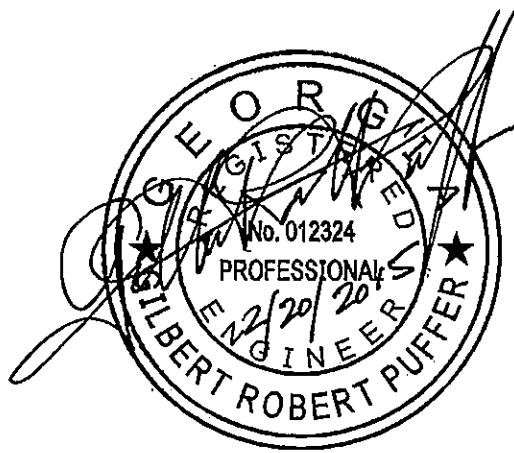


BIDDING DOCUMENTS FOR

**Cobb County-Marietta Water Authority
Highway 41 Water Main, Phase IV
CCMWA Project No.: 41 IS 2701**

BIDDING DOCUMENTS FOR

**Cobb County-Marietta Water Authority
Highway 41 Water Main, Phase IV
CCMWA Project No.: 41 IS 2701**



**ATKINS
Project No. 100032548**

TABLE OF CONTENTS

SECTION NO. SECTION TITLE

GENERAL PROVISIONS

00 11 13	Advertisement for Bids
00 21 13	Instructions to Bidders
00 31 46	Permits and Easements
00 41 13	Bid Form
00 43 13	Bid Bond
00 45 19	Non-Collusion Affidavit of Bidder
00 45 43	Corporate Certificate
00 45 44	Contractor's License Certification
00 45 46	Affidavit Verifying Status
00 45 47	Security and Immigration Act Compliance Certification
00 45 48	Contractor Affidavit and Agreement
00 45 49	Subcontractor Affidavit and Agreement
00 45 50	Sub-subcontractor Affidavit and Agreement
00 51 00	Notice of Award
00 52 00	Agreement Between Owner and Contractor
00 54 14	Pre-construction Oath
00 55 00	Notice to Proceed
00 61 14	Performance Bond
00 61 15	Payment Bond
00 62 14	Certification of Contractor's Attorney
00 62 15	Certification of Owner's Attorney
00 62 16	Insurance Certificate Checklist
00 65 19	Contract Completion Affidavit
00 72 00	General Conditions
00 73 00	Supplementary Conditions

TECHNICAL PROVISIONS

DIVISION 01 – GENERAL REQUIREMENTS

01 11 00	Summary of Work
01 21 16	Allowances
01 22 00	Measurement and Payment
01 29 00	Applications for Payment
01 31 13	Coordination of Work
01 32 16	Construction Schedules
01 32 23	Field Engineering
01 33 00	Shop Drawings, Product Data and Samples

TABLE OF CONTENTS (Continued)

01 35 13	Special Project Procedures
01 35 25	Confined Space Entry
01 35 55	Job Site Security
01 41 00	Regulatory Requirements
01 45 29	Testing Laboratory Services
01 51 00	Temporary Utilities
01 56 17	Dust Control and Property Protection
01 77 00	Contract Closeout

DIVISION 02 – EXISTING CONDITIONS

02 32 13	Subsurface Conditions
----------	-----------------------

DIVISION 09 – FINISHES

09 06 91	Subgrade Concrete Coating
----------	---------------------------

DIVISION 31 – EARTHWORK

31 11 00	Site Preparation
31 23 19	Construction Dewatering
31 25 00	Slope Control and Erosion Control
31 37 00	Rip Rap

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 12 16	Asphalt Paving
32 31 13	Chain Link Fence and Gates
32 92 00	Grassing and Mulching

DIVISION 33 - UTILITIES

33 05 16.13	Precast Concrete Structures
33 11 13	Water Main Construction

SUPPLEMENTAL SPECIFICATIONS

02400	TUNNELING
02601	BLW WATER MAIN CONSTRUCTION
15241	CORROSION CONTROL - DUCTILE IRON PIPING
15250	CORROSION WRAP COATING

EASEMENTS

1	Marietta Lexus
2	Promendade Associates
3	Advantaged Asset Acquisitions
4	Shashin Shah

ADVERTISEMENT FOR BIDDERS

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

April 2, 2015, 10:00 AM Local Time

for the Project known as:

Cobb County-Marietta Water Authority
Highway 41 Water Main, Phase IV

at which time and place the proposals will be publicly opened and read aloud. Proposals 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 ATKINS. Bid opening time is subject to extension pursuant to O.C.G.A Section 36-91-20(d).

