3, or approved equivalent material and manufacturer.

2.30 PIPE FOR GRAVITY SEWER

- A. Pipe for gravity sewer shall be ductile iron (DIP) designed and manufactured in accordance with the latest revision of AWWA/ANSI C150/A21.50. Pipe wall thickness shall be in accordance with requirements of Pressure Class 350.
- B. Ductile Iron Pipe shall have an outside asphaltic coating in accordance with the latest revision of ANSI A21.51.
- C. Pipe interior shall be Protecto 401 ceramic epoxy lined with a minimum thickness of 40 mils and sealed with an approved exterior bituminous seal coat in accordance with ANSI A21.51.
- D. Pipe Joints shall be Standard "Push-On" in accordance with the latest revision of ANSI/AWWA C111/A21.11 and furnished complete with gaskets.

2.31 BONDING OF PIPE JOINTS, CATHODIC TEST STATIONS AND CATHODIC CONNECTIONS.

- A. Contractor shall bond all pipe joints on this project with 2-cables per joint following the procedures and materials shown on the Contract Drawings. Some joints will not be bonded to provide isolation, as directed by the Engineer.
- B. Cathodic test stations shall be as shown on the plans.
- C. The cathodic connection to the Colonial Gas Pipeline shall be as shown on the plans.
- D. Coating system M-1 shall be DENSO or Trenton, with primer coat Denso Paste or Wax Tape Primer and finish coat Densyl Tape or #1 Wax Tape.
- E. Contractor shall provide Tinker-Razor Model RF-IT – Above Ground Insulator Tester / RF-IT, prior to start of construction.

3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. Where necessary, the construction zone will be cleared to allow trenching and pipe laying operations. Clearing will be restricted to easement limits shown on plans, plus areas within the highway right-of-way. The cleared area shall be left free of stumps, limbs, rocks and other debris. Cleared areas in forested zones will be left in a condition suitable for bush-hog cutting; areas adjacent to lawns shall be left suitable for lawn mower cutting and at least in as good a condition as the adjoining property. Trees, brush, stumps and other debris from clearing and grubbing shall be disposed of in accordance with local ordinances (which place restrictions on burning); burial within the right-of-way or easement will not be permitted.
- B. The Contractor is responsible for restoring any property (shrubs, signs, sidewalks, paving, trees, structures, etc.) that is damaged by his operations. It is understood that any item which is not specifically listed as a pay item but which exists at the time the project is bid is included in the overall bid price.

3.2 FENCES

- A. The Contractor shall take down fences on or crossing right-of- way for such periods of time only as are necessary to prosecute the work of clearing, grubbing, trenching, pipe laying and backfilling. Gaps made in fences shall be closed in substantial manner at night and during any suspension of work, and, upon completion of the pipe line, fences shall be restored to as good condition as before disturbed. No charges shall be made by the Contractor for any expense incurred in taking down or restoring fences, except where listed in the bid proposal.

3.3 PROTECTION OF TREES

- A. The Contractor shall carefully protect all trees adjacent to the work outside the easement limits. He shall not permit excavating machinery or trucks to scrape the bark or tear the limbs from the trees, nor connect ropes or guy cables to them.

3.4 INTERFERENCE WITH EXISTING STRUCTURES

- A. All existing pipes, drains, or other structures on, above, or below ground shall be carefully supported and protected from injury, and if injured, they shall be restored in a satisfactory manner by and at the expense of the Contractor.

3.5 INFORMATION CONCERNING CONDITIONS

- A. The accuracy of information furnished by the Engineer and/or the plans and specifications as to underground and surface structures, foundation conditions, character of soil, position and quantity of ground and subsoil water, etc., is not guaranteed by the Owner. Bidders must satisfy themselves by personal examination and by such other means as they desire with respect to actual conditions in the nature of the ground and subsoil water and in regard to the locations of existing underground or surface structures. Unforeseen conditions

shall not constitute a claim for increased compensation under the terms of the contract, nor constitute a basis for the cancellation thereof.

3.6 CLEAN UP

- A. The Contractor shall remove all unused material, excess rock and earth, and all other debris from the construction site as closely behind the work as practical. All trenches shall be backfilled and tamped before the end of each day's work.
- B. If at any time during the course of the work, the cleanup, grassing and/or pavement replacement falls too far behind the pipe laying (at the discretion of the Engineer) the Contractor shall be required to close down pipe laying operations until the cleanup, grassing and/or pavement replacement is caught up to the work in progress.

3.7 TRENCH EXCAVATION

- A. Water lines shall have a minimum cover of 72" unless otherwise specified or shown on the drawings. The depth of cover shall be a minimum of 72" below drainage ditches paralleling existing roads or easements. Contractor shall follow the profile shown on the drawings, adjusted as necessary for unknown conflicts encountered during construction but must always provide a uniform slope up to air valves or down to blow-off valves without any intermediate high or low spots between these valves. All changes in grade shall be made gradually.
- B. In laying pipe across water courses, railroad crossings, or depressions of any kind, the minimum depth herein specified shall be maintained at the bottom of the depression.
- C. Where necessary, the line shall be lowered at valves so that the top of the valve stem is approximately one foot below the finished grade. The trench shall be deepened to provide a gradual approach to all low points of the line, and no additional payment shall be allowed for extra excavation involved.
- D. All trenches shall be of sufficient width to provide ample working space on each side of the pipe to allow making perfect joints and to allow taping of polyethylene encasement around the entire periphery of the pipe and bells at all joints.
- E. Pipe trenches shall be straight and true to grade and in the location shown on the plans. The bottom of trenches shall be dressed to facilitate laying conditions called for on the construction plans so that the pipe has an even bearing on bedding material throughout the entire length of the pipe barrel.
- F. Bedding shall be granular material and be 1/8 the nominal pipe diameter or 4" minimum under the pipe barrel. 36" DIP shall be supported by a minimum of 6" of bedding material. Crushed concrete or similar recycled material is not acceptable for use as bedding material. An earth dam shall be installed at 200-ft intervals to keep water from flowing easily through the gravel bedding.
- G. All excavation material shall be so placed so as not to interfere with public travel on the streets and highways along which the lines are laid. All excess excavated material shall be disposed of without extra cost to the Owner.

3.8 ROCK EXCAVATION

- A. All excavation is considered unclassified. There will be no additional payment for rock excavation. Unclassified excavation is defined as the excavation of all materials encountered, including rock materials, regardless of their nature or the manner in which they are removed.

3.9 LAYING PIPE

- A. All pipe, before being placed in trench, shall be examined, and any pipe showing defects shall be rejected. The inside of the pipe shall be clean and free of trash and dirt, and if necessary a swab or brush shall be used to clean the pipe before lowering it into the trench.
- B. All pipe shall be laid straight, true to line and grade. For all laying conditions, bell and coupling holes shall be dug to allow the pipe to have continuous bearing with bedding throughout the entire length of the barrel between bell or coupling holes. No shimming or blocking up of the pipe will be allowed.
- C. In making ductile iron joints, the outside of the spigot end of the pipe and the inside of the bell shall be thoroughly cleaned and the gasket inspected to see that it is properly placed. Lubricant shall be applied to the spigot end of the pipe and it shall be inserted into the bell of the adjoining pipe to the "Stop Mark" shown on the pipe. Joint deflection shall be checked by Contractor for compliance with the pipe manufacturer's recommended limits.
- D. All openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons, such as rest breaks or meal periods. Trench dewatering methods (gravel bedding with pumps, etc.) must be used where necessary to maintain a dry ditch during pipe laying operations.
- E. As pipe is installed, each joint shall be air tested for leakage using a dual bladder system allowing for the testing of deflected (up to 5%) DI pipe. The dual bladders shall seal the pipe joint on both sides of the joint permitting the pressuring of the joint up to a minimum of 5 psi for 5 seconds. If the joint fails to maintain the air pressure within 1 psi, the pipe shall be re-installed and re-tested. Regardless of the success or failure of the low pressure joint test, Contractor remains responsible for the installation and for the required leakage testing specified in this section. Equipment shall be similar to equipment produced by Petersen Products Co. or Lansas Products.

3.10 BACKFILLING

- A. After the pipe has been installed and all joints have been made, the trench shall be backfilled as described on the Detail Sheets of the construction plans.
- B. Bedding shall be granular material and be 1/8 the nominal pipe diameter or 4" minimum under the pipe barrel, whichever is larger. 36" DIP shall be supported

by a minimum of 6” of bedding material. Crushed concrete or similar recycled material is not acceptable for use as bedding material.

- C. The type of bedding will be Type 5 for the entire length of this project.
- D. For the remaining backfill to the top of the trench, suitable material excavated from the site may be used, as determined by the Engineer, and compacted as shown in the Trench Details shown in the plans.
- E. Suitable material shall be clean and free of rock larger than 2” at its largest dimension, organics, cinders, stumps, limbs, frozen earth or mud, debris or waste and other unsuitable materials.
- F. Should the material excavated from the trench be saturated, the saturated material may be used as backfill, provided it is allowed to dry properly and it is capable of meeting the specified compaction requirements.
- G. In rock excavation, the backfill shall not contain over 50% broken stone, and the maximum sized stone placed in the trench shall not have a weight exceeding 25 pounds. Excess rock and fragments of rock weighing more than 25 pounds shall be loaded and hauled to disposal as directed by the Engineer. If it is necessary, in order to comply with the above specifications, selected backfill shall be borrowed and hauled to the trenches in rock excavation, at no additional cost to the Owner. Under no circumstances shall bottom of pipe rest against rock or unyielding material. Minimum bedding of 6” carefully compacted backfill shall separate bottom of pipe from rock or unyielding material.
- H. Tamping shall be done with mechanical tamps in such a manner as to meet compaction requirements without moving or damaging the pipe. Compaction shall be done with either pneumatic hand tamps, hydro-tamps or other approved methods.
- I. Compaction tests will be run as directed by Engineer to ensure that the above specifications are being met.

3.11 POLYETHYLENE ENCASUREMENT

- A. Polyethylene encasement shall be **Double Wrapped** with 8-mil V-Bio white polyethylene encasement as the first and inside layer and with 8-mil (LLD) black polyethylene encasement in the second and outside layer. It shall be installed in accordance with AWWA C105 (ANSI A21.5-82) "Method A" (**Double Wrapped**).
- B. Cut polyethylene tube to a length approximately 2 ft. longer than that of the pipe section. Slip the tube around the pipe, centering it to provide a 1-ft. overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends.
- C. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tube.

- D. After assembling the pipe joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe, slip it over the end of the new length of pipe, and secure it in place. Then slip the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Secure the overlap in place. Take up the slack width to make a snug, but not tight fit along the barrel of the pipe, securing the fold at quarter points.
- E. Repair any rips, punctures, or other damage to the polyethylene with manufacturer's adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured in place. Proceed with installation of the next section of pipe in the same manner. If a second layer of polyethylene encasement is called on the plans, it shall be installed in the same manner as the first. The white or first layer shall not be visible anywhere along the pipe.
- F. Cover bends, reducers, offsets, and other pipe-shaped appurtenances with polyethylene in the same manner as the pipe.
- G. When valves, tees, crosses, and other odd-shaped pieces cannot be wrapped practically in a tube, wrap with a flat sheet or split length of polyethylene tube by passing the sheet under the appurtenance and bringing it up and around the body. Make seams by bringing the edges together, folding over twice, and taping down. Handle width and overlaps at joints as described above. Tape polyethylene securely in place at valve-stem and other penetrations.
- H. Provide openings for branches, service taps, blow-offs, air valves, and similar appurtenances by making an X-shaped cut in the polyethylene and temporarily folding back the film. After the appurtenance is installed, tape the slack securely to the appurtenance and repair the cut, as well as any other damaged areas in the polyethylene, with tape.
- I. Install polyethylene tubes on the carrier pipe (inside casings but not between the casing spacers and the pipe) by an X-shaped cut in the polyethylene and temporarily folding back the film. After the casing spacer is installed, tape the slack securely over and around the casing spacer appurtenances and repair the cut, as well as any other damaged areas in the polyethylene, with tape.

3.12 THRUST RESTRAINT

A. GENERAL

At changes in direction of the main and at other points shown on the drawings or directed by the Engineer, thrust forces in the line shall be absorbed by restrained joints, concrete blocking, or reinforced concrete collars, or a combination thereof.

B. RESTRAINED JOINTS

Where restrained joints are called for on the drawings, they shall be of the type specified in these specifications, and assembly shall be in accordance with

manufacturer recommendations. Torque wrenches shall be used to verify that all bolts and nuts are tightened to manufacturer's recommendations.

C. CONCRETE BLOCKING

The Engineer shall be notified by the Contractor before blocking is placed. Blocking will be of the dimensions called for on the drawings and will be placed against a vertical surface of undisturbed soil that has been cleared of all loose material.

D. REINFORCED CONCRETE COLLARS

Reinforced concrete collars shall be cast in place as shown on the drawings and as specified in ACI 318-83.

3.13 LEAKAGE TEST

A. PRESSURIZATION

After the pipe has been installed, all new pipe shall be flushed and then subjected to a hydrostatic pressure test. Each valved section of pipe shall be slowly filled with water, and the test pressure indicated in the Contract Drawings, and corrected to the elevation of the test gauge, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the owner. Valves shall not be operated in either the opening or closing direction at differential pressures above the rated pressure. It is good practice to allow the system to stabilize at the test pressure before conducting the leakage test.

If the Contractor intends to perform hydrostatic testing against existing valves that are in service, the Contractor must obtain permission from the Owner. Prior to testing, the Contractor shall disinfect the pipeline in accordance with the requirements of Paragraph 3.14. If, after repairs are made to the pipeline to correct leakage test deficiencies, the Engineer deems that the sanitation of the pipeline has been compromised, the Contractor shall disinfect the pipeline at the Contractor's expense.

B. AIR REMOVAL

Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high point, the contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged or left in place at the discretion of the owner.

C. LEAKAGE DEFINED

Leakage shall be defined as the quantity of water that must be supplied into the newly installed pipe or any valved section thereof to maintain the specified test pressure after the pipe has been filled with water and the air has been expelled. Leakage shall not be measured by a drop in pressure in a test section.

Leakage shall be defined as the total quantity of water that must be pumped into the pipe during the test period to maintain pressure within 5 psi of the specified test pressure for the test duration including water required to return pipe to test pressure at the end of the test. Leakage shall be the total cumulative amount measured on a water meter.

D. ALLOWABLE LEAKAGE

The allowable leakage rate will be in accordance with AWWA C600 and determined by the following formula:

$$L = (S \times D \times P^{1/2}) / 148,000$$

Where:

L = testing allowance (makeup water) in gallons per hour;

S = length of pipe tested, in feet;

D = nominal pipe diameter, in inches;

P = average test pressure during the test, in pounds per square inch.

For example, at an average pressure of 250 psi during the test, the leakage allowance is 3.85 gallons per hour for 1,000 feet of 36" pipe.

Any segment where leakage exceeds the allowable rate shall not be accepted; the leakage shall be located, repaired and re-tested until it meets the specified allowance.

E. TEST RESTRICTIONS

1. The hydrostatic test shall be of at least 2-hour duration. Test Pressure shall not vary by more than ± 5 psi for the duration of the test; this may require periodic pumping.
2. Valves shall not be operated in either direction at differential pressure exceeding the rated valve working pressure. Use of a test pressure greater than the rated valve pressure can result in trapped test pressure between the gate of a double-disc gate valve. For tests at these pressures, the test setup should include provision, independent of the valve, to reduce the line pressure to the rated valve pressure on completion of the test. The valve can then be opened enough to equalize the trapped pressure with the line pressure, or fully opened if desired.
3. Test pressure shall not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

3.14 DISINFECTION

- A. After leakage testing and all necessary repairs have been made, the lines shall be flushed clean. Note that for a 36-inch pipe, a flow of 11,000 gallons per minute (15.8 million gallons per day) is required to reach a cleaning velocity of 3.5 feet

per second. Because it is not feasible to provide this flow to completely flush the main, during installation of the pipe, Contractor must clean the pipe of all mud, sand, gravel, etc. as the pipe is installed. Cleaning of the pipe using high-pressure water jets or other means will be required as necessary to accomplish thorough cleaning. Contractor shall verify that cleaning has been accomplished by inspecting the interior of the pipe for the full length. Inspection of the pipe will be performed in the presence of the Engineer. After flushing the main, it will then be disinfected in strict accordance with AWWA Standard for Disinfecting Water Mains, C651- latest edition, subject to the following special conditions:

- B. The method of disinfection shall be either the Continuous-Feed Method or the Slug Method. The Tablet Method is not acceptable.
- C. The form of chlorine shall be a one percent solution made from sodium hypochlorite and pumped and metered into the pipeline. Water must be flowing during the feeding operation and the injection point must be located so that the flow of water will disperse the chlorine throughout the pipeline.
- D. Unless otherwise approved by the Owner, Contractor shall dechlorinate the highly-chlorinated water being flushed from the pipeline.
- E. The Owner shall be responsible for bacteriological sampling and testing water from the disinfected pipeline.
- F. Before any flushing or disinfection work is begun, the Contractor shall outline his planned procedures for these tasks and obtain approval of the Owner.
- G. The Contractor is responsible for the installation and removal of sample points as required by AWWA C651 on the water main.

3.15 DECHLORINATION

- A. After the disinfection process has been completed, the heavily chlorinated water shall be flushed from the main until chlorine measurements show that the concentration in the water leaving the main is no higher than that generally prevailing in the distribution system or is acceptable for domestic use. The area where the chlorinated water is to be discharged shall be inspected. If there is any possibility that the chlorinated discharge will cause damage to the environment, then a ascorbic acid shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water.
- B. The chlorine residual of the water being disposed may be neutralized by treating the water with ascorbic acid. Minimum dosage requirements are listed in the table below. Additional dosage for the complete neutralization of chlorine residual is the responsibility of the Contractor.

Chlorine	Ascorbic Acid
1 Lb	2.5 Lb

3.16 CONNECTION TO EXISTING WATER MAINS

- A. At beginning of construction, the Contractor shall make exploratory excavation at each location where connections to existing pipes are shown for the purpose of determining the exact location, elevation and type of fittings required to make the connections. Where it is necessary to disrupt service on existing lines, the Contractor shall first obtain permission from the Owner and schedule his work accordingly.
- B. Where existing pipe is to be abandoned, the Contractor shall plug the opening by pouring concrete or brick and mortar in an around the opening as needed to completely seal the opening.

3.17 SETTING VALVES

- A. Valves shall be placed where shown on the plans or directed by the Engineer. Valves shall be set plumb, and shall have cast iron valve boxes and/or manholes as called for on the plans. The valve boxes shall be placed directly over the valve and set plumb, the top of the box being brought to the surface of the ground. After the boxes are in place, earth shall be filled in the trench and thoroughly tamped around the box, and after all settlement has taken place, each valve box shall have a concrete collar as shown on the plans.

3.18 VALVE STEM EXTENSION

- A. Valve stem extensions shall be furnished and installed for all buried gate valves and shall be 12” below grade for valves with valve boxes and 18” below the flat top of the valve vaults.

3.19 AIR AND VACUUM ASSEMBLIES

- A. Air and vacuum relief valve assemblies shall be constructed strictly in accordance with the details shown on the plans.

3.20 INSTALLATION OF SOLID SLEEVES

- A. Spacer rings must be used with all solid sleeves and no exceptions will be allowed. When connecting to existing water lines, one full length joint of pipe must be installed between solid sleeves and adapter pieces.

3.21 OUTLETS

- A. Where flanged outlets are shown on the plans, they shall be installed as recommended by the manufacturer. When attaching a valve to the outlet, the valve and tapping machine, when used, shall be supported to relieve stress on the outlet fixture. The hole in the ductile iron pipe may be cut by a mechanical tapping machine.
- B. For welded-on outlets, in areas where the parent pipe is a restrained joint pipe and joined in the run to other restrained joints on both sides, it is important to fully extend the restrained joints (such as US Pipe’s TR FLEX or American Flex-Ring)

so that unwanted line extension does not over-deflect any joints attached to the welded-on outlet.

3.22 MEGALUG (WEDGE ACTION RESTRAINT GLAND)

- A. Contractor shall follow the manufacturer's instructions for installation of each Megalug.
- B. When installing the Megalug gland, clean the inside of the pipe bell and lubricate both the Megalug gasket and the spigot end of the pipe. Place the gland on the plain end with the lip extension toward the plain end, followed by the gasket. Insert the pipe into the pipe bell and press the gasket firmly and evenly into place. Keep the joint straight during assembly. Push the gland toward the pipe bell and center it around the pipe with the gland lip against the gasket. Install bolts and hand tighten nuts. Make any required deflection after joint assembly and before the bolts are tightened. Tighten the bolts to the manufacturer's recommendation for the gland size. Contractor shall utilize a torque wrench to tighten the gland bolts and the t-bolts. At least one torque wrench shall be on the work site at all times. Tighten the twist-off bolts per manufacturer's recommendations. Should removal of this application be necessary, this must be done in accordance with manufacturer's recommendation.
- C. If restrained joints are installed above ground prior to installation in the underground trench, all connections shall be checked again after the pipe has been installed in the trench and the bolts checked for the correct torque. Polyethylene encasement shall be installed such that it does not interfere in this process.

3.23 SPECIALS AND FITTINGS

- A. Specials and fittings shall be properly braced to insure that they will not be blown off or broken loose under the greatest possible working pressure. Where it is necessary to use concrete to block vertical bends, etc., the concrete will be paid for extra, at the unit price bid per cubic yard for miscellaneous concrete.

3.24 HIGHWAY AND RAILROAD CROSSINGS

- A. NOT USED.

3.25 PLACING OF STEEL CASING PIPE

- A. NOT USED.

3.26 BORE PITS

- A. NOT USED.

3.27 REMOVE & DISPOSE OF EXISTING APPURTENANCES

- A. Where called for on the plans, all existing above ground appurtenances shall be removed and disposed of by the contractor. The area where these appurtenances are removed shall be regraded and grassed or repaved to match the existing landscaping or pavement.

3.28 REMOVE & DISPOSE OF EXISTING WATER MAIN

- A. Where called for on the plans, existing water main shall be removed and disposed of by the Contractor. The Contractor will be responsible for proper disposal of the existing water main off site.

3.29 REMOVING AND REPLACING PAVEMENT

A. GENERAL

Removing and replacing pavement bituminous or concrete shall consist of removing the type of pavement and base encountered and replacing same as shown on the detailed drawings. Pavement shall be removed only as necessary to install water main.

B. SUBGRADE

The trench shall be backfilled in layers not more than 6" thick and shall be thoroughly compacted with mechanical tamps. No base course shall be placed on loose earth or dusty material.

C. BITUMINOUS PAVEMENT

Bituminous pavement shall be replaced with base and topping as shown on drawings. Edges of cut pavement shall be neatly squared off. Extreme care shall be executed to assure that the squared edges of existing pavement will not be broken or disturbed during rolling of the asphalt topping.

3.30 REMOVE & REPLACE CONCRETE CURB AND GUTTER

- A. The Contractor shall remove only that curbing which would otherwise be damaged in the prosecution of his work within the limits of the pavement removal.
- B. After the Contractor has completed his pipe laying and backfilling operations, the concrete curb and gutter shall be constructed monolithically on a prepared compacted subgrade, in conformity with the lines, grades and cross-section of the existing curbing and in accordance with these specifications.
- C. Concrete materials, placement and protection shall be in accordance with ACI 318 specifications.
- D. The forms, except the divider plates or templates between each ten (10) foot section, may be of wood or metal. The divider plates or templates shall be of metal. Forms shall be of approved sections and shall have a flat surface on top. Forms shall present a smooth surface, sufficiently thick and braced to withstand the weight of the concrete without bulging or becoming displaced. Special care shall be exercised to keep metal forms free from rust, grease or other foreign matter which would discolor the concrete. Metal templates or dividing plates shall be of sufficient thickness and of such design as to hold the forms rigidly in place and to produce a smooth vertical joint after the plates are removed. They shall be

of the full dimensions shown on the plans for curb, gutter or combinations of curb and gutter.

- E. Concrete curb and gutter shall be constructed in sections having uniform lengths of ten (10) feet. The length of these sections may be reduced where necessary for closures, but no section less than six (6) feet will be permitted. These sections shall be separated by sheet steel templates set perpendicular to the face and top of the curbing. These templates shall be one-eighth (1/8) of an inch in thickness of the widths of the gutter and not less than two (2) inches longer than the depth of each respective type. The templates shall be set carefully during the placing of concrete and allowed to remain in place wherever possible until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place. The vertical face and top of the curb shall be floated smooth and the edge of the face shall be rounded to a radius of three-quarters (3/4) of an inch while the concrete is still soft. The forms on the face of the gutter and curb shall be removed as soon as possible and at the surface of the curb floated with a wooden float to a smooth and even surface finish.
- F. Immediately after the removal of the forms, the ends of the transverse joints at the edge shall be carefully opened for the entire depth of the cross section. Expansion joints shall be formed of premolded joint filler of the specified thickness, and shall be placed in line with the expansion joints in the adjoining pavement or gutter and at other locations designated on the plans. All joint filler shall be cut to full depth, width and length of construction. Any expansion joint material protruding after the concrete is finished shall be trimmed as directed. Where curb and gutter is constructed upon a street without paving, the distance between expansion joints shall not exceed forty (40) feet.
- G. After the concrete has set sufficiently, the space behind the curb shall be refilled to the required elevation with material which shall be compacted by tamping until firm and solid.
- H. Where concrete curb and gutter is to be located along the edge of existing pavement, the following procedure shall apply. A uniform alignment shall be established by string line. A cut line will be marked along the pavement to give a uniform cut width of 24 inches, and the pavement will be sawed and then removed to a depth of six inches. The cut edge will be used for the front form of the curb and gutter except in locations where the edge of pavement deviates from face of curb by six inches or more in which case a front form will be used. The space will later be filled with concrete to a depth of two inches below the surface and finished with a two-inch thick layer of asphalt.
- I. In cases where new replaced curb is joined to old curb, the old curb shall be squared off to provide a straight construction joint.

3.31 REMOVE & REPLACE CONCRETE SIDEWALK

- A. Debris from sidewalks removed shall be collected and hauled away and disposed of by the Contractor in an approved disposal area. Sidewalks shall be replaced with Portland Cement Concrete of not less than 3,000 psi compressive strength at

28 days of age. Sidewalks shall be replaced to the original width and thickness or a minimum of 6" thick. The sidewalks shall have a broom finish. All instructions in Placing of Concrete in these specifications shall be adhered to.

3.32 REMOVE & REPLACE CULVERTS (ALL SIZES & TYPES)

- A. When culverts are encountered during the construction of the pipeline, the said culvert shall be removed and then replaced upon installation of the pipeline. If the culvert, in the opinion of the engineer, is damaged beyond use the contractor shall be responsible for replacing new culvert pipe to match the existing pipe.

3.33 REPLACING GRAVEL DRIVEWAYS

- A. Gravel driveways will be replaced at locations shown on the plans. Gravel shall be graded aggregate base and shall be placed 6" layers, 12" deep.

3.34 REPAIR OF SEPTIC TANK DRAIN FIELDS

- A. If the contractor encounters an existing septic tank drain field during installation of the proposed water main, he shall immediately notify the Cobb County Health Department and acquire a permit to repair the drain line in accordance with Health Department regulations. A new drain field line will be installed as necessary a minimum of ten feet away from the proposed water main.

3.35 CONNECTION TO EXISTING WATER MAINS, 12" AND SMALLER

- A. At beginning of construction, the Contractor shall make exploratory excavation at each location where connections to existing pipes are shown for the purpose of determining the exact location, elevation and type of fittings required to make the connections. Where it is necessary to disrupt service on existing lines, the Contractor shall first obtain permission from the Owner and schedule his work accordingly.

3.36 PIPE LOCATION

- A. The Contractor shall install 6" PVC pipe from the top of the water main to above grade at specific locations and maintain the pipe for the duration of the construction. The pipe shall be maintained clear of debris. During the survey for recording location of the pipe, the pipe shall be cut to a point below grade, backfilled with granular material and a locator ball installed as shown on plans.

3.37 RECORD INFORMATION

- A. The Contractor shall record on the manufacturer's pipe laying drawings the top of bell elevation for the each joint of pipe installed in the format shown in the following table. Such drawings shall be submitted to the Engineer at the same time as the Contractor's monthly pay request is submitted.

Point #	Station #	Top of Pipe Elev.	Description

****END OF SECTION****

Appendix A
Geotechnical Report



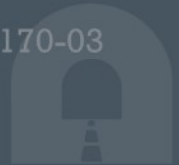
UNITED
CONSULTING

REPORT

**For Freese and Nichols,
Inc.**

Geotechnical Exploration
CCMWA West Side Loop 36-Inch
Water Main
Cardell Road & South Gordon Road
Southwest
Austell, Georgia

Project No.: FRENI-18-GA-02170-03
January 18, 2019



January 18, 2018

Mr. Trooper Smith, P.E.
Freese and Nichols, Inc.
125 Townpark Drive
Suite 300
Kennesaw, Georgia 30144

Via Email: tw@freese.com

RE: Report of Geotechnical Exploration
CCMWA West Side Loop 36-Inch Water Main
Cardell Road & South Gordon Road Southwest
Austell, Georgia
Project No.: FRENI-18-GA-02170-03

Dear Mr. Smith:

United Consulting is pleased to submit this report of our Geotechnical Exploration for the above-referenced project. The work was completed in general accordance with our Proposal No. P2017.1102.01 dated October 2018 (Rev. 2) and Work Authorization dated Nov-7-2018.

We appreciate the opportunity to assist you with this project and look forward to our continued participation. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

UNITED CONSULTING



Rafael I. Ospina, P.E.
Geotechnical Engineer



Chris L. Roberds, P.G.
Senior Executive Vice President

SRT/RIO/CLR/nj

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1.0 EXECUTIVE SUMMARY

United Consulting has completed a Geotechnical Exploration on the CCMWA West Side Loop 36-Inch Water Main project along Cardell Road & South Gordon Road Southwest in Austell, Cobb County, Georgia. Please refer to the text of the report for a more detailed discussion of the items summarized below.

1. Below the ground surface, 34 borings encountered between 3 to 18 feet of fill soils. The fill generally appeared to be free of debris and organic content, but slightly variable in consistency.
2. Partially Weathered Rock (PWR) was encountered in borings B-6, B-25, B-34, and B-35 starting at depths ranging from the surface to 23 feet. Auger refusal was not encountered in the borings. As such, some difficult excavation conditions (blasting for trench/utility excavations) associated with PWR will be encountered.
3. Groundwater was encountered at the time of drilling in borings B-8, B-24, B-24A, and B-25 at depths ranging from 6 to 10 feet. Since the borings were primarily drilled within the travel lanes, they were backfilled upon completion of drilling. As such, depth to stabilized groundwater could not be determined. Shallower groundwater should be expected near the existing river crossings and some control of groundwater during construction is expected in that area. It is possible that perched water levels could develop at shallower depths above partially weathered rock or rock at the site. The contractor should be prepared to manage perched water or groundwater as needed.
4. The proposed 36-inch water main will be installed along a busy road; therefore, traffic control will be required during the construction.

2.0 PROJECT INFORMATION

We understand that the project consists of construction of a 36-inch diameter water main along Cardell Road and South Gordon Road Southwest in Austell, Cobb County, Georgia. The proposed water main will start at Station 0 + 00± located on Cardell Road, approximately 450 feet southeast of its intersection with Old Alabama Road Southwest. At Station 41 + 50, the water main will traverse along South Gordon Road. The water main will terminate at Station 195 + 00, where it connects to the Mableton Parkway Waterline.

3.0 PURPOSE

The purpose of this Geotechnical Exploration was to assess the general type and condition of the subsurface materials at the Project Site and to provide recommendations regarding the design and construction of the water main, grading, earthwork, quality control and other geotechnical related issues, deemed pertinent to this project.

4.0 SCOPE

The scope of our geotechnical exploration included the following items:

1. Boring layout and clearing underground utilities;
2. A visual reconnaissance of the site from a geotechnical standpoint;
3. Drilling forty-seven (47) Standard Penetration Test (SPT) borings and one (1) offset boring to assess the quality and consistency of the subsurface soils;
4. Visual evaluation of the soil samples obtained during our field testing program for further identification and classification;
5. Performing laboratory testing consisting of ten (10) natural moisture content tests, six (6) grain size analysis with hydrometer, six (6) Atterberg Limits on representative soil samples as well as eighteen (18) soil corrosivity tests and two (2) water sample corrosion tests on samples at requested locations;
6. Analyzing the existing soil conditions with respect to the proposed construction; and
7. Preparing this report to document the results of our field-testing program, engineering analysis, and to provide our findings and general recommendations.

5.0 ALIGNMENT REVIEW

A foot and an automobile reconnaissance of the Project were conducted as part of this exploration. We understand that the 36-inch diameter water main will be constructed along Cardell Road and South Gordon Road Southwest in Austell, Cobb County, Georgia. We anticipate that the proposed water main will be constructed as open trench excavation. Road/lane closure will be required on Cardell Road and South Gordon Road during the construction activities. The project is generally in a developed area with single family homes along Cardell Road and South Gordon Road and commercial buildings near its intersection with Factory Shoals Road. Underground utilities such as gas, water, sewer lines, and telephone cables were observed within the right of way. Some of the buried utility lines also crossed the road.

6.0 SUBSURFACE CONDITIONS

Initially, borings B-19, B-24, B-24A, and B-29 encountered a surficial layer of grass/leaves and topsoil, and the remaining borings encountered a surficial layer of asphalt and GAB or concrete. Beneath the surficial materials, boring B-5 and B-24A encountered approximately 18 feet of fill soils, borings B-3, B-6, B-10, B-14, B-25 and B-28 encountered approximately 10 to 13 feet of fill soils, borings B-1, B-2, B-4, B-7, B-9, B-11, B-13, B-15, B-18, B-20, B-22, B-32, B-39, B-44, and B-47 encountered approximately 8 feet of fill soils, and borings B-8, B-12, B-19, B-30, B-34, B-36, B-37, B-40, B-45, and B-46 encountered approximately 3 feet of fill soils. The fill soil consisted of very loose to dense sand with varying amounts of silt, clay, mica, and rock fragments; or soft to very stiff clay with varying amounts of sand, silt, and gravel; or soft to very stiff silt with varying amounts of clay, sand, and gravel. The Standard Penetration Test resistance (N-values) in the fill sands ranged from 0 blows per foot (bpf) to 47 bpf, those in the fill clays ranged from 2 bpf to 22 bpf, while those in the fill silts ranged from 4 bpf to 19 bpf. Low consistency fill soils (N-value \leq 5 bpf) were encountered at the surface in borings B-4, B-5, B-19, B-22, B-30, B-32, B-39, and B-47; at 3 feet in boring B-25 and B-42; and at 8 feet in boring B-24.

Beneath the fill soils in the aforementioned borings, and the surface in the remaining borings, typical residual soils of the Piedmont Physiographic Province of Georgia were encountered in the borings. The residual soils generally consisted of loose to very dense sand with varying amounts of silt, clay, rock fragments and mica; or soft to hard silt with varying amounts of sand, clay, rock fragments, and mica. Boring B-22 also contained a layer of soft silty clay. N-values within the residual sand soils ranged from 5 to 65 blows per foot (bpf), those within the residual silt soils ranged from 4 to 38 bpf, and an N-Value of 4 was recorded in the residual clay. Low consistency residual soils (N-value \leq 5 bpf) were encountered between 3 to 10 feet in borings B-19, B-22, and B-26.

Partially Weathered Rock (PWR) was encountered in borings B-6, B-25, B-34, and B-35 starting at depths ranging from the surface to 23 feet. PWR is a term for residuum that can be penetrated with a soil drilling auger but has N-values in excess of 100 bpf. The PWR encountered was classified as very dense sand with varying amounts of rock fragments, clay, silt, and mica; or hard silt with varying amounts of sand and rock fragments.

Auger refusal was not encountered in the borings. Auger refusal is the depth that the boring cannot be advanced with a soil drilling auger. Auger refusal within residual soils generally represents a seam of dense PWR, boulders, or top of massive bedrock.

Groundwater was encountered in B-8, B-24, B-24A, and B-25 at depths ranging from 6 to 10 feet. Since the borings were primarily drilled within the travel lanes, they were backfilled upon completion of drilling. Groundwater levels should also be anticipated to fluctuate with the change of seasons, during periods of very low or high precipitation, or due change in floodplain or watershed upstream of the site.

Borings B-19, B-24, B-24A, and B-29 were backfilled with soil cuttings. The remaining borings were backfilled with soil cuttings, with the upper 1.5 feet backfilled with hydrated "quickcrete", and then the surface hole patched with 4" (or original thickness) of cold asphalt patch.

A list of the borings along with their associated station numbers, boring terminative depths, and depths to groundwater, PWR, and auger refusal, if encountered, is presented in the following table.

Table 1: Summary of Subsurface Conditions

Boring No.	Station No.	Elevation	Fill Depth (ft)	Depth to PWR (ft)	Depth to Groundwater (ft)	Termination Depth (ft)
B-1	1+50	914	8	NE	NE	10
B-2	5+00	916	8	NE	NE	10
B-3	10+00	925	10	NE	NE	10
B-4	15+00	914	8	NE	NE	10
B-5	18+50	905	18	NE	NE	20
B-6	20+25	905	13	18	NE	20
B-7	25+00	916	8	NE	NE	10
B-8	30+00	925	3	NE	6	10
B-9	35+00	936	8	NE	NE	10
B-10	40+00	954	10	NE	NE	10
B-11	46+50	970	8	NE	NE	10
B-12	52+00	981	3	NE	NE	10
B-13	57+50	1000	8	NE	NE	10
B-14	59+50	995	10	NE	NE	10
B-15	64+50	1008	8	NE	NE	10
B-16	70+00	991	NE	NE	NE	10
B-17	74+00	976	NE	NE	NE	10
B-18	78+00	968	8	NE	NE	10
B-19	81+00	986	3	NE	NE	10
B-20	84+00	999	8	NE	NE	10
B-21	90+00	989	NE	NE	NE	10
B-22	95+00	975	8	NE	NE	10
B-23	100+00	961	NE	NE	8	10
B-24	103+25	950	15	NE	6	15
B-24A	103+00	950	18	NE	6	20
B-25	104+25	954	13	13	10	25
B-26	109+00	978	NE	NE	NE	10
B-27	114+00	1000	NE	NE	NE	10
B-28	119+00	1019	10	NE	NE	10
B-29	124+00	1046	NE	NE	NE	10
B-30	128+50	1078	3	NE	NE	10
B-31	132+00	1097	NE	NE	NE	10
B-32	136+00	1083	8	NE	NE	10
B-33	139+00	1080	NE	NE	NE	10

B-34	142+25	1091	3	8	NE	10
B-35	144+00	1093	NE	0	NE	10
B-36	148+50	1087	3	NE	NE	10
B-37	153+00	1081	3	NE	NE	10
B-38	157+00	1093	NE	NE	NE	10
B-39	160+50	1088	8	NE	NE	10
B-40	165+00	1104	3	NE	NE	10
B-41	170+00	1109	NE	NE	NE	10
B-42	175+00	1111	8	NE	NE	10
B-43	180+00	1107	NE	NE	NE	10
B-44	185+00	1104	8	NE	NE	10
B-45	190+00	1082	3	NE	NE	10
B-46	195+00	1072	3	NE	NE	10
B-47	5+00	1071	8	NE	NE	10
NE – Not Encountered						

For a more detailed description of the subsurface conditions encountered, please refer to the boring logs in The Appendix.

7.0 LABORATORY TESTING PROGRAM

Laboratory testing for this project included ten (10) natural moisture content tests, six (6) grain size analysis with hydrometer, and six (6) Atterberg Limits. The results of the moisture content tests are shown on boring logs next to the respective samples tested. The natural moisture content of the samples tested ranged from 4.8% to 51.5%. A narrative description of the laboratory tests is included in The Appendix.

Eighteen (18) soil corrosivity tests at depths of 3 feet and two (2) water sample corrosion tests were also conducted and the results of these tests are tabulated below:

Table 2: Soil Corrosivity Test Results

Boring	Soil pH (S.U.)	Soil Resistivity (ohm-cm)
B-1	6.1	15,000
B-3	4.76	35,000
B-8	5.08	19,000
B-10	6.8	8,300
B-12	6.27	13,000
B-16	4.52	8,500
B-20	4.9	85,000
B-22	6.89	16,000
B-27	6.2	25,000
B-29	6.63	25,000
B-31	5.48	25,000
B-33	5.93	16,000
B-35	6.23	43,000
B-37	6.72	14,000
B-39	6.34	17,000
B-41	4.91	15,000
B-43	5.2	85,000
B-45	4.67	25,000

Table 3: Water Corrosion Test Results

Boring	Chloride (mg/L)	Sulphate (mg/L)	pH (S.U.)	Resistivity (ohm-cm)
B-5/B-6	5.27	7.93	6.96	10,700
B-24	5.06	3.81	8.07	11,400

8.0 DISCUSSION AND RECOMMENDATIONS

The following recommendations are based on our understanding of the proposed construction, the data obtained in the soil test borings, a site reconnaissance, and our experience with subsurface conditions similar to those encountered at the project site.

We recommend that United Consulting be provided with updated documents early in the preparation of final construction drawings to determine if our recommendations are still valid or should be re-evaluated and revised.

8.1 Trench Excavation

Based on our boring data Partially Weathered Rock (PWR) was encountered in borings B-6, B-25, B-34, and B-35 starting at depths ranging from the surface to 23 feet. Auger refusal was not encountered in the borings. Some difficult excavation conditions (blasting for trench/utility excavations) associated with PWR will be encountered at the following locations:

Table 4: PWR Locations

Boring Number	Station	Depth below Ground Surface (ft)
B-6	20 + 25	18
B-25	104 + 25	13
B-34	142 + 25	8
B-35	144 + 00	0

It is also important to note that depths to PWR and rock can vary over short horizontal distances in the Piedmont geologic area, and PWR and rock could be encountered during construction at shallower depths between and outside the boring locations for this study.

PWR typically requires loosening by ripping with large dozers pulling single tooth rippers in mass excavation. The use of specialized excavation equipment (such as ram-hoes, jackhammers, or possibly blasting) is typically required for PWR excavation in confined (trench) excavations. Relatively sound, massive, rock typically requires blasting for removal in mass or trench excavation.

Excavation techniques will vary based on the weathering of the materials, fracturing and jointing in the rock, and the overall stratigraphy of the feature. Actual field conditions usually display a gradual weathering progression with poorly defined and uneven boundaries between layers of different materials. We recommend that the following definitions for rock in earthwork excavation be included in bid documents:

1. General Excavation: Any material occupying an original volume of more than 1 cubic yard which cannot be excavated with a single-tooth ripper drawn by a crawler tractor having a minimum draw bar pull rating of not less than 80,000 lbs. usable pull (Caterpillar D-8 or larger).

2. **Trench Excavation:** Any material occupying an original volume of more than 1/2 cubic yard which cannot be excavated with a backhoe having a bucket curling force rated at not less than 40,000 lbs., using a rock bucket and rock teeth (John Deere 790 or larger).

Removal of rock by blasting can be very expensive. The costs of excavation vary with the type of material encountered and the quantities to be excavated. Hence, control of quantities is important. You may consider independent recording of the blasting contractors air track drilling in order to have independent verification of quantities. We will be happy to assist as requested by you with this undertaking.

8.2 Caving Considerations

All excavations should be conducted in accordance with the Occupational Safety and Health Administration (OSHA) guidelines. Flattening of the excavation sidewalls and/or the use of bracing may be needed to maintain stability during construction.

8.3 Groundwater Considerations

Groundwater was encountered at the time of drilling in borings B-8, B-24, B-24A, and B-25 at depths ranging from 6 to 10 feet. Since the borings were primarily drilled within the travel lanes, they were backfilled upon completion of drilling. As such depth to stabilized groundwater could not be determined.

Shallower groundwater should be expected near the existing river crossings and some control of groundwater during construction is expected in that area. It is possible that perched water levels could develop at shallower depths above partially weathered rock or rock at the site.

The contractor should be prepared for dewatering, and groundwater should be lowered to depths of at least 3 feet below excavation depths throughout construction.