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

The project consists of new 36" and 42" water mains connecting to the Cobb County-Marietta Water Authority's existing water transmission system. The project will also include new 16-inch water main connecting to the Marietta BLW existing distribution system. The work to be done consists of furnishing all labor, equipment and materials required to construct the water main and appurtenances as shown in the contract drawings. Work includes:

1. Approximately 5,590 LF of 36" DIP Water Main.
2. Approximately 3,750 LF of 42" DIP Water Main.
3. Approximately 595 LF of 54" DIP Water Main.
4. Connection to existing 36" Water Main at Franklin Drive.
5. Connection to existing 36" Water Main at Caswell Drive and existing 42" Water Main south of Windy Hill Road.
6. Connection to existing 36" Water Main at Herodian Way.
7. Connections to existing water distribution mains for the Cobb County Water System.
8. Approximately 5,250 LF of 16" DIP Water Main.
9. Connection to existing water distribution mains for the Marietta Board of Lights and Water.
10. 4 Large Diameter Gate Valve installations.
11. 1 - 84" Tunnel installation.

A mandatory meeting for all Bidders will be conducted at Cobb County-Marietta Water Authority's General Manager's Office, 1170 Atlanta Industrial Drive, Marietta, Georgia 30066:

March 12, 2015, 10:00 AM/PM Local Time

All Bidders shall be prequalified by the OWNER at the time of the first publication of this notice and shall have attended the Pre-Bid meeting. Bidders shall inform themselves concerning Georgia Laws and comply with same.

Each bidder shall be prepared to supply sufficient qualified labor, sufficient equipment and necessary incidentals to satisfactorily perform the work in a timely manner. The OWNER reserves the right to reject any bidder who does not satisfy the OWNER as to its ability to successfully perform the Work.

The time allowed for Substantial Completion will be 330 calendar days, and the time allowed for completion and readiness for final payment will be 360 calendar days, from the date of commencement. Liquidated Damages for delay beyond Substantial Completion is Three thousand dollars (\$3,000) per day and Liquidated Damages for delay beyond Final Completion is one thousand five Hundred dollars (\$1,500) per day.

All bids must be made out on the bid form to be obtained from the ENGINEER with 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 write its utility contractor license number on the face of its Bid Envelope.

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 as Exhibits "B" and "C". 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 ninety 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.

Contract Specifications and Plans and Geotechnical Report are open to public inspection at the office of ATKINS, 1600 RiverEdge Parkway, NW, Suite 600, Atlanta, GA 30328. Contract Specifications and Plans may be obtained from ATKINS, 1600 RiverEdge Parkway, NW, Suite 600, Atlanta, GA 30328 upon deposit of \$250.00. The Geotechnical Report may be obtained from ATKINS, 1600 RiverEdge Parkway, NW, Suite 600, Atlanta, GA 30328 upon deposit of \$50.00. No refunds will be made.

All questions regarding bid must be submitted to the Engineer by **March 19, 2015, 4:00 PM**. Electronic communications must be submitted to gil.puffer@atkinsglobal.com.

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

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

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 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.

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. Pre-qualification of Bidders has been performed. Only Bids from pre-qualified Bidders will be opened.

3.2. Previous pre-qualification to submit a bid for this Project notwithstanding, the Owner reserves the right to reject any Bidder who does not satisfy the Owner as to its ability to successfully perform the Work.

3.3. To demonstrate current qualifications to perform the Work, each Bidder must be prepared to submit within five days after bid opening, upon request, detailed written evidence such as financial data, previous experience, present commitments and other such data as may be requested.

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

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 subsurface 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 holes 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. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

6. Interpretations and Addenda

6.1. All questions about the meaning or intent of the Bidding Documents are to be directed to Engineer. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Issuing Officer as having received the Bidding Documents. Questions received less than fifteen 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 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 sixty-sixth 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 1.12 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. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in Paragraphs 6.05.A,

6.05.B and 6.05.C of the General Conditions and may be supplemented in the General Requirements.

11. Subcontractors, Suppliers and Others

11.1. If the 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 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. An 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, 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 listed 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 6.06.B of the General Conditions.

12. Bid Form

12.1. The Bid Form is included with the Bidding Documents; additional copies may be obtained from the Issuing Office.

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

contractor license number, if required by law, must also be shown.

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. Any bid not bearing the bidder's utility contractor license number issued by the State of Georgia Construction Industry Licensing Board, when required by State Law, may not be considered by the Owner. 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, state contractor license number, and accompanied by the **Bid security, Bid Form and Non-Collusion Affidavit, and Contractor's License Certification**. 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 without the utility contractor license number noted on the face of the envelope will not be opened.

15.2. Unless precluded by O.C.G.A. Section 43-14-8.3(h), 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.

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

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

15.5. No Bid shall be opened unless the Bidder has been pre-qualified for the pipe size specified in the Advertisement for Bidders.

16. Bids to Remain Subject to Acceptance

All Bids will remain subject to acceptance for ninety 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 withdrawal is required by O.C.G.A. § 36-19-43.

17. Award of Contract

17.1. Owner reserves the right to reject any or 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, 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 lowest responsible and responsive Bidder 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 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.

PERMITS AND EASEMENTS

The following table contains information about the status of the permits and easements that are to be obtained by the Owner for this project.

Item No.	Permit or Easement	Description	Status	Expected Approval or Acquisition Date
1	GDOT Utility Permit	Submitted	Approved	2015
2	City of Marietta, GA Erosion and Sediment Control Permit	Submitted	Pending	Upon contract award and Contractor submittal of NOI to Georgia EPD.
3	City of Smyrna, GA Erosion and Sediment Control Permit	Submitted	Pending	Upon contract award and Contractor submittal of NOI to Georgia EPD.
4	Easements	4 parcels	Acquired	2014

BID FORM

PROJECT IDENTIFICATION:

Cobb County-Marietta Water Authority
Highway 41 Water Main, Phase IV

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 or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for ninety 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 which is hereby acknowledge: (List Addenda by Addendum Number and Date)

- (b) BIDDER 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 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 (except Underground Facilities) 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.

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
1.	WATER MAINS 54" DIP, Pressure Class 350 Within Tunnel (Pay Item 2.01)	105	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
2.	WATER MAINS 54" DIP, Pressure Class 350 (Pay Item 2.01)	490	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
3.	WATER MAINS 48" DIP, Pressure Class 250 (Pay Item 2.01)	50	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
4.	WATER MAINS 42" DIP, Pressure Class 250 (Pay Item 2.01)	3,750	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
5.	WATER MAINS 36" DIP, Pressure Class 250 (Pay Item 2.01)	5,690	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
6.	WATER MAINS 16" DIP, Pressure Class 350 (Pay Item 2.01)	30	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
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PROPOSAL

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Cobb County-Marietta Water Authority					
7.	WATER MAINS 12" DIP, Pressure Class 350 (Pay Item 2.01)	150	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
8.	WATER MAINS 8" DIP, Pressure Class 350 (Pay Item 2.01)	60	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
9.	RESTRAINED JOINTS / FITTINGS 54" Pipe (Pay Item 2.02)	13	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
10.	RESTRAINED JOINTS / VALVES 54" Pipe (Pay Item 2.02)	4	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
11.	RESTRAINED JOINTS / PIPE RESTRAINT 54" Pipe (Pay Item 2.02)	30	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
12.	RESTRAINED JOINTS / FITTINGS 48" Pipe (Pay Item 2.02)	17	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
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ATKINS Project No. 100032548
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<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
13.	RESTRAINED JOINTS / VALVES 48" Pipe (Pay Item 2.02)	2	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
14.	RESTRAINED JOINTS / PIPE RESTRAINT 48" Pipe (Pay Item 2.02)	10	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
15.	RESTRAINED JOINTS / FITTINGS 42" Pipe (Pay Item 2.02)	2	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
16.	RESTRAINED JOINTS / VALVES 42" Pipe (Pay Item 2.02)	2	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
17.	RESTRAINED JOINTS / PIPE RESTRAINT 42" Pipe (Pay Item 2.02)	90	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
18.	RESTRAINED JOINTS / FITTINGS 36" Pipe (Pay Item 2.02)	21	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