Management of groundwater during construction can likely be accomplished using perimeter and interior interconnected trenches gravity drained to appropriate outfalls. Where gravity drainage may not be possible, collected water would need to be routed to sumps and pumped for discharge. Considering the groundwater levels are likely indicative of perched water, permanent control of groundwater may not be needed. However, the need for localized or more comprehensive permanent control of groundwater will need to be further evaluated based on conditions at the time of construction.

8.4 Temporary Shoring

Care should be exercised during construction within or adjacent to the existing roads. For shallow open-excavation, we recommend temporary appropriate shoring to maintain stability of slope, underground utilities, and roadways. For deep excavations such those in at the proposed vault structures, construction of excavation bracing may be required to maintain stability of the road. For an excavation bracing system design, we recommend a constant earth pressure equal to $0.80K_a\gamma H$, where K_a is the co-efficient of active earth pressure, γ is the unit weight of in-situ soil, and H is the depth of the excavation. Based on our experience with similar soils and field data, we recommend the following Table 5 summarizing the

ultimate equivalent fluid pressures to be used in preliminary design for in-situ soils for temporary excavation bracing design.

Table 5: Summary of Ultimate Equivalent Fluid Pressures (Excavation Bracing)

Pressure Conditions	Co-efficient of Earth Pressures	Ultimate Equivalent Fluid Pressure
Active (K_a)	0.35	38 psf/ft
At-rest (K_o)	0.53	58 psf/ft
Passive (K_p)	2.8	308 psf/ft

These ultimate equivalent fluid pressures were calculated by the Rankine method using an estimated in-situ soil unit weight of 110 pcf, an average in-situ angle of internal friction of 28 degrees, and zero effective cohesion. The long-term cohesion strength parameter has not been utilized in the determination of the earth pressures. Generally, for this soil type, most of the long-term cohesive strength is lost as a result of exposure and disturbance during excavation. We can design reinforced earth retaining walls, sheet pile walls or excavation bracing, if needed.

8.5 Earthwork

The onsite soils, if free of organic and other deleterious materials, should generally be suitable for reuse as engineered fill with proper moisture control. Partially weathered rock (PWR) can be used as engineered fill if it breaks up sufficiently to meet gradation requirements. PWR can also be mixed with soil to meet gradation requirements.

Due to the presence of high silt contents, some of the onsite soil may be sensitive to moisture variation. During rainy seasons, these soils will be difficult to dry. As a practical consideration during extended periods of wet weather, wet onsite soils may need to be discarded and replaced with drier soils. These soils should be placed within a narrow range of their optimum moisture content (typically within about 3 percent of optimum moisture) to achieve proper compaction. Typical restrictions on suitable fill are no organics, plasticity index less than 25, and maximum particle size of four inches, with not more than 30 percent greater than 3/4-inch. These restrictions should also be applied to imported borrow soils if needed.

Positive drainage should be maintained at all times to prevent saturation of exposed soils in case of sudden rains. Rolling the surface of disturbed soils will also improve runoff and reduce the soil moisture and construction delays. The degree of soil stability problems will also be dependent upon the precautions taken by the contractor to help protect the soils from saturation during construction.

Moisture-density determinations should be performed for each soil type used, to provide data necessary for quality assurance testing. Soil moisture contents at the time of compaction should be adjusted so that they are within moisture content limits that will allow the required compaction to be obtained.

8.6 Slopes

All slopes should be protected from erosion during construction and provided with appropriate permanent vegetation or other cover after construction. Slopes should be protected from concentrated run-off flow by means of berms and drainage ditches to direct runoff around slopes or through concrete channels. Appropriate vegetative cover should consist of fast growing grasses that will rapidly create a dense root mat over the entire slope. Landscaping consisting of isolated shrubs and pine straw will not provide adequate slope protection.

All temporary slopes and open excavations should be performed in accordance with applicable OSHA guidelines for trench safety.

8.7 Retaining Walls

The following retaining wall recommendations pertain to cast-in-place building and site retaining walls and are not intended for modular block or MSE walls. If modular block or MSE walls are planned on the site, United Consulting should be notified because additional evaluation will be required to provide recommendations specific to the planned wall types and locations.

The design of retaining walls must include the determination of the lateral pressure that will act on the wall. The lateral earth pressure is a function of the soil properties, surcharge loads behind the wall, and amount of deformation that the wall can undergo. This deformation is basically dependent upon the relative rigidity of the wall system.

The active earth pressure condition develops when the wall moves away from the soil over a sufficient distance, such as for a freestanding cantilever wall. The at-rest condition exists when there is no lateral strain on the soil, such as walls, which are rigidly restrained like a basement or sub-foundation wall. The passive condition occurs when the wall moves into the soil.

The following equivalent fluid pressures are recommended for three earth pressure conditions.

Table 6 - Lateral Earth Pressures

Earth Pressure Condition	Earth Pressure Coefficient	Recommended Equivalent Fluid Pressure
Active	$K_A = 0.33$	40 psf/foot
At-Rest	$K_O = 0.50$	60 psf/foot
Passive	$K_P = 3.00$	360 psf/foot

We note that considerable horizontal deflections are required to mobilize the passive pressure; therefore, the designer should consider a safety factor of 2 to the stated ultimate passive earth pressure in design.

The recommended equivalent fluid pressures are based on an assumed soil density of 120 pcf, an internal friction angle of 30 degrees and cohesion of zero. A coefficient of friction of 0.36 for sliding may be used for the retaining wall design.

The parameters listed above are based on a level properly compacted backfill, no friction at the wall-soil interface, and no surcharge effects. For design of retaining walls, which could be inundated, the buoyant unit weight of the inundated soil should be used to determine the lateral earth pressure. The hydrostatic pressure based on the maximum ponding elevation should be utilized in the analysis.

Heavy compaction equipment should not be used to compact backfill within 5 feet laterally behind any retaining wall unless the wall is designed for the increased pressure or temporarily braced. Therefore, light compaction equipment may be required in this zone. Retaining wall backfill should be compacted to 95 percent of the Standard Proctor maximum dry density. A permanent drainage system such as a footing drain, or a fabric drain such as Enka drain, Mira drain, etc., is recommended for any retaining walls which are more than 5 feet in height.

The retaining walls should be designed by a professional engineer familiar with retaining wall design and registered in Georgia. Global stability should be determined, and the designer should consider sloping backfill, surcharges and other factors affecting wall loadings.

8.8 Fill Placement

Moisture-density determinations should be performed for each soil type used to provide data necessary for quality assurance testing. The natural moisture content at the time of compaction should be within moisture content limits, which will allow the required compaction to be obtained. This is generally within three percentage points of the optimum moisture. The contractor should be prepared to increase or decrease soil water content as needed to achieve the required degrees of compaction.

The fill should be placed in thin lifts (not to exceed 8-inch loose thickness) and compacted. We recommend the fill be compacted to at least 98 percent of Standard Proctor (ASTM D 698) maximum dry density within top two feet and at least 95 percent of Standard Proctor maximum dry density elsewhere on the site.

A Geotechnical Engineer on a full-time basis should observe grading operations. In-place density tests taken by that individual will assess the degree of compaction being obtained. The frequency of the testing should be determined by the Geotechnical Engineer.

9.0 LIMITATIONS

This report is for the exclusive use of **Freese and Nichols, Inc.** and the designers of the project described herein, and may only be applied to this specific project. Our conclusions and recommendations have been prepared using generally accepted standards of Geotechnical Engineering practice in the State of Georgia. No other warranty is expressed or implied. Our firm is not responsible for conclusions, opinions or recommendations of others.

The right to rely upon this report and the data within may not be assigned without UNITED CONSULTING'S written permission.

The scope of this evaluation was limited to an evaluation of the load-carrying capabilities and stability of the subsoils. Oil, hazardous waste, radioactivity, irritants, pollutants, molds, or other dangerous substance and conditions were not the subject of this study. Their presence and/or absence are not implied or suggested by this report, and should not be inferred.

Our conclusions and recommendations are based upon design information furnished to us, data obtained from the previously described exploration and testing program and our past experience. They do not reflect variations in subsurface conditions that may exist intermediate of our borings, and in unexplored areas of the site. Should such variations become apparent during construction, it will be necessary to re-evaluate our conclusions and recommendations based upon "on-site" observations of the conditions.

If the design or location of the project is changed, the recommendations contained herein must be considered invalid, unless our firm reviews the changes and our recommendations are either verified or modified in writing. When design is complete, we should be given the opportunity to review the foundation plan, grading plan, and applicable portions of the specifications to confirm that they are consistent with the intent of our recommendations.

UNITED CONSULTING

APPENDIX

General Notes /Narrative of Drilling Operations

Figure 1– Boring Location Plan (3)

Figure 2 – Boring Location Plan & Profile (30)

Exploration Procedures

SPT Boring Logs (47)

Laboratory Procedures

Lab Summary Sheet (1)

Liquid and Plastic Test Report (2)

Grain Size Distribution Curves (6)

GENERAL NOTES

The soil classifications noted on the Boring Logs are visual classifications unless otherwise noted. Minor constituents of a soil sample are termed as follows:

Trace	0 - 10%
Some	11 - 35%
Suffix "y" or "ey"	36 - 49%

LEGEND



Split Spoon Sample obtained during Standard Penetration Testing



Relatively Undisturbed Shelby Tube Sample



Groundwater Level at Time of Boring Completion



Groundwater Level at 24 hours (or as noted) after Termination of Boring

w Natural Moisture Content

LL Liquid Limit

PL Plastic Limit Atterberg Limits

PI Plasticity Index

PF Percent Fines (Percent Passing #200 Sieve)

γ_d Dry Unit Weight (Pounds per Cubic Foot or PCF)

γ_m Moist or In-Situ Unit Weight (PCF)

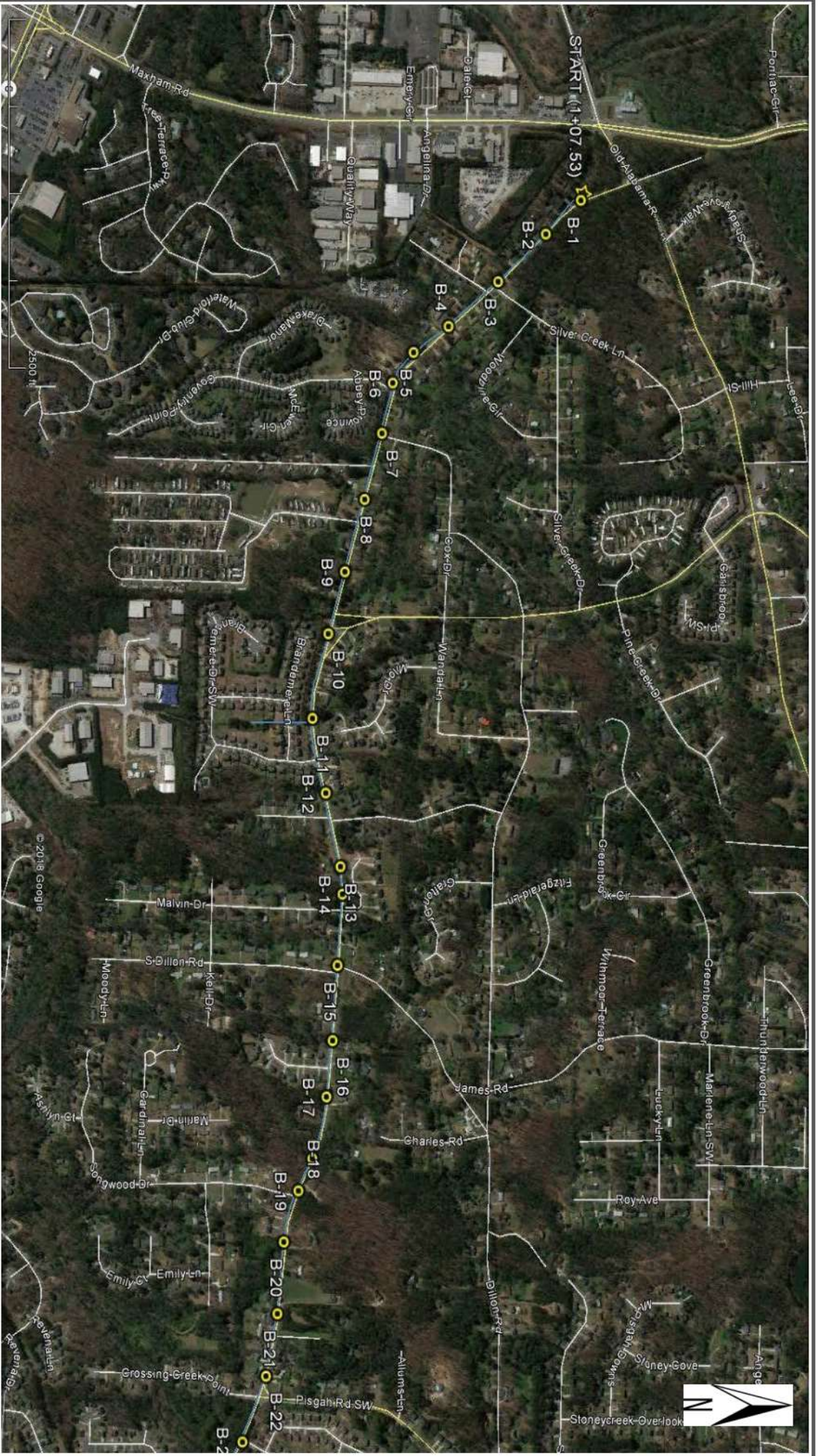
γ_{sat} Saturated Unit Weight (PCF)

BORING LOG DATA NARRATIVE OF DRILLING OPERATION

The test borings were made by mechanically advancing helical hollow stem augers into the ground. Samples were collected at regular intervals in each of the borings following established procedures for performing the Standard Penetration Test in accordance with ASTM Specification D 1586. Soil samples were obtained with a standard 1.4" I.D. x 2.0" O.D. split barrel sampler. The sampler is first seated 6" to penetrate any loose cuttings and then driven an additional foot with the blows required of a 140-pound hammer freely falling a distance of 30 inches. The number of blows required to drive the sampler the final foot is designated the "standard penetration resistance." The driving resistance, known as the "N" value, can be correlated with the relative density of granular soils and the consistency of cohesive deposits.

The following table describes soil consistency and relative densities based on standard penetration resistance values (N) determined by the Standard Penetration Test (SPT).

	<u>"N"</u>	<u>Consistency</u>
Clay and Silt	0-2	Very Soft
	3-4	Soft
	5-8	Firm
	9-15	Stiff
	16-30	Very Stiff
	Over 31	Hard
	<u>"N"</u>	<u>Relative Density</u>
Sand	0-4	Very Loose
	5-10	Loose
	11-19	Firm
	20-29	Medium Dense
	30-49	Dense
	50+	Very Dense

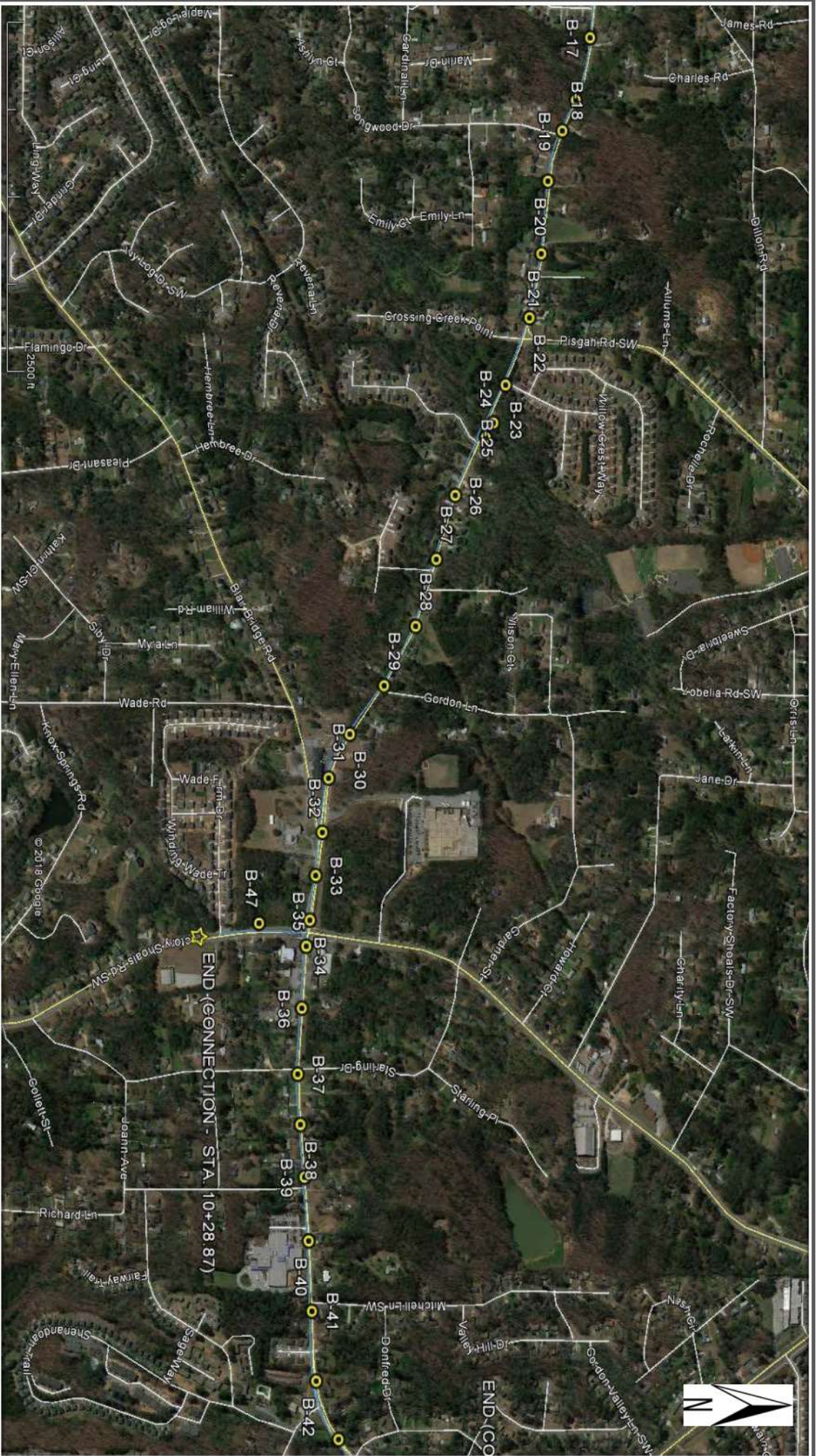


Source: Base Map from Google earth 2018

Notes:
 Boring locations are based on 50% design alignment. Final locations will be determined based on final pipe alignment and boring access.

SCALE: NTS	DATE: Jan-17-2019	PROJECT No.: SHARP-18-GA-02416-01	TITLE:
PREPARED: RIO	CHECKED: CR	REVISIONS:	Boring Location Plan (1 of 3) CCMWA West Side Loop W. Main, Austell, GA
CLIENT:	FREESE AND NICHOLS, INC.		 UNITED CONSULTING 625 HOLCOMB BRIDGE ROAD NORCROSS, GEORGIA
			

FIG. 1



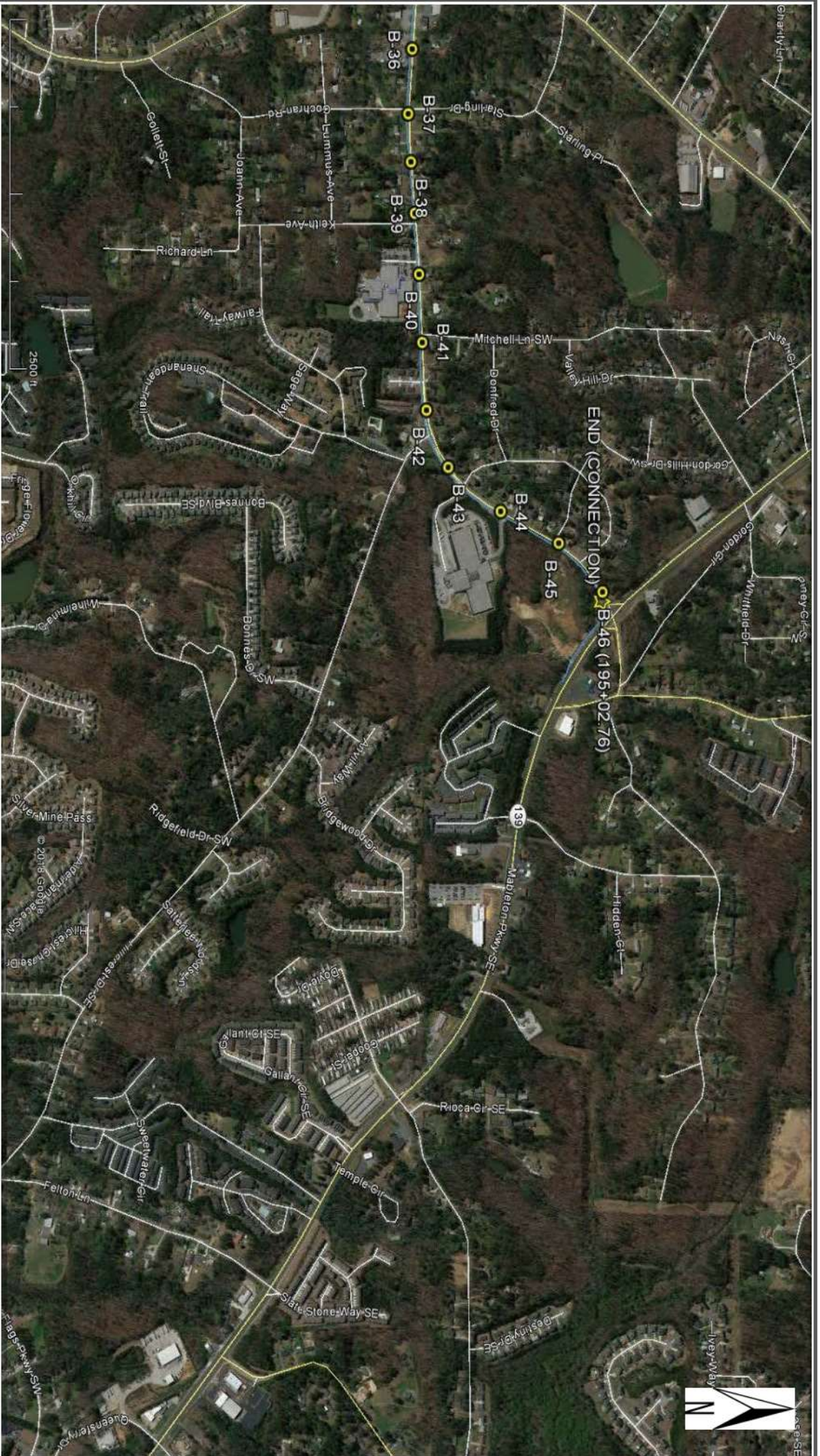
Source: Base Map from Google earth 2018

Notes:
 Boring locations are based on 50% design alignment. Final locations will be determined based on final pipe alignment and boring access.

SCALE: NTS	DATE: Jan-17-2019	PROJECT No.: SHARP-18-GA-02416-01
PREPARED: RIO	CHECKED: CR	REVISIONS:
CLIENT: FREESE AND NICHOLS, INC.		

TITLE: Boring Location Plan (2 of 3) CCMWA West Side Loop W, Main, Austell, GA
 UNITED CONSULTING 625 HOLCOMB BRIDGE ROAD NORCROSS, GEORGIA

FIG. 1



Source: Base Map from Google earth 2018

Notes:
 Boring locations are based on 50% design alignment. Final locations will be determined based on final pipe alignment and boring access.

SCALE: NTS	DATE: Jan-17-2019	PROJECT No.: SHARP-18-GA-02416-01
PREPARED: RIO	CHECKED: CR	REVISIONS:
CLIENT: FREESE AND NICHOLS, INC.		

TITLE: CCMWA West Side Loop W, Main, Austell, GA

FIG. 1



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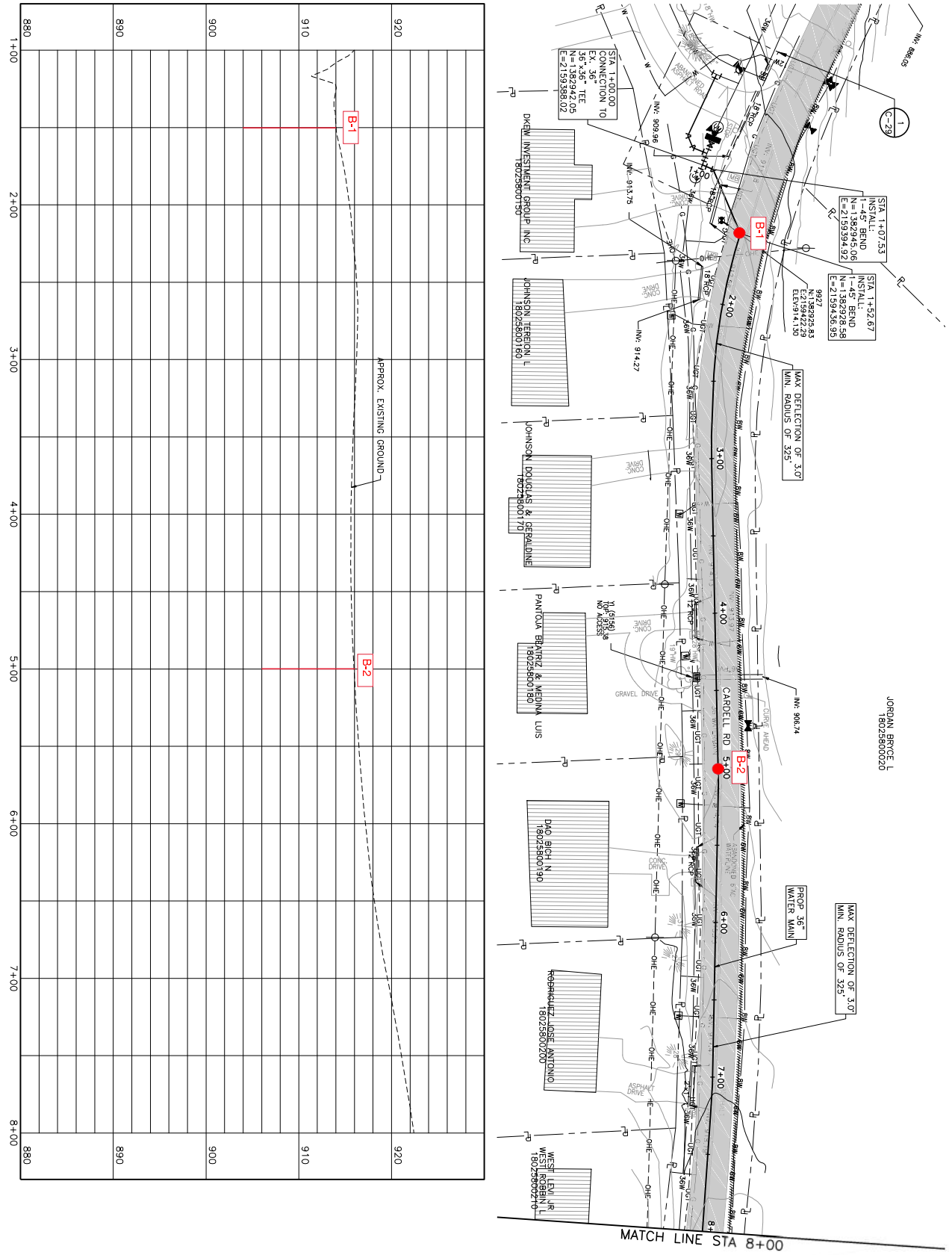


FIG. 2
(1 of 30)

SHEET		C-1	
NO.		ISSUE	
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2	BY	DATE	FILE NAME
			CV-ALL-SHTS01.dwg
DESIGNED	CHKD	REVISED	CHECKED
FDH	CKW		JCS
PEN JOB NO.		CBR18213	
DATE		08/31/18	

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

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FREESE NICHOLS

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

NOTES:
 SCALE: HORIZONTAL 1" = 20', VERTICAL 1" = 10'

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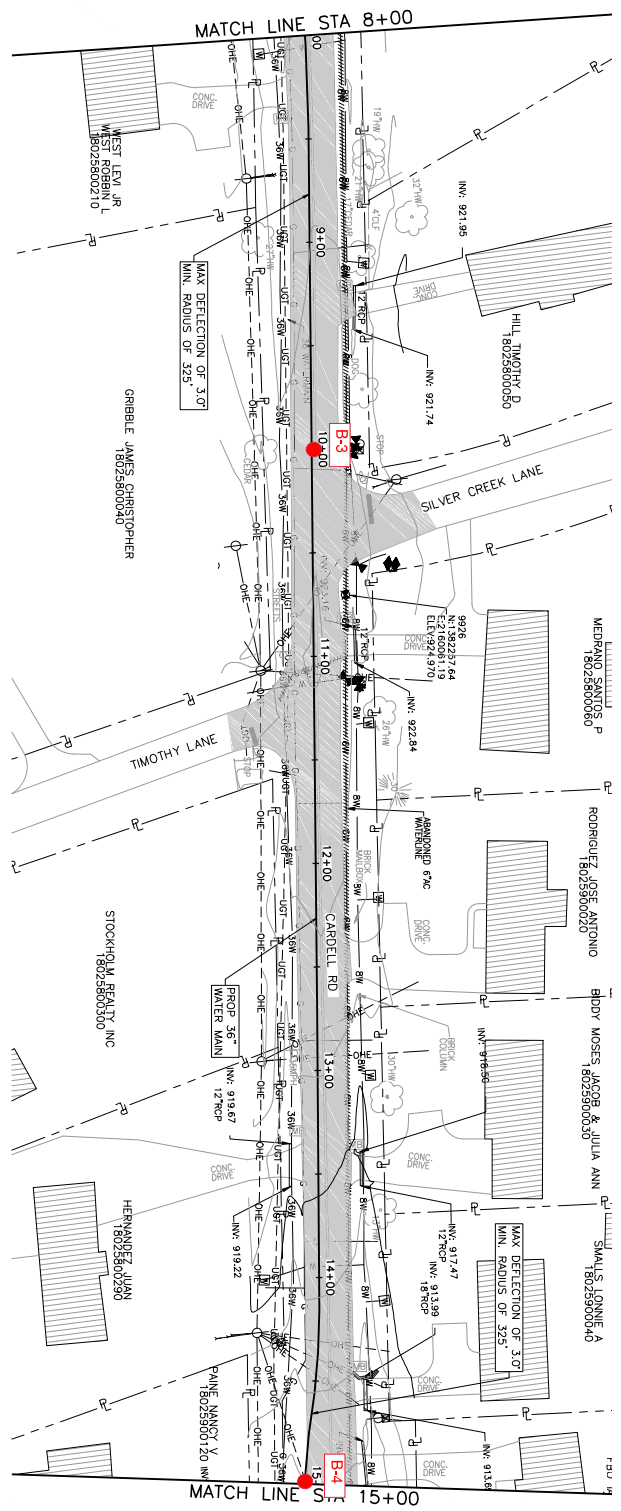
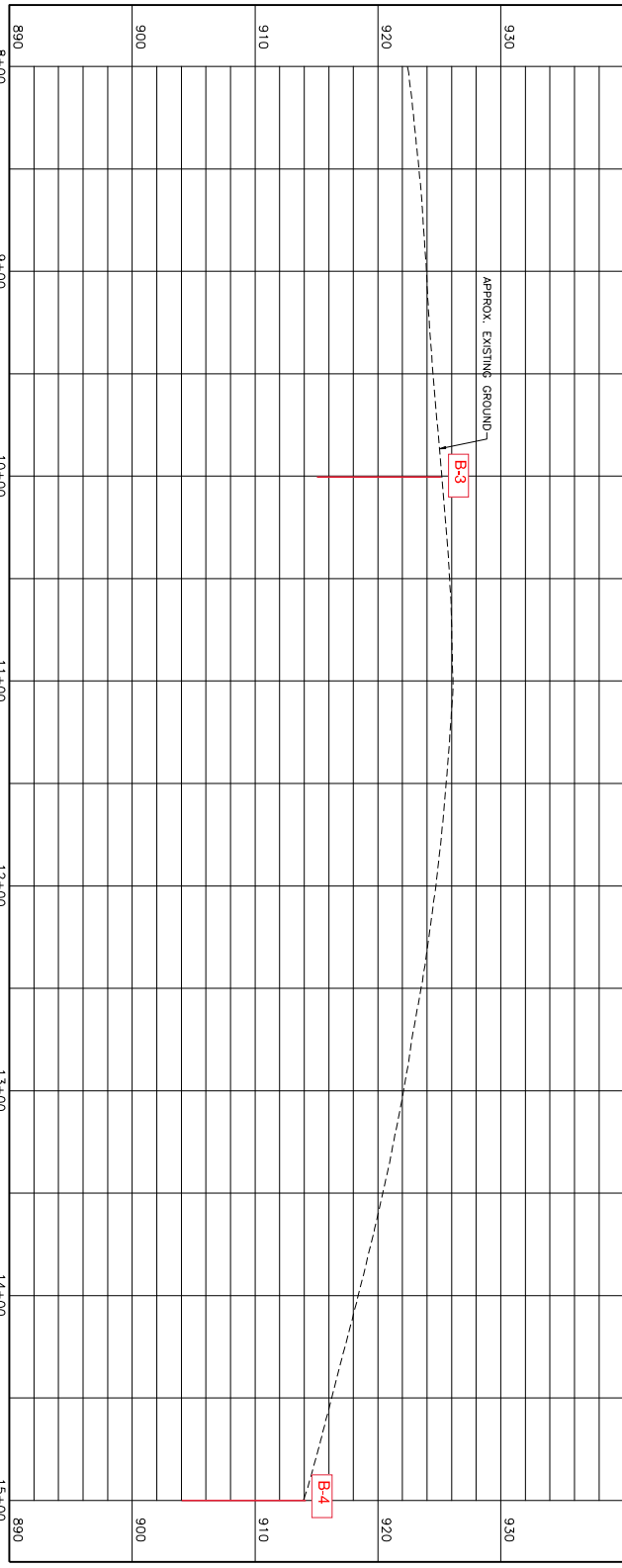


FIG. 2
(2 of 30)

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE:
 HORIZONTAL: 1" = 20.00'
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NO.	ISSUE	BY	DATE	FILE NAME
				CV-ALL-SHTS01.dwg

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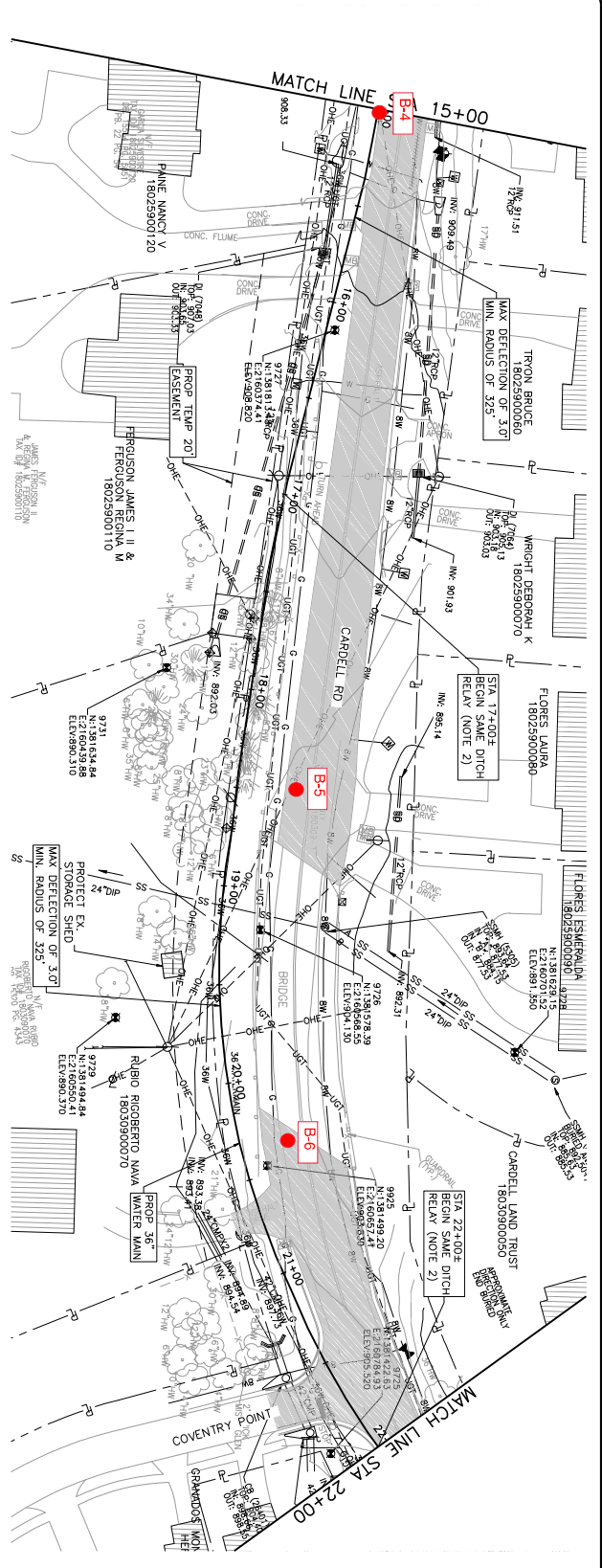
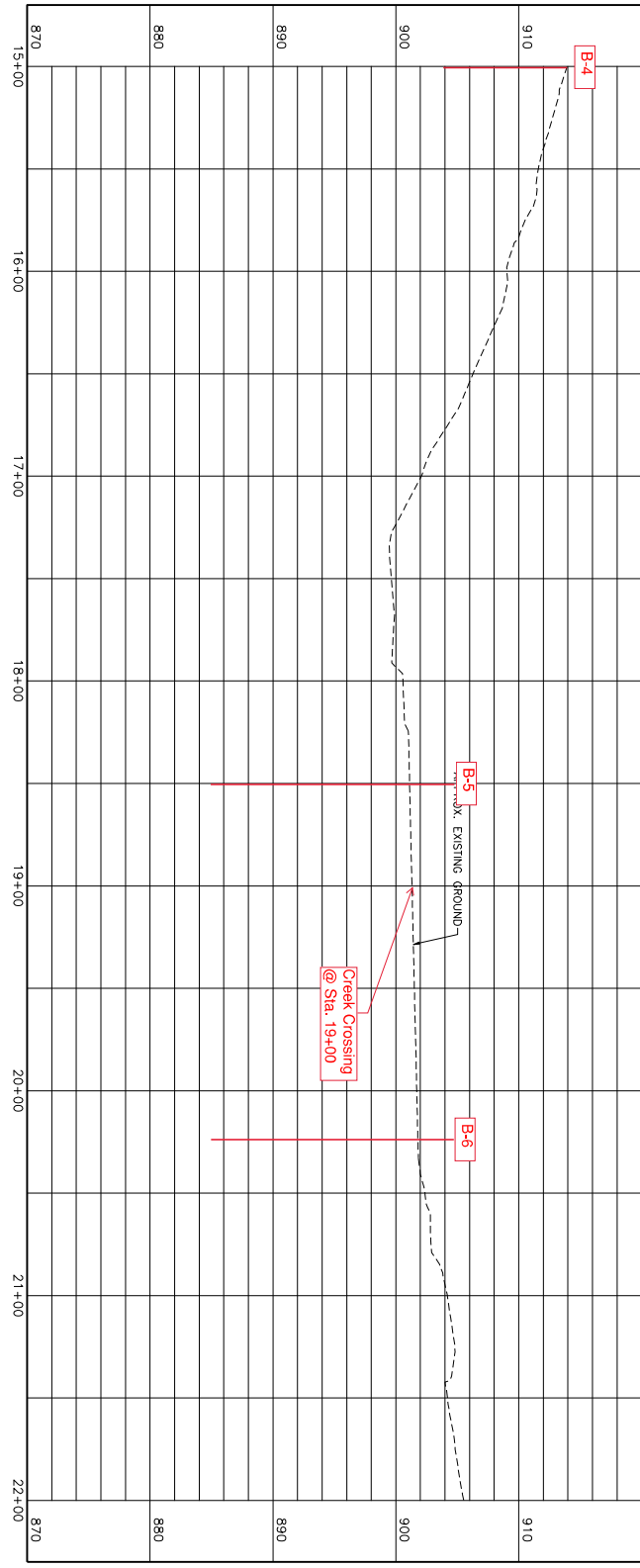
COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
PLAN AND PROFILE
STA 8+00 TO 15+00

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Plot Date: 8/31/2018 3:14 PM Plot By: 02618 Filename: N:\VTU\Drawings\CV-ALL-SHT501.dwg



- NOTES:**
1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
 2. CONTRACTOR TO VERIFY LIMIT OF SAME DITCH RELAY BASED ON ACTUAL FIELD CONDITIONS AND REMOVE BACKFILL AND COMPACT AS SPECIFIED.
 3. SUPPORT/PROTECT EX. POWER POLES.



Fig. 2
(3 of 30)

NO.	ISSUE	BY	DATE	CHECKED	FILE NAME
					CV-ALL-SHT501.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
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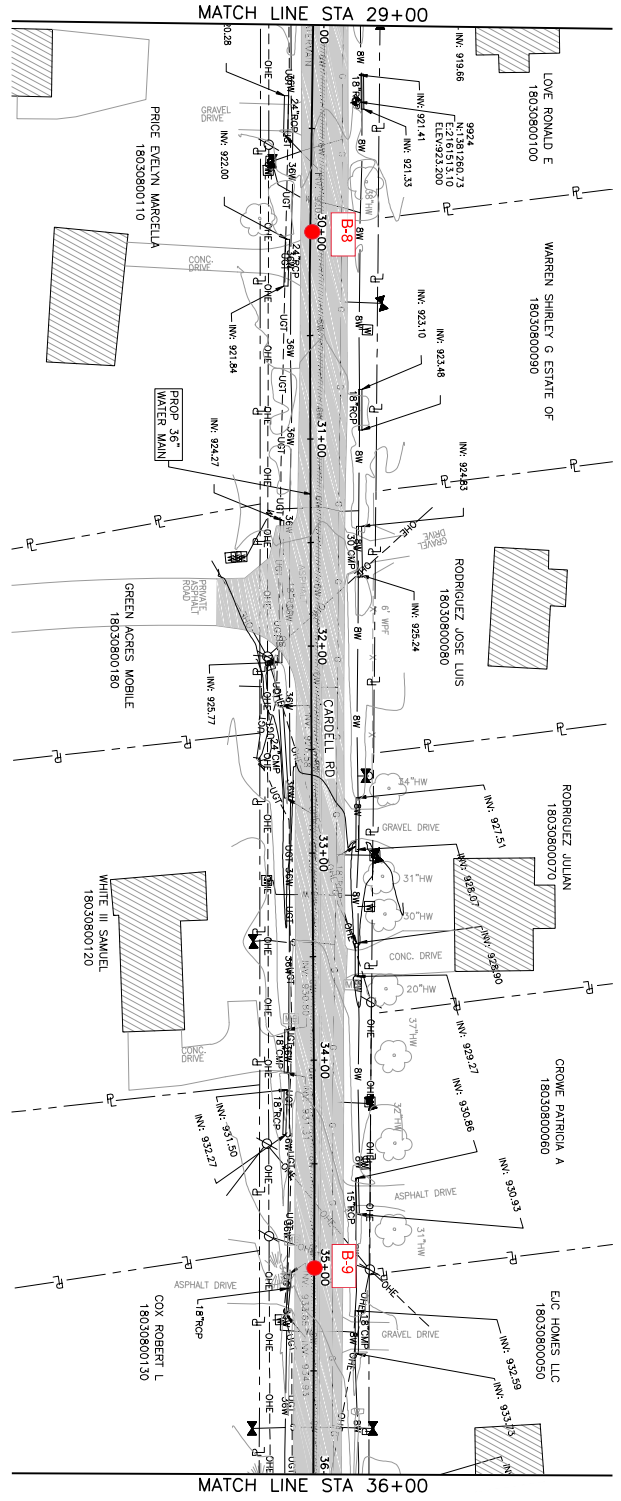
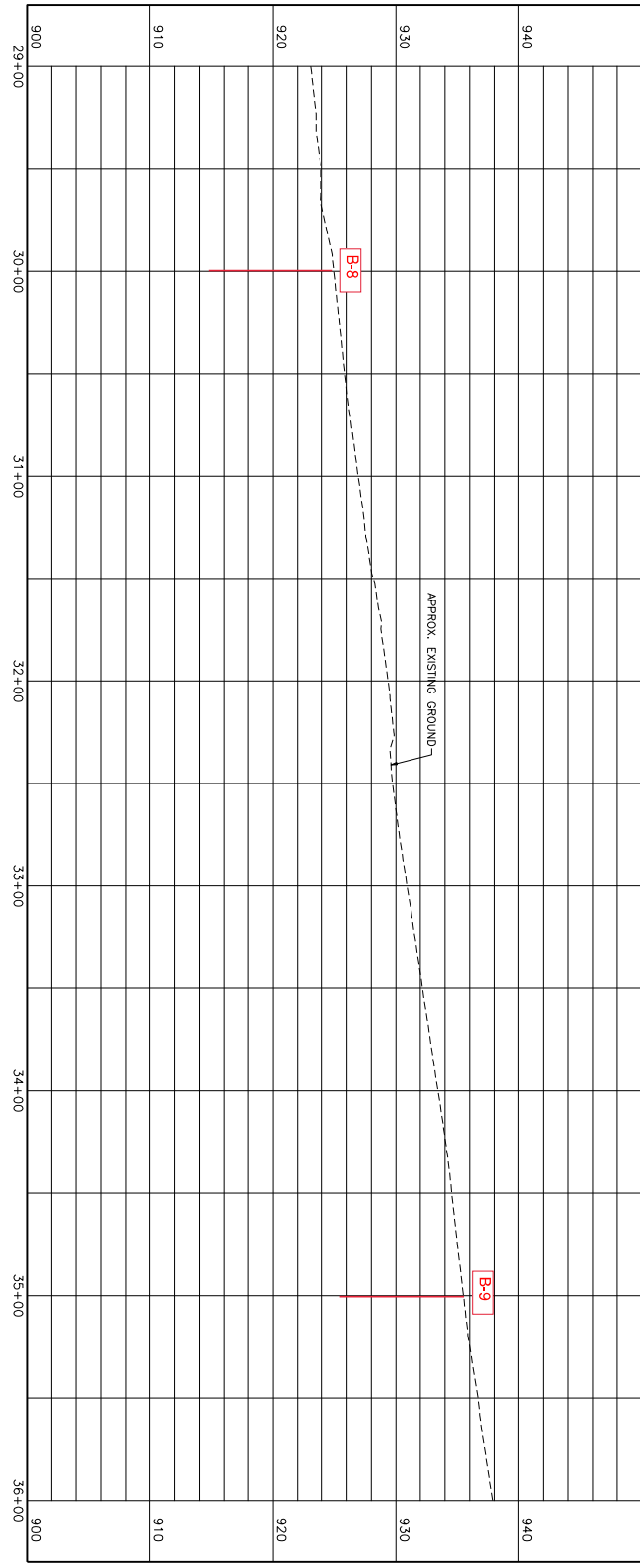


Fig. 2
(5 of 30)

NO.	ISSUE	BY	DATE

FILE NAME	CV-ALL-SHTS01.dwg
CHECKED	JCS
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DESIGNED	FDH
DATE	08/31/18
PROJECT NO.	CBR18213

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
STA 29+00 TO 36+00

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

0' 10' 20' 30'
 SCALE IN FEET
 HORIZONTAL
 5' 10'
 SCALE IN FEET
 VERTICAL



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Plot Date: 8/31/2018 3:14 PM Plot By: 02618 Filename: N:\WTU\Drawings\CV-ALL-SHTS01.dwg

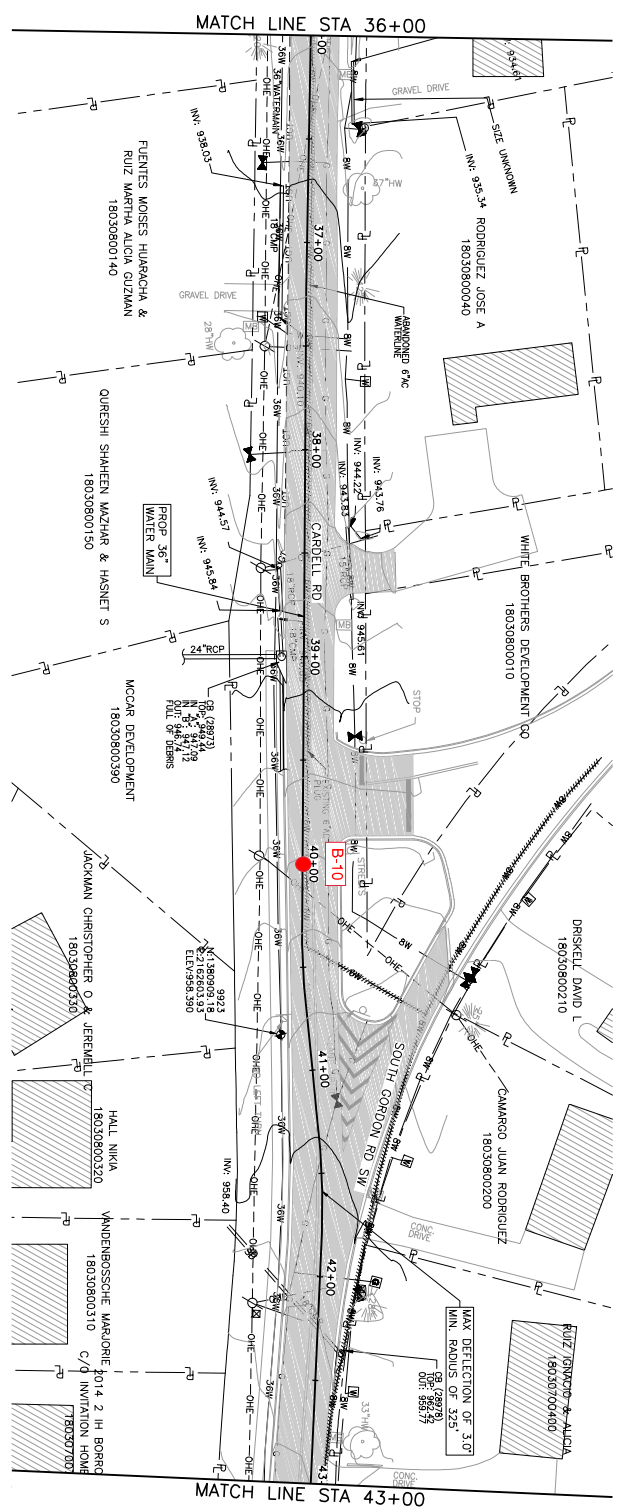
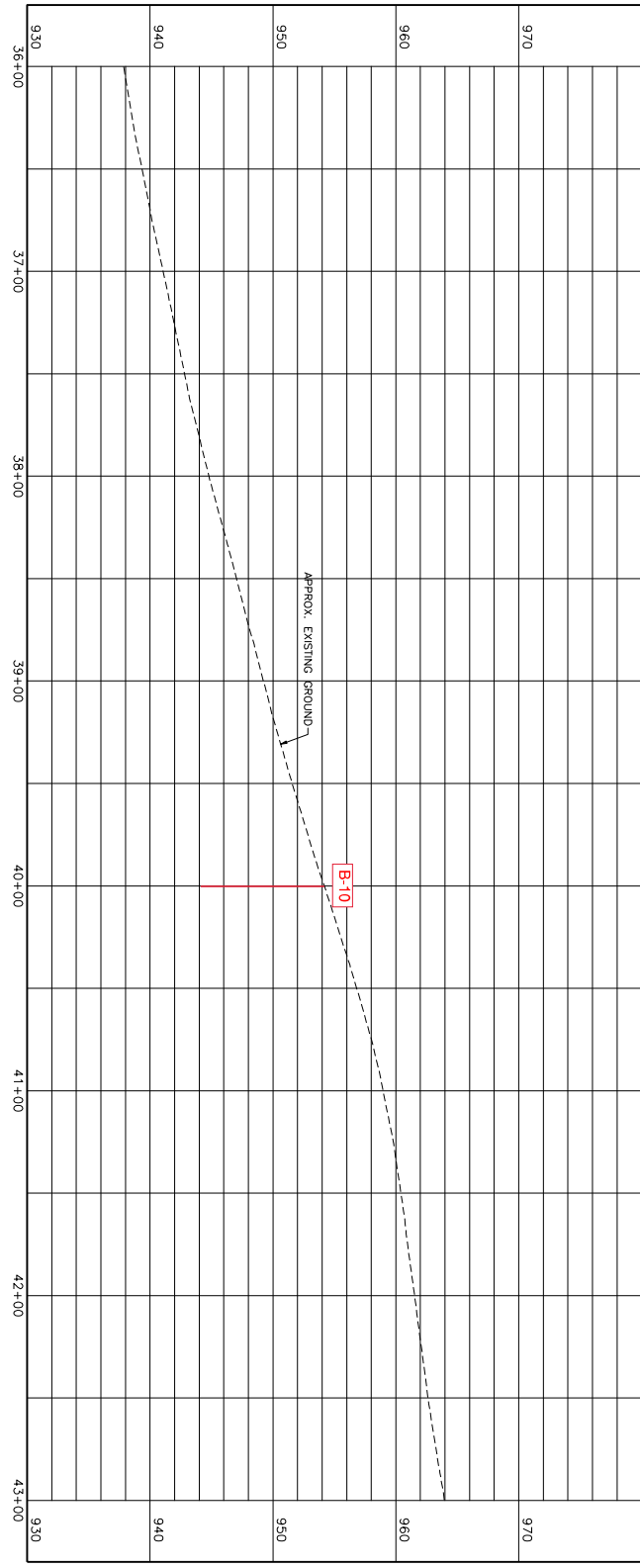


Fig. 2
(6 of 30)

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE:
 HORIZONTAL: 1" = 20.00'
 VERTICAL: 1" = 5.00'



NO.	ISSUE	BY	DATE	CHECKED	FILE NAME
					CV-ALL-SHTS01.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
PLAN AND PROFILE
STA 36+00 TO 43+00

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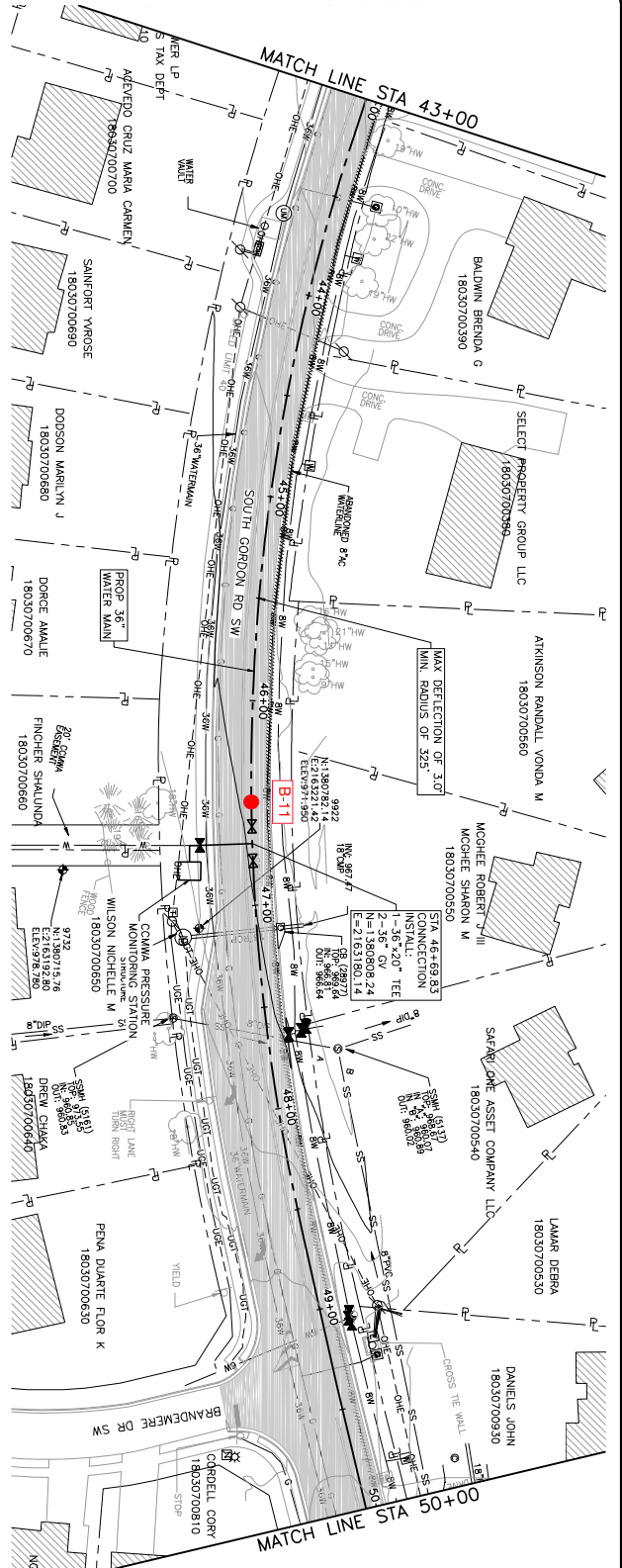
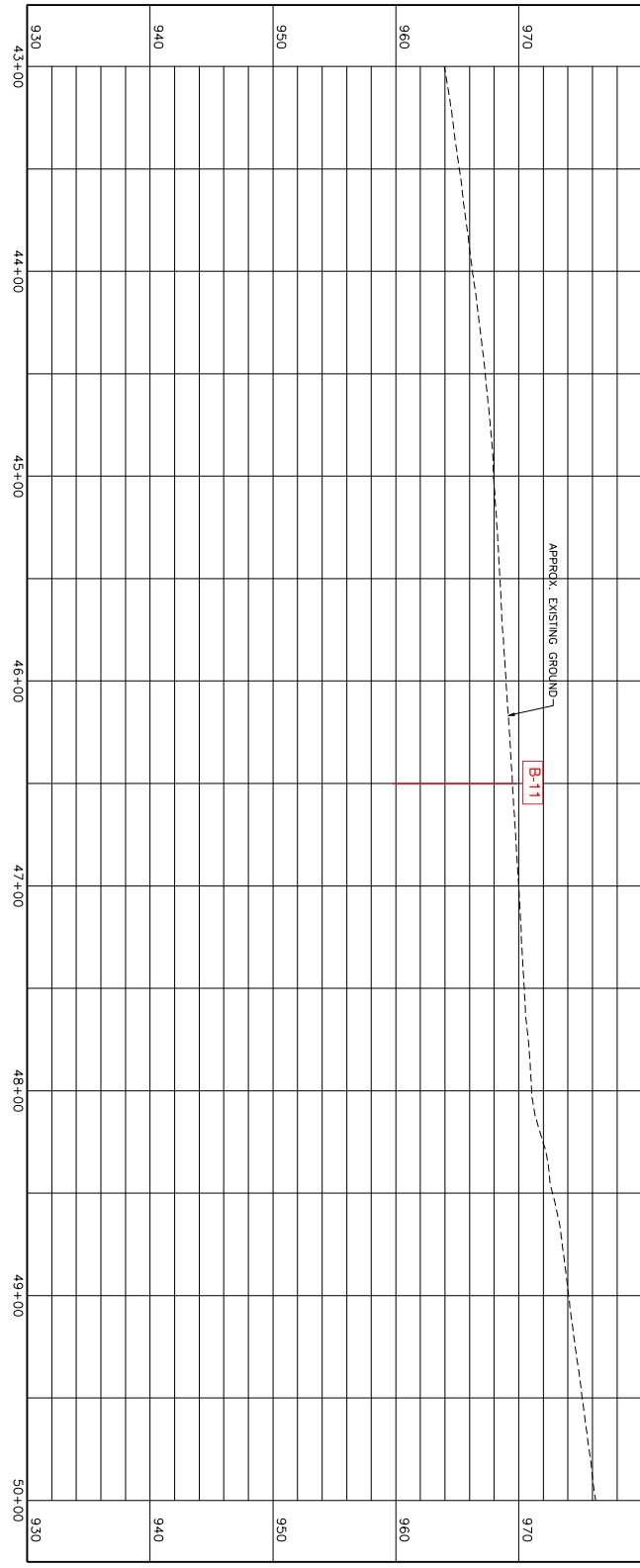


Fig. 2
(7 of 30)

NO.	ISSUE	BY	DATE	FILE NAME
				CV-ALL-SHTS01.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
PLAN AND PROFILE
STA 43+00 TO 50+00

NOTES:

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE:
 HORIZONTAL: 1" = 20.00'
 VERTICAL: 1" = 10.00'

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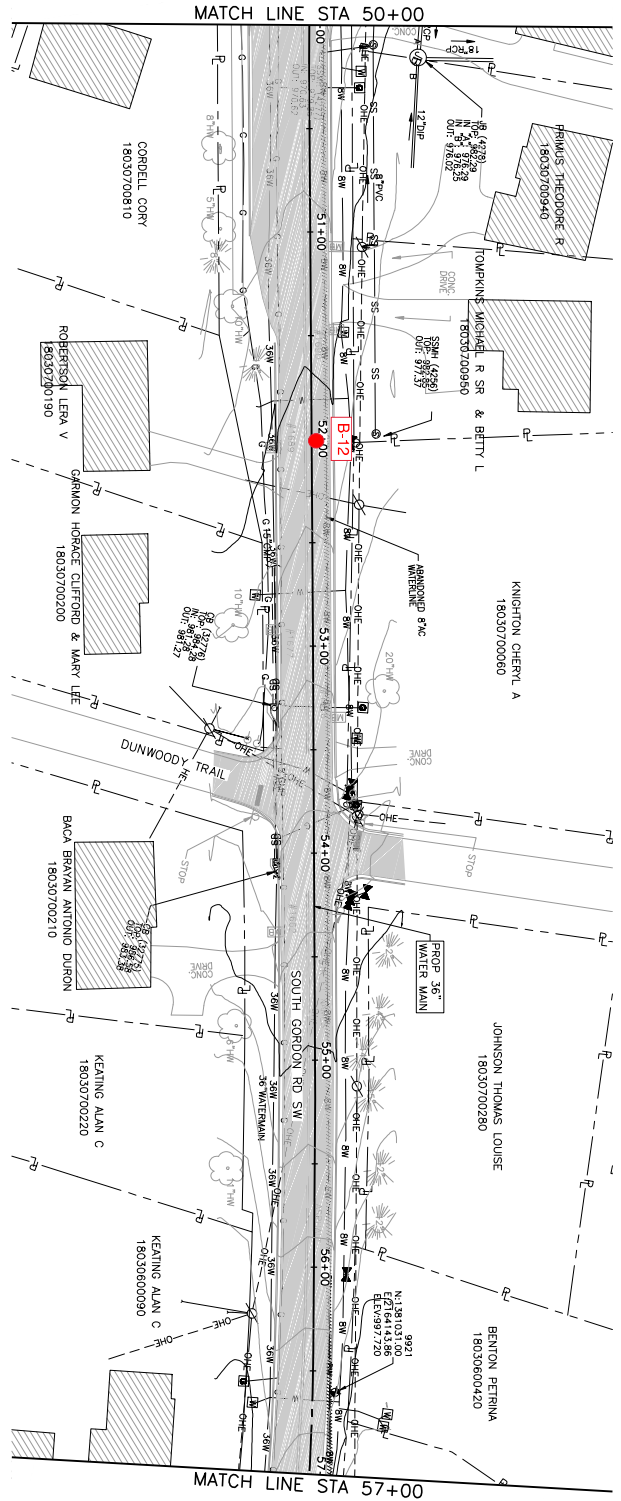
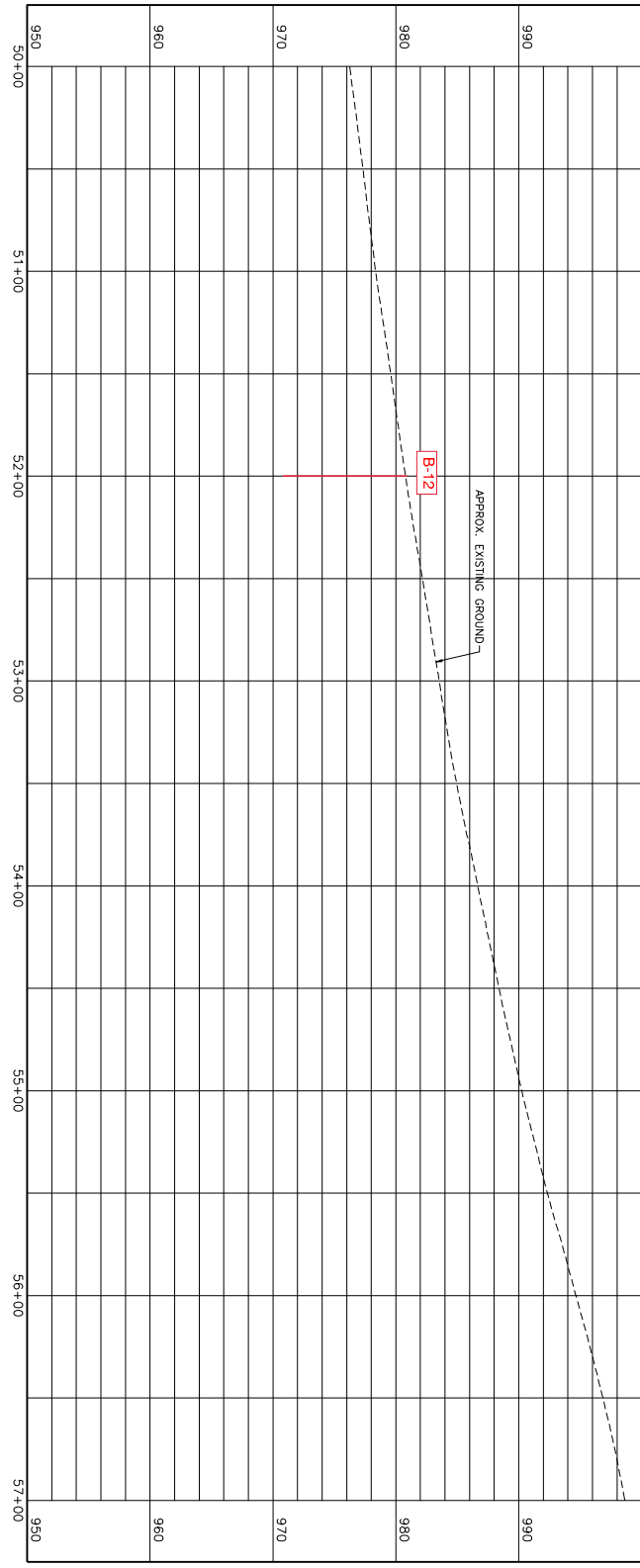


Fig. 2
(8 of 30)

NO.	ISSUE	BY	DATE	FILE NAME
				CV-ALL-SHTS01.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
STA 50+00 TO 57+00

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE:
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 VERTICAL: 1" = 10'

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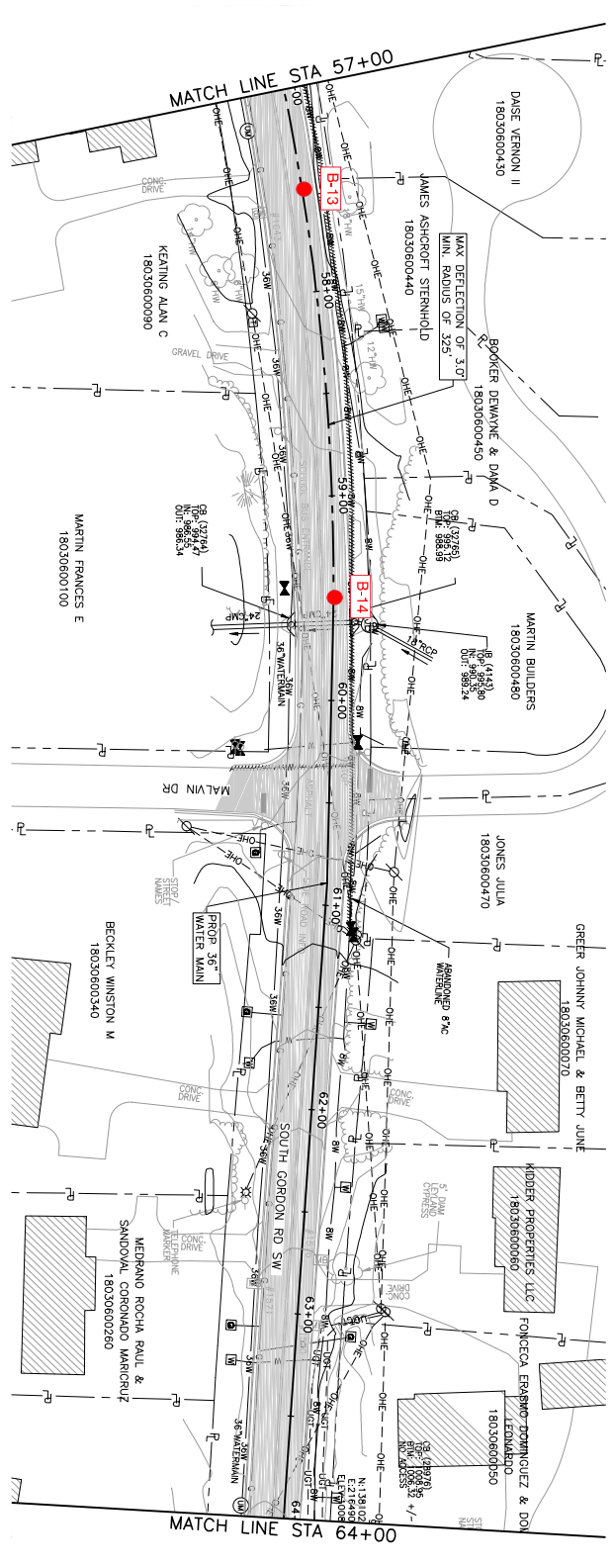
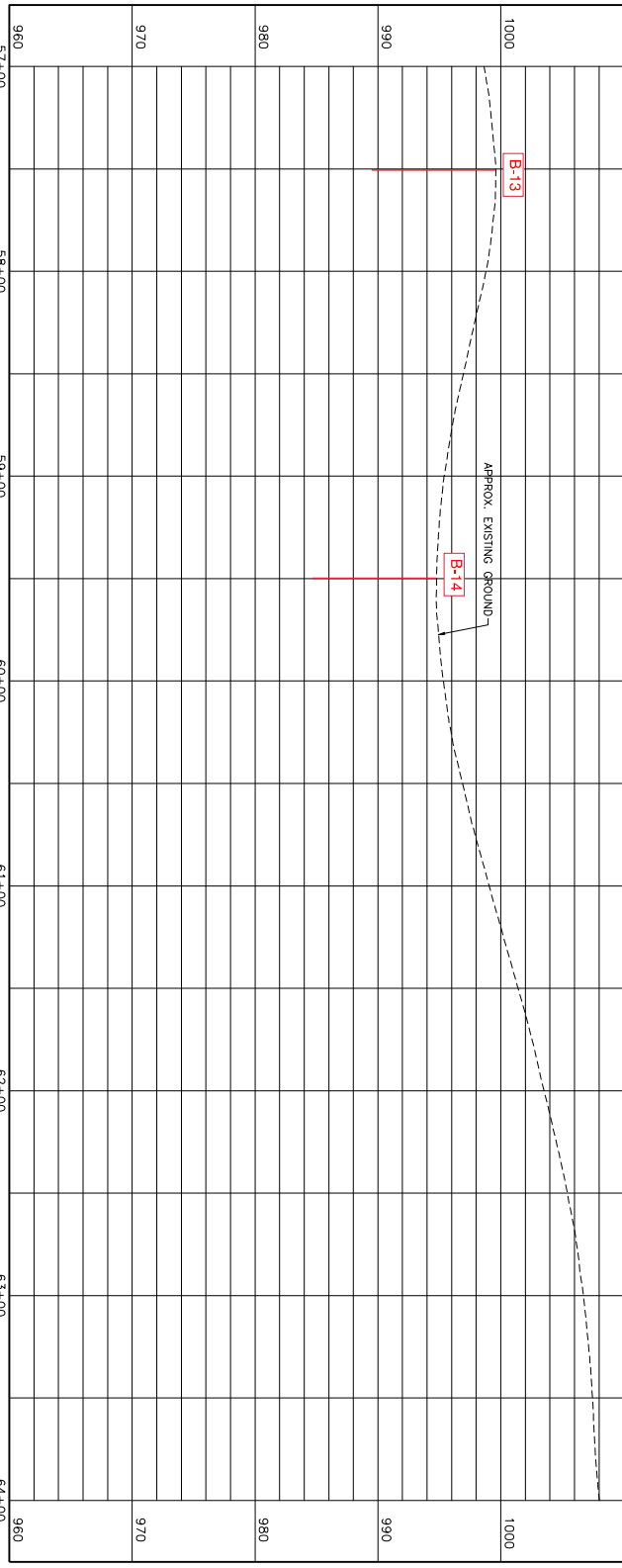


Fig. 2
(9 of 30)

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COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
PLAN AND PROFILE
STA 57+00 TO 64+00

PER JOB NO. CBR18213	DATE 08/31/18
DESIGNED FDH	DRAWN CKM
REVISED	CHECKED JCS
FILE NAME CV-ALL-SHTS01.dwg	

NOTES:

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE: HORIZONTAL 1" = 50' VERTICAL 1" = 10'

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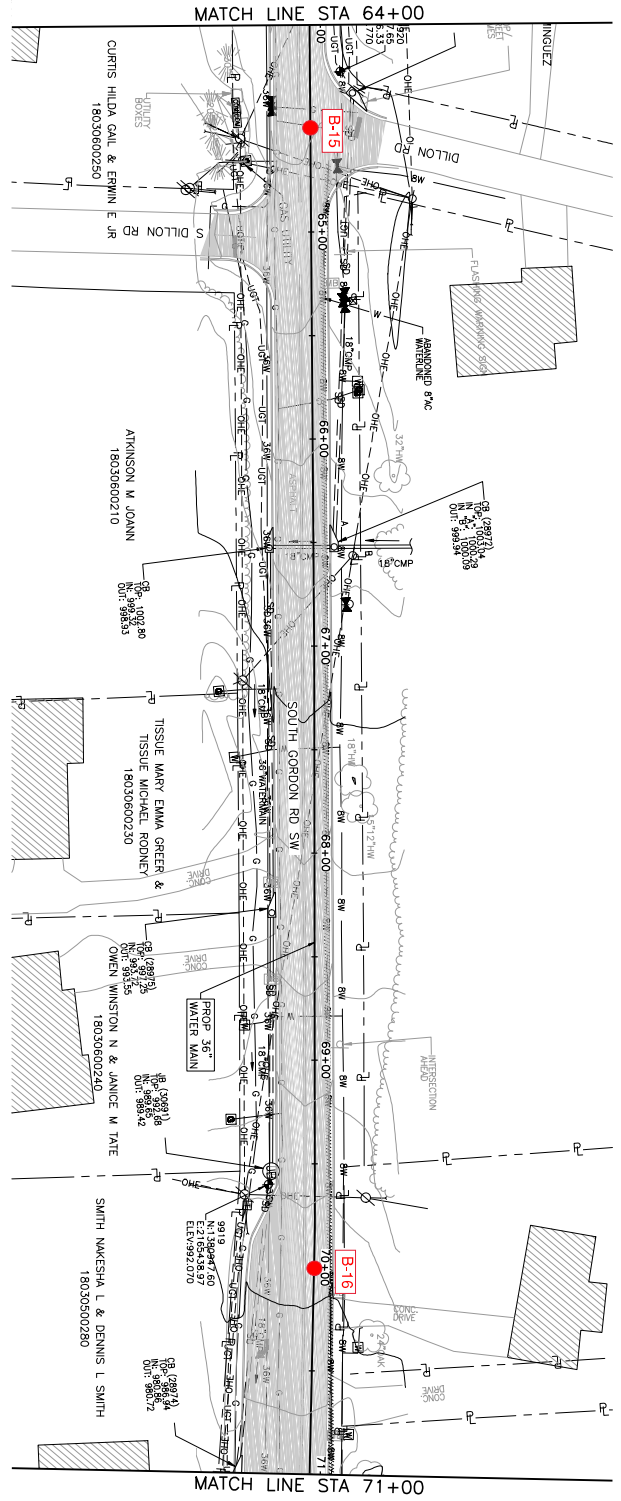
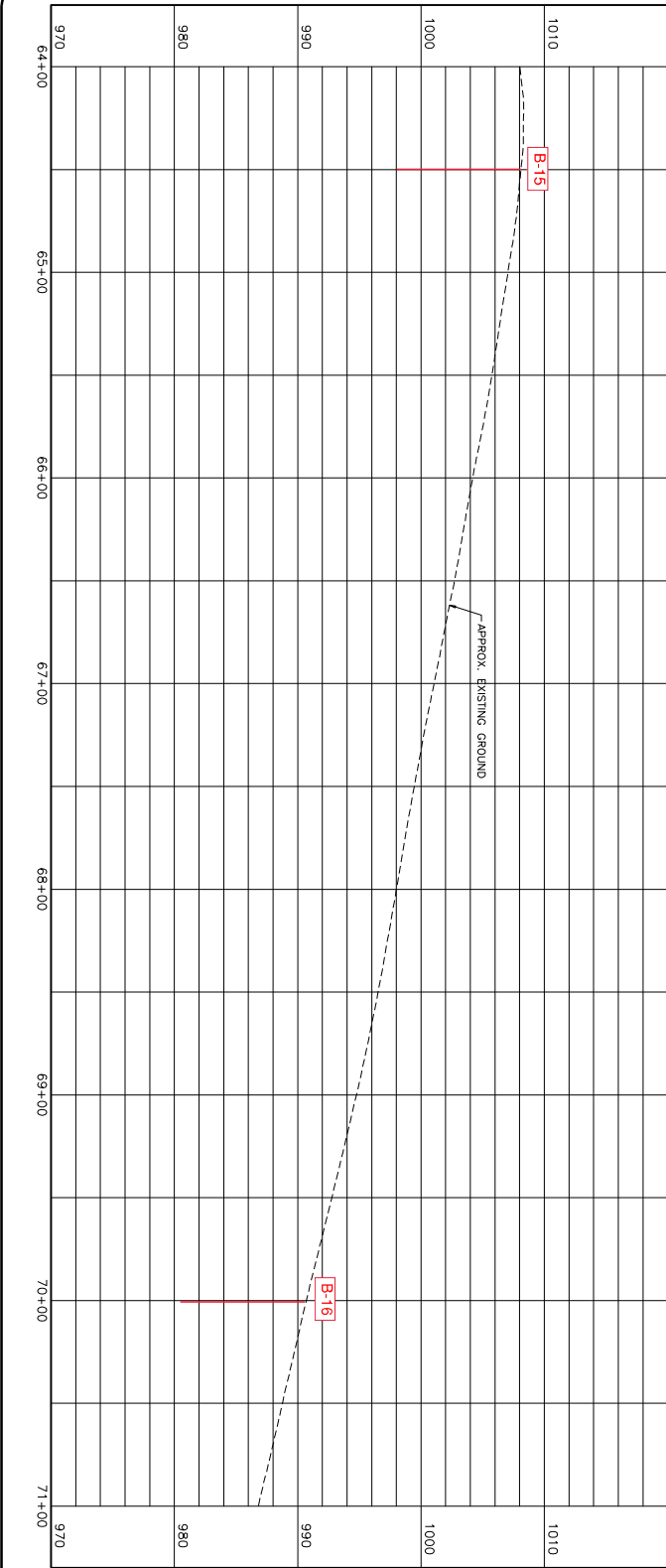
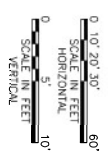


Fig. 2
(10 of 30)

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.



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WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
STA 64+00 TO 71+00

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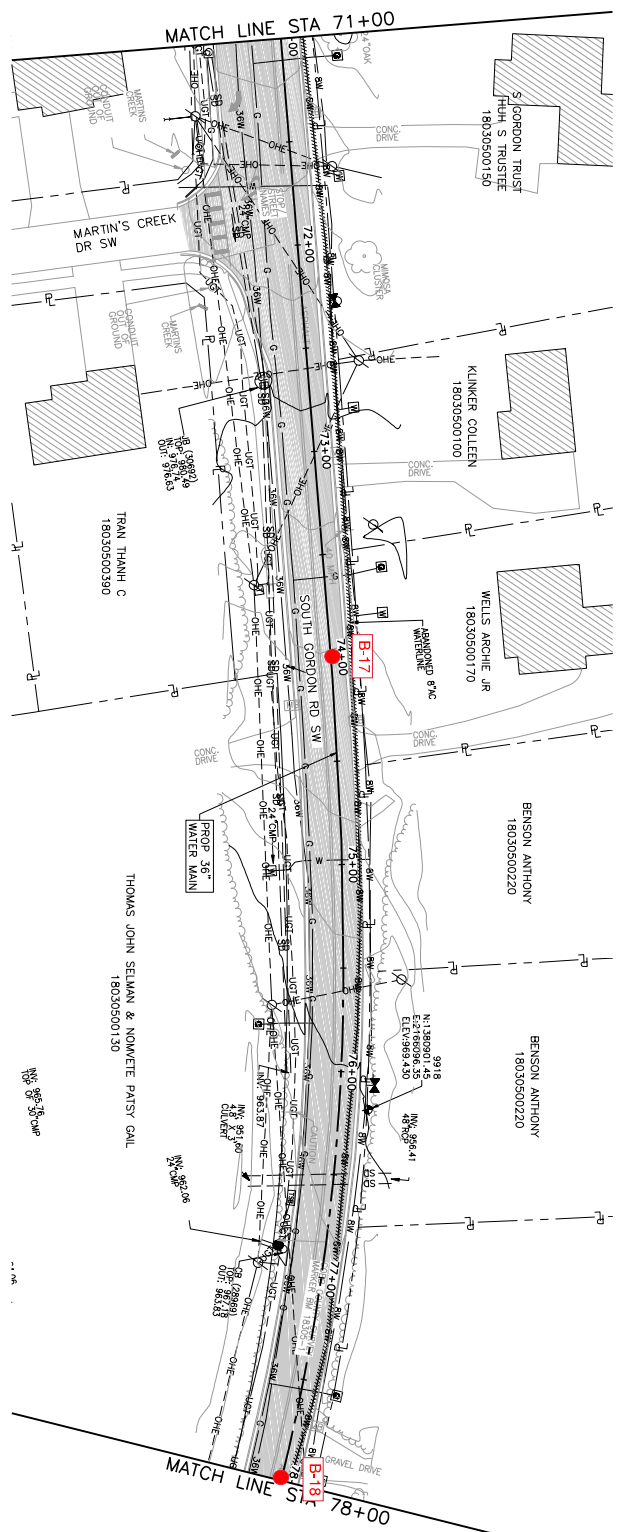
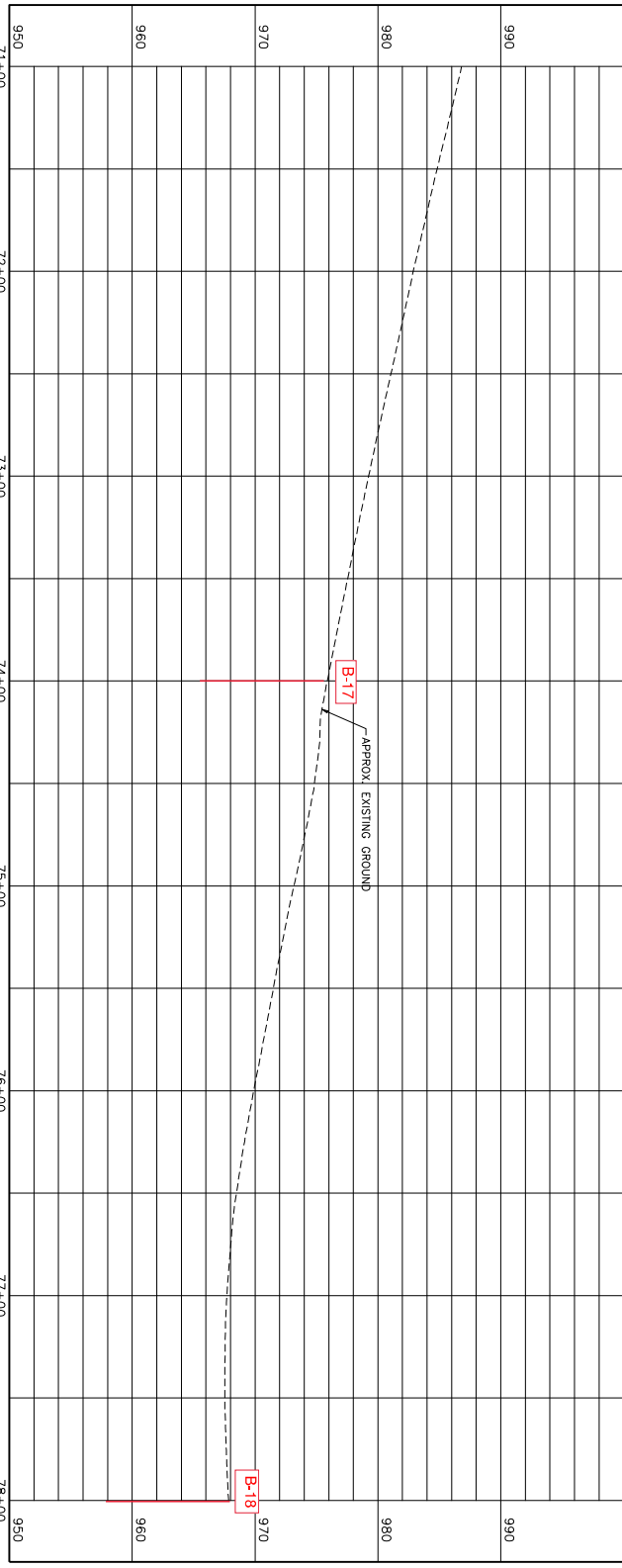


FIG. 2
 (11 of 30)

NO.	ISSUE	BY	DATE

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COBB COUNTY-MARIETTA WATER AUTHORITY
 WEST SIDE LOOP SECTION 2
 36-INCH WATER MAIN REPLACEMENT
 CIVIL
 PLAN AND PROFILE
 STA 71+00 TO 78+00

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE: HORIZONTAL 1" = 20' VERTICAL 1" = 10'

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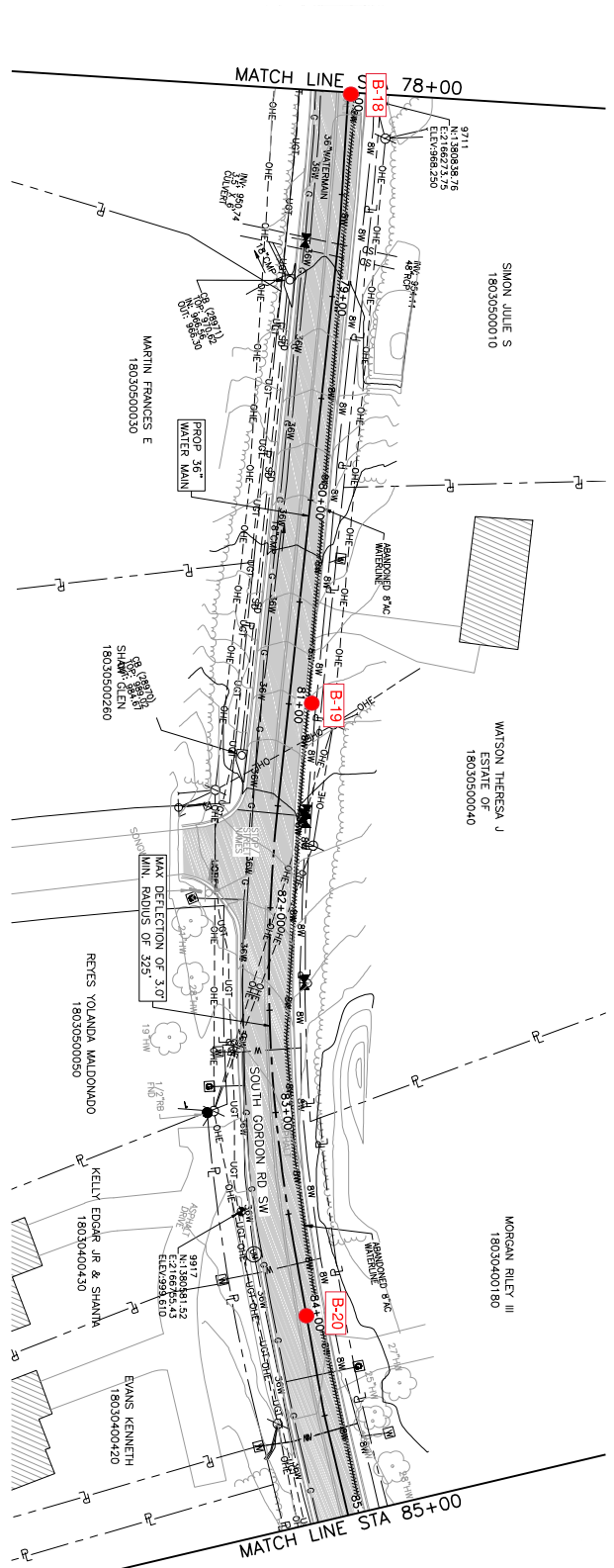
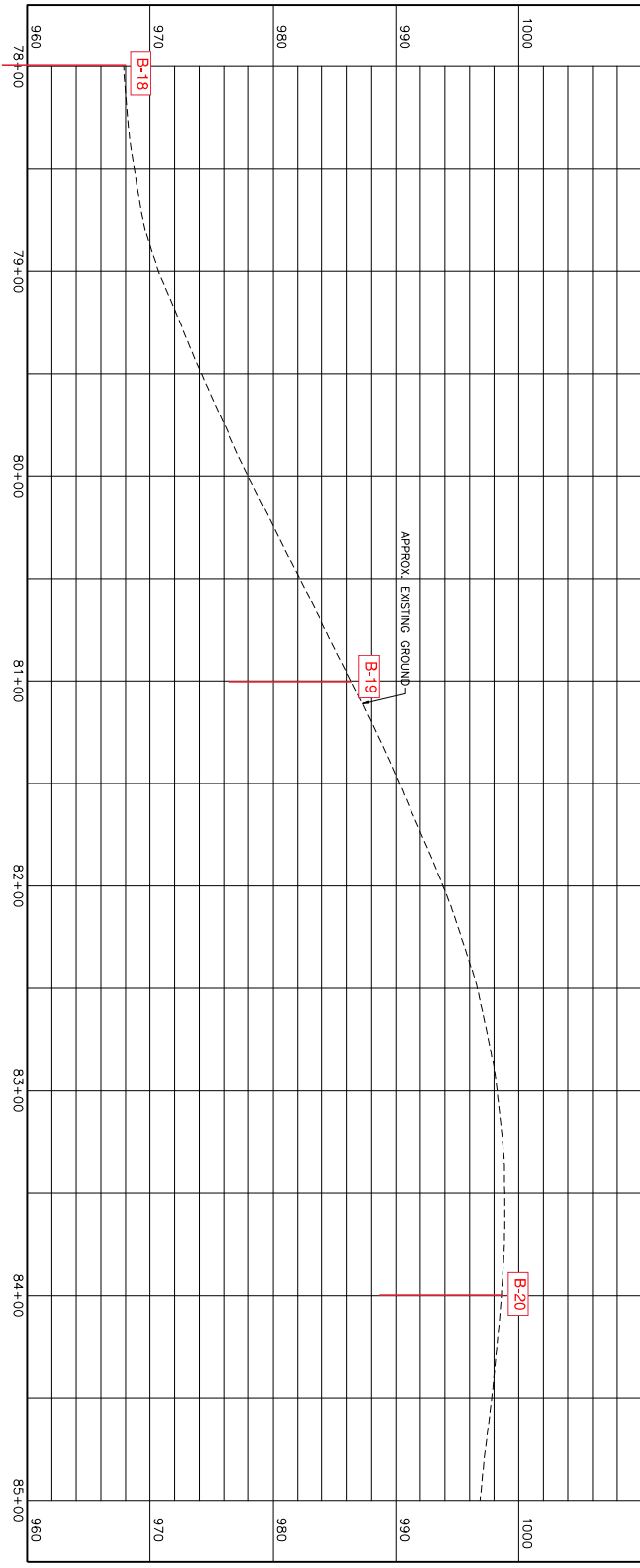


FIG. 2
(12 of 30)

NO.	ISSUE	BY	DATE	FILE NAME
				CV-ALL-SHT502.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
PLAN AND PROFILE
STA 78+00 TO 85+00

- NOTES:**
- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.