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Cobb County-Marietta Water Authority					
19.	RESTRAINED JOINTS / VALVES 36" Pipe (Pay Item 2.02)	6	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
20.	RESTRAINED JOINTS / PIPE RESTRAINT 36" Pipe (Pay Item 2.02)	68	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
21.	RESTRAINED JOINTS / FITTINGS 16" Pipe (Pay Item 2.02)	5	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
22.	RESTRAINED JOINTS / VALVES 16" Pipe (Pay Item 2.02)	2	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
23.	RESTRAINED JOINTS / PIPE RESTRAINT 16" Pipe (Pay Item 2.02)	2	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
24.	RESTRAINED JOINTS / FITTINGS 12" Pipe (Pay Item 2.02)	13	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
25.	RESTRAINED JOINTS / VALVES 12" Pipe (Pay Item 2.02)	10	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
26.	RESTRAINED JOINTS / PIPE RESTRAINT 12" Pipe (Pay Item 2.02)	9	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
27.	RESTRAINED JOINTS / FITTINGS 8" Pipe (Pay Item 2.02)	13	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
28.	RESTRAINED JOINTS / VALVES 8" Pipe (Pay Item 2.02)	12	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
29.	RESTRAINED JOINTS / PIPE RESTRAINT 8" Pipe (Pay Item 2.02)	7	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
30.	DUCTILE IRON FITTINGS (Pay Item 2.03)	66,990	LB	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

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Cobb County-Marietta Water Authority					
31.	VALVES 16" Gate Valve, MJ x MJ (Pay Item 2.04)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
32.	VALVES 12" Gate Valve, MJ x MJ (Pay Item 2.04)	3	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
33.	VALVES 8" Gate, MJ x MJ (Pay Item 2.04)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
34.	PIPE OUTLETS 42"x 12" Flex Ring Jt. Blow-off Tangential Welded-on Outlet (Pay Item 2.05)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
35.	PIPE OUTLETS 36"x 12" Flex Ring Jt. Blow-off Tangential Welded-on Outlet (Pay Item 2.05)	2	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
36.	PIPE OUTLETS 54"x 24" FLG Welded-on Outlet (Pay Item 2.05)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

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Cobb County-Marietta Water Authority					
37.	PIPE OUTLETS 36"x 24" FLG Welded-on Outlet (Pay Item 2.05)	1	EA	_____	_____
				Numerals	Numerals
				Unit Price in Words	
38.	PIPE OUTLETS 24" Blind Flange with 8" FLG Welded-on Outlet (Pay Item 2.05)	1	EA	_____	_____
				Numerals	Numerals
				Unit Price in Words	
39.	PIPE OUTLETS 24" Blind Flange with 6" FLG Welded-on Outlet (Pay Item 2.05)	1	EA	_____	_____
				Numerals	Numerals
				Unit Price in Words	
40.	AIR & VACUUM VALVE 6" FLG Combination AVV with 8" Gate Valve (Pay Item 2.06)	1	EA	_____	_____
				Numerals	Numerals
				Unit Price in Words	
41.	AIR & VACUUM VALVE 4" FLG Combination AVV with 6" Gate Valve (Pay Item 2.06)	1	EA	_____	_____
				Numerals	Numerals
				Unit Price in Words	
42.	CONCRETE MANHOLE ASSEMBLY Inline Valves (10' Diameter) (Pay Item 2.07)	3	EA	_____	_____
				Numerals	Numerals
				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
43.	CONCRETE MANHOLE ASSEMBLY, Extra Payment for sections exceeding Ten VF (10' Diameter) (Pay Item 2.07)	40	VF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
44.	CONCRETE MANHOLE ASSEMBLY Inline Valves (8' Diameter) (Pay Item 2.07)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
45.	CONCRETE MANHOLE ASSEMBLY, Extra Payment for sections exceeding Ten VF (8' Diameter) (Pay Item 2.07)	10	VF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
46.	CONCRETE MANHOLE ASSEMBLY A/V, Inline Valves (6' Diameter) (Pay Item 2.07)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
47.	CONCRETE MANHOLE ASSEMBLY, Extra Payment for sections exceeding Ten VF (6' Diameter) (Pay Item 2.07)	10	VF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
48.	CONCRETE MANHOLE ASSEMBLY Blow-off and Valves (4' Diameter) (Pay Item 2.07)	4	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
49.	CONCRETE MANHOLE ASSEMBLY Extra Payment for sections exceeding Ten VF (4' Diameter) (Pay Item 2.07)	35	VF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
50.	SAMPLE TEST STATION (Pay Item 2.9)	4	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
51.	CONNECTION TO CCMWA 36" WATER MAIN Franklin Drive Sta 0+04 (Pay Item 2.12)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
52.	CONNECTION TO CCMWA 42" WATER MAIN Sta 51+72 (Pay Item 2.12)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
53.	CONNECTION TO CCMWA 42" WATER MAIN Sta 88+30 (Pay Item 2.12)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
54.	CONNECTION TO CCMWA 36" WATER MAIN Herodian Way Sta 127+27 (Pay Item 2.12)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

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Cobb County-Marietta Water Authority					
55.	METER VAULT REMOVE & DISPOSE (Pay Item 2.14)	2	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
56.	INSTALLATION OF LOCATOR BALLS (Pay item 2.15)	290	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
57.	SUBGRADE STABILIZER STONE (Pay Item 2.17)	16,980	TN	_____	_____
				Numerals	Numerals

				Unit Price in Words	
58.	SOLID ROCK EXCAVATION IN TRENCH (Pay Item 2.18)	2,820	CY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
59.	MISCELLANEOUS CONCRETE (Pay Item 2.19)	1,050	CY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
60.	GRADED AGGREGATE BASE (Pay Item 2.22)	10,120	TN	_____	_____
				Numerals	Numerals

				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

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Cobb County-Marietta Water Authority					
61.	BORROW MATERIAL (Pay Item 2.23)	2,430	CY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
62.	MILLING EXISTING PAVEMENT 1.5" DEPTH (Pay item 2.25)	13,290	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
63.	PAVEMENT OVERLAY 1.5" DEPTH (12.5 mm SUPERPAVE) (Pay item 2.26)	13,290	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
64.	PAVEMENT TRENCH BASE 6" BASE COURSE (25 mm) (Pay item 2.27)	8,860	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
65.	PAVEMENT TRENCH BASE 5" BINDER (19mm) (Pay item 2.27)	8,860	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
66.	REMOVE & REPLACE ASPHALT DRIVEWAYS AND PARKING LOTS (Pay Item 2.28)	4,240	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
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Cobb County-Marietta Water Authority					
67.	REMOVE & REPLACE CONCRETE SIDEWALK (Pay Item 2.31)	3,270	SY	_____	_____
				Numerals	Numerals
				Unit Price in Words	
68.	REMOVE & REPLACE CURB AND GUTTER (Concrete) (Pay Item 2.32)	9,870	LF	_____	_____
				Numerals	Numerals
				Unit Price in Words	
69.	REMOVE AND REPLACE FENCE (Chain Link) (Pay Item 2.33)	110	LF	_____	_____
				Numerals	Numerals
				Unit Price in Words	
70.	TRAFFIC STRIPE PAINT (Pay Item 2.34)	10	LM	_____	_____
				Numerals	Numerals
				Unit Price in Words	
71.	TRAFFIC STRIPE THERMOPLASTIC (Pay Item 2.34)	10	LM	_____	_____
				Numerals	Numerals
				Unit Price in Words	
72.	PERMANENT SEWER SERVICE (6" DIP) (Pay Item 2.56)	30	LF	_____	_____
				Numerals	Numerals
				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
73.	GROUT EXISTING WATER MAIN (20") (Pay Item 2.56)	5,460	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
74.	REMOVE & REPLACE CULVERT PIPE (30" Concrete Pipe) (Pay Item 2.60)	20	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
75.	REMOVE & REPLACE CULVERT PIPE (24" Concrete Pipe) (Pay Item 2.60)	90	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
76.	REMOVE & REPLACE CULVERT PIPE (18" Concrete Pipe) (Pay Item 2.60)	70	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
77.	REMOVE & REPLACE CULVERT PIPE (15" Concrete Pipe) (Pay Item 2.60)	30	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
78.	CONSTRUCT BLOWOFF STRUCTURE (Pay Item 2.61)	3	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

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Cobb County-Marietta Water Authority					
79.	VIDEO DOCUMENTATION (Pay Item 2.62)	1	LS	_____	_____
				Numerals	Numerals

				Unit Price in Words	
80.	TAPPING SLEEVE AND VALVE (8") @ 100+17 (Pay Item 2.64)	1	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
81.	BONDED JOINT (Pay