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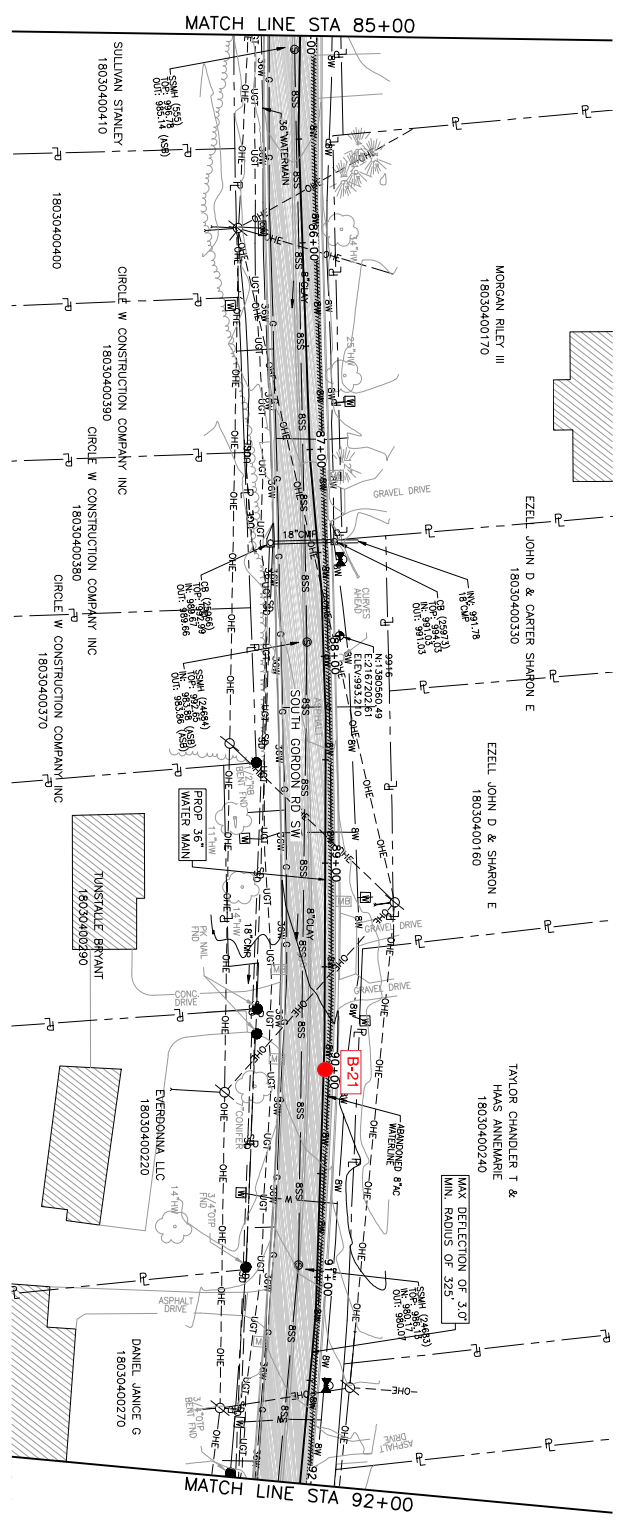
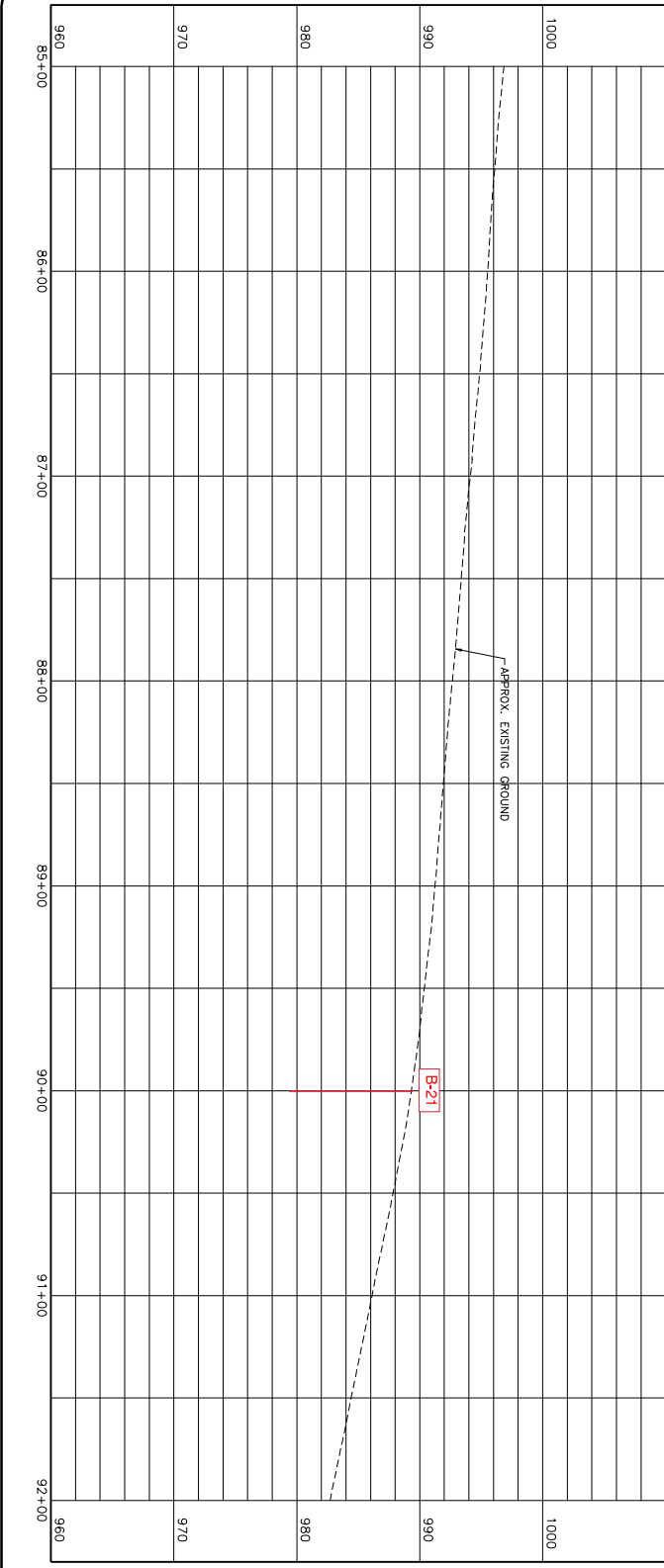


FIG. 2
(13 of 30)

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REVISD	
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FILE NAME: CV-ALL-SHT502.dwg

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WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
STA 85+00 TO 92+00

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE: HORIZONTAL 1" = 20.00'
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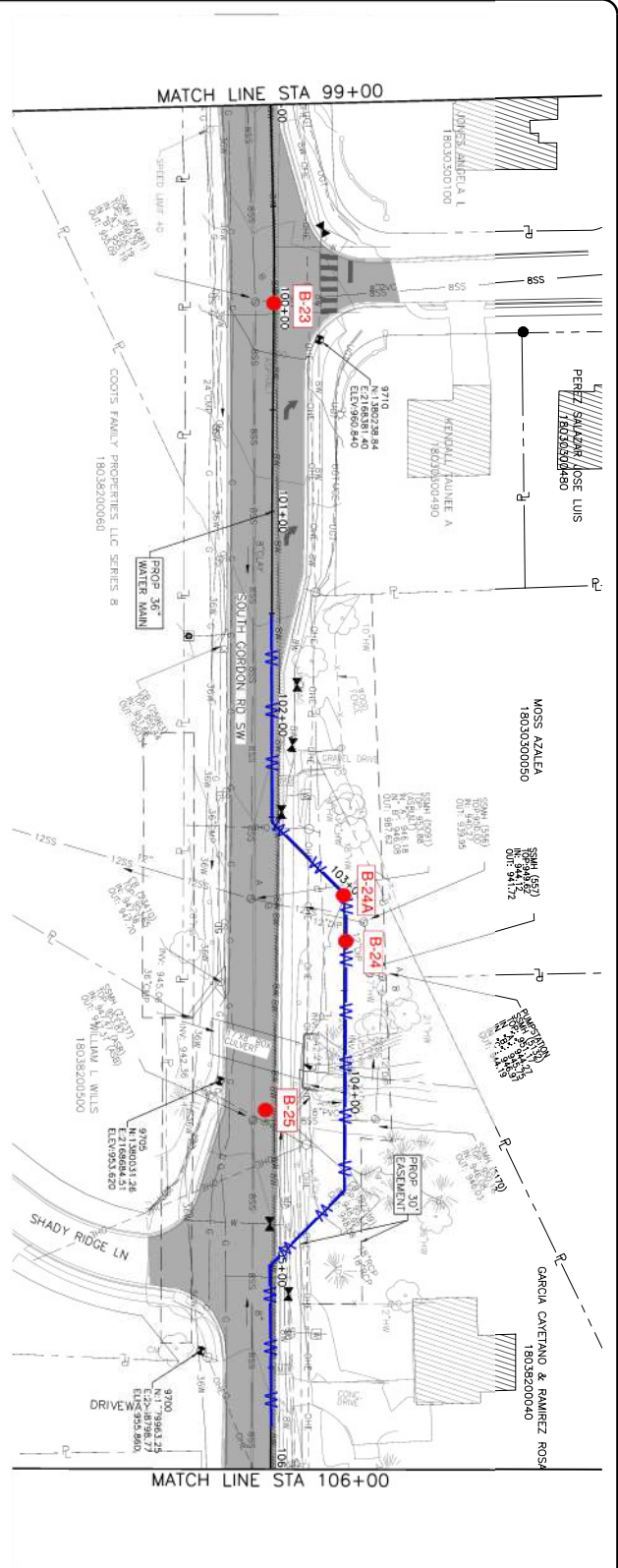
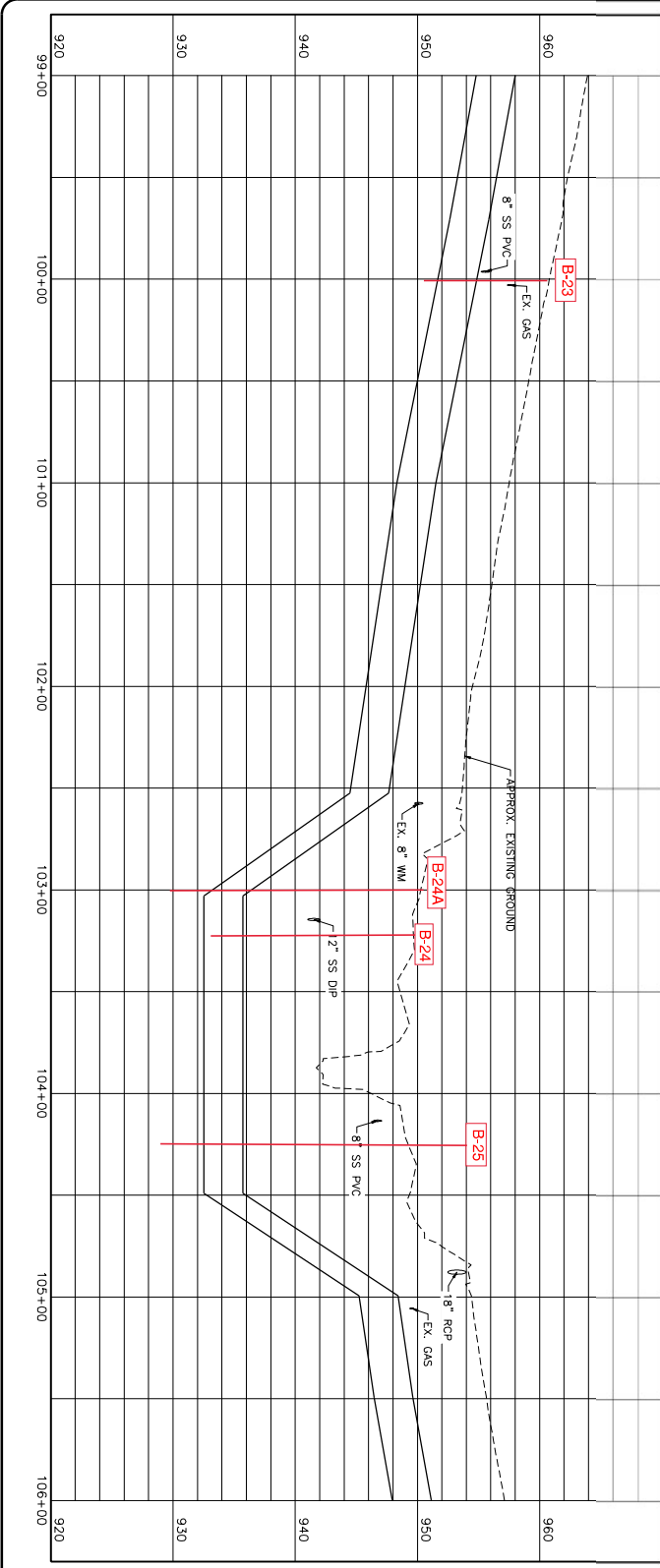


FIG. 2
(15 of 30)

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE:
 HORIZONTAL: 1" = 20', 30'
 VERTICAL: 1" = 5', 10'

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WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
 PLAN AND PROFILE
 STA 99+00 TO 106+00

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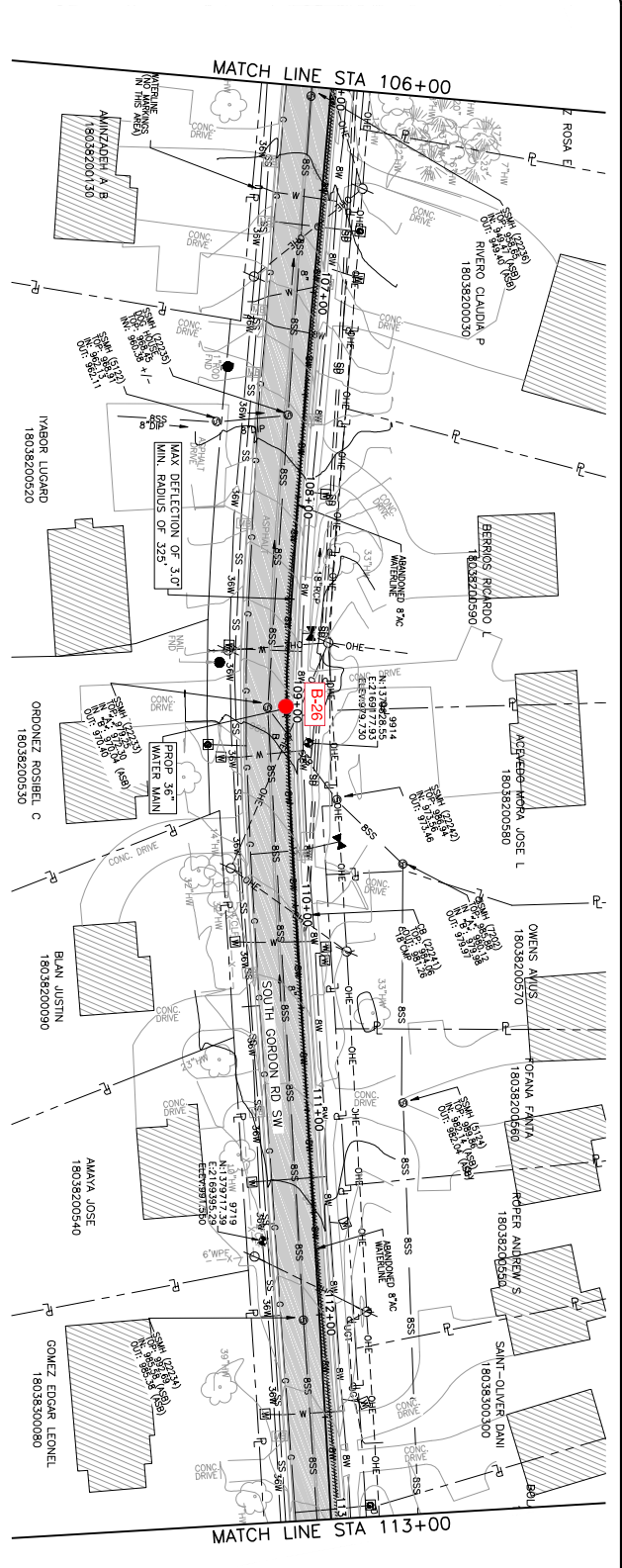
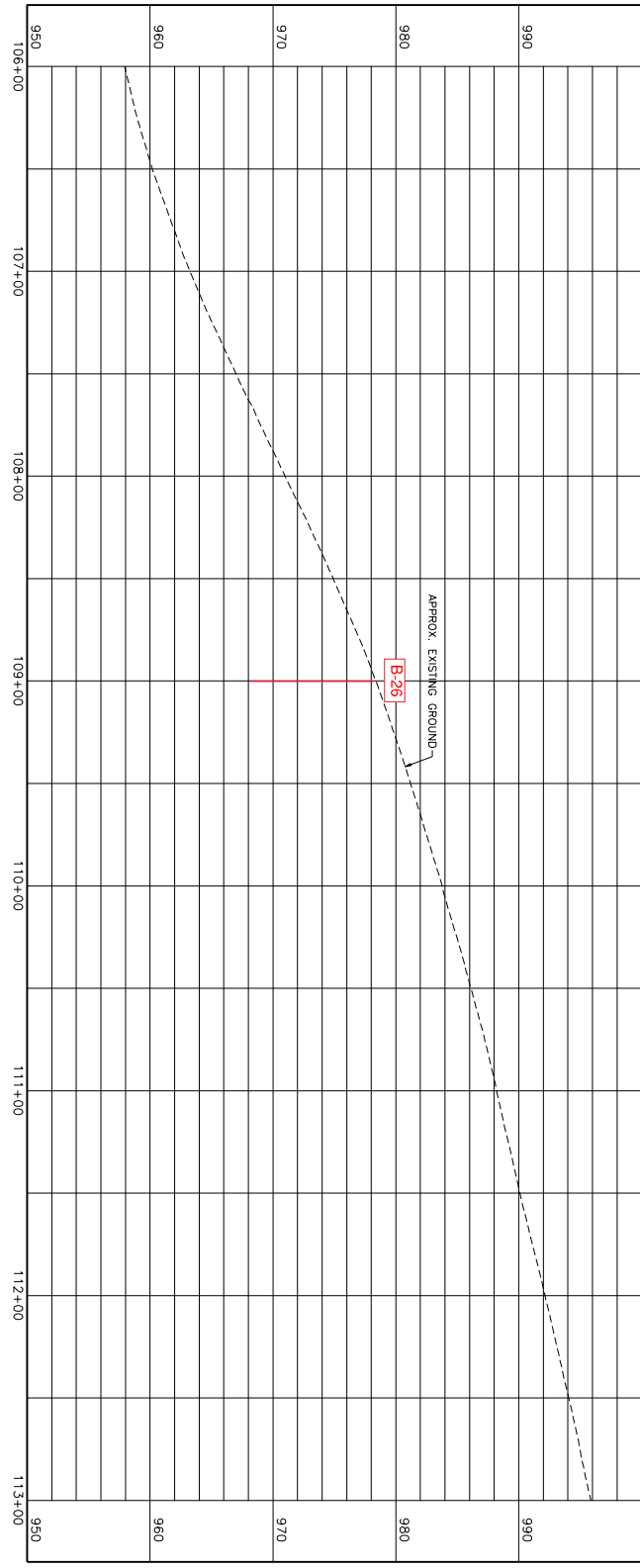


Fig. 2
(16 of 30)

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					CV-ALL-SHT502.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
PLAN AND PROFILE
STA 106+00 TO 113+00

NOTES:

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE:
 HORIZONTAL: 1" = 20'
 VERTICAL: 1" = 10'

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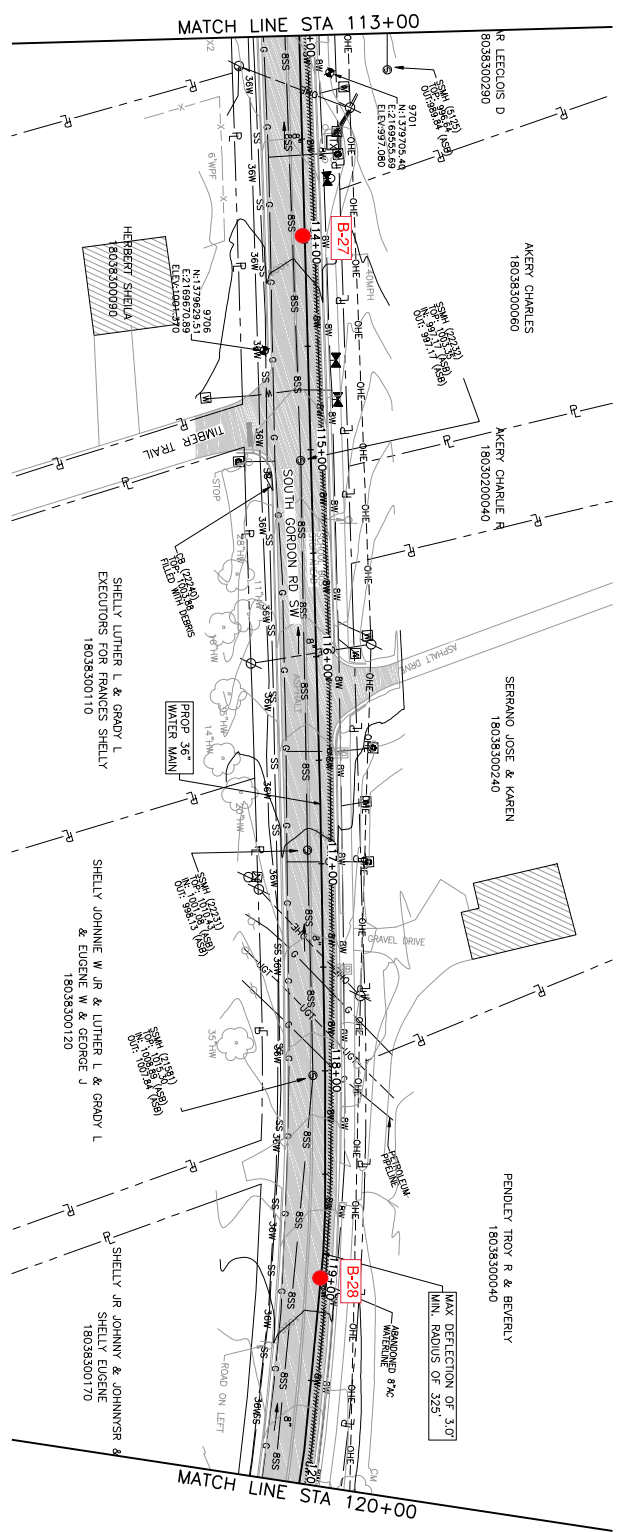
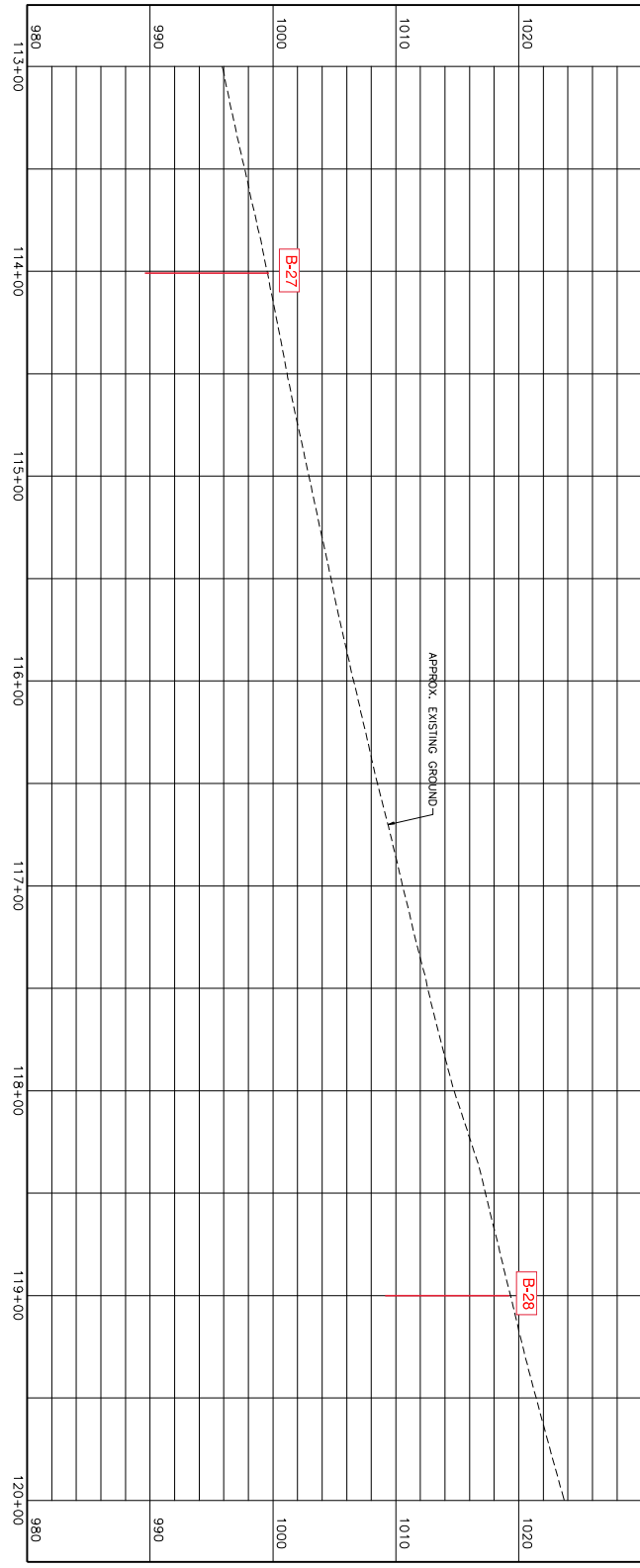


Fig. 2
(17 of 30)

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REVISD	
CHECKED	JCS

FILE NAME: CV-ALL-SHT502.dwg

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WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
 STA 113+00 TO 120+00

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATIONS AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE: HORIZONTAL: 1" = 20.00' VERTICAL: 1" = 10.00'

SCALE: HORIZONTAL: 1" = 20.00' VERTICAL: 1" = 10.00'

SCALE: HORIZONTAL: 1" = 20.00' VERTICAL: 1" = 10.00'

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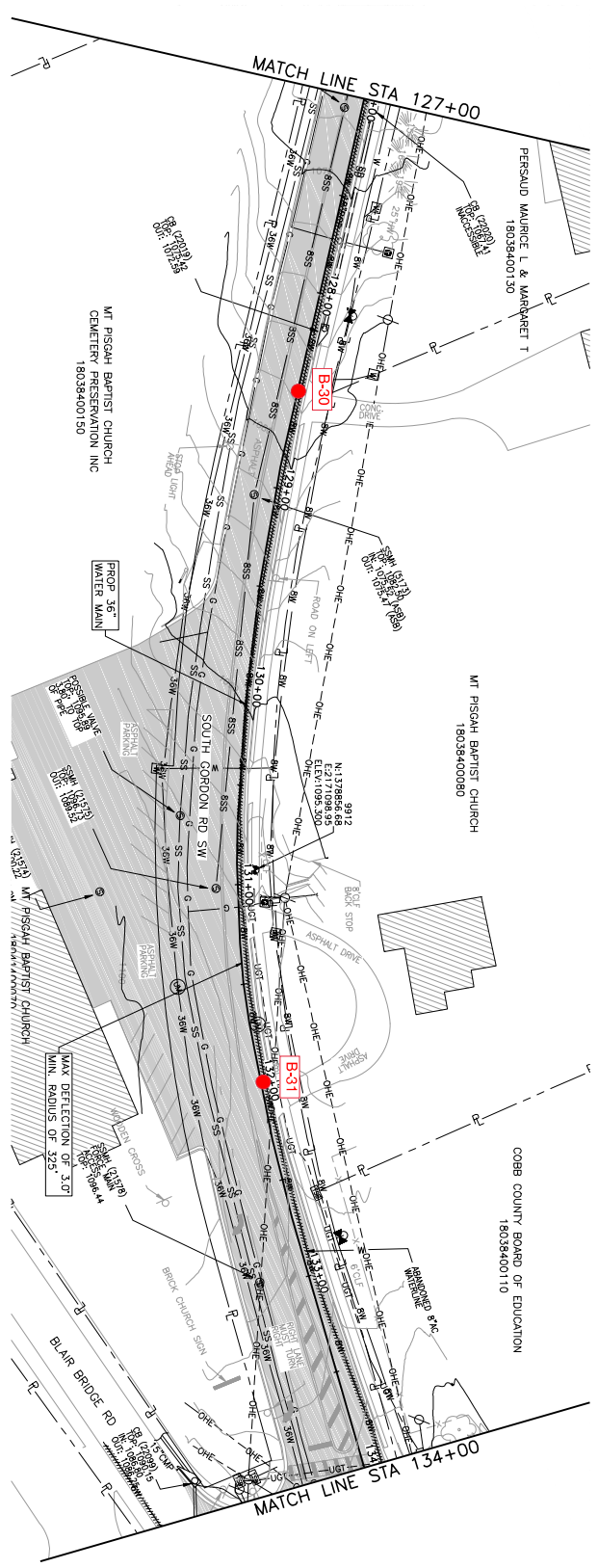
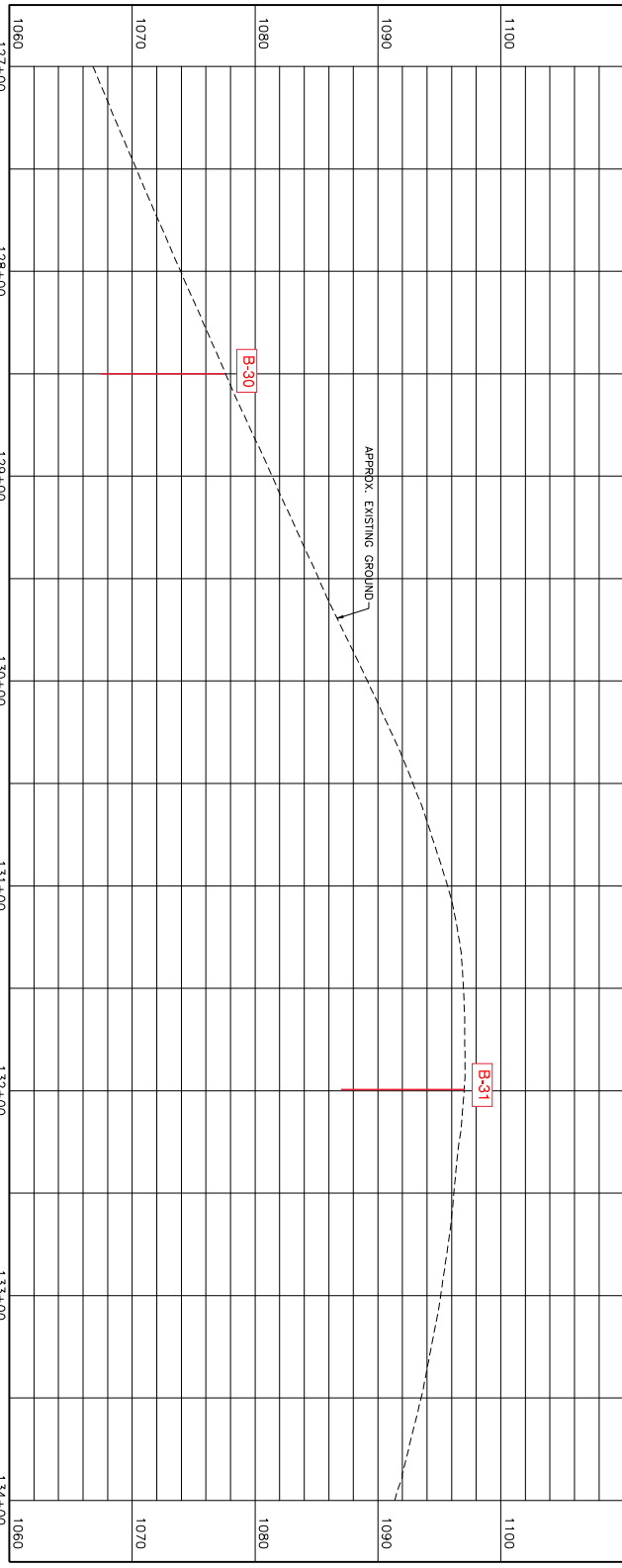


FIG. 2
(19 of 30)

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE: HORIZONTAL 1" = 50'
 SCALE: VERTICAL 1" = 10'

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SCALE: HORIZONTAL 1" = 50'
 SCALE: VERTICAL 1" = 10'

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FILE NAME: CV-ALL-SHT502.dwg

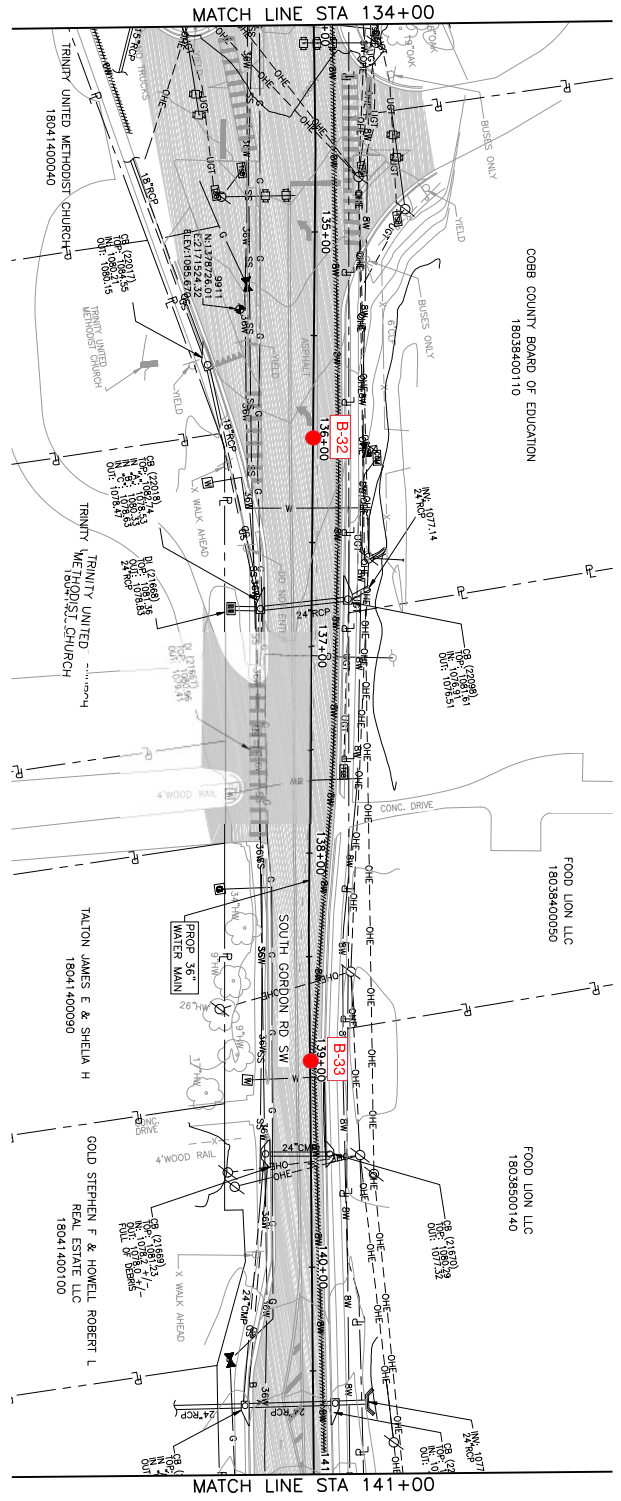
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WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
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Station	Profile (Elevation)
134+00	1050
135+00	1050
136+00	1050
137+00	1050
138+00	1050
139+00	1050
140+00	1050
141+00	1050

Fig. 2
(20 of 30)

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REVISD	
CHECKED	JCS
FILE NAME	CV-ALL-SHT502.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
STA 134+00 TO 141+00

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE:
 PLAN: 1" = 20'
 PROFILE: 1" = 10'



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Plot Date: 8/31/2018 3:23 PM Plot By: 02618 Filename: N:\WTU\Drawings\CV-ALL-SHT503.dwg

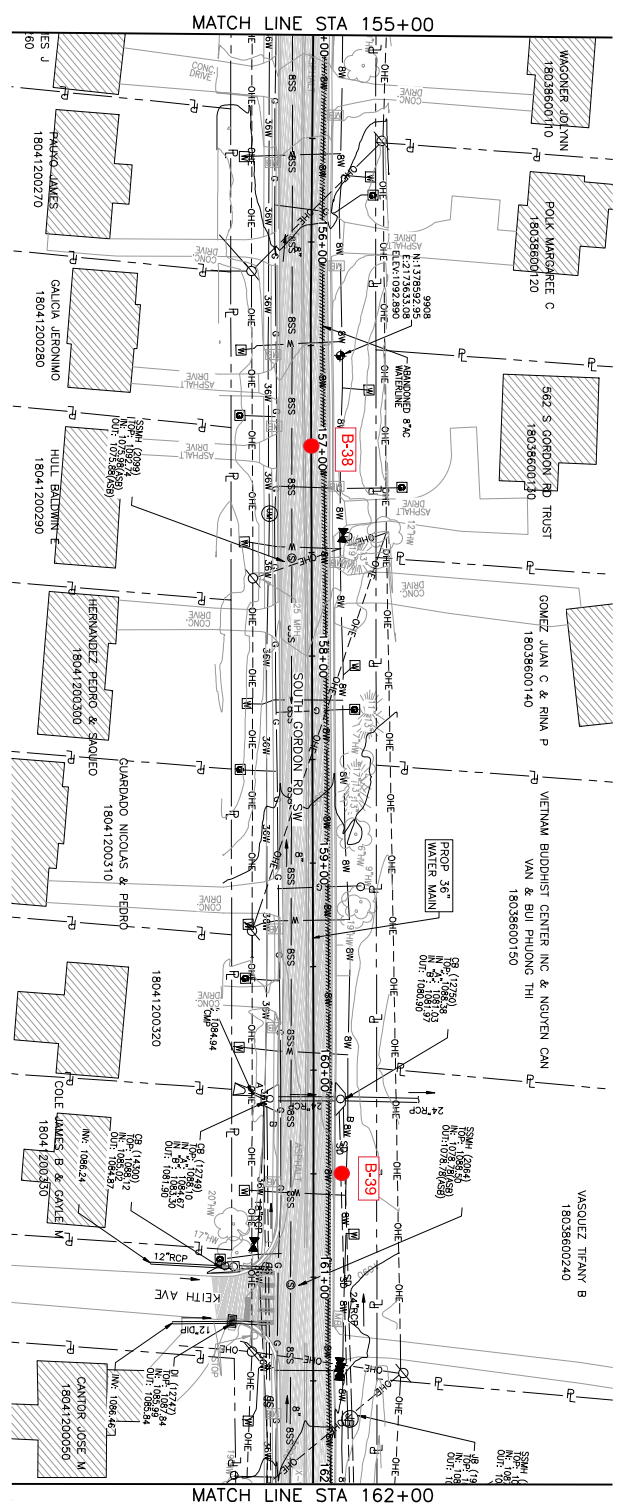
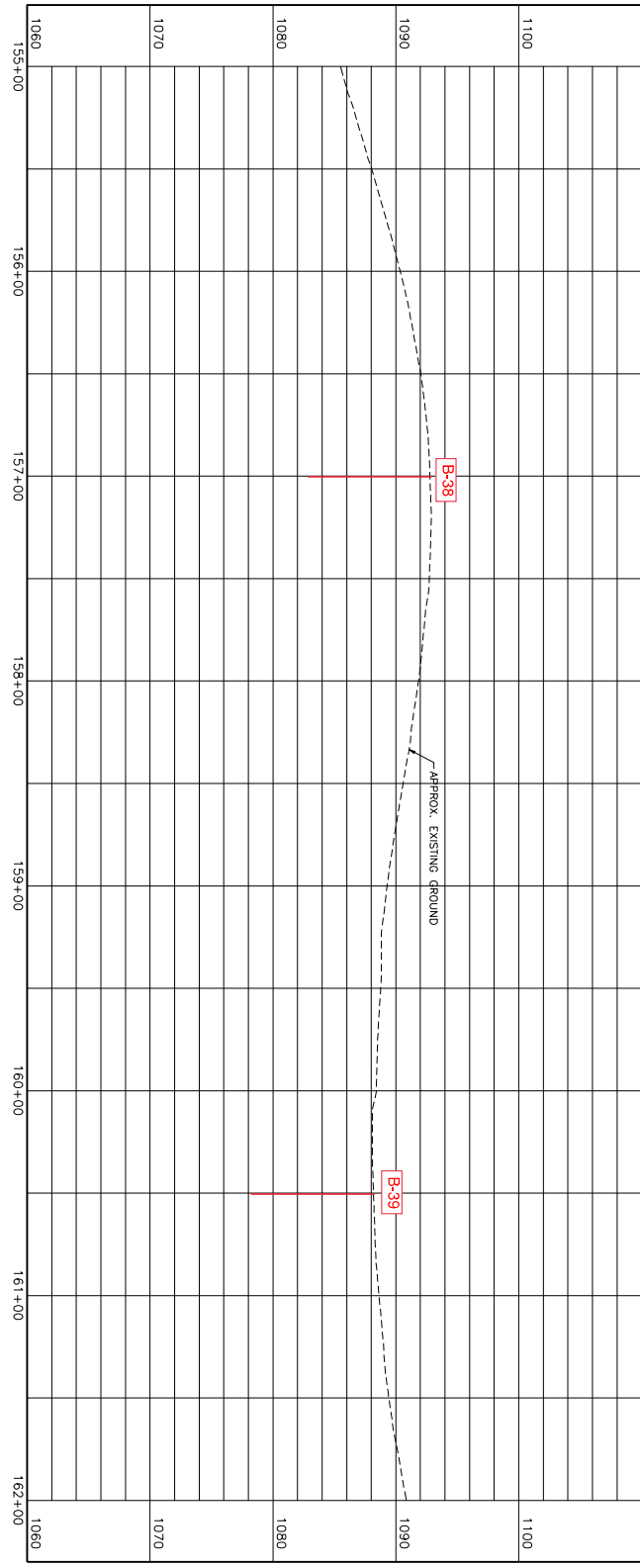


FIG. 2
 (23 of 30)

NO.	ISSUE	BY	DATE

FILE NAME	CV-ALL-SHT503.dwg
DESIGNED	FDH
DRAWN	CKM
REVISD	
CHECKED	JCS

COBB COUNTY-MARIETTA WATER AUTHORITY
 WEST SIDE LOOP SECTION 2
 36-INCH WATER MAIN REPLACEMENT
 CIVIL
 PLAN AND PROFILE
 STA 155+00 TO 162+00

NOTES:

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE: HORIZONTAL 1" = 50' VERTICAL 1" = 10'

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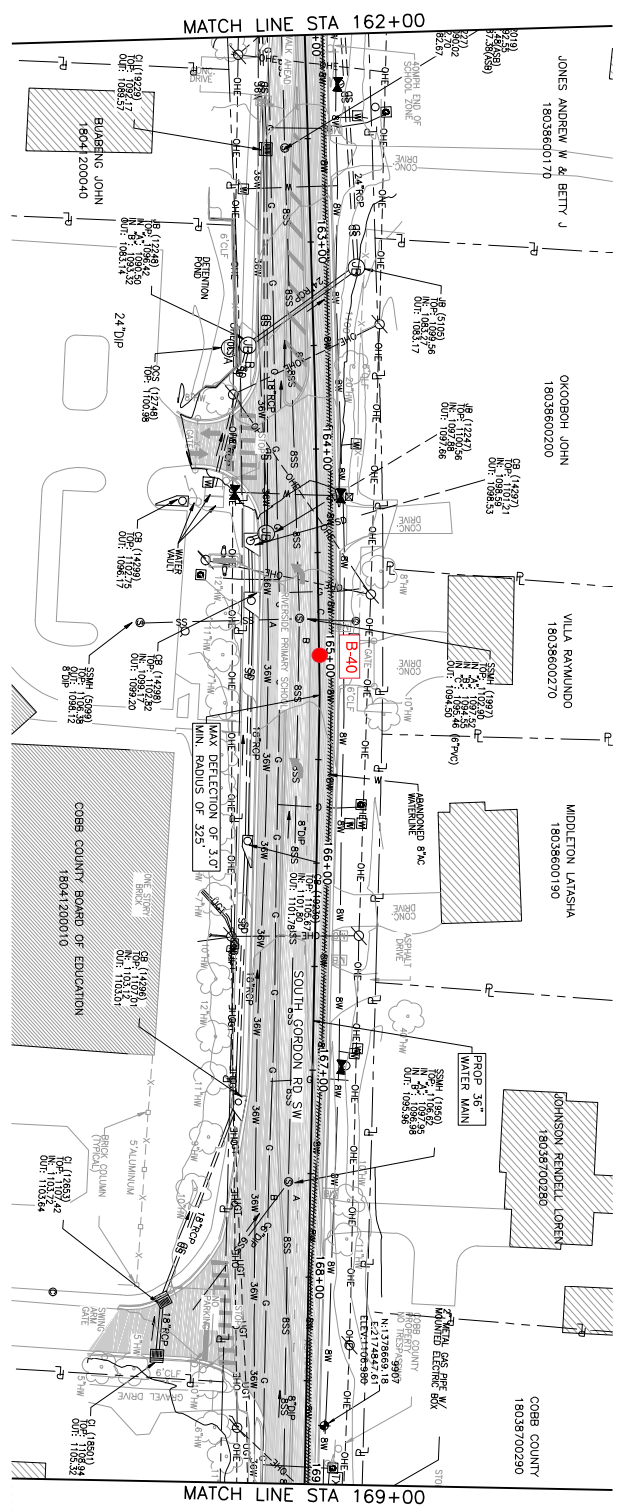
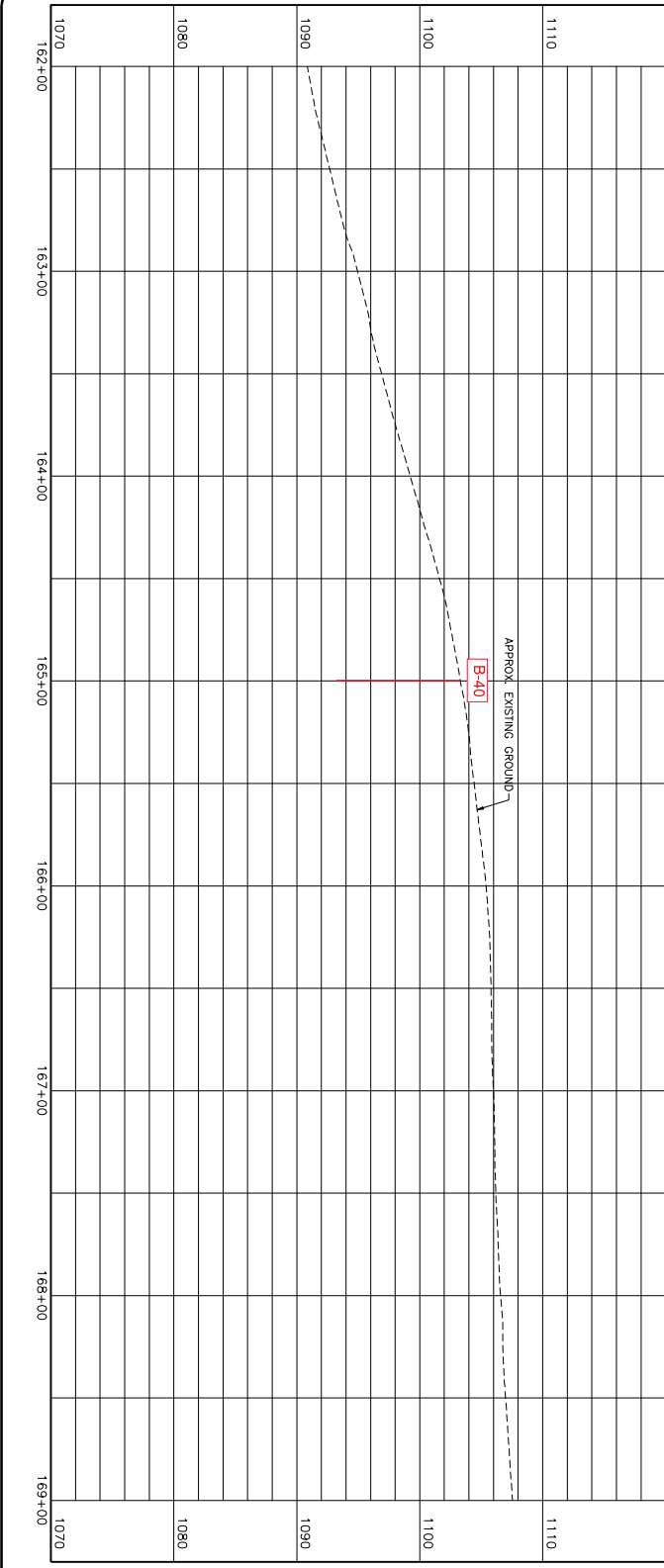


FIG. 2
 (24 of 30)

NO.	ISSUE	BY	DATE	FILE NAME

VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

CIVIL
 PLAN AND PROFILE
 STA 162+00 TO 169+00

PER JOB NO.	CBR18213
DATE	08/31/18
DESIGNED	FDH
DRAWN	CKM
REVISED	
CHECKED	JCS
FILE NAME	CV-ALL-SHT503.dwg

NOTES:

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE: HORIZONTAL: 1" = 50' VERTICAL: 1" = 10'

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Plot Date: 8/31/2018 3:24 PM Plot By: 02618 Filename: N:\WTU\Drawings\CV-ALL-SHT503.dwg

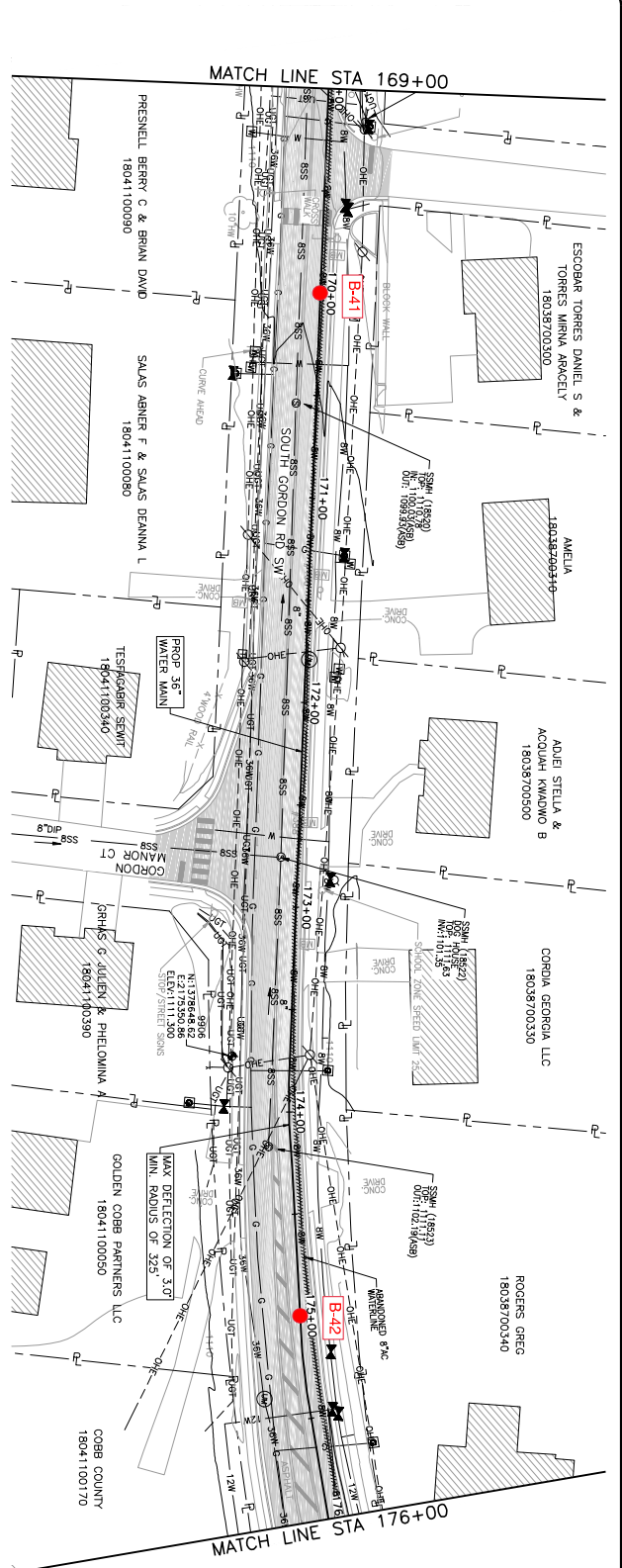
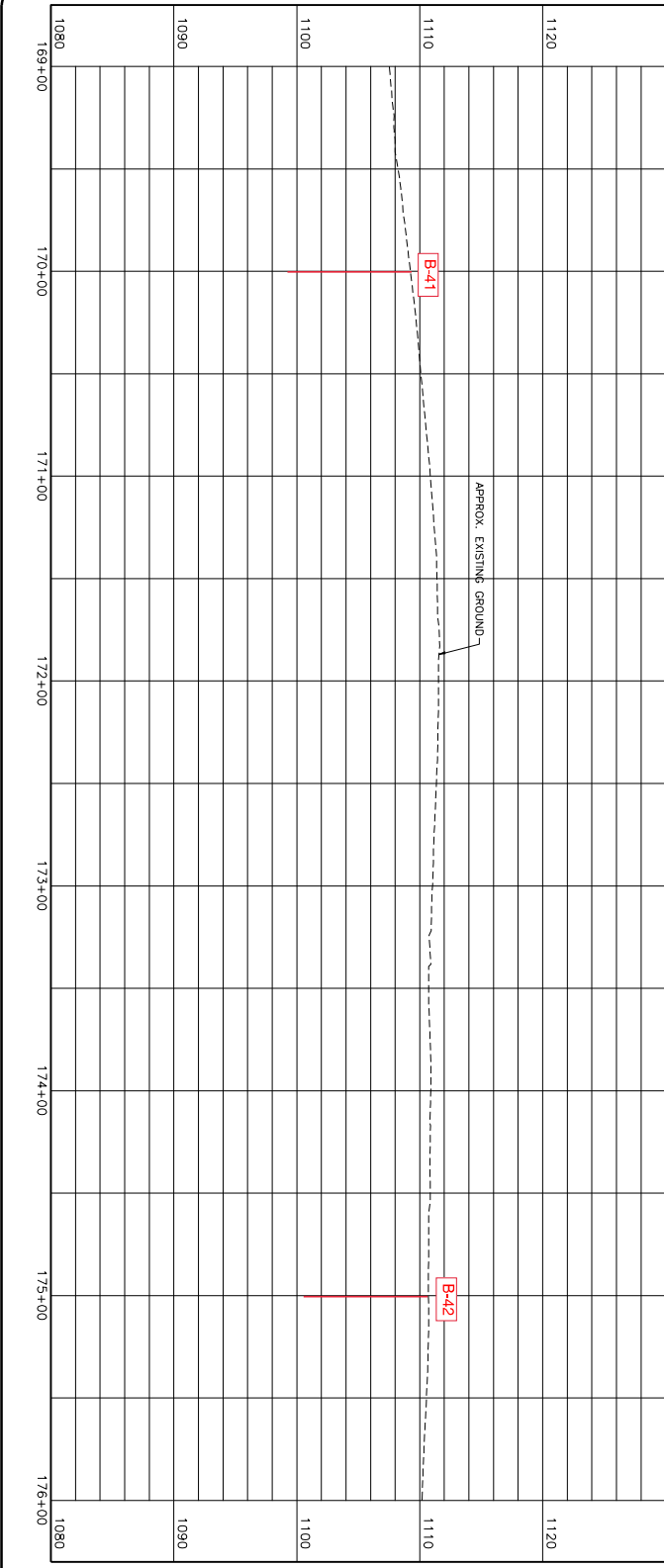


Fig. 2
(25 of 30)

NO.	ISSUE	BY	DATE	FILE NAME

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
STA 169+00 TO 176+00

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NOTES:
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 LOCATION AND DEPTH OF ALL
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SCALE: HORIZONTAL
 1" = 40'
 SCALE: VERTICAL
 1" = 10'

Plot Date: 8/31/2018 3:25 PM Plot By: 02618 Filename: N:\WTU\Drawings\CV-ALL-SHT503.dwg

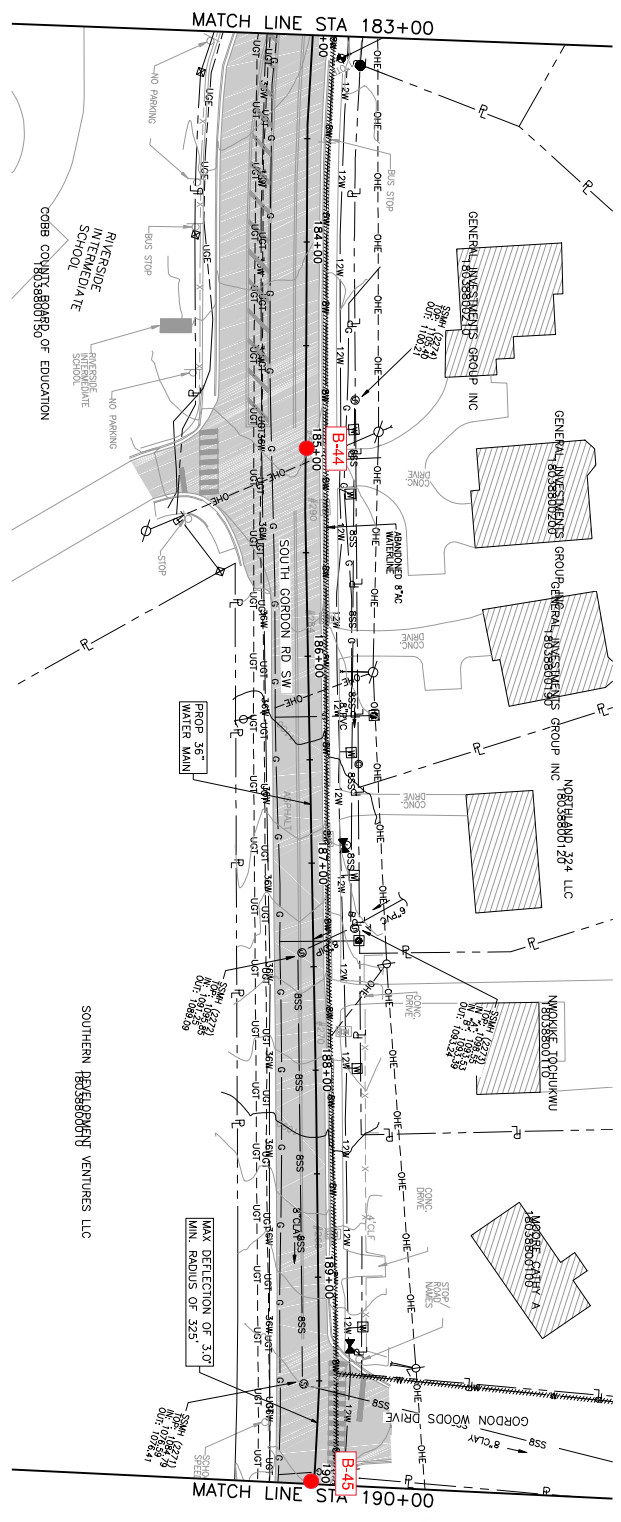
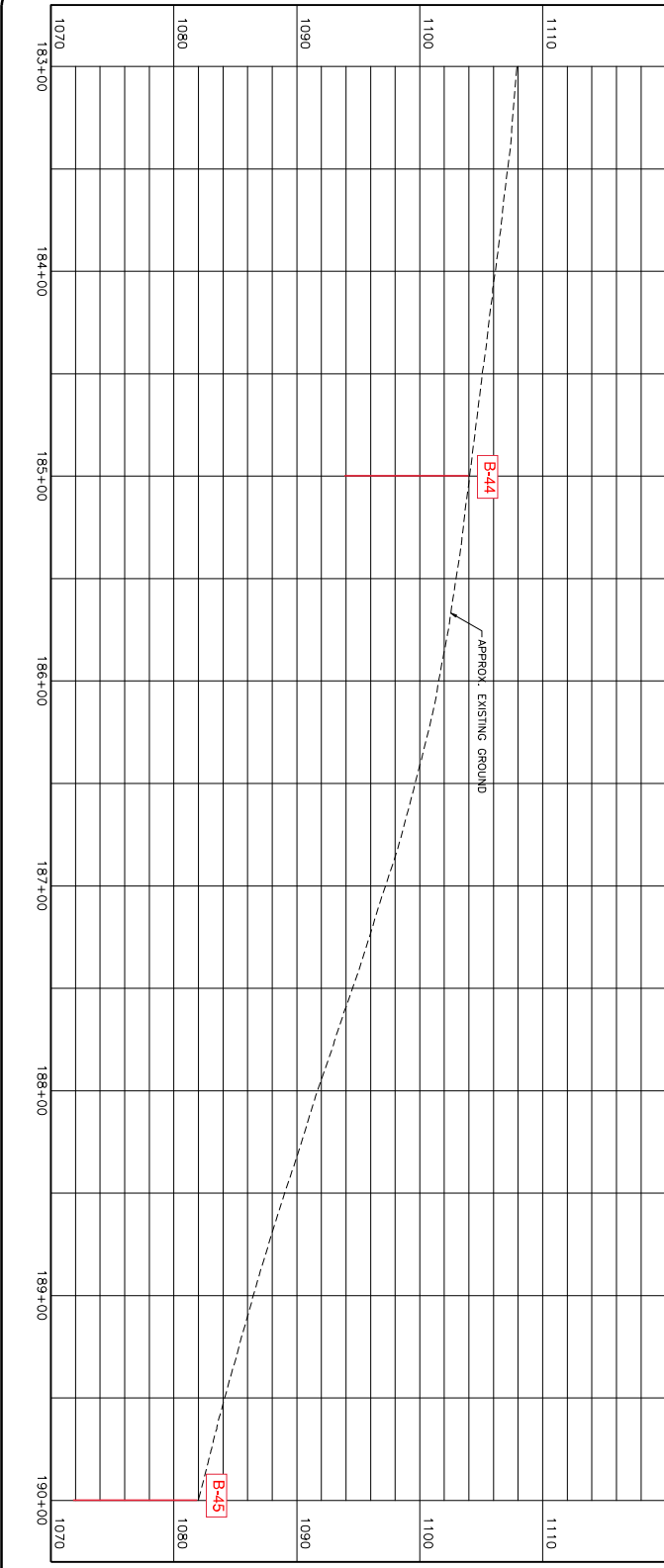


FIG. 2
(27 of 30)

NO.	ISSUE	BY	DATE	FILE NAME
				CV-ALL-SHT503.dwg

DESIGNED	FDH
DRAWN	CKM
REVISD	
CHECKD	JCS

COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT
 CIVIL
PLAN AND PROFILE
STA 183+00 TO 190+00

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.



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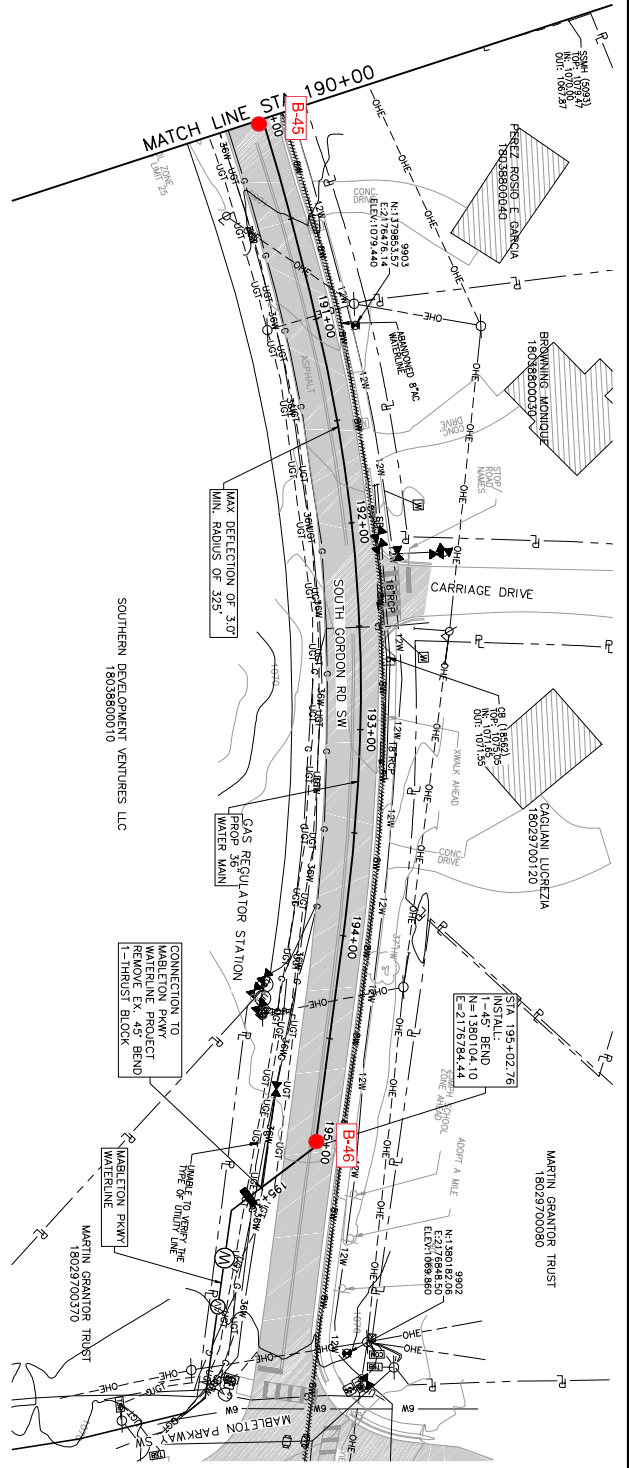
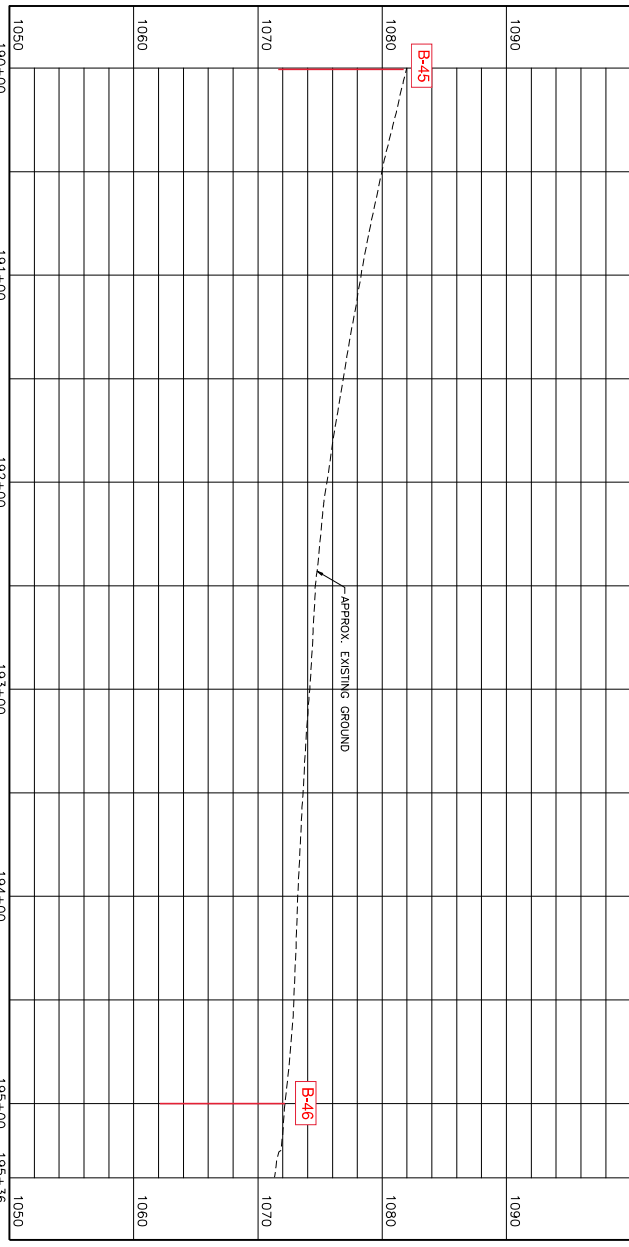


FIG. 2
(28 OF 30)

NOTES:
 1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.

SCALE IN FEET
 HORIZONTAL: 1" = 20'
 VERTICAL: 1" = 5'

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NO.	ISSUE	BY	DATE	FILE NAME

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COBB COUNTY-MARIETTA WATER AUTHORITY
WEST SIDE LOOP SECTION 2
36-INCH WATER MAIN REPLACEMENT

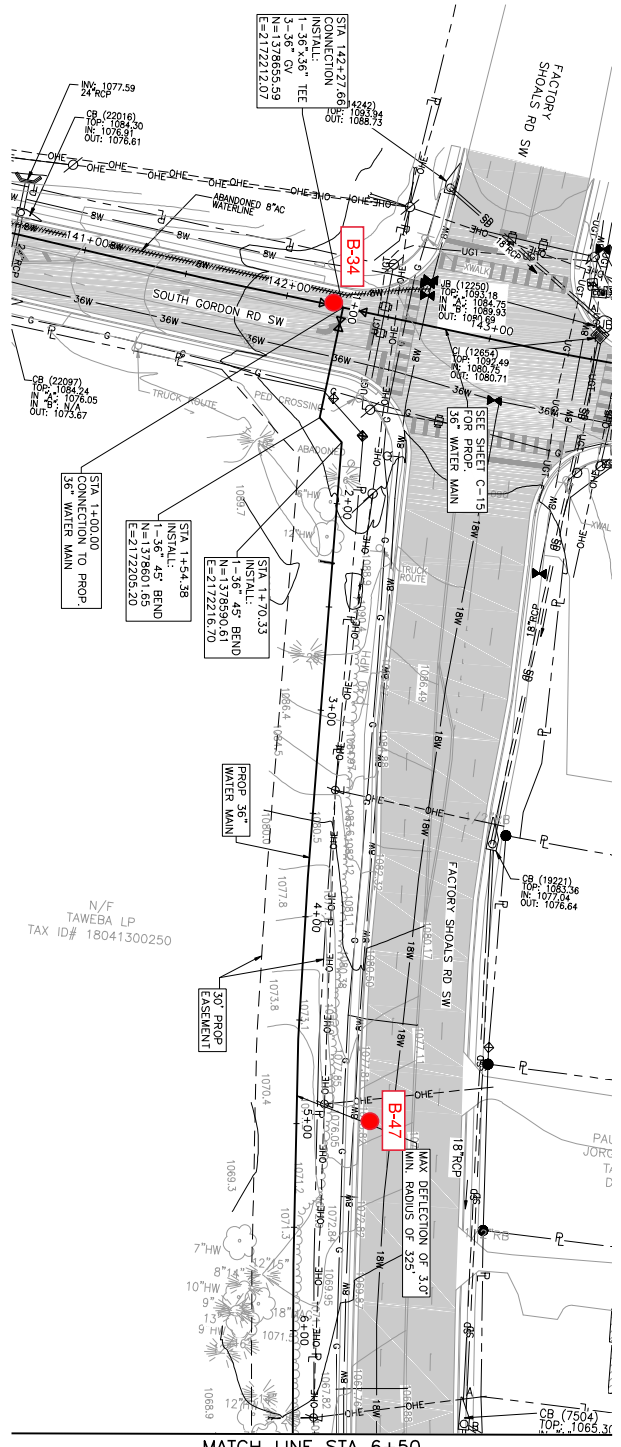
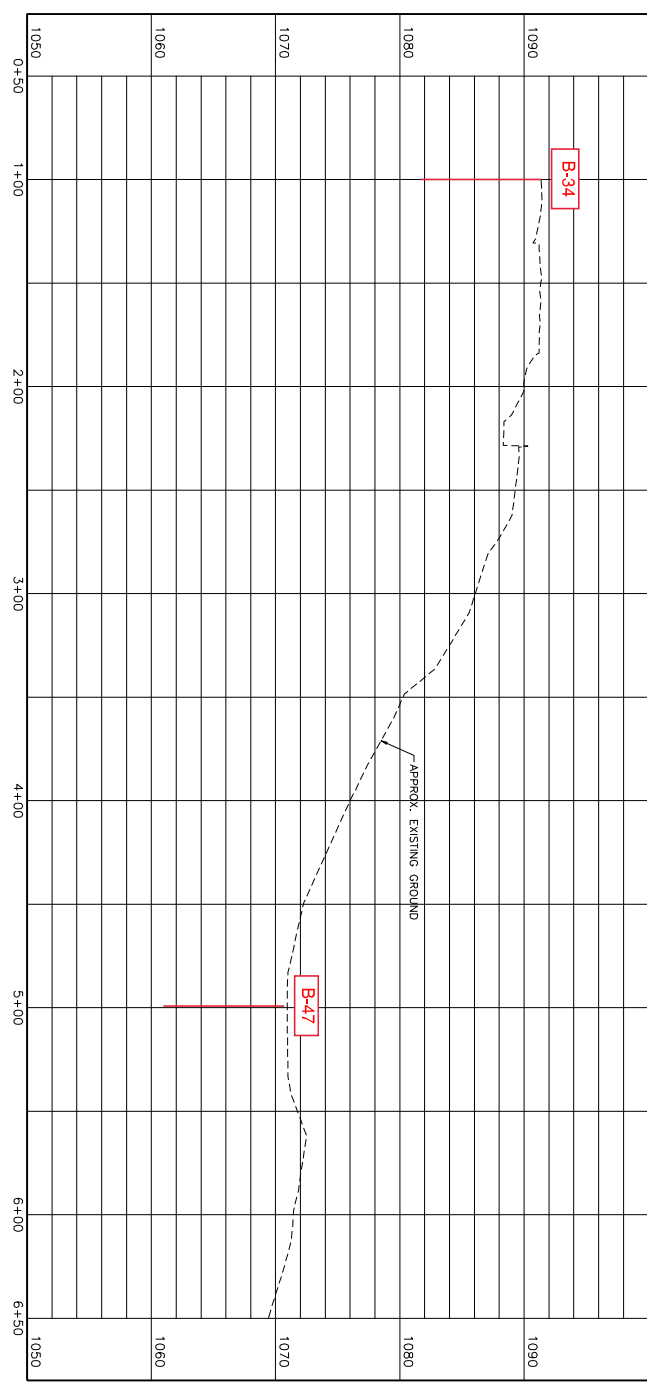
CIVIL
PLAN AND PROFILE
STA 190+00 TO END

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MATCH LINE STA 6+50

Fig. 2
(29 of 30)

NO.	ISSUE	BY	DATE

REV. JOB NO.	CBR18213
DATE	06/31/18
DESIGNED	FDH
DRAWN	CKM
REVISED	
CHECKED	JCS
FILE NAME	CV-ALL-SHT503.dwg

COBB COUNTY-MARIETTA WATER AUTHORITY
 WEST SIDE LOOP SECTION 2
 36-INCH WATER MAIN REPLACEMENT

CIVIL
 PLAN AND PROFILE
 CONNECTION AT FACTORY SHOALS TO 6+50

NOTES:
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 OF CONSTRUCTION.

SCALE IN FEET
 HORIZONTAL: 1" = 20'
 VERTICAL: 1" = 10'

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EXPLORATION PROCEDURES

Standard Penetration Test (SPT) borings

Forty-seven (47) SPT borings (designated B-1 through B-47) were performed at the approximate locations indicated on the attached Boring Location Plan (Figure 1). The SPT borings were performed in general accordance with ASTM D 1586. Soil samples obtained during testing were visually evaluated by the Project Engineer and classified according to the visual-manual procedure described in ASTM D 2488. A narrative of field operations is included in The Appendix.

The test locations in the field were determined by the Project Engineer by the use of a handheld GPS unit and/or measuring distances from existing site features. The test locations should, therefore, be considered approximate.



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-4
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/18/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	
	915	3" Asphalt, 3" GAB	0						Station: 15+00 Automatic Hammer Efficiency is 93%
		Silt-clayey, trace sand and roots; soft; red-brown (Fill)		1		2-2-2	4	6	
		Clay-silty, trace sand and mica; very soft; red-brown	5	2		1-1-1	2	6	
	905	Silt-clayey; stiff; yellow/orange brown (Residual)	10	3		3-3-6	9	10	No groundwater encountered at the time of drilling
		BORING TERMINATED AT 10 FEET							
	900		15						
	895		20						
	890		25						
	885		30						
	880		35						
	875		40						



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-5
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 1/7/19
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
	905	3" Asphalt, 3" GAB	0							Station: 18+50 Automatic Hammer Efficiency is 93%
		Sand-silty, some clay; loose; red-brown (Fill)		1		2-2-3	5	6		
		Clay-some silt, trace sand and mica; stiff; red-brown	5	2		3-4-7	11	6		
	895		10	3		6-7-15	22	10		
	890	Sand-silty; firm; dark brown	15	4		5-6-8	14	4		
	885	Sand-silty, trace quartz fragments; firm; brown (Residual)	20	5		7-8-7	15	6		No groundwater encountered at the time of drilling
		BORING TERMINATED AT 20 FEET								
	880		25							
	875		30							
	870		35							
	865		40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-7
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/18/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES				NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE		RECOV.
		3" Asphalt, 3" GAB	0						Station: 25+00 Automatic Hammer Efficiency is 93%
	915	Clay-silty; firm; red-brown (Fill)		1		3-3-4	7	10	
		Silt-sandy, trace clay; firm; orange brown	5	2		3-3-3	6	6	
	910								
		Sand-silty, micaceous; dense; orange brown (Residual)	10	3		9-15-20	35	8	
	905	BORING TERMINATED AT 10 FEET							No groundwater encountered at the time of drilling
			15						
	900								
			20						
	895								
			25						
	890								
			30						
	885								
			35						
	880								
			40						
	875								



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-11
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/18/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
	970	2" Asphalt, 3" GAB	0							Station: 46+50 Automatic Hammer Efficiency is 93%
		Silt-clayey, trace mica and sand; firm; dark brown/tan (Fill)		1		3-3-4	7	8		
		-stiff; brown								
	965		5	2		3-4-5	9	8		
		Silt-sandy, micaceous; firm; brown gray (Residual)								
	960		10	3		2-3-4	7	6		No groundwater encountered at the time of drilling
		BORING TERMINATED AT 10 FEET								
	955		15							
	950		20							
	945		25							
	940		30							
	935		35							
	930		40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-14
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/19/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
	995	3" Asphalt, 1" GAB	0							Station: 59+50 Automatic Hammer Efficiency is 93%
		Silt-sandy, trace rock fragments and clay; stiff; dark brown (Fill)		1		6-8-3	11	4		
		Clay-silty, trace sand and mica; firm; red brown	5	2		2-3-3	6	6		
	990									
		-some sand		3		3-4-4	8	6		
	985	BORING TERMINATED AT 10 FEET	10							No groundwater encountered at the time of drilling
	980		15							
	975		20							
	970		25							
	965		30							
	960		35							
	955		40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-19
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/19/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES				NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE		RECOV.
		Leaves/Topsoil	0						Station: 81+00 Automatic Hammer Efficiency is 93%
	985	Silt-some sand, trace mica; soft; orange brown (Fill)		1		1-2-2	4	6	
	980	Silt-sandy, trace mica; soft; brown (Residual)	5	2		2-2-2	4	4	
		-stiff; tan brown		3		4-4-7	11	10	
	975	BORING TERMINATED AT 10 FEET	10						No groundwater encountered at the time of drilling
			15						
	970								
			20						
	965								
			25						
	960								
			30						
	955								
			35						
	950								
			40						
	945								



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-24
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/19/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	
[Cross-hatched pattern]	950	Leaves/Topsoil	0						Station: 103+25 Automatic Hammer Efficiency is 93%
		Silt-sandy, trace mica; stiff; brown (Fill)		1		2-4-7	11	6	
	945	Sand-silty, trace root fragments; very loose; brown gray	5	2		0-1-1	2	2	Groundwater encountered at 6 feet at the time of drilling
	940	-no recovery	10	3		WOH	0	0	WOH - Weight Of Hammer
	935	-some rock fragments; very dense; black	15	4		50/4"	50/4"	4	Blow Count Magnified due to presence of crushed aggregate
		BORING TERMINATED AT 15 FEET							
	930		20						
	925		25						
	920		30						
	915		35						
	910		40						



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-25
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/19/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	
	955	4" Asphalt, No GAB	0						Station: 104+25 Automatic Hammer Efficiency is 93%
		Sand-trace silt, clay and rock fragments; loose; brown-black (Fill)		1		7-3-3	6	4	
	950	-some silt and clay, trace mica; brown	5	2		3-2-3	5	6	
	945	-trace quartz fragments; firm	10	3		6-8-7	15	8	
									Groundwater encountered at 10 feet at the time of drilling
	940	Partially Weathered Rock sampled as: Silt-sandy, trace mica; very dense; dark gray (Residual)	15	4		8-15-50/1"	50/1"	4	
	935	Sand-silty; firm; gray-brown	20	5		5-7-12	19	8	
	930	Partially Weathered Rock sampled as: Sand-silty, trace rock fragments; very dense; gray	25	6		12-50/2"	50/2"	4	
		BORING TERMINATED AT 25 FEET							
	925		30						
	920		35						
	915		40						



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-26
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		3" Asphalt, 2" GAB	0							Station: 109+00 Automatic Hammer Efficiency is 93%
		Sand-silty; loose; orange-brown (Residual)		1		3-3-5	6	4		
	975	-trace mica; firm								
			5	2		4-5-7	5	6		
	970	-trace clay								
			10	3		3-5-5	15	8		
		BORING TERMINATED AT 10 FEET								No groundwater encountered at the time of drilling
	965									
			15							
	960									
			20							
	955									
			25							
	950									
			30							
	945									
			35							
	940									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-27
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC


USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
	1000	6" Asphalt, No GAB	0						Station: 114+00 Automatic Hammer Efficiency is 93%	
		Sand-silty; firm; light white-brown (Residual)		1		4-6-6	12	4		
	995		5	2		4-5-6	11	6		
		-trace mica; loose; red brown								
	990		10	3		2-3-4	7	8	No groundwater encountered at the time of drilling	
		BORING TERMINATED AT 10 FEET								
	985			15						
	980			20						
	975			25						
	970		30							
	965		35							
	960		40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-28
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
	1020	6" Asphalt, No GAB	0						Station: 119+00 Automatic Hammer Efficiency is 93% No groundwater encountered at the time of drilling	
		Sand-silty, trace clay and quartz; firm; brown (Fill)		1		3-7-7	14	8		
	1015	-medium dense; orange brown		2		7-9-12	21	6		15.5
				5						
	1010	-loose		3		5-5-2	7	8		
				10						
			BORING TERMINATED AT 10 FEET							
	1005		15							
	1000		20							
	995		25							
	990		30							
	985		35							
	980		40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-29
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		4" Asphalt, No GAB	0							Station: 124+00 Automatic Hammer Efficiency is 93%
	1045	Sand-silty; firm; dark red- brown (Residual)		1		5-5-6	11	6		
		-trace silt; light red brown								
	1040		5	2		7-9-9	18	6		
	1035	BORING TERMINATED AT 10 FEET	10	3		5-7-9	16	8		No groundwater encountered at the time of drilling
	1030		15							
	1025		20							
	1020		25							
	1015		30							
	1010		35							
	1005		40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-30
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		5" Asphalt, 2" GAB	0							Station: 128+50 Automatic Hammer Efficiency is 93%
		Sand-silty; loose; dark brown (Fill)		1		2-2-3	5	6		
	1075	Sand-silty; loose; brown (Residual)								No groundwater encountered at the time of drilling
			5	2		3-4-5	9	10		
	1070	-trace quartz fragments; firm; red-brown	10	3		5-6-9	15	8		
		BORING TERMINATED AT 10 FEET								
	1065									
			15							
	1060									
			20							
	1055									
			25							
	1050									
			30							
	1045									
			35							
	1040									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-31
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES				NOTES		
				NO.	TYPE	BLOWS/6"	N VALUE		RECOV.	W
		4" Asphalt, 2" GAB	0						Station: 132+00 Automatic Hammer Efficiency is 93%	
	1095	Sand-silty; trace mica; firm; orange brown (Residual)		1		5-7-10	17	14		
		-medium dense; brown	5	2		7-9-11	20	8		
	1090	-some silt; dense	10	3		9-15-21	36	8		
	1085	BORING TERMINATED AT 10 FEET								No groundwater encountered at the time of drilling
			15							
	1080									
			20							
	1075									
			25							
	1070									
			30							
	1065									
			35							
	1060									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-32
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		7" Asphalt, No GAB	0							Station: 136+00 Automatic Hammer Efficiency is 93%
		Sand-silty; trace mica and clay; very loose; gray (Fill)		1		1-1-2	3	4		
	1080	-some clay; loose	5	2		2-3-2	5	8	20.8	
	1075	Sand-silty, trace clay; loose; red- brown (Residual)	10	3		2-3-5	8	8		No groundwater encountered at the time of drilling
		BORING TERMINATED AT 10 FEET								
	1070									
			15							
	1065									
			20							
	1060									
			25							
	1055									
			30							
	1050									
			35							
	1045									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-33
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
	1080	4" Asphalt, No GAB	0							Station: 139+00 Automatic Hammer Efficiency is 93%
		Sand-silty, micaceous; firm; brown (Residual) (SM)		1		7-7-7	14	10		
		-some silt and clay; trace mica; loose	5	2		4-5-4	9	8	13.8	
	1075									
		-firm	10	3		5-6-9	15	6		
	1070	BORING TERMINATED AT 10 FEET								No groundwater encountered at the time of drilling
	1065		15							
	1060		20							
	1055		25							
	1050		30							
	1045		35							
	1040		40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-35
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		6" Asphalt, No GAB	0							
		Partially Weathered Rock		1	█	50/1"	50/1"	0		Station: 144+00 Automatic Hammer Efficiency is 93% No Recovery
	1090	Partially Weathered Rock sampled as: Sand-trace silt and quartz fragments; very dense; white- brown (Residual)	5	2	█	50/4"	50/4"	4		
	1085		Sand-trace silt; very dense; red- brown	10	3	█	11-27-38	65	4	
		BORING TERMINATED AT 10 FEET								No groundwater encountered at the time of drilling
	1080									
			15							
	1075									
			20							
	1070									
			25							
	1065									
			30							
	1060									
			35							
	1055									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-36
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		6" Asphalt, No GAB	0							Station: 148+50 Automatic Hammer Efficiency is 93%
	1085	Sand-silty, some mica; firm; brown (Fill)		1		5-6-7	13	10		
		Sand-silty, some mica; firm; red-brown (Residual)	5	2		7-7-8	15	4		
	1080	-micaceous; medium dense		3		9-12-17	29	4		No groundwater encountered at the time of drilling
		BORING TERMINATED AT 10 FEET	10							
	1075									
			15							
	1070									
			20							
	1065									
			25							
	1060									
			30							
	1055									
			35							
	1050									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-37
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	
	1080	4" Asphalt, No GAB	0						Station: 153+00 Automatic Hammer Efficiency is 93%
		Sand-silty, some clay; dense; dark gray (Fill)		1		10-17-30	47	8	
	1075	Sand-silty, micaceous; loose; brown (Residual)	5	2		3-4-3	7	6	No groundwater encountered at the time of drilling
		-firm; red brown		3		7-5-6	11	8	
	1070	BORING TERMINATED AT 10 FEET	10						
			15						
	1065								
			20						
	1060								
			25						
	1055								
			30						
	1050								
			35						
	1045								
			40						
	1040								



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-40
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 12/26/18
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.	
	1105	5" Asphalt, No GAB	0						Station: 165+00 Automatic Hammer Efficiency is 93%
		Sand-silty, trace clay, micaceous; firm; brown (Fill)		1		4-5-7	12	8	
		Sand-silty, micaceous; firm; light brown (Residual)	5	2		3-7-8	15	6	
	1095	-brown	10	3		6-7-9	15	6	No groundwater encountered at the time of drilling
		BORING TERMINATED AT 10 FEET							
	1090		15						
	1085		20						
	1080		25						
	1075		30						
	1070		35						
	1065		40						



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-43
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 1/7/19
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES				NOTES		
				NO.	TYPE	BLOWS/6"	N VALUE		RECOV.	W
		4" Asphalt; 3" GAB	0						Station: 180+00 Automatic Hammer Efficiency is 93%	
	1105	Sand-silty, trace clay and mica; firm; red brown (Residual) (SM)		1		8-6-8	14	4		
		-some silt, trace gravel; light brown	5	2		4-5-6	11	4		8.6
	1100	-trace rock fragments								
			10	3		7-7-5	12	6		
	1095	BORING TERMINATED AT 10 FEET								No groundwater encountered at the time of drilling
			15							
	1090									
			20							
	1085									
			25							
	1080									
			30							
	1075									
			35							
	1070									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-45
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 1/7/19
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		4" Asphalt; 2" GAB	0							
	1080	Sand-trace silt and rock fragments; medium dense; brown gray (Fill)		1	▲	8-10-11	21	6		Station: 190+00 Automatic Hammer Efficiency is 93%
	1075	Sand-silty, micaceous, trace rock and clay; orange brown (Residual)	5	2	▲	13-14-10	24	6		
		-some mica; red brown		3	▲	11-10-10	20	6		
	1070	BORING TERMINATED AT 10 FEET	10							No groundwater encountered at the time of drilling
			15							
	1065									
			20							
	1060									
			25							
	1055									
			30							
	1050									
			35							
	1045									
			40							



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BORING LOG

CONTRACTED WITH: Freese and Nichols, Inc. BORING NO.: B-46
 PROJECT NAME: CCMWA West Side Loop 36 inch Water Main DATE: 1/7/19
 JOB NO.: FRENI-18-GA-02170-03 DRILLER: BIG DOG RIG: D-50 LOGGED BY: MC

USCS	ELEV.	DESCRIPTION	DEPTH in FEET	SAMPLES					NOTES	
				NO.	TYPE	BLOWS/6"	N VALUE	RECOV.		W
		6" Asphalt; 3" GAB	0							Station: 195+00 Automatic Hammer Efficiency is 93%
	1070	Sand-silty, trace clay and rock fragments and mica; medium dense; loose; brown gray (Fill)		1		8-3-4	7	6		
		Sand-silty, trace clay and mica; firm; red-light brown (Residual)	5	2		3-4-7	11	6	20.5	
	1065									
		-micaceous; medium dense; gray brown	10	3		6-7-15	22	6		
	1060	BORING TERMINATED AT 10 FEET								No groundwater encountered at the time of drilling
			15							
	1055									
			20							
	1050									
			25							
	1045									
			30							
	1040									
			35							
	1035									
			40							

LABORATORY PROCEDURES

Grain Size (Sieve) Analysis with or without Hydrometer

Grain Size Analysis tests were performed to determine the particle size distribution of selected samples tested. The grain size distribution of soils coarser than a number 200 sieve was determined by passing the samples through a standard set of nested sieves. Materials finer than the number 200 sieves were suspended in water and the grain size distribution computed from the time rate of settlement of the different size particles. Air-dried soil passed through a #200 sieve. 50 grams of that must soak in s/c agent for a minimum of 8 hours. Soil is then put in graduated cylinder with a hydrometer. Readings are taken at specified times. A graph is drawn from data. These tests were similar to those described by ASTM D 421 and D 422. The results are included in The Appendix.

Liquid and Plastic Limits (Atterberg Limits)

Liquid Limit and Plastic Limit tests aid in the classification of the soils and provide an indication of the soil behavior with moisture change. The Plasticity Index is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The Liquid Limit is the moisture content at which the soil will flow as a heavy viscous fluid and is the upper limit of the plastic range, as determined in accordance with ASTM D 4318. The Plastic Limit is the moisture content at which the soil begins to lose its plasticity, as determined in accordance with ASTM D 4318. The Plasticity Index is the difference between the Liquid Limit and Plastic Limit. The Liquidity Index is the ratio of the difference between the in-place moisture and the plastic limit to the Plasticity Limit. The data obtained are in The Appendix.

Moisture Content

The moisture content was determined for selected soil samples obtained in the split spoon sampler. A representative portion of each sample was weighed and then placed in an oven and dried at 110 degrees Centigrade for at least 15 to 16 hours. After removal from the oven, the soil was again weighed. The weight of the moisture lost during drying thus was determined. From this data, the moisture content of the sample was then calculated as the weight of moisture divided by dry weight of the soil, expressed as a percentage. This test was conducted according to ASTM D 2216. The moisture content results are indicated on the attached boring logs.

Moisture content is a useful index of a soil's compressibility. If the soil is to be used as fill, the moisture content may be compared to the range of water content for which proper compaction may be achieved.

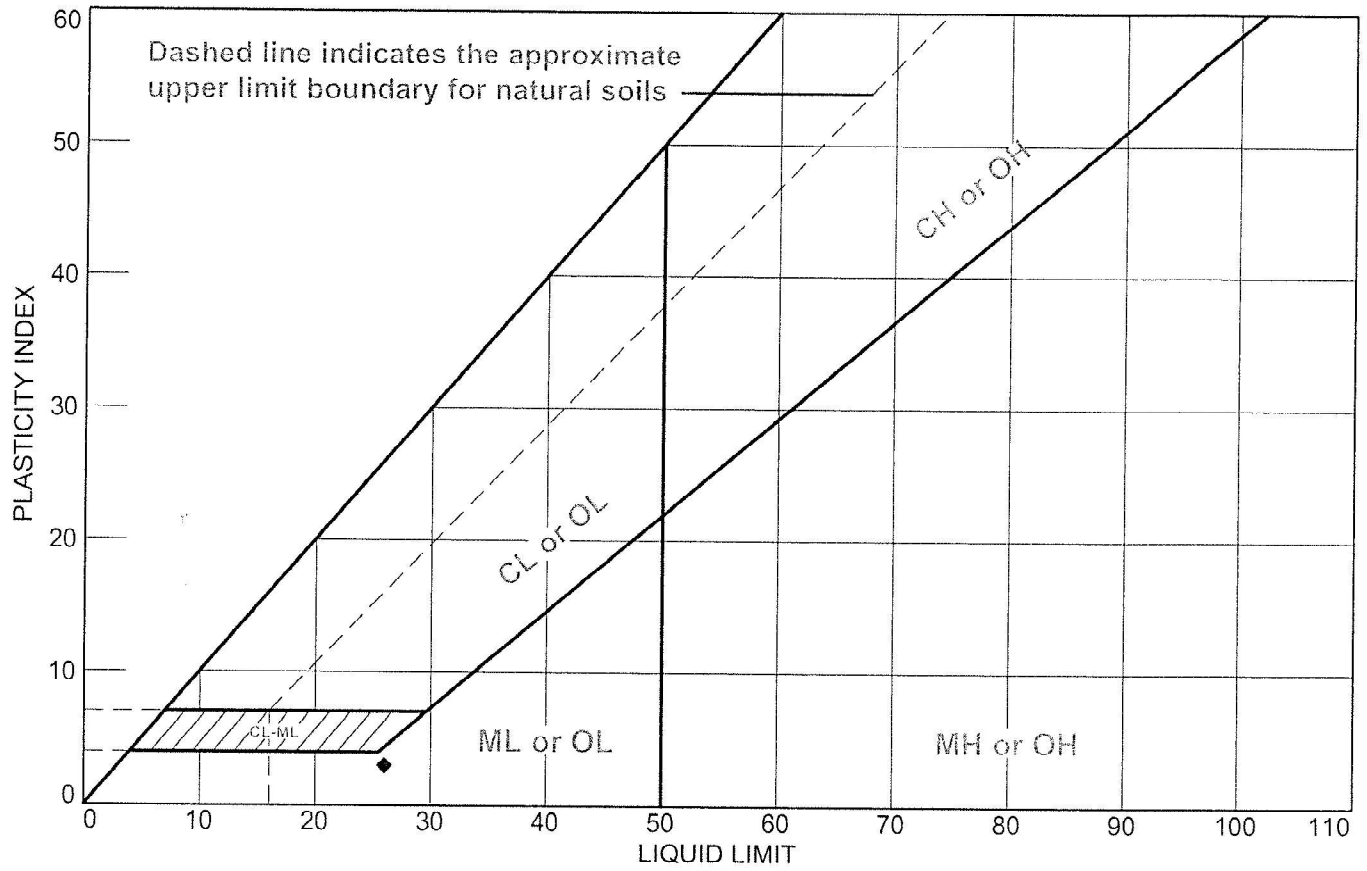
**CCMWA West Side Loop 36-inch Water Main
SUMMARY OF SOIL DATA**

Sample Identification Borehole Number	Sample ID	Sample Type	Sample Depth	Soil Classification	As Rcd Moisture %	Atterberg Limits			Grain Size Distribution			Compaction		Organic Content %	Unit Weight		Permeability (cm/sec)	Additional Tests Conducted (See Notes)	
						L.L.	P.L.	P.I.	L.I.	% Finer No. 4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)		Optimum Moisture %	Gs			Moisture %
B-3	2	Bag	3.5-5	-	26.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-6	2	Bag	3.5-5	ML	22.8	26	23	3	-0.07	98.5	51.3	50	-	-	-	-	-	-	-
B-8	2	Bag	3.5-5	-	24.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-13	2	Bag	3.5-5	-	11.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-16	2	Bag	3.5-5	SM	10.1	NV	NP	NP	-	100.0	26.4	24	-	-	-	-	-	-	-
B-18	2	Bag	3.5-5	-	14.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-22	2	Bag	3.5-5	-	23.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-23	2	Bag	3.5-5	SM	7.7	NV	NP	NP	-	75.9	14.3	14.0	-	-	-	-	-	-	-
B-28	2	Bag	3.5-5	-	15.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-32	2	Bag	3.5-5	-	20.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-33	2	Bag	3.5-5	SM	13.8	NV	NP	NP	-	100.0	33.6	32.0	-	-	-	-	-	-	-
B-38	2	Bag	3.5-5	-	12.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-42	2	Bag	3.5-5	-	24.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-43	2	Bag	3.5-5	SC	8.6	NV	NP	NP	-	94.0	28.9	25.0	-	-	-	-	-	-	-
B-46	2	Bag	3.5-5	-	20.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-47	2	Bag	3.5-5	SM	17.4	NV	NP	NP	-	98.0	41.7	38.0	-	-	-	-	-	-	-

ABBREVIATIONS: LIQUID LIMIT (LL)
 PLASTIC LIMIT (PL)
 PLASTICITY INDEX (PI)
 LIQUIDITY INDEX (LI)
 SPECIFIC GRAVITY (G_s)
 MOISTURE (M_c)
 NP - NO PLASTICITY
 NV - NO VALUE

NOTES: T = TRIAXIAL TEST
 U = UNCONFINED COMPRESSION TEST
 C = CONSOLIDATION TEST
 DS = DIRECT SHEAR TEST
 O = ORGANIC CONTENT
 P = pH
 V_c = Volume/shrinkage change

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA							
SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-16	3.5-5.0 ft	10.1	NP	NV	NP	SM
■	B-23	3.5-5.0 ft	7.7	NP	NV	NP	SM
▲	B-33	3.5-5.0 ft	13.8	NP	NV	NP	SM
◆	B-6	3.5-5.0 ft	22.8	23	26	3	ML

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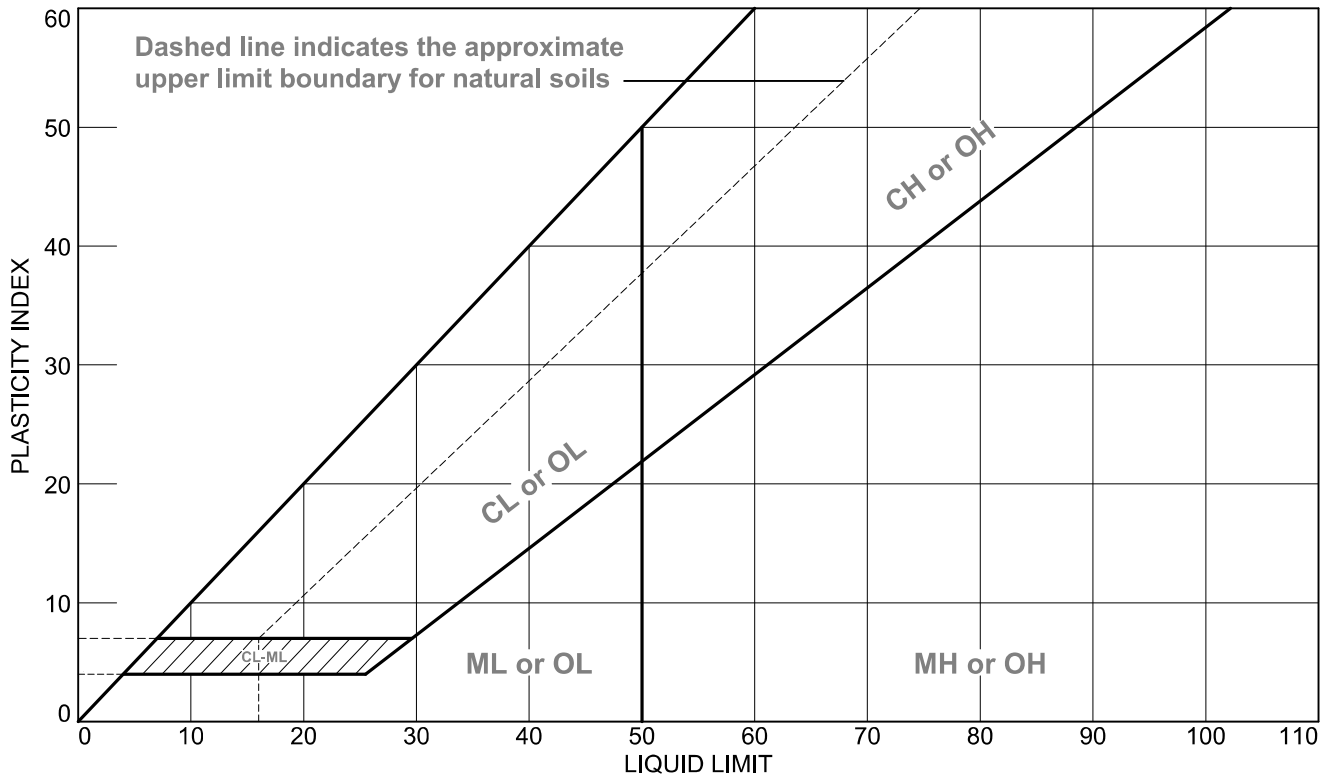
Client: FREESE AND NICHOLS, INC.

Project: Westside Loop

Project No.: FREN118GA0217003

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●		B-43	3.5-5.0 ft	8.6	NP	NV	NP	SM
■		B-47	3.5-5.0 ft	17.4	NP	NV	NP	SM

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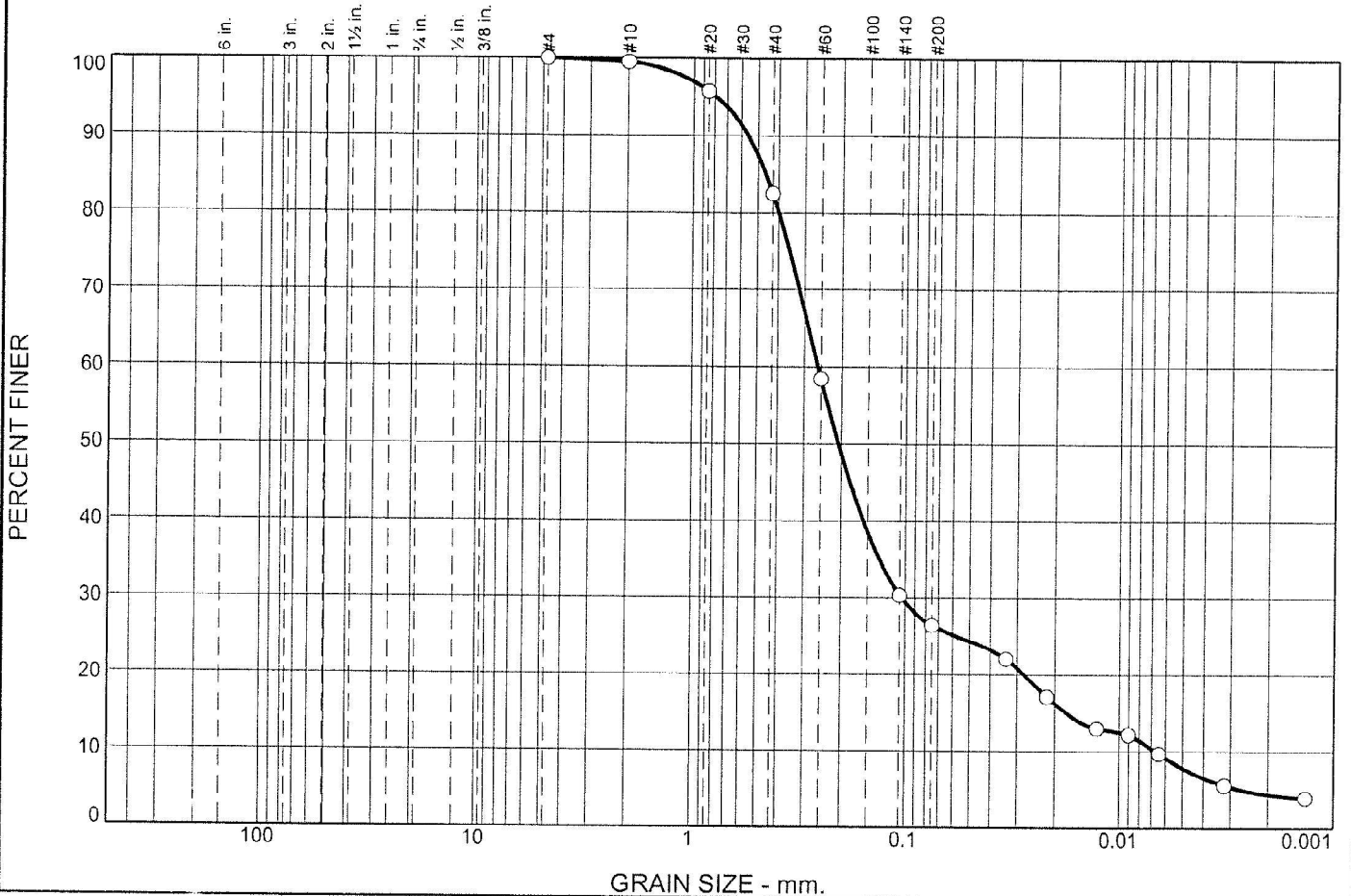
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Project: Westside Loop

Project No.: FRENI18GA0217003

Figure

Particle Size Distribution Report



% +3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.0	73.6	18.6	7.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.5		
#20	95.8		
#40	82.5		
#60	58.4		
#140	30.3		
#200	26.4		

Material Description

Sand, some silt, trace clay, red brown

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 0.5552 D₈₅= 0.4576 D₆₀= 0.2588
D₅₀= 0.2064 D₃₀= 0.1041 D₁₅= 0.0177
D₁₀= 0.0067 C_u= 38.66 C_c= 6.26

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

* (no specification provided)

Sample Number: B-16

Depth: 3.5-5.0 ft

Date: 1/2/2019

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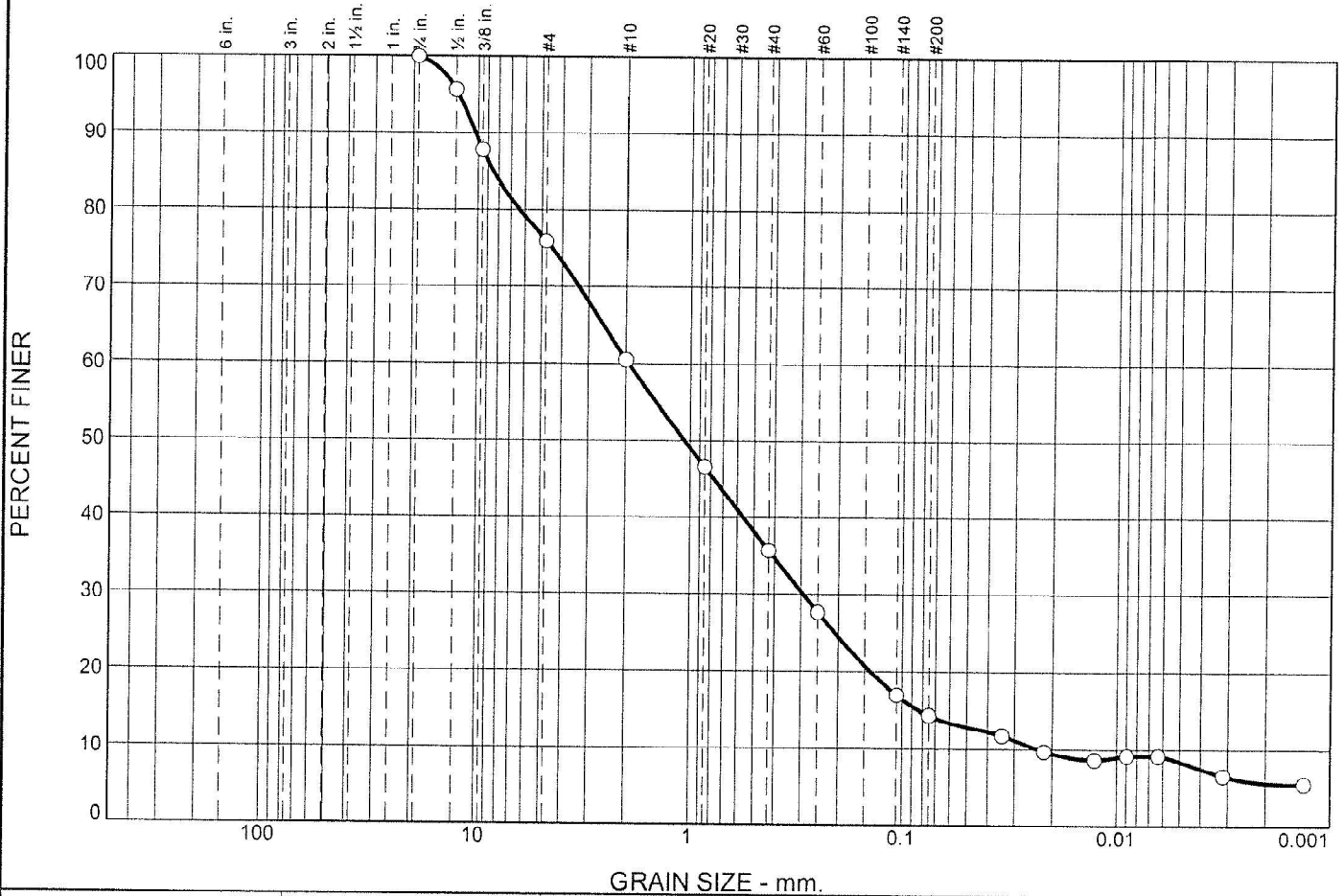
Client: FREESE AND NICHOLS, INC.

Project: Westside Loop

Project No: FRENI18GA0217003

Figure

Particle Size Distribution Report



% +3"	% Gravel	% Sand	% Silt	% Clay
0.0	24.1	61.6	5.8	8.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75	100.0		
0.5	95.7		
0.375	87.8		
#4	75.9		
#10	60.5		
#20	46.5		
#40	35.6		
#60	27.7		
#140	16.9		
#200	14.3		

Material Description

Sand, some gravel, trace clay and silt, light tan

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 10.2893 D₈₅= 8.4633 D₆₀= 1.9477
D₅₀= 1.0626 D₃₀= 0.2932 D₁₅= 0.0841
D₁₀= 0.0236 C_u= 82.54 C_c= 1.87

Classification

USCS= SM AASHTO= A-1-b

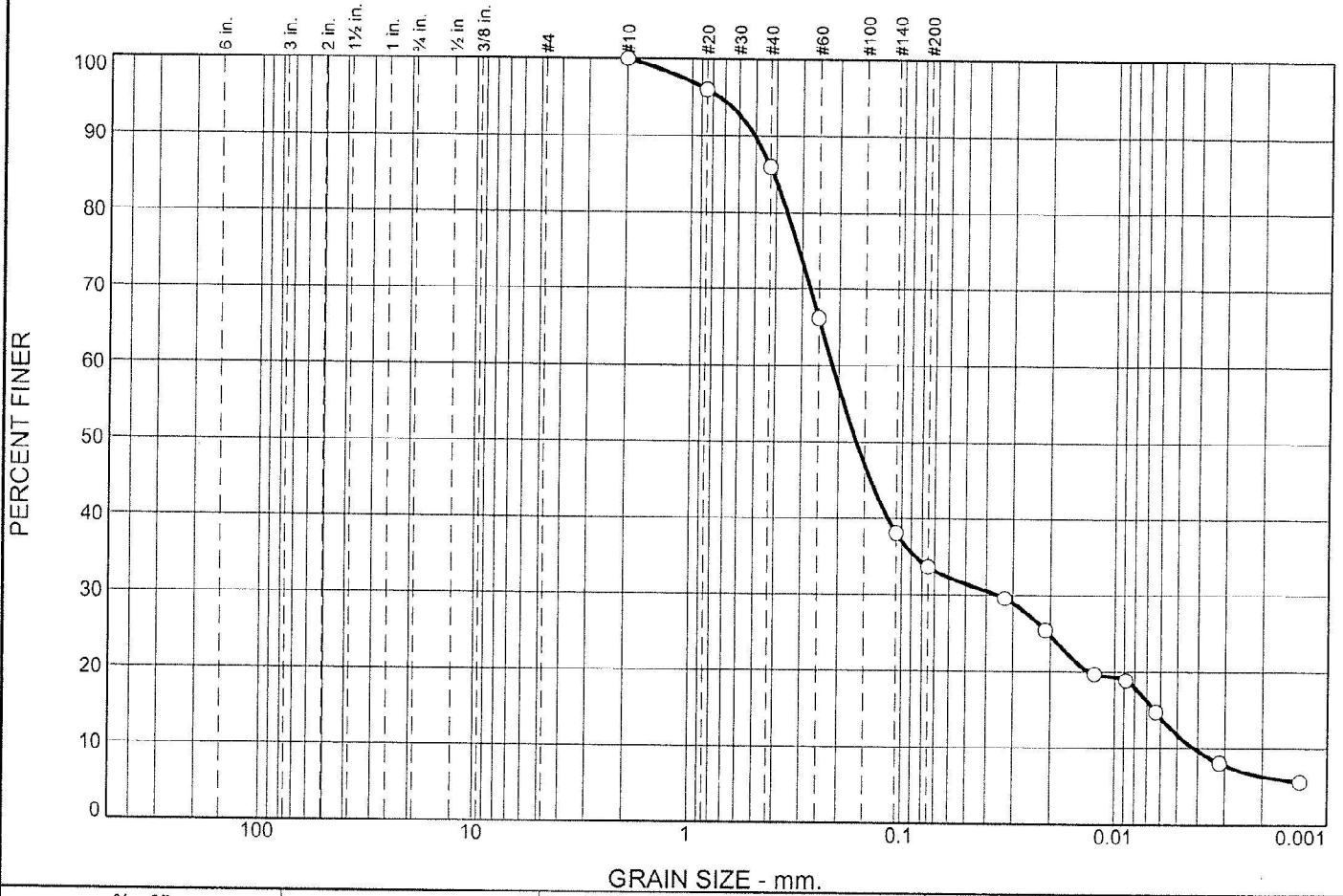
Remarks

* (no specification provided)

Sample Number: B-23 Depth: 3.5-5.0 ft Date: 1/2/2019

United Consulting Norcross, Georgia	Client: FREESE AND NICHOLS, INC. Project: Westside Loop Project No: FRENI18GA0217003
Figure	

Particle Size Distribution Report



% +3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.0	66.4	21.8	11.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	96.1		
#40	86.0		
#60	66.1		
#140	38.1		
#200	33.6		

* (no specification provided)

Material Description

Sand, some silt and clay, brown

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 0.5034 D₈₅= 0.4111 D₆₀= 0.2148
D₅₀= 0.1641 D₃₀= 0.0357 D₁₅= 0.0065
D₁₀= 0.0042 C_u= 51.54 C_c= 1.42

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample Number: B-33

Depth: 3.5-5.0 ft

Date: 1/2/2019

United Consulting

Norcross, Georgia

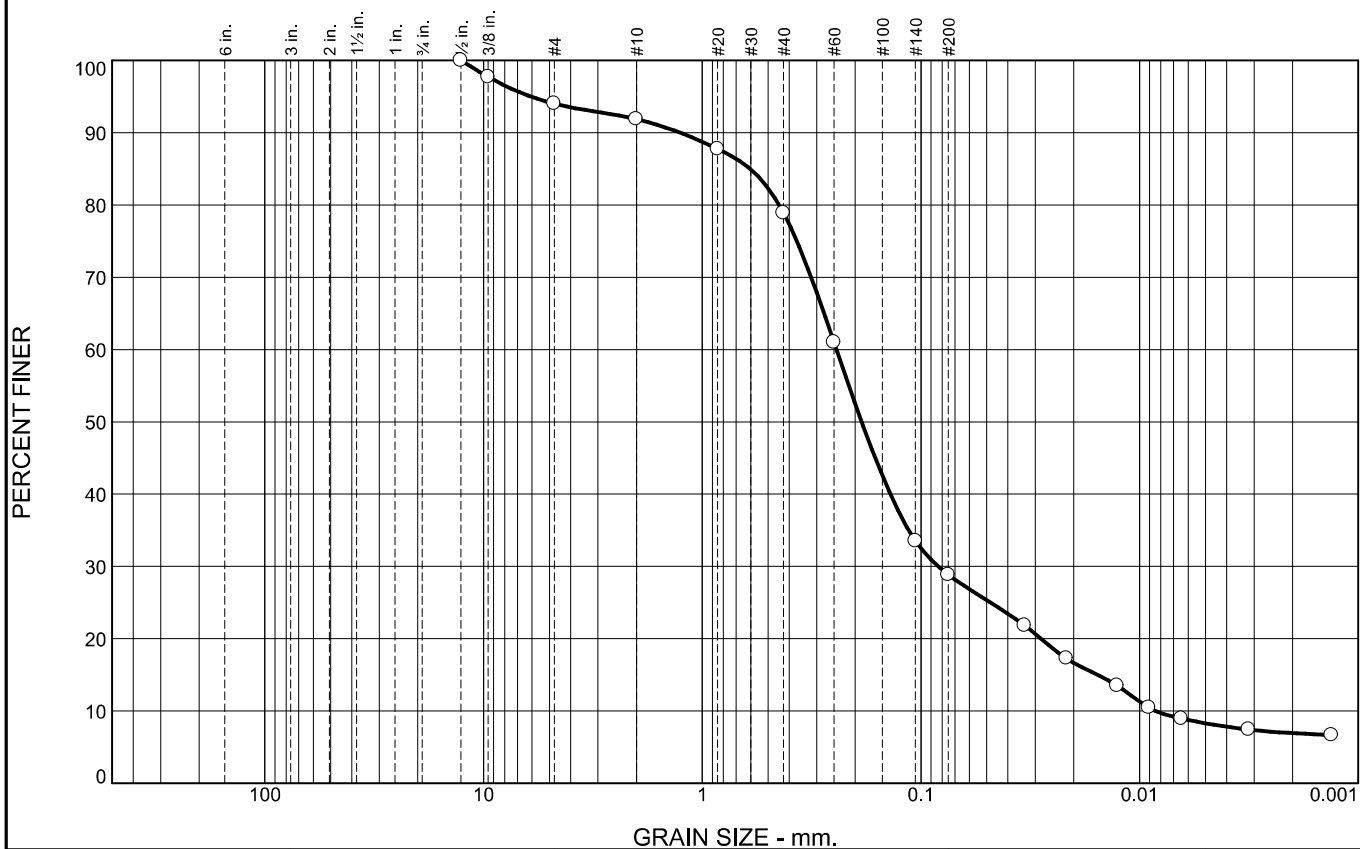
Client: FREESE AND NICHOLS, INC.

Project: Westside Loop

Project No: FREN18GA0217003

Figure

Particle Size Distribution Report



% +3"	% Gravel	% Sand	% Silt	% Clay
0.0	6.0	65.1	20.6	8.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5	100.0		
0.375	97.7		
#4	94.0		
#10	91.9		
#20	87.7		
#40	78.9		
#60	61.0		
#140	33.5		
#200	28.9		

Material Description

Sand, some silt, trace clay and gravel, red brown

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 1.2631 D₈₅= 0.6049 D₆₀= 0.2435
D₅₀= 0.1866 D₃₀= 0.0836 D₁₅= 0.0156
D₁₀= 0.0084 C_u= 28.85 C_c= 3.40

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

* (no specification provided)

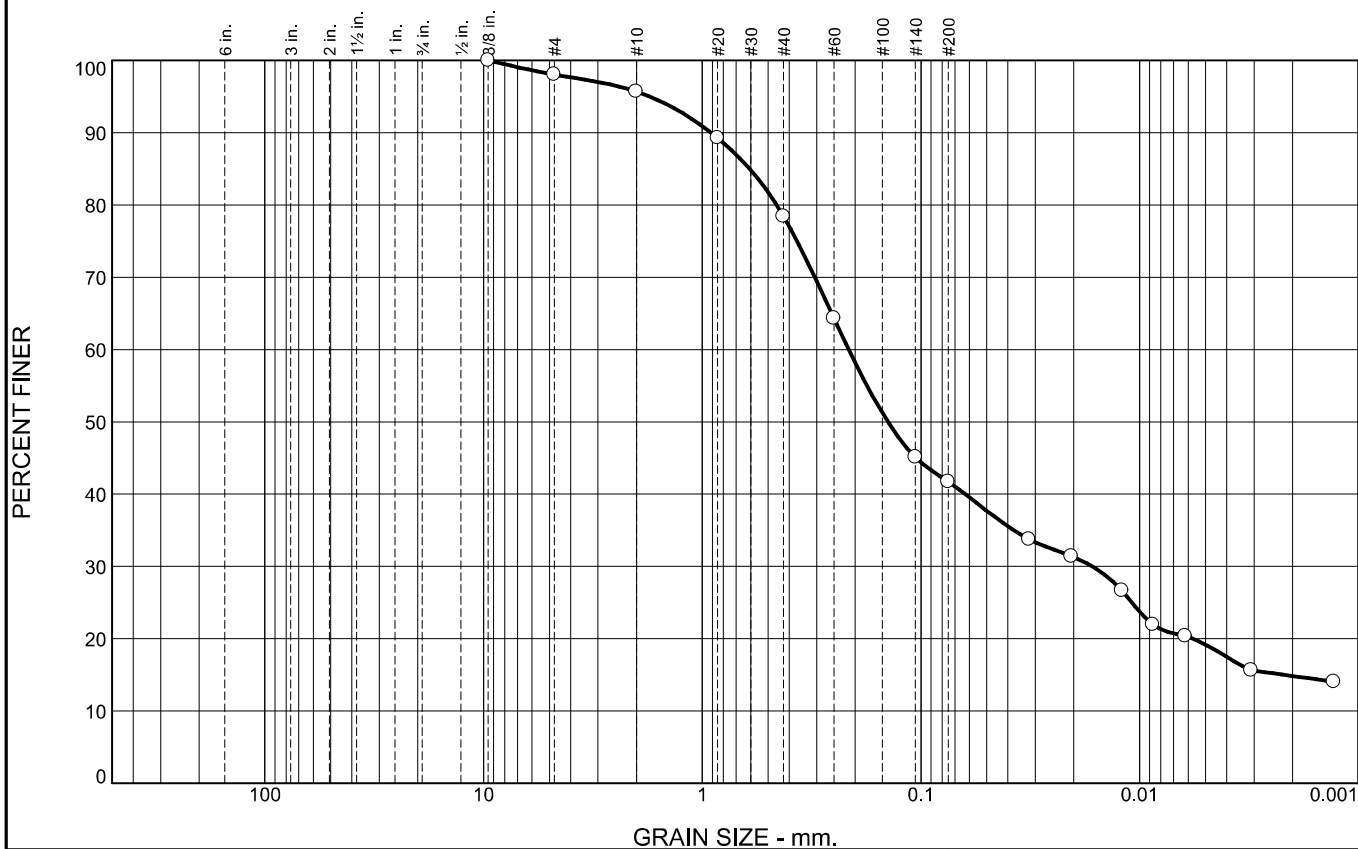
Sample Number: B-43 Depth: 3.5-5.0 ft

Date: 1/8/2019

United Consulting Norcross, Georgia	Client: FREESE AND NICHOLS, INC. Project: Westside Loop Project No: FREN18GA0217003
--	--

Figure

Particle Size Distribution Report



% +3"	% Gravel	% Sand	% Silt	% Clay
0.0	2.0	56.3	22.5	19.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375	100.0		
#4	98.0		
#10	95.7		
#20	89.3		
#40	78.4		
#60	64.3		
#140	45.1		
#200	41.7		

Material Description

Sand, some silt and clay, trace gravel, red brown

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₉₀= 0.9125 D₈₅= 0.6070 D₆₀= 0.2138
 D₅₀= 0.1415 D₃₀= 0.0164 D₁₅= 0.0022
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-4(0)

Remarks

* (no specification provided)

Sample Number: B-47 Depth: 3.5-5.0 ft

Date: 1/8/2019

United Consulting Norcross, Georgia	Client: FREESE AND NICHOLS, INC. Project: Westside Loop Project No: FREN18GA0217003
	Figure

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@geoprofessional.org www.geoprofessional.org

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Appendix B
Cathodic Protection Report

January 30, 2019

Mr. Carleton Sherrer
Principal/Vice President
Freese and Nichols, Inc.
360 Interstate North Parkway, Suite 250
Atlanta, GA 30339

**Reference: Corrosion Assessment
Cobb County-Marietta Water Authority (CCMWA)
West Side Loop Section 2 Project**

Dear Mr. Sherrer,

In accordance with our proposal to Freese and Nichols, Inc. dated 15 November 2018, Southern Cathodic Protection Company (SCPC) personnel conducted an assessment of corrosion threats posed by the subterranean environment that will surround the referenced water main. The assessment was performed during the month of December 2018. The following sections detail the investigation.

INTRODUCTION

The proposed West Side Loop Section 2 Project, initiated by Cobb County-Marietta Water Authority (CCMWA), will consist of the installation of approximately 19,500 feet of 36-inch diameter ductile iron pipe. The primary section of pipeline originates on Cardell Road closest to Old Alabama Road SW and proceeds in an easterly direction to the intersection of South Gordon Road SW and Mableton Parkway SW.

SCPC was contracted to conduct a corrosion evaluation survey for inclusion in the overall water main design. The evaluation consisted of 1) studying soil conditions in the proposed right-of-way to determine corrosivity, and 2) examining other utilities in the right-of-way that may cause direct current (DC) or alternating current (AC) interference related corrosion. The findings are detailed herein.

TESTS AND MEASUREMENTS

SCPC performed standardized testing to evaluate the corrosion threats that may exist. Listed below are brief descriptions of the tests conducted and their significance.

- A. In accordance with ASTM¹ G57, "Standard Test Method for Field Measurement of Soil Resistivity Using the Wenner Four-Pin Method", soil layer resistivity was measured in situ at an approximate spacing of 2,000 feet along the pipeline route. The method is used as a screening tool to locate areas where low soil resistivity exists and, thus, may have a greater likelihood of corrosive

¹ ASTM International

- conditions. Measurements were conducted at a probe rod spacing of five, ten, fifteen, and twenty feet at each test location. The Barnes Layer Method was used to calculate the apparent resistivity of each soil layer that will encompass the pipeline.
- B. United Consulting conducted a subsurface investigation and provided soil corrosivity data for review. Representative soil samples were collected at a three foot depth and tested in the laboratory with regards to the parameters detailed below.
- a. *Resistivity (laboratory)*: ASTM G187, “Standard Test Method for Measurement of Soil Resistivity Using the Two-Electrode Soil Box Method”. The laboratory measurement provides a focused assessment of minimum resistivity within the particular soil layer targeted.
 - b. *pH*: ASTM G51, “Standard Test Method for Measuring pH of Soil for Use in Corrosion Testing”. Determination of pH allows detection of acidic conditions that can be detrimental to buried ferrous materials.
- C. A study was conducted to determine if present conditions are likely to support DC interference corrosion activity after construction of the water main. This type of corrosion may be caused by an interaction with the cathodic protection system of a foreign utility such as a natural gas pipeline or fuel service station where underground storage tanks are in operation. If the water main passes through a voltage gradient associated with the cathodic protection system of such structures, current may be picked up and discharged at another location. Where DC current discharges from the water main, corrosion will occur. The following techniques were employed to evaluate present and future conditions.
- a. *Examination of existing and planned utility locations*: Proposed water main construction drawings were reviewed and a site visit to the proposed water main location was conducted to determine the proximity of utilities to the future water main.
- D. Proposed water main construction drawings were reviewed to identify the proximity to high voltage AC (HVAC) power line corridors. Pipelines sharing, paralleling, or crossing HVAC transmission line corridors may be subject to electrical interference from electrostatic coupling and/or electromagnetic inductive and conductive effects. Electromagnetic induction is the primary effect of the HVAC transmission line on the buried pipeline during normal operation. This form of interference is due to the magnetic field produced by AC current flowing in the overhead conductors coupling with the pipeline and inducing a voltage on the pipeline. If these electrical effects are high enough, a possible shock hazard may exist for anyone that touches an exposed part of the pipeline. A mitigation system can be designed for those areas where potentials are above permissible limits.

FINDINGS

The following observations were made during field work and data analysis. The associated data and results may be found in the attachments.

- In situ soil resistivity measurements are indicative of expected moderate corrosion activity due to the encountering of heterogeneous soils along the pipeline right-of-way. The proposed right-of-way near E of Willow Bend Ln yielded the lowest resistivity of 6,550 ohm-cm at a depth of between 15 and 20 feet, which is considered moderately corrosive to metallic structures.
- Foreign pipeline crossings under cathodic protection were found during examination of proposed construction plans and during the field investigation. Several “farm taps” were identified near the Plantation Pipeline crossing and along the proposed water main route. This traditionally reduces the higher pressure of a gas main to a lower pressure for delivery to a residential service. The area is served by the Austell Natural Gas System. Contact was made and it was confirmed that the steel distribution pipelines are protected by a galvanic anode cathodic protection system. This type of system would not usually be the cause of an interference issue with another metallic structures due to the lower voltages involved and the localized current output of the galvanic anodes.
- A rectifier, owned by the Plantation Pipeline Company, was identified within the proposed alignment corridor. The approximate alignment location of the intersecting area is 118+20. Due to the presence of this rectifier and the associated cathodic protection groundbed; and to confirm that stray DC current will not be an issue, it would be advisable to perform testing with the cooperation of Plantation Pipeline personnel during the construction phase.
- A fuel service station operated by Shell is located at 690 South Gordon Road and has underground storage of fuel. The nature of the underground tanks is unknown, but would warrant investigation during construction to identify possible stray current interference.
- Upon review of the proposed alignment and the performed field investigation, the water main will not be installed within a high voltage AC power line corridor in any area along this route.

CONCLUSIONS

Based upon the results of field testing and data review, the following conclusions may be drawn.

- The soil environment to which the proposed ductile iron water main will be exposed is considered to be moderately corrosive to metallic structures. Our soil resistivity readings were in line with the core samples taken and tested by United Consulting.

- The presence of an impressed current cathodic protection system, within the proposed alignment, could create DC interference and would warrant investigation and testing. Mitigation methods may need to be designed and deployed.
- The proposed water main alignment, as shown on project plans, will cross other utilities employing galvanic cathodic protection as a means of corrosion control. The proposed alignment is possibly favorable for stray DC current-induced corrosion/interference at the time of investigation.
- The Shell gas station underground storage tank system may have an impressed current system, a galvanic system, or may be a non-metallic system that presents no stray current issues. This condition will require investigation.
- Generally, a welded steel pipeline with dielectric bonded coating buried in close proximity to a high voltage AC power line would merit an AC mitigation model to be developed. However, considering the route of the proposed water main does not come in proximity of any high voltage AC power lines, the development of such model before installation of the water main would be unwarranted.

RECOMMENDATIONS

The following recommendations are submitted pursuant to the findings of the corrosion assessment.

- It is recommended that the entire proposed pipeline be coated with a minimum of 200 g/m² zinc spray via a zinc metallizing process in accordance with ISO 8179-1 "Ductile Iron Pipes - External Zinc-based Coating - Part 1: Metallic Zinc with Finishing Layer. Second edition 2004-06-01." Pipe segments that cannot be properly coated through zinc metallizing shall be coated with a zinc-rich paint.
- It is recommended that the entire proposed pipeline be double polyethylene-encased (4 mil and 8 mil), with inner layer consisting of V-Bio polyethylene wrap, in accordance with CCMWA construction specifications for ductile iron pipe and ANSI²/AWWA³ C105/A21.5, "Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems." This measure will assist in minimizing corrosion activity due to both soil conditions and future DC interference from foreign utilities.
- All pipe joints should be bonded by exothermically welding in place two copper cables across each pipe joint. Such a bond eliminates the possibility of interference currents moving along a pipe section "jumping the joint" to the next pipe segment and causing corrosion where the current briefly reenters surrounding soil or water. Bonding of the joints also allows for application of supplemental cathodic protection, if required, at a later date.

² American National Standards Institute

³ American Water Works Association

- Install strategically-placed monitoring test stations, approximately every 1,000 feet not to exceed 1,800 feet, which will be used to monitor the performance of the zinc spray coating and to identify the presence of interference current sources in the future, confirm electrical continuity across pipe joints, and accurately locate the line using a conventional pipe and cable locator. Test stations installed remote from the water main should include the installation of a stationary reference electrode placed in close proximity to the pipe per manufacturer's instructions.
- A continuity survey should be performed after installation of the water main to confirm electrical continuity between joints.
- Contact Plantation to obtain the output of the rectifier and the location of the groundbed. Perform testing with the cooperation of Plantation Pipeline personnel during the construction phase to determine if additional measures are required.
- Contact Shell to determine the nature of the underground storage tanks at the gas station. Coordination with Shell personnel may be needed to determine if a stray current interference condition exists that would require mitigation during the construction phase.
- A pipe-to-soil potential survey is recommended after installation of the water main to collect native potential measurements and to detect unforeseen stray current interference.

We trust you will find our analysis report to be complete and satisfactory. If you have any questions, or require additional information, please contact us at your earliest convenience. We appreciate the opportunity to work with you and your staff on this project.

Sincerely,



Todd Halligan, PE
Project Manager



SOIL RESISTIVITY DATA

Freese and Nichols

Cobb County-Marietta Water Authority West Side Loop Section 2

Site No.	Station No.	Date	Resistivity of Layer ¹ , Ohm-cm				Road Crossings	GPS Coordinates
			0'-5' Depth	5'-10' Depth	10'-15' Depth	15'-20' Depth		
01	2+00	12/11/2018	154,000	181,000	410,000	92,100	E of Old Alabama	33.801478 -84.618442
02	11+70	12/11/2018	33,000	25,700	18,100	13,100	E of Timothy Lane	33.798657 -84.615695
03	31+00	12/11/2018	20,800	127,000	46,400	39,200	Green Acres Homes	33.796164 -84.610922
04	50+40	12/11/2018	42,100	40,600	40,000	28,900	E of Brandemere Dr	33.795331 -84.604496
05	70+60	12/11/2018	19,200	74,000	67,600	30,300	W of Martins Creek Drive	33.795610 -84.598154
06	101+00	12/11/2018	42,200	20,100	10,800	6,550	E of Willow Bend Ln	33.793419 -84.588191
07	118+20	12/11/2018	52,000	18,300	24,500	141,000	Plantation rectifier	33.791682 -84.583110
08	133+00	12/11/2018	80,000	223,000	242,000	206,000	Blair Bridge Rd	33.789534 -84.579113
09	145+40	12/11/2018	15,600	84,500	130,000	57,105	E of Factory Shoals Rd	33.789005 -84.575012
10	166+60	12/11/2018	60,000	741,000	151,000	74,900	Riverside Primary Schl.	33.789184 -84.567902
11	184+70	12/11/2018	32,400	106,000	70,600	233,000	Riverside Intermediate Scl.	33.791219 -84.562676
12	192+70	12/11/2018	50,300	99,700	73,600	63,600	Carriage Dr	33.792988 -84.561939

¹ Resistivities of each layer calculated using Barnes Layer Method

² Bulk resistivity at 20'

Appendix C
Kinder Morgan-Plantation Pipeline
ROW Crossing Permit

PLANTATION PIPE LINE COMPANY

Street Address: 2901 Woodwin Road
City, State, Zip: Doraville, Georgia 30360
Telephone: 770-841-0541 © 770-751-4258(o)

File Reference No.: _____
Line Section: 6B
ROW: 161-1 and 162-1
PLANTATION ROW REFERENCE

**REQUEST FOR PERMIT TO CROSS RIGHT-OF-WAY AND FACILITIES
OF PLANTATION PIPE LINE COMPANY**

Cobb County Marietta Water Authority hereby requests a permit to cross the right-of-way and
(NAME OF APPLICANT)
interstate pipeline facilities of Plantation Pipe Line Company (Plantation), a Delaware and Virginia Corp., with
36 Inch ductile iron water main to serve South Gordon Road Austell, Ga.
(SIZE AND TYPE OF INSTALLATION) (NAME OF SUBDIVISION OR OTHER GEOGRAPHIC AREA)
in Cobb Georgia if said permit is granted, applicant agrees its foreign line(s) or private
(COUNTY/PARISH) (STATE)
residential driveways will be installed pursuant to the following specifications, unless it is installed on existing
highway right-of-way of way or specific written waivers are granted by Plantation:

SPECIFICATIONS OF ALL CROSSINGS

1. Applicant, or its agent, will give a representative of Plantation's Doraville, Georgia
Maintenance Office telephone number 770-841-0541 © , 48 hours' notice of the day on
770-751-4258(o)
which the crossing(s) will be made, in order that arrangements can be made for necessary representatives
of Plantation to be present. Plantation's representative will establish the width of the pipeline confinement
strip and approximate depth of the pipeline(s).
2. Applicant shall investigate, defend, indemnify, and hold Plantation, its officers, employees, agents, servants
and representatives, harmless from all claims, loss, liability, attorney fees, cost and expense, including
death, personal injury, and property damage occurring to applicant or its Contractor, or its subcontractors or
Plantation, their respective officers, employees, agents, servants, and representatives, or to third parties
which arise out of or in connection with, or by reason of, performance of the work herein contemplated or the
existence of said installations, thereafter, including those claims which are alleged to have been caused from
Plantation's sole or concurrent negligence, but which arise out of, or in connection with, or by reasons of,
performance of the work development herein contemplated or the existence of said installations thereafter.
3. It is further understood and agreed between Applicant and Plantation:
 - A. That Plantation does not, by consenting to the proposed installation of this facility across its pipeline
confinement strip and its facilities, assume any responsibility for the protection of its pipeline(s).
Furthermore, all work performed in connection with these installations will be without expense, risk,
or liability to Plantation or any of its directors, officers, agents, representatives, or employees.
 - B. That Plantation will make every reasonable effort to avoid damage to the applicant's installation that
may be permitted pursuant to this permit for the purpose of exercising its easement rights.
Plantation will attempt to notify the applicant, except in cases of an emergency nature, prior to
interruption of service. Plantation will accept no liability for restoring the installation or for the
interruption of service in the use of said installation.
 - C. That except to the extent made necessary by the construction and maintenance of such permitted
crossings and encroachments, and the reasonable use thereof, the exercise of any rights permitted
to applicant shall not interfere with or supersede the rights of Plantation under its easements.
4. This agreement shall be binding upon the parties hereto and their respective successors in title.
5. Execution below by Applicant acknowledges agreement and acceptance of the conditions expressed herein
both as to Specifications for all crossings and Specifications for Applicant's particular type crossing and
Applicant agrees not to begin any work within the confines of the confinement strip until this permit has been
executed by the Parties.

SPECIFICATIONS FOR ROAD CROSSINGS

1. Private residential driveway(s) shall cross as nearly as possible at right angles to Plantation's line(s). The existing cover will be maintained over the line(s) at all points including side ditches, after construction is completed. If cutting is permitted, a minimum of 48 inches of cover shall remain. Any fill added over Plantation's right-of-way of way must have specific prior Plantation approval in each case. The private residential driveway surface shall be of asphalt or concrete but designed in a manner that sections can be readily and easily removed with light, common excavating equipment, unless state, county or municipal specifications require concrete curbs and gutters.

SPECIFICATIONS FOR UTILITY CROSSINGS

1. No excavating machinery will be operated upon Plantation's confinement strip until Plantation's representative is present at the crossing site, and further, no mechanical excavation will be permitted within twenty five (25) feet of any pipeline absent the express authorization of a Plantation on-site representative, which authorization will be given after visual inspection of the pipeline.
2. The line crossing Plantation's line(s) will be laid with minimum clearance of twenty-four (24) inches. Plantation's representative at the crossing will determine if the line crossing Plantation's line(s) is to be installed over or under Plantation's line(s); unless this decision has been made by Plantation prior to the date of the crossing. The depth of the line crossing Plantation's line(s) is to be maintained for the full distance across the pipeline confinement strip, and the crossing is to be made as nearly as possible at right angles to Plantation's line(s).
3. Electrical power and telephone cables will be encased for the entire width of Plantation's right-of-way of way. Schedule 40 EC-PVC duct is preferable; however, other materials may be used if approved by Plantation. Electrical power cables shall be installed with two to four inches of concrete around the duct or casing.
4. The use of explosives will not be permitted within the pipeline confinement strip and any use of explosives in the general area of the pipeline will be conducted in a manner so as to avoid any damage to Plantation's pipeline facilities.

Cobb County - Marietta Water Authority 1170 Atlanta Industrial Drive
 APPLICANT'S NAME APPLICANT'S STREET ADDRESS

Glenn M. Page _____
 PRINT SIGNER'S NAME APPLICANT'S MAILING ADDRESS

General Manager Marietta, GA 30066
 PRINT SIGNER'S TITLE CITY STATE ZIP

BY: [Signature] 2/14/19 770.514.5300
 SIGNATURE OF SIGNER DATE TELEPHONE

To the extent of its rights or interest and without warranty, Plantation hereby permits the crossing described in this request for Permit to Cross Right-Of-Way and Facilities of Plantation Pipe Line Company.

PLANTATION PIPE LINE COMPANY
 BY: [Signature]

Burney L. Sproul
 PRINT SIGNER'S NAME

Right Of Way Technician
 TITLE

2-15-19
 DATE

Appendix D
Easement Documents

Memorandum

To: Cobb County Marietta Water Authority
From: Jim Moonshower, Easement Acquisition Consultant, Moonshower's Inc.
Date: Jan 4, 2019

Re: Signed Easement – 2055 Cardell Rd., Austell, GA. James & Regina Ferguson

Attached is the original signed Easement for right of way easement to allow CCMWA to replace 36" water main WEST SIDE LOOP-SECTION 2. Also attached is Compensation Estimate & W-9 Social Security.

Mail check to ^{Ferguson} ~~Rubin~~ at address below.

Contact Info:

James & Regina Ferguson (brother & sister)
2055 Cardell Road
Austell, GA 30168

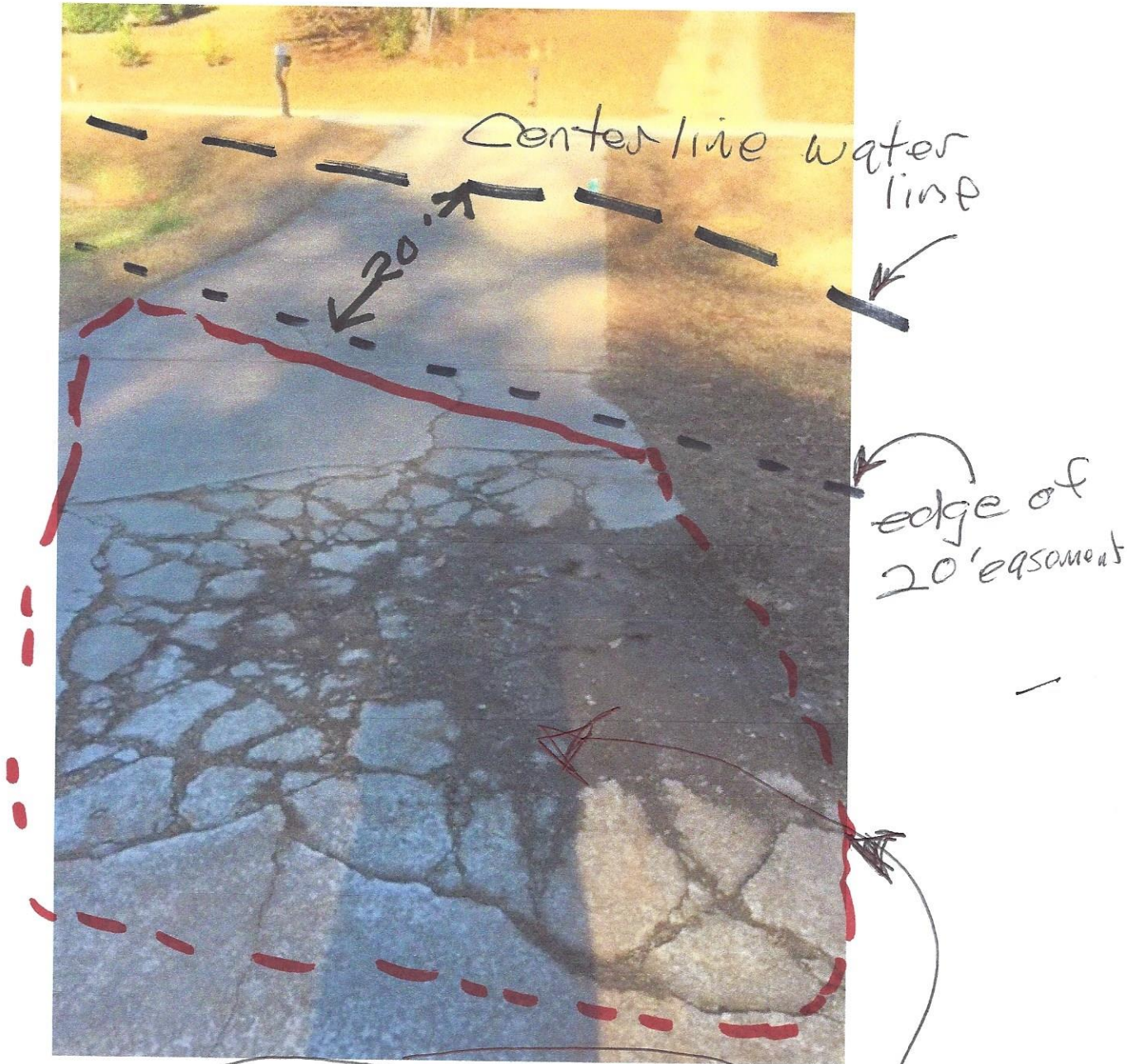
Mobile: 770-633-9278


Jim Moonshower
RW Consultant

SIPULATIONS:

1. CCMWA to replace all concrete 12' wide driveway from Cardell Rd RW across CCMWA 20' easement area and extended about 21' into property to repair badly crumbled area after construction. Shown in picture attached to Compensation Estimate attached. Owners have granted CCMWA to do this on their property off of the easement area.

2055 Cardell Rd
Ferguson



EASEMENT INSTRUMENT

STATE OF GEORGIA
COUNTY OF COBB

This grant of easement made this 4th day of January, ~~2018~~ 2019 from **JAMES FERGUSON, II & REGINA M. FERGUSON** (hereinafter collectively called "Grantor(s)"), as Party or Parties of the First Part whether one or more, to **COBB COUNTY - MARIETTA WATER AUTHORITY**, as Party of the Second Part (hereinafter called "Grantee").

WITNESSETH, that Grantor(s) for the sum of Ten (\$ 10.⁰⁰) Dollars and Other Valuable Considerations, in hand paid, at and before the sealing and delivery of these presents, the receipt and sufficiency whereof is hereby acknowledged, have (has) granted, bargained, sold and conveyed, and by these presents do(es) grant, bargain, sell and convey unto Grantee an easement and right-of-way over, through, across and under the property of Grantor(s) more particularly described as follows:

A permanent easement for the purpose of the **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**, as more particularly described in the plat attached hereto as Exhibit "A". Said easement(s) being more particularly described as follows:

Being a strip or parcel of land running in, through, over and across the property now or formerly owned by James Ferguson, II & Regina M. Ferguson, as described in a deed recorded among the Land Records of Cobb County, Georgia in Deed Book 6337, Page 285 and as shown on an Easement Sketch prepared by TerraMark Land Surveying, Inc. and attached hereto, said strip or parcel lying and being in Land Lots 259 & 309, 18th District, 2nd Section of Cobb County, Georgia and being more particularly described as follows:

Beginning for the same of the strip or parcel of land at a point on the Southwesterly Right of Way Line of Cardell Road, said point being at State Plane Coordinate (Georgia West Zone) of North: 1,381,832.080; East: 2,160,332.989; thence, leaving the said Point of Beginning and running with the said line of Cardell Road

1. South 38° 56' 50" East, 180.37 feet; thence, leaving the aforesaid line of Cardell Road and running
2. South 51° 11' 22" West, 20.00 feet; thence,
3. North 38° 56' 50" West, 173.53 feet; thence,
4. North 32° 17' 16" East, 21.12 feet to the Point of Beginning, containing 3,539 square feet or 0.0812 of an acre of land, more or less.

The permanent easement granted hereunder shall be perpetual.

If applicable, any temporary easement(s) granted hereunder shall

automatically terminate upon the completion of construction of the water transmission line to be installed by Grantee, said construction project known as **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**. Said construction shall be deemed complete one year from the date of Grantee's acceptance of said lines from the contractor.

The permanent easement(s) covered by this instrument are for the purpose of operating water pipelines with related valves and other attachments, together with the right to go upon said land to install said water pipelines and related valves and attachments, and any additional lines of pipe adjacent to and parallel with the lines mentioned together with related valves and attachments and to inspect, maintain and repair the same as may from time to time be necessary or expedient and whenever the Grantee may see fit, with all rights, members and appurtenances to said easement and right-of-way in any wise appertaining to or belonging. Grantee shall also have the right to maintain said permanent easement and to strip clear of trees, undergrowth, and brush in the event that Grantor or Grantor's assigns fail to do so.

Grantor covenants and agrees that Grantor will not impound water or construct buildings, structures, engineering works or other obstructions of any type whatsoever on the above-described permanent easement strip unless authorized to do so in writing by Grantee. Grantor agrees to leave Grantee's water line(s) undisturbed as to location and depth. These covenants and agreements shall be covenants running with the land and shall be binding on Grantor, his heirs, successors, and assigns. After a water line has been installed, Grantee shall not be liable for damage caused on the easement by keeping said easement clear of trees, undergrowth, brush, buildings, structures, engineering work and obstructions in the exercise of its rights granted herein.

After any construction by Grantee, Grantee shall re-seed with grass any portions of said right-of-way strip covered with vegetation prior to such construction and will replace any preexisting improvements damaged during construction excepting trees and deep rooted vegetation. Except for a flush pipe having a diameter of 12" or less at any low point, any markers and any ground manholes and manhole covers, any water pipeline(s), valves and related attachments to be constructed by Grantee across any portion of the above-described right-of-way strip shall, at the time of construction thereof, be installed to such depth as will not interfere with Grantor's subsequent use of said property for normal parking or landscaping purposes.

Delay of Grantee in the use or exercise of any right or easement hereby granted, or in laying or installing of water pipeline(s) in or along said right-of-way, shall not result in loss limitation, or abandonment of any of the right, title, interest, easement or estate hereby granted. The rights herein granted are divisible and assignable in part or in whole. The terms, covenants, and provisions of the right-

of-way easement shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors, and assigns of the parties hereto.

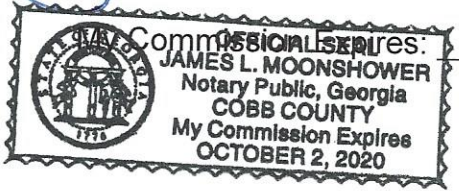
TO HAVE AND TO HOLD the said rights and right-of-way, easement, estate and privileges over, in, through and to the above-described land unto the said Grantee, its successors and assigns forever. Grantor(s) do(es) hereby covenant(s) with Grantee that Grantor(s) (are, is) lawfully seized and possessed of the real estate above described, that Grantor(s) (has) (have) a good and lawful right to convey it, or any part thereof, that it is free from all encumbrances and that Grantor(s) will forever warrant(s) and defend(s) the title thereto against the lawful claims of all persons whomsoever unto said Grantee, its successors and assigns.

IN WITNESS WHEREOF, Grantor(s) (has) (have) hereunto set (his, her, its, their) hand(s) and affixed (his, her, its, their) seals) the day and year first above written.

Acceptance and agreement of conditions placed herein.
Signed, sealed and delivered in the
presence of:

Heila J. Moonshower
Witness

James L. Moonshower
Notary Public



Grantor
BY: [Signature] (SEAL)
Name: James I Ferguson
Title: _____

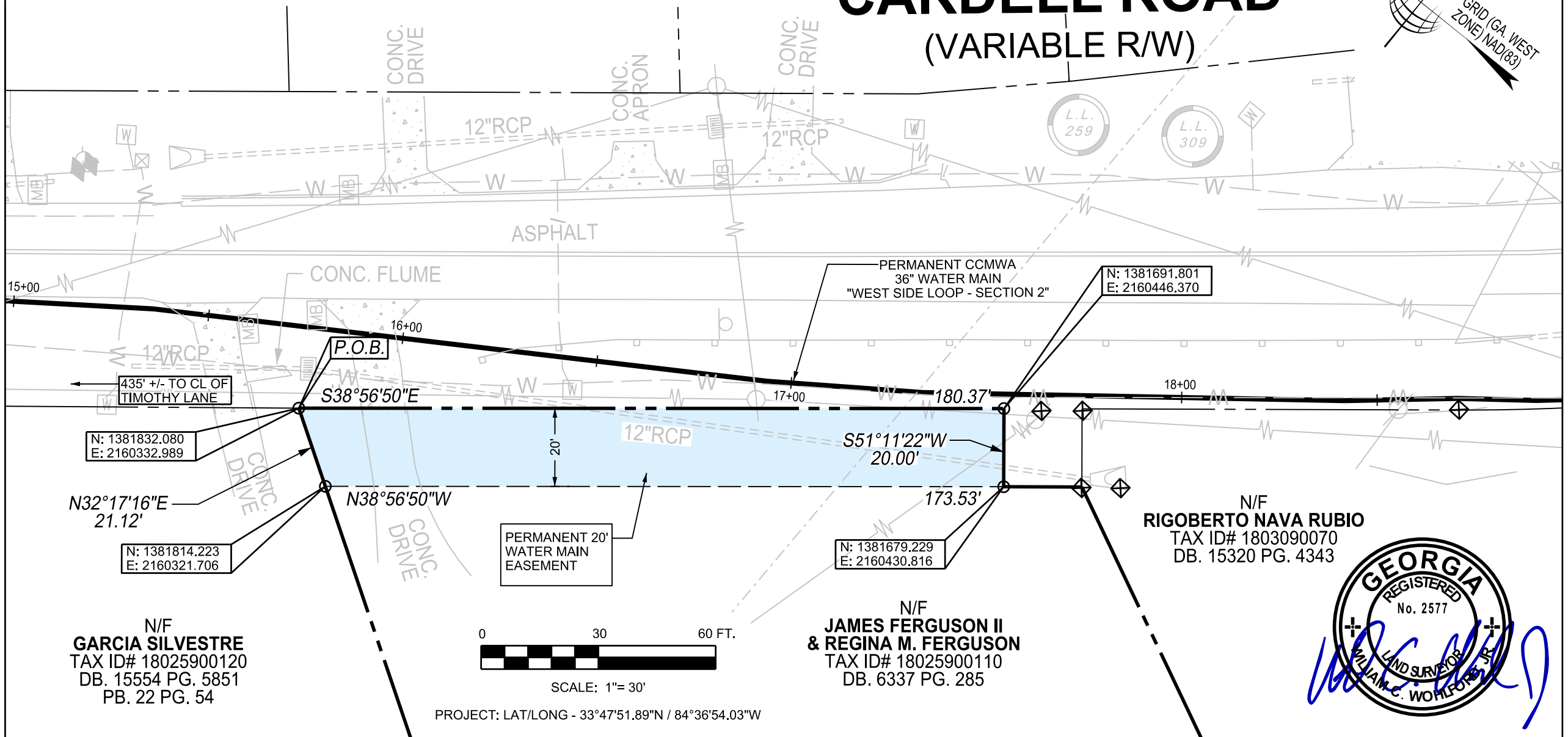
BY: Regina M. Ferguson (SEAL)
Name: Regina M Ferguson
Title: _____

EXHIBIT "A"
EASEMENT PLAT

NOTE: THE LOCATION OF THE PROPOSED WATER MAIN WITHIN THE PERMANENT EASEMENT IS SUBJECT TO CHANGE PRIOR TO OR DURING CONSTRUCTION OF THE PROJECT; HOWEVER, THE EASEMENT SHALL NOT CHANGE WITHOUT APPROVAL OF GRANTOR.

IMPROVEMENTS MAY EXIST ON SUBJECT PROPERTY WHICH HAVE NOT BEEN FIELD LOCATED AT THIS TIME.

CARDELL ROAD (VARIABLE R/W)

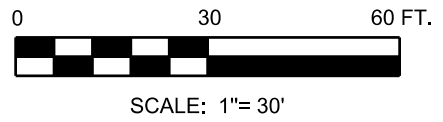
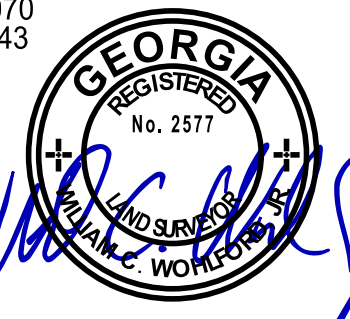


N/F
GARCIA SILVESTRE
TAX ID# 18025900120
DB. 15554 PG. 5851
PB. 22 PG. 54

PERMANENT 20'
WATER MAIN
EASEMENT

N/F
**JAMES FERGUSON II
& REGINA M. FERGUSON**
TAX ID# 18025900110
DB. 6337 PG. 285

N/F
RIGOBERTO NAVA RUBIO
TAX ID# 1803090070
DB. 15320 PG. 4343



PROJECT: LAT/LONG - 33°47'51.89"N / 84°36'54.03"W

3,539 SQ. FT./ 0.0812 AC. EASEMENT



LOCATED IN LAND LOTS
259 & 309
18TH DISTRICT
2ND SECTION
COBB COUNTY, GA
DATE: 10/12/18 SHEET NO. 1

SKETCH OF WATER MAIN EASEMENT
AS REQUIRED BY:
COBB COUNTY-MARIETTA
WATER AUTHORITY
C.C.M.W.A. NO. WSL PH2

THROUGH THE PROPERTY OF:
**JAMES FERGUSON II
& REGINA M. FERGUSON**
COBB COUNTY
TAX PARCEL # 18025900110

TerraMark
Professional Land Surveying
TerraMark Land Surveying, Inc.
1396 Bells Ferry Road
Marietta, Georgia 30066
www.TerraMark.com
(P) (770) 421-1927

Memorandum

To: Cobb County Marietta Water Authority
From: Jim Moonshower, Easement Acquisition Consultant, Moonshower's Inc.
Date: Jan 1, 2019

Re: Signed Easement – 2039 Cardell Rd., Austell, GA. RIGOBERTO NAVA RUBIO

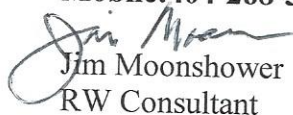
Attached is the original signed Easement for right of way easement to allow CCMWA to replace 36" water main WEST SIDE LOOP-SECTION 2. Also attached is Compensation Estimate & W-9 Social Security number and pictures of existing shed and new shed with cost estimate.

Mail check to Rubio at address below.

Contact Info:

Rigoberto Nava Rubio
2039 Cardell Road
Austell, GA 30168

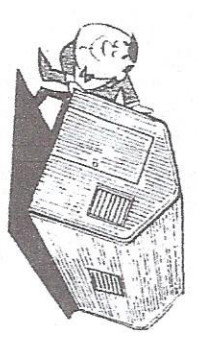
Mobile:404-268-3750


Jim Moonshower
RW Consultant

SIPULATIONS:

1. Owner to remove existing red shed from existing location away from RW easement before April 1, 2019.
2. CCMWA has reimbursed owner for a new replacement 10'x12' metal shed elsewhere on property. See Compensation Estimate in file.
3. CCMWA to replace all asphalt driveway with in Cardell Rd RW and new CCMWA 20' easement area after construction.
4. Ok to cut any trees needed to install new water line.
5. Replace water meter in current sodded front yard location near driveway. Current location of meter will be in construction/excavation area.

Kroyan



**SUPERIOR BUILDINGS
AND CARPORTS, INC.**
3080 POWDER SPRINGS ROAD
POWDER SPRINGS, GEORGIA 30127
PHONE: (770) 943-2265
WWW.123CARPORTS.COM



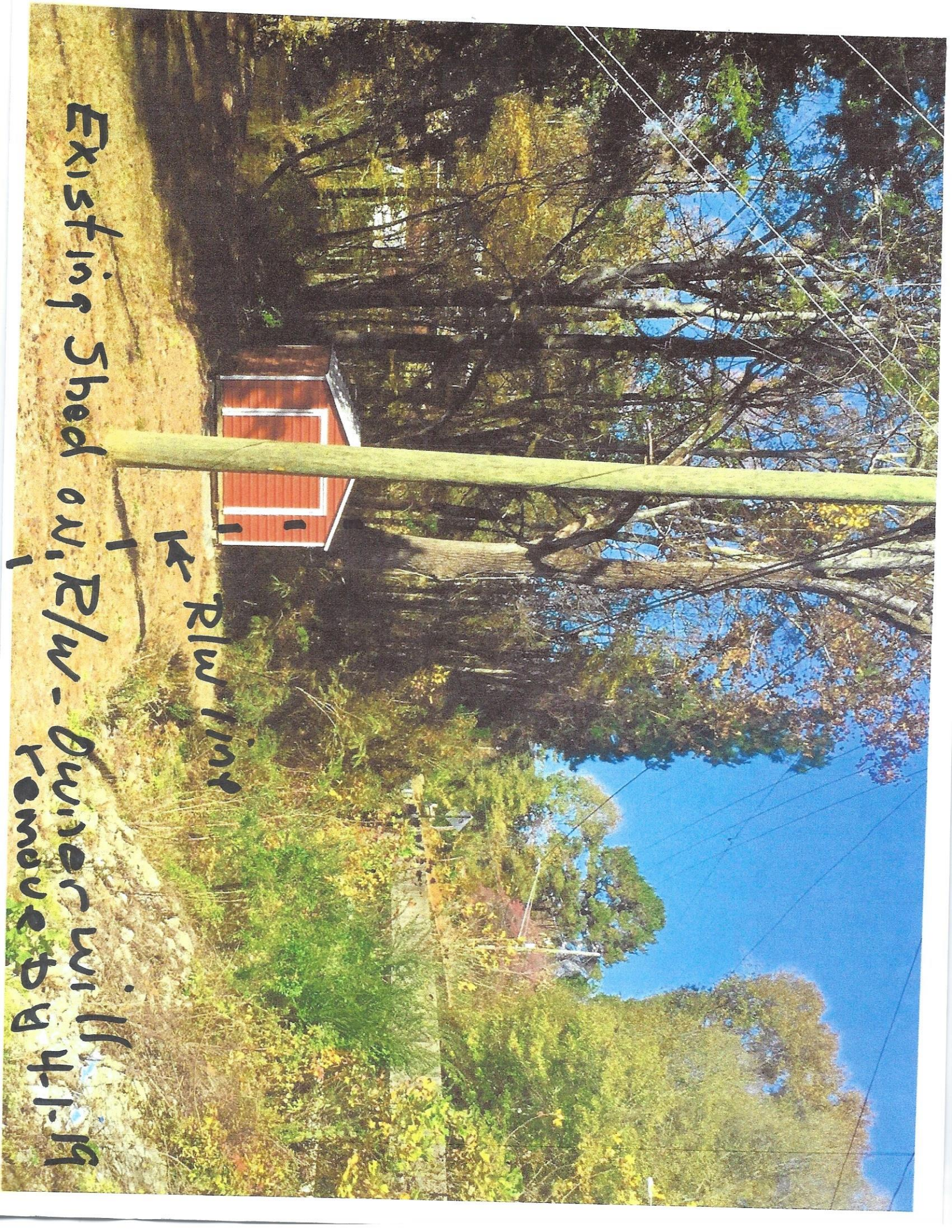
Customer's
Order No. _____
Name Rigo Rubio Date 11/30/18
Address 2039 Gardell, Austol, CH

SOLD BY Brynn CASH _____ C. O. D. _____ CHARGE _____ ON ACCT _____
MISE REFD. _____ PAID OUT _____

QUAN.	DESCRIPTION	PRICE	AMOUNT
1	10x12		2095.00
1	48" Door		50.00
	tax		134.00
	TOTAL		2379.00

Buyer Assumes Responsibility For Local Electrical Codes

Rec'd By _____



Existing Shed on R/W - Owner will remove by 4-1-19

← R/W line

EASEMENT INSTRUMENT

STATE OF GEORGIA
COUNTY OF COBB

This grant of easement made this 1st day of January, ~~2018~~ ²⁰¹⁹ from **RIGOBERTO NAVA RUBIO** (hereinafter collectively called "Grantor(s)"), as Party or Parties of the First Part whether one or more, to **COBB COUNTY - MARIETTA WATER AUTHORITY**, as Party of the Second Part (hereinafter called "Grantee").

WITNESSETH, that Grantor(s) for the sum of Ten (\$ 10.00) Dollars and Other Valuable Considerations, in hand paid, at and before the sealing and delivery of these presents, the receipt and sufficiency whereof is hereby acknowledged, have (has) granted, bargained, sold and conveyed, and by these presents do(es) grant, bargain, sell and convey unto Grantee an easement and right-of-way over, through, across and under the property of Grantor(s) more particularly described as follows:

A permanent easement for the purpose of the **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**, as more particularly described in the plat attached hereto as Exhibit "A". Said easement(s) being more particularly described as follows:

Being a strip or parcel of land running in, through, over and across the property now or formerly owned by Rigoberto Nava Rubio, as described in a deed recorded among the Land Records of Cobb County, Georgia in Deed Book 15320, Page 4343 and as shown on an Easement Sketch prepared by TerraMark Land Surveying, Inc. and attached hereto, said strip or parcel lying and being in Land Lot 309, 18th District, 2nd Section of Cobb County, Georgia and being more particularly described as follows:

Beginning for the same of the strip or parcel of land at a point on the Southwesterly Right of Way Line of Cardell Road, said point being at State Plane Coordinate (Georgia West Zone) of North: 1,381,463.139; East: 2,160,682.168; thence, leaving the said Point of Beginning and the said line of Cardell Road and running

1. South 22° 19' 09" West, 20.14 feet; thence,
2. 224.55 feet along the arc of a curve deflecting to the right and having a radius of 580.87 feet and a chord bearing and distance of North 49° 52' 18" West, 223.15 feet; thence,
3. North 38° 47' 58" West, 96.69 feet to a concrete right of way monument found; thence,
4. North 51° 11' 22" East, 20.00 feet to a concrete right of way monument found on the aforesaid line of Cardell Road; thence, running with the said line of Cardell Road
5. South 38° 47' 56" East, 96.69 feet to a concrete right of way monument found; thence,
6. 214.45 feet along the arc of a curve deflecting to the left and having a radius of 560.87 feet and a chord bearing and distance of South 49° 45' 03" East, 213.15

feet to the Point of Beginning, containing 6,323 square feet or 0.1452 of an acre of land, more or less.

The permanent easement granted hereunder shall be perpetual.

If applicable, any temporary easement(s) granted hereunder shall automatically terminate upon the completion of construction of the water transmission line to be installed by Grantee, said construction project known as **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**. Said construction shall be deemed complete one year from the date of Grantee's acceptance of said lines from the contractor.

The permanent easement(s) covered by this instrument are for the purpose of operating water pipelines with related valves and other attachments, together with the right to go upon said land to install said water pipelines and related valves and attachments, and any additional lines of pipe adjacent to and parallel with the lines mentioned together with related valves and attachments and to inspect, maintain and repair the same as may from time to time be necessary or expedient and whenever the Grantee may see fit, with all rights, members and appurtenances to said easement and right-of-way in any wise appertaining to or belonging. Grantee shall also have the right to maintain said permanent easement and to strip clear of trees, undergrowth, and brush in the event that Grantor or Grantor's assigns fail to do so.

Grantor covenants and agrees that Grantor will not impound water or construct buildings, structures, engineering works or other obstructions of any type whatsoever on the above-described permanent easement strip unless authorized to do so in writing by Grantee. Grantor agrees to leave Grantee's water line(s) undisturbed as to location and depth. These covenants and agreements shall be covenants running with the land and shall be binding on Grantor, his heirs, successors, and assigns. After a water line has been installed, Grantee shall not be liable for damage caused on the easement by keeping said easement clear of trees, undergrowth, brush, buildings, structures, engineering work and obstructions in the exercise of its rights granted herein.

After any construction by Grantee, Grantee shall re-seed with grass any portions of said right-of-way strip covered with vegetation prior to such construction and will replace any preexisting improvements damaged during construction excepting trees and deep rooted vegetation. Except for a flush pipe having a diameter of 12" or less at any low point, any markers and any ground manholes and manhole covers, any water pipeline(s), valves and related attachments to be constructed by Grantee across any portion of the above-described right-of-way strip shall, at the time of construction thereof, be installed to such depth as will not interfere with Grantor's subsequent use of said property for normal parking or landscaping purposes.

Delay of Grantee in the use or exercise of any right or easement hereby granted, or in laying or installing of water pipeline(s) in or along said right-of-way, shall not result in loss limitation, or abandonment of any of the right, title, interest, easement or estate hereby granted. The rights herein granted are divisible and assignable in part or in whole. The terms, covenants, and provisions of the right-of-way easement shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors, and assigns of the parties hereto.

TO HAVE AND TO HOLD the said rights and right-of-way, easement, estate and privileges over, in, through and to the above-described land unto the said Grantee, its successors and assigns forever. Grantor(s) do(es) hereby covenant(s) with Grantee that Grantor(s) (are, is) lawfully seized and possessed of the real estate above described, that Grantor(s) (has) (have) a good and lawful right to convey it, or any part thereof, that it is free from all encumbrances and that Grantor(s) will forever warrant(s) and defend(s) the title thereto against the lawful claims of all persons whomsoever unto said Grantee, its successors and assigns.

IN WITNESS WHEREOF, Grantor(s) (has) (have) hereunto set (his, her, its, their) hand(s) and affixed (his, her, its, their) seals) the day and year first above written.

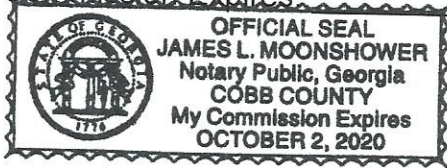
Acceptance and agreement of conditions placed herein.

Signed, sealed and delivered in the presence of:

Heck Moon
Witness

James L. Moonshower
Notary Public

My Commission Expires:



Grantor

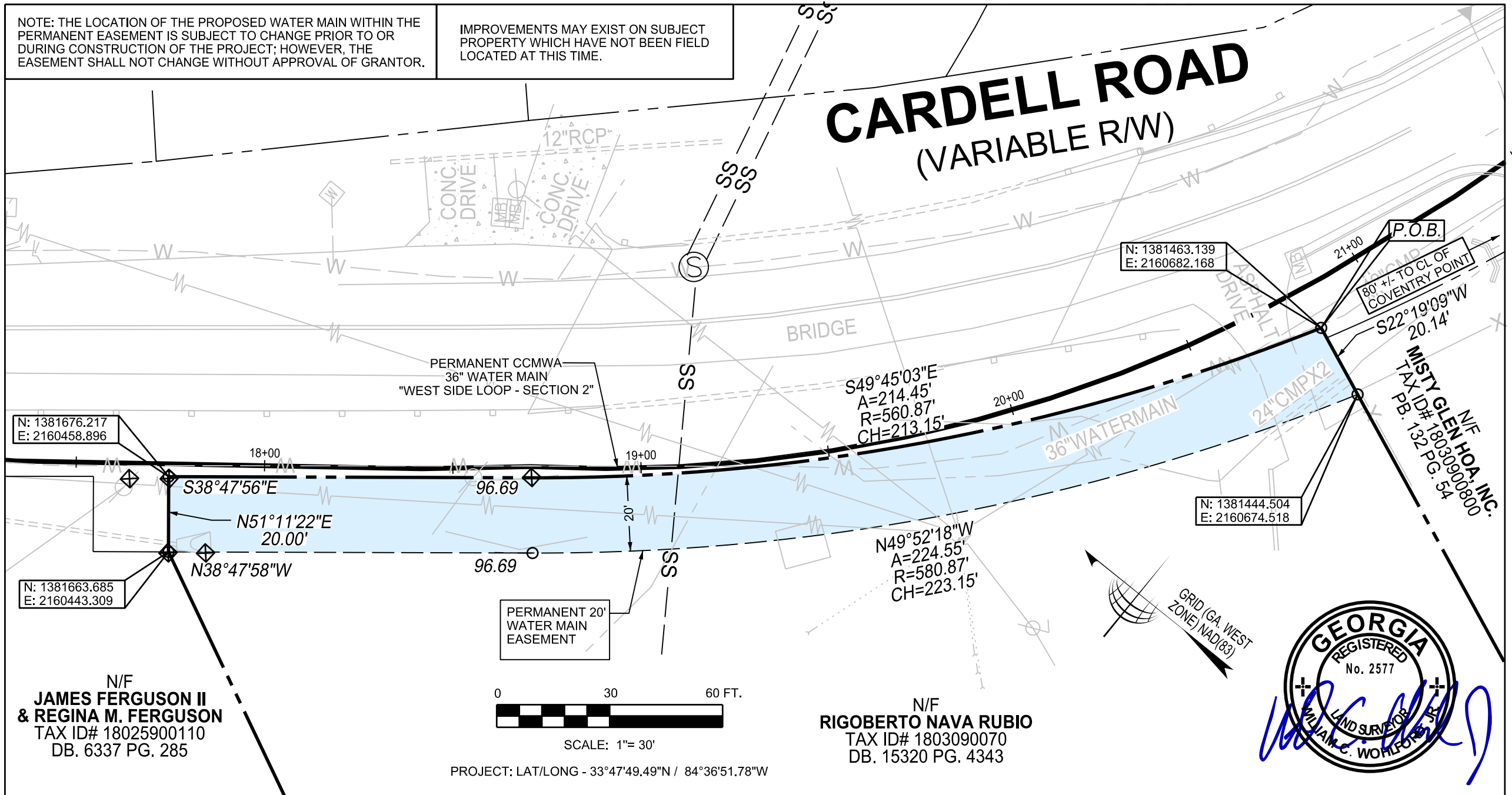
BY: *Rigoberto Navar* (SEAL)
Name: *Rigoberto Navar Rubio*
Title: *owner*

BY: _____ (SEAL)
Name: _____
Title: _____

NOTE: THE LOCATION OF THE PROPOSED WATER MAIN WITHIN THE PERMANENT EASEMENT IS SUBJECT TO CHANGE PRIOR TO OR DURING CONSTRUCTION OF THE PROJECT; HOWEVER, THE EASEMENT SHALL NOT CHANGE WITHOUT APPROVAL OF GRANTOR.

IMPROVEMENTS MAY EXIST ON SUBJECT PROPERTY WHICH HAVE NOT BEEN FIELD LOCATED AT THIS TIME.

CARDELL ROAD (VARIABLE R/W)



N: 1381676.217
E: 2160458.896

N: 1381663.685
E: 2160443.309

N: 1381463.139
E: 2160682.168

N: 1381444.504
E: 2160674.518

N/F
**JAMES FERGUSON II
& REGINA M. FERGUSON**
TAX ID# 18025900110
DB. 6337 PG. 285

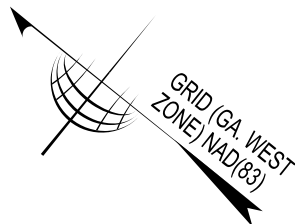
N/F
RIGOBERTO NAVA RUBIO
TAX ID# 1803090070
DB. 15320 PG. 4343

PERMANENT 20'
WATER MAIN
EASEMENT

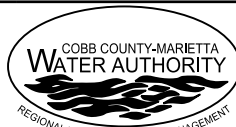


SCALE: 1"= 30'

PROJECT: LAT/LONG - 33°47'49.49"N / 84°36'51.78"W



6,323 SQ. FT./ 0.1452 AC. EASEMENT



LOCATED IN LAND LOT 309
18TH DISTRICT
2ND SECTION
COBB COUNTY, GA

DATE: 10/12/18 SHEET NO. 1

SKETCH OF WATER MAIN EASEMENT
AS REQUIRED BY:

COBB COUNTY-MARIETTA
WATER AUTHORITY

C.C.M.W.A. NO. WSL PH2

THROUGH THE PROPERTY OF:
RIGOBERTO NAVA RUBIO
COBB COUNTY

TAX PARCEL # 1803090070

TerraMark Land Surveying, Inc.
1396 Bells Ferry Road
Marietta, Georgia 30066
www.TerraMark.com
TerraMark
Professional Land Surveying

(P) (770) 421-1927

EASEMENT INSTRUMENT

STATE OF GEORGIA COUNTY OF COBB

This grant of easement made this _____ day of _____, 2018 from **COBB COUNTY** (hereinafter collectively called "Grantor(s)"), as Party or Parties of the First Part whether one or more, to **COBB COUNTY - MARIETTA WATER AUTHORITY**, as Party of the Second Part (hereinafter called "Grantee").

WITNESSETH, that Grantor(s) for the sum of _____ (\$_____) Dollars and Other Valuable Considerations, in hand paid, at and before the sealing and delivery of these presents, the receipt and sufficiency whereof is hereby acknowledged, have (has) granted, bargained, sold and conveyed, and by these presents do(es) grant, bargain, sell and convey unto Grantee an easement and right-of-way over, through, across and under the property of Grantor(s) more particularly described as follows:

A permanent easement for the purpose of the **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**, as more particularly described in the plat attached hereto as Exhibit "A". Said easement(s) being more particularly described as follows:

Being a strip or parcel of land running in, through, over and across the property now or formerly owned by Cobb County, as shown on an Easement Sketch prepared by TerraMark Land Surveying, Inc. and attached hereto, said strip or parcel lying and being in Land Lot 382, 18th District, 2nd Section of Cobb County, Georgia and being more particularly described as follows:

Beginning for the same of the strip or parcel of land at a point on the Northerly Right of Way Line of South Gordon Road, said point being at the intersection of the said line of South Gordon Road and the North Line of aforesaid Land Lot 382, and said point being at State Plane Coordinate (Georgia West Zone) of North: 1,380,145.270; East: 2,168,564.153; thence, leaving the said Point of Beginning and the said line of South Gordon Road and running with the said line of Land Lot 382

1. South 89° 11' 20" East, 74.32 feet; thence,
2. South 65° 22' 56" East, 91.45 feet; thence,
3. South 32° 40' 52" West, 30.30 feet to a point on the aforesaid line of South Gordon Road; thence, running with the said line of South Gordon Road
4. North 65° 22' 56" West, 155.20 to the Point of Beginning, containing 3,700 square feet or 0.0849 of an acre of land, more or less.

The permanent easement granted hereunder shall be perpetual.

If applicable, any temporary easement(s) granted hereunder shall automatically terminate upon the completion of construction of the water transmission line to be installed by Grantee, said construction project known as **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**. Said construction shall be deemed complete one year from the date of Grantee's acceptance of said lines from the contractor.

The permanent easement(s) covered by this instrument are for the purpose of operating water pipelines with related valves and other attachments, together with the right to go upon said land to install said water pipelines and related valves and attachments, and any additional lines of pipe adjacent to and parallel with the lines mentioned together with related valves and attachments and to inspect, maintain and repair the same as may from time to time be necessary or expedient and whenever the Grantee may see fit, with all rights, members and appurtenances to said easement and right-of-way in any wise appertaining to or belonging. Grantee shall also have the right to maintain said permanent easement and to strip clear of trees, undergrowth, and brush in the event that Grantor or

Grantor's assigns fail to do so.

Grantor covenants and agrees that Grantor will not impound water or construct buildings, structures, engineering works or other obstructions of any type whatsoever on the above-described permanent easement strip unless authorized to do so in writing by Grantee. Grantor agrees to leave Grantee's water line(s) undisturbed as to location and depth. These covenants and agreements shall be covenants running with the land and shall be binding on Grantor, his heirs, successors, and assigns. After a water line has been installed, Grantee shall not be liable for damage caused on the easement by keeping said easement clear of trees, undergrowth, brush, buildings, structures, engineering work and obstructions in the exercise of its rights granted herein.

After any construction by Grantee, Grantee shall re-seed with grass any portions of said right-of-way strip covered with vegetation prior to such construction and will replace any preexisting improvements damaged during construction excepting trees and deep rooted vegetation. Except for a flush pipe having a diameter of 12" or less at any low point, any markers and any ground manholes and manhole covers, any water pipeline(s), valves and related attachments to be constructed by Grantee across any portion of the above-described right-of-way strip shall, at the time of construction thereof, be installed to such depth as will not interfere with Grantor's subsequent use of said property for normal parking or landscaping purposes.

Delay of Grantee in the use or exercise of any right or easement hereby granted, or in laying or installing of water pipeline(s) in or along said right-of-way, shall not result in loss limitation, or abandonment of any of the right, title, interest, easement or estate hereby granted. The rights herein granted are divisible and assignable in part or in whole. The terms, covenants, and provisions of the right-of-way easement shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors, and assigns of the parties hereto.

TO HAVE AND TO HOLD the said rights and right-of-way, easement, estate and privileges over, in, through and to the above-described land unto the said Grantee, its successors and assigns forever. Grantor(s) do(es) hereby covenant(s) with Grantee that Grantor(s) (are, is) lawfully seized and possessed of the real estate above described, that Grantor(s) (has) (have) a good and lawful right to convey it, or any part thereof, that it is free from all encumbrances and that Grantor(s) will forever warrant(s) and defend(s) the title thereto against the lawful claims of all persons whomsoever unto said Grantee, its successors and assigns.

IN WITNESS WHEREOF, Grantor(s) (has) (have) hereunto set (his, her, its, their) hand(s) and affixed (his, her, its, their) seals) the day and year first above written.

Acceptance and agreement of conditions placed herein.

Signed, sealed and delivered in the presence of:

Witness

Notary Public

My Commission Expires: _____

Grantor

BY: _____(SEAL)

Name: _____

Title: _____

BY: _____(SEAL)

Name: _____

Title: _____

NOTE: THE LOCATION OF THE PROPOSED WATER MAIN WITHIN THE PERMANENT EASEMENT IS SUBJECT TO CHANGE PRIOR TO OR DURING CONSTRUCTION OF THE PROJECT; HOWEVER, THE EASEMENT SHALL NOT CHANGE WITHOUT APPROVAL OF GRANTOR.

IMPROVEMENTS MAY EXIST ON SUBJECT PROPERTY WHICH HAVE NOT BEEN FIELD LOCATED AT THIS TIME.

N/F
TAUNEE A. KENDALL
TAX ID# 18030300490
DB. 14850 PG. 5553
PB. 185 PG. 67

N/F
AZALEA MOSS
TAX ID# 18030300050
DB. 15180 PG. 2683

N/F
WILLOW BEND POA, INC.
TAX ID# 18030300590

N/F
CAYETANO GARCIA & ROSA E. RAMIREZ
TAX ID# 18038200040
DB. 15179 PG. 380

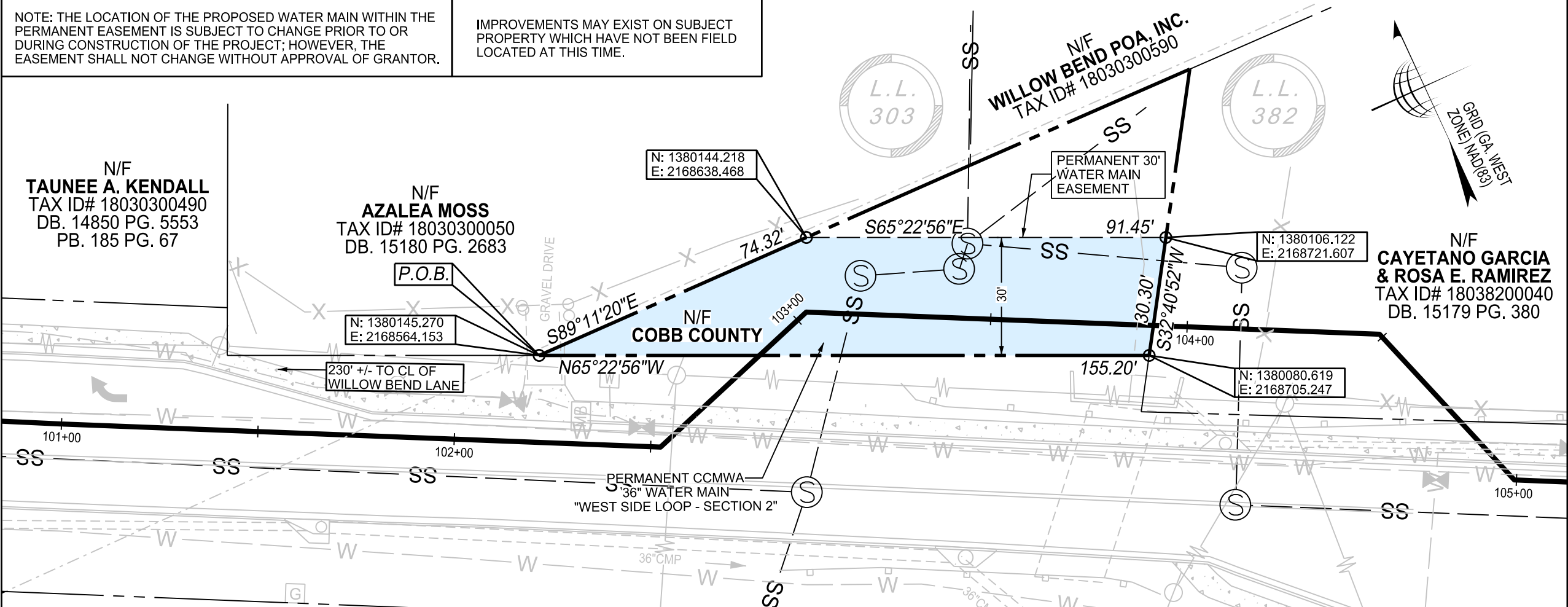
N: 1380145.270
E: 2168564.153
P.O.B.
230' +/- TO CL OF
WILLOW BEND LANE

N: 1380144.218
E: 2168638.468

PERMANENT 30'
WATER MAIN
EASEMENT

N: 1380106.122
E: 2168721.607

N: 1380080.619
E: 2168705.247

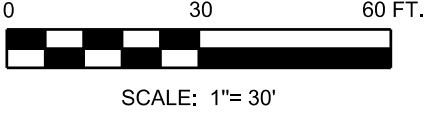


SOUTH GORDON ROAD

(VARIABLE R/W)



N/F
COOTS FAMILY PROPERTIES LLC SERIES 8
TAX ID# 18038200060
DB. 14844 PG. 5860



PROJECT: LAT/LONG - 33°47'36.00\"/>

N/F
WILLIAM L. WILLS
TAX ID# 18038200500
DB. 13244 PG. 4051
PB. 186 PG. 61

SHADY RIDGE LANE

3,700 SQ. FT./ 0.0849 AC. EASEMENT



LOCATED IN LAND LOT 382
18TH DISTRICT
2ND SECTION
COBB COUNTY, GA
DATE: 10/12/18 SHEET NO. 1

SKETCH OF WATER MAIN EASEMENT
AS REQUIRED BY:
COBB COUNTY-MARIETTA
WATER AUTHORITY
C.C.M.W.A. NO. WSL PH2

THROUGH THE PROPERTY OF:
COBB COUNTY
COBB COUNTY

TerraMark
Professional Land Surveying

TerraMark Land Surveying, Inc.
1396 Bells Ferry Road
Marietta, Georgia 30066
www.TerraMark.com
(P) (770) 421-1927

EASEMENT INSTRUMENT

STATE OF GEORGIA
COUNTY OF COBB

This grant of easement made this 15 day of December, 2018 from **CAYETANO GARCIA & ROSA A. RAMIREZ** (hereinafter collectively called "Grantor(s)"), as Party or Parties of the First Part whether one or more, to **COBB COUNTY - MARIETTA WATER AUTHORITY**, as Party of the Second Part (hereinafter called "Grantee").

WITNESSETH, that Grantor(s) for the sum of Ten (\$ 10.00) Dollars and Other Valuable Considerations, in hand paid, at and before the sealing and delivery of these presents, the receipt and sufficiency whereof is hereby acknowledged, have (has) granted, bargained, sold and conveyed, and by these presents do(es) grant, bargain, sell and convey unto Grantee an easement and right-of-way over, through, across and under the property of Grantor(s) more particularly described as follows:

A permanent easement for the purpose of the **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**, as more particularly described in the plat attached hereto as Exhibit "A". Said easement(s) being more particularly described as follows:

Being a strip or parcel of land running in, through, over and across the property now or formerly owned by Cayetano Garcia & Rosa E. Ramirez, as described in a deed recorded among the Land Records of Cobb County, Georgia in Deed Book 15179, Page 380, and as shown on an Easement Sketch prepared by TerraMark Land Surveying, Inc. and attached hereto, said strip or parcel lying and being in Land Lot 382, 18th District, 2nd Section of Cobb County, Georgia and being more particularly described as follows:

Beginning for the same of the strip or parcel of land at a point on the Northerly Right of Way Line of South Gordon Road, said point being at State Plane Coordinate (Georgia West Zone) of North: 1,380,068.437; East: 2,168,697.431; thence, leaving the said Point of Beginning and running

1. North 32° 40' 52" East, 30.19 feet; thence,
2. South 63° 41' 26" East, 111.55 feet; thence,
3. South 26° 48' 12" West, 30.00 feet to a point on the aforesaid line of South Gordon Road; thence, running with the said line of South Gordon Road
4. North 63° 41' 26" West, 114.64 to the Point of Beginning, containing 3,393 square feet or 0.0779 of an acre of land, more or less.

The permanent easement granted hereunder shall be perpetual.

If applicable, any temporary easement(s) granted hereunder shall

automatically terminate upon the completion of construction of the water transmission line to be installed by Grantee, said construction project known as **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**. Said construction shall be deemed complete one year from the date of Grantee's acceptance of said lines from the contractor.

The permanent easement(s) covered by this instrument are for the purpose of operating water pipelines with related valves and other attachments, together with the right to go upon said land to install said water pipelines and related valves and attachments, and any additional lines of pipe adjacent to and parallel with the lines mentioned together with related valves and attachments and to inspect, maintain and repair the same as may from time to time be necessary or expedient and whenever the Grantee may see fit, with all rights, members and appurtenances to said easement and right-of-way in any wise appertaining to or belonging. Grantee shall also have the right to maintain said permanent easement and to strip clear of trees, undergrowth, and brush in the event that Grantor or Grantor's assigns fail to do so.

Grantor covenants and agrees that Grantor will not impound water or construct buildings, structures, engineering works or other obstructions of any type whatsoever on the above-described permanent easement strip unless authorized to do so in writing by Grantee. Grantor agrees to leave Grantee's water line(s) undisturbed as to location and depth. These covenants and agreements shall be covenants running with the land and shall be binding on Grantor, his heirs, successors, and assigns. After a water line has been installed, Grantee shall not be liable for damage caused on the easement by keeping said easement clear of trees, undergrowth, brush, buildings, structures, engineering work and obstructions in the exercise of its rights granted herein.

After any construction by Grantee, Grantee shall re-seed with grass any portions of said right-of-way strip covered with vegetation prior to such construction and will replace any preexisting improvements damaged during construction excepting trees and deep rooted vegetation. Except for a flush pipe having a diameter of 12" or less at any low point, any markers and any ground manholes and manhole covers, any water pipeline(s), valves and related attachments to be constructed by Grantee across any portion of the above-described right-of-way strip shall, at the time of construction thereof, be installed to such depth as will not interfere with Grantor's subsequent use of said property for normal parking or landscaping purposes.

Delay of Grantee in the use or exercise of any right or easement hereby granted, or in laying or installing of water pipeline(s) in or along said right-of-way, shall not result in loss limitation, or abandonment of any of the right, title, interest, easement or estate hereby granted. The rights herein granted are divisible and assignable in part or in whole. The terms, covenants, and provisions of the right-

of-way easement shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors, and assigns of the parties hereto.

TO HAVE AND TO HOLD the said rights and right-of-way, easement, estate and privileges over, in, through and to the above-described land unto the said Grantee, its successors and assigns forever. Grantor(s) do(es) hereby covenant(s) with Grantee that Grantor(s) (are, is) lawfully seized and possessed of the real estate above described, that Grantor(s) (has) (have) a good and lawful right to convey it, or any part thereof, that it is free from all encumbrances and that Grantor(s) will forever warrant(s) and defend(s) the title thereto against the lawful claims of all persons whomsoever unto said Grantee, its successors and assigns.

IN WITNESS WHEREOF, Grantor(s) (has) (have) hereunto set (his, her, its, their) hand(s) and affixed (his, her, its, their) seals) the day and year first above written.

Acceptance and agreement of conditions placed herein.

Signed, sealed and delivered in the presence of:

Garca
Witness

Sheila Dr. Moore
Notary Public

My Commission Expires

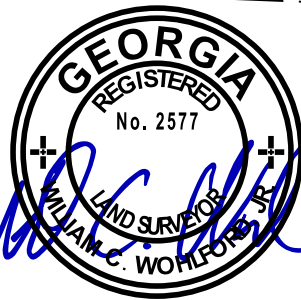
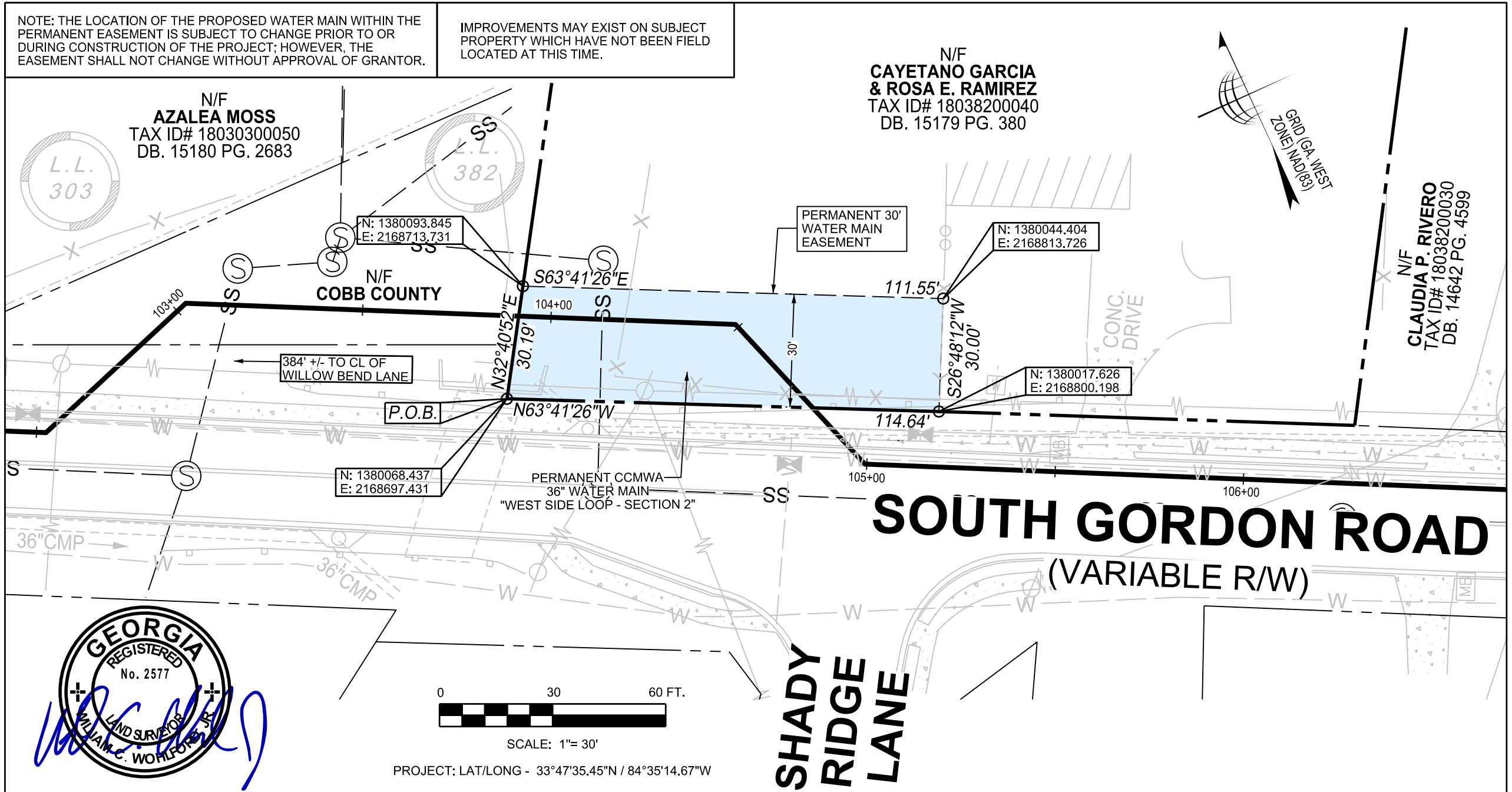


Grantor
BY: [Signature] (SEAL)
Name: CAYETANO GARCIA L
Title: _____

BY: [Signature] (SEAL)
Name: ROSA E. Ramirez
Title: _____



NOTE: THE LOCATION OF THE PROPOSED WATER MAIN WITHIN THE PERMANENT EASEMENT IS SUBJECT TO CHANGE PRIOR TO OR DURING CONSTRUCTION OF THE PROJECT; HOWEVER, THE EASEMENT SHALL NOT CHANGE WITHOUT APPROVAL OF GRANTOR.

IMPROVEMENTS MAY EXIST ON SUBJECT PROPERTY WHICH HAVE NOT BEEN FIELD LOCATED AT THIS TIME.



SCALE: 1"= 30'

PROJECT: LAT/LONG - 33°47'35.45"N / 84°35'14.67"W

3,393 SQ. FT./ 0.0779 AC. EASEMENT		LOCATED IN LAND LOT 382 18TH DISTRICT 2ND SECTION COBB COUNTY, GA DATE: 10/12/18 SHEET NO. 1	SKETCH OF WATER MAIN EASEMENT AS REQUIRED BY: COBB COUNTY-MARIETTA WATER AUTHORITY C.C.M.W.A. NO. WSL PH2	THROUGH THE PROPERTY OF: CAYETANO GARCIA & ROSA E. RAMIREZ COBB COUNTY TAX ID# 18038200040	 <p>TerraMark Land Surveying, Inc. 1396 Bells Ferry Road Marietta, Georgia 30066 www.TerraMark.com (P) (770) 421-1927</p>
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EASEMENT INSTRUMENT

STATE OF GEORGIA
COUNTY OF COBB

This grant of easement made this 12th day of February, 2018 from g. Hughes
THE HUGHES CHILDREN'S TRUST (hereinafter collectively called "Grantor(s)"),
as Party or Parties of the First Part whether one or more, to **COBB COUNTY -**
MARIETTA WATER AUTHORITY, as Party of the Second Part (hereinafter called
"Grantee").

WITNESSETH, that Grantor(s) for the sum of _____ (\$46,557.00) Dollars
and Other Valuable Considerations, in hand paid, at and before the sealing and
delivery of these presents, the receipt and sufficiency whereof is hereby
acknowledged, have (has) granted, bargained, sold and conveyed, and by these
presents do(es) grant, bargain, sell and convey unto Grantee an easement and
right-of-way over, through, across and under the property of Grantor(s) more
particularly described as follows:

A permanent easement for the purpose of the **WEST SIDE LOOP,**
SECTION 2 - 36-INCH WATER MAIN REPLACEMENT, as more particularly
described in the plat attached hereto as Exhibit "A". Said easement(s) being more
particularly described as follows:

Being a strip or parcel of land running in, through, over and across the property now
or formerly owned by The Hughes Children's Trust, as described in a deed recorded
among the Land Records of Cobb County, Georgia in Deed Book 13922, Page 436,
and as shown on an Easement Sketch prepared by TerraMark Land Surveying, Inc.
and attached hereto, said strip or parcel lying and being in Land Lot 413, 18th District,
2nd Section of Cobb County, Georgia and being more particularly described as
follows:

Beginning for the same of the strip or parcel of land at a concrete right of way
monument found at the intersection of the Southerly Right of Way Line of South
Gordon Road and the Westerly Right of Way Line of Factory Shoals Road, said point
being at State Plane Coordinate (Georgia West Zone) of North: 1,378,594.894; East:
2,172,226.680; thence, leaving the said Point of Beginning and running with the said
line of Factory Shoals Road

1. South 00° 16' 54" East, 214.92 feet; thence,
2. South 01° 13' 58" East, 77.62 feet; thence,
3. South 03° 28' 25" East, 108.56 feet; thence,
4. South 04° 33' 16" East, 125.46 feet; thence, leaving the aforesaid line of Factory
Shoals Road and running
5. North 89° 44' 29" West, 30.11 feet; thence,
6. North 04° 33' 16" West, 123.22 feet; thence,
7. North 03° 28' 25" West, 109.43 feet; thence,
8. North 01° 13' 58" West, 78.46 feet; thence,



9. North 00° 16' 54" West, 236.25 feet to a point on the aforesaid line of South Gordon Road; thence, running with the said line of South Gordon Road
10. South 82° 40' 30" East, 9.65 feet; thence,
11. South 46° 10' 58" East, 28.46 feet to the Point of Beginning, containing 16,192 square feet or 0.3717 of an acre of land, more or less.

The permanent easement granted hereunder shall be perpetual.

If applicable, any temporary easement(s) granted hereunder shall automatically terminate upon the completion of construction of the water transmission line to be installed by Grantee, said construction project known as **WEST SIDE LOOP, SECTION 2 - 36-INCH WATER MAIN REPLACEMENT**. Said construction shall be deemed complete one year from the date of Grantee's acceptance of said lines from the contractor.

The permanent easement(s) covered by this instrument are for the purpose of operating water pipelines with related valves and other attachments, together with the right to go upon said land to install said water pipelines and related valves and attachments, and any additional lines of pipe adjacent to and parallel with the lines mentioned together with related valves and attachments and to inspect, maintain and repair the same as may from time to time be necessary or expedient and whenever the Grantee may see fit, with all rights, members and appurtenances to said easement and right-of-way in any wise appertaining to or belonging. Grantee shall also have the right to maintain said permanent easement and to strip clear of trees, undergrowth, and brush in the event that Grantor or Grantor's assigns fail to do so.

Grantor covenants and agrees that Grantor will not impound water or construct buildings, structures, engineering works or other obstructions of any type whatsoever on the above-described permanent easement strip unless authorized to do so in writing by Grantee. Grantor agrees to leave Grantee's water line(s) undisturbed as to location and depth. These covenants and agreements shall be covenants running with the land and shall be binding on Grantor, his heirs, successors, and assigns. After a water line has been installed, Grantee shall not be liable for damage caused on the easement by keeping said easement clear of trees, undergrowth, brush, buildings, structures, engineering work and obstructions in the exercise of its rights granted herein.

After any construction by Grantee, Grantee shall re-seed with grass any portions of said right-of-way strip covered with vegetation prior to such construction and will replace any preexisting improvements damaged during construction excepting trees and deep rooted vegetation. Except for a flush pipe having a diameter of 12" or less at any low point, any markers and any ground manholes and manhole covers, any water pipeline(s), valves and related attachments to be constructed by Grantee across any portion of the above-described right-of-way



strip shall, at the time of construction thereof, be installed to such depth as will not interfere with Grantor's subsequent use of said property for normal parking or landscaping purposes.

Delay of Grantee in the use or exercise of any right or easement hereby granted, or in laying or installing of water pipeline(s) in or along said right-of-way, shall not result in loss limitation, or abandonment of any of the right, title, interest, easement or estate hereby granted. The rights herein granted are divisible and assignable in part or in whole. The terms, covenants, and provisions of the right-of-way easement shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors, and assigns of the parties hereto.

TO HAVE AND TO HOLD the said rights and right-of-way, easement, estate and privileges over, in, through and to the above-described land unto the said Grantee, its successors and assigns forever. Grantor(s) do(es) hereby covenant(s) with Grantee that Grantor(s) (are, is) lawfully seized and possessed of the real estate above described, that Grantor(s) (has) (have) a good and lawful right to convey it, or any part thereof, that it is free from all encumbrances and that Grantor(s) will forever warrant(s) and defend(s) the title thereto against the lawful claims of all persons whomsoever unto said Grantee, its successors and assigns.

IN WITNESS WHEREOF, Grantor(s) (has) (have) hereunto set (his, her, its, their) hand(s) and affixed (his, her, its, their) seals) the day and year first above written.



Acceptance and agreement of conditions placed herein.

Signed, sealed and delivered in the presence of:

John Helges
Witness

John Holm
Notary Public



My Commission Expires: _____

Grantor
BY: T. Webb Hughes (SEAL)
Name: T. Webb HUGHES
Title: Trustee

BY: _____ (SEAL)
Name: _____
Title: _____

NOTARY PUBLIC, ROCKDALE COUNTY, GEORGIA
MY COMMISSION EXPIRES OCTOBER 17, 2019

NOTE: THE LOCATION OF THE PROPOSED WATER MAIN WITHIN THE PERMANENT EASEMENT IS SUBJECT TO CHANGE PRIOR TO OR DURING CONSTRUCTION OF THE PROJECT; HOWEVER, THE EASEMENT SHALL NOT CHANGE WITHOUT APPROVAL OF GRANTOR.

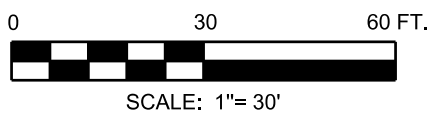
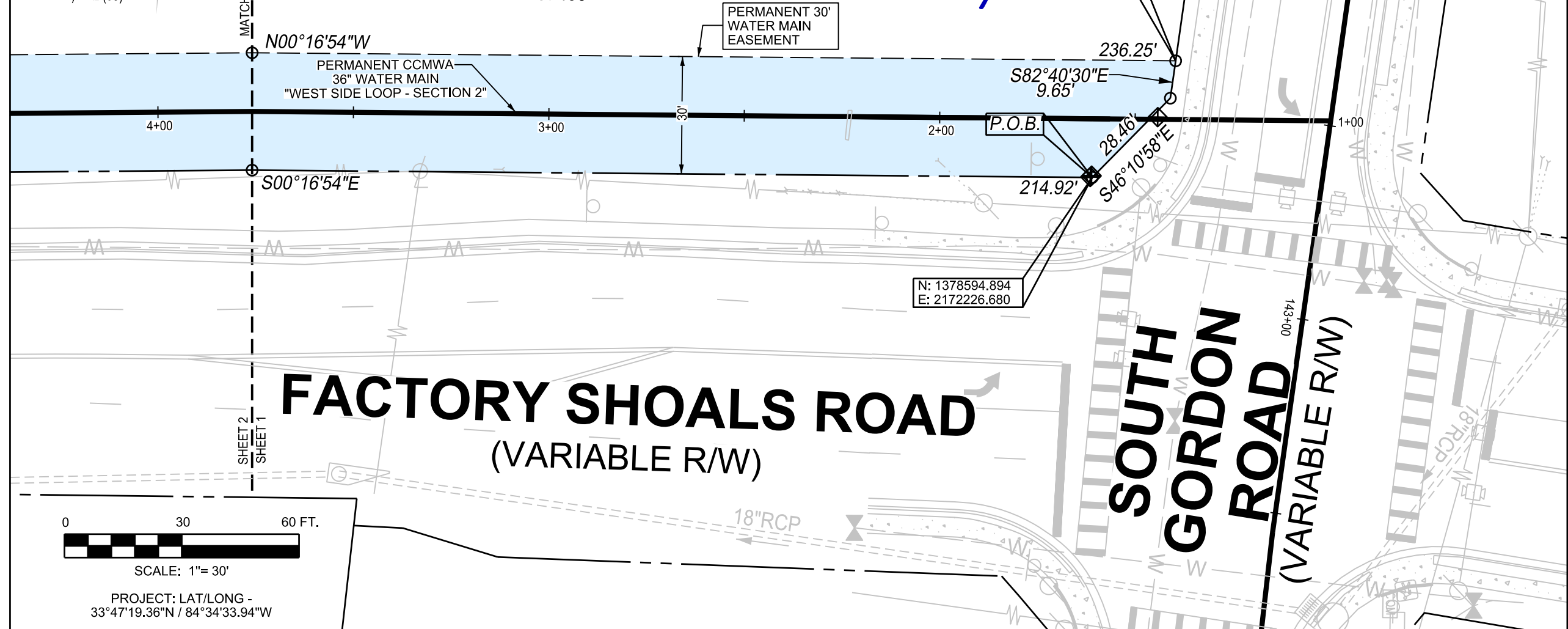
IMPROVEMENTS MAY EXIST ON SUBJECT PROPERTY WHICH HAVE NOT BEEN FIELD LOCATED AT THIS TIME.




GRID (GA. WEST ZONE) NAD(83)

N/F
THE HUGHES CHILDREN'S TRUST
 TAX ID# 18041300250
 DB. 13922 PG. 436

MATCH LINE SHEET 2 SHEET 1



SCALE: 1"= 30'
 PROJECT: LAT/LONG -
 33°47'19.36"N / 84°34'33.94"W

16,192 SQ. FT./ 0.3717 AC. EASEMENT		LOCATED IN LAND LOT 413 18TH DISTRICT 2ND SECTION COBB COUNTY, GA DATE: 10/12/18 SHEET NO. 1 OF 2	SKETCH OF WATER MAIN EASEMENT AS REQUIRED BY: COBB COUNTY-MARIETTA WATER AUTHORITY C.C.M.W.A. NO. WSL PH2	THROUGH THE PROPERTY OF: THE HUGHES CHILDREN'S TRUST COBB COUNTY TAX ID# 18041300250	 <p>TerraMark Land Surveying, Inc. 1396 Bells Ferry Road Marietta, Georgia 30066 www.TerraMark.com (P) (770) 421-1927</p>
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NOTE: THE LOCATION OF THE PROPOSED WATER MAIN WITHIN THE PERMANENT EASEMENT IS SUBJECT TO CHANGE PRIOR TO OR DURING CONSTRUCTION OF THE PROJECT; HOWEVER, THE EASEMENT SHALL NOT CHANGE WITHOUT APPROVAL OF GRANTOR.

IMPROVEMENTS MAY EXIST ON SUBJECT PROPERTY WHICH HAVE NOT BEEN FIELD LOCATED AT THIS TIME.



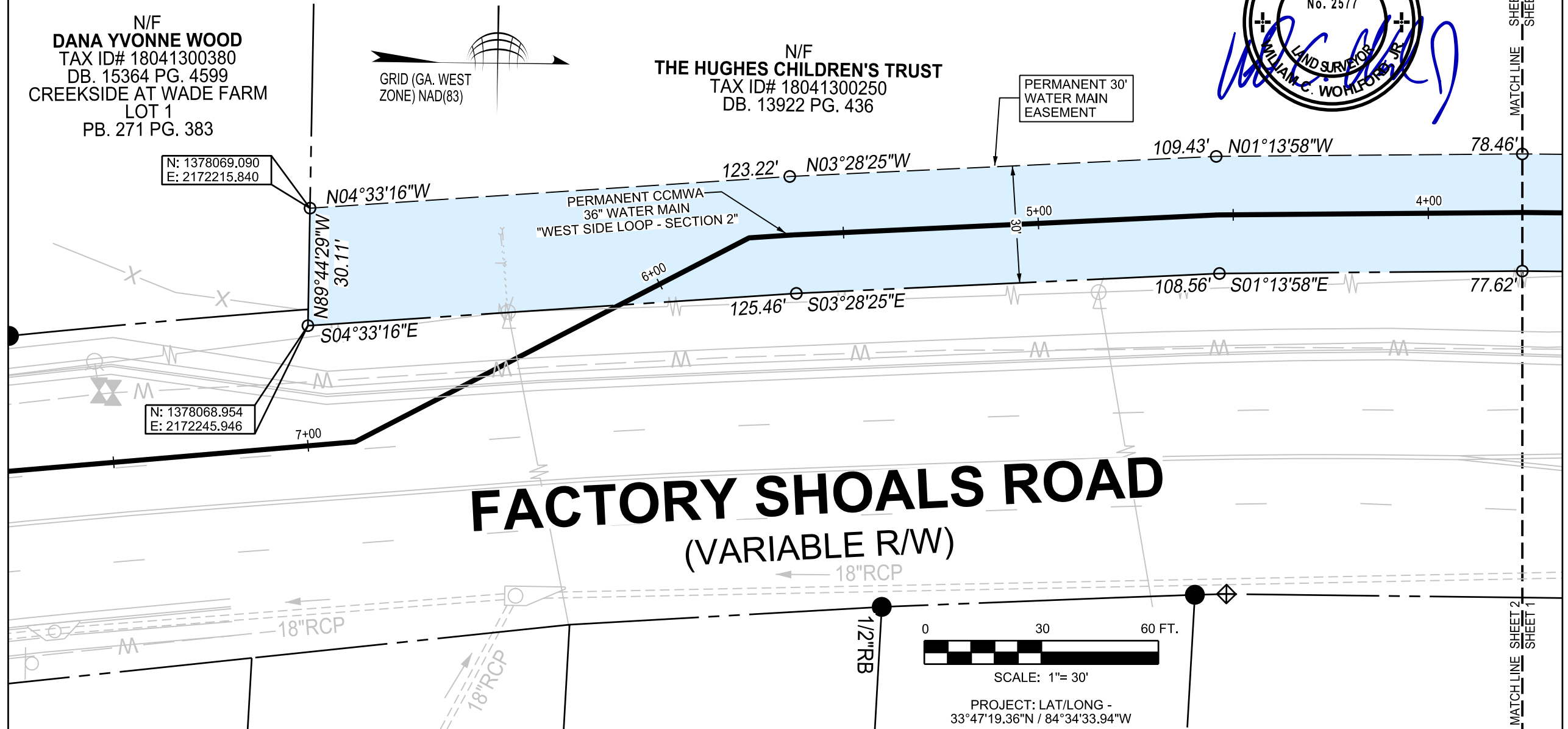
N/F
DANA YVONNE WOOD
 TAX ID# 18041300380
 DB. 15364 PG. 4599
 CREEKSIDE AT WADE FARM
 LOT 1
 PB. 271 PG. 383

GRID (GA. WEST ZONE) NAD(83)

N/F
THE HUGHES CHILDREN'S TRUST
 TAX ID# 18041300250
 DB. 13922 PG. 436

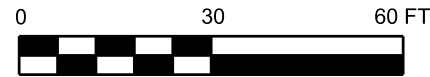
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FACTORY SHOALS ROAD

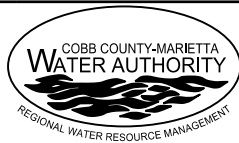
(VARIABLE R/W)



SCALE: 1"= 30'

PROJECT: LAT/LONG -
 33°47'19.36"N / 84°34'33.94"W

16,192 SQ. FT. / 0.3717 AC. EASEMENT



LOCATED IN LAND LOT 413
 18TH DISTRICT
 2ND SECTION
 COBB COUNTY, GA
 DATE: 10/12/18 SHEET NO. 2 OF 2

SKETCH OF WATER MAIN EASEMENT
 AS REQUIRED BY:
 COBB COUNTY-MARIETTA
 WATER AUTHORITY
 C.C.M.W.A. NO. WSL PH2

THROUGH THE PROPERTY OF:
THE HUGHES CHILDREN'S TRUST
 COBB COUNTY
 TAX ID# 18041300250

TerraMark
 Professional Land Surveying
 TerraMark Land Surveying, Inc.
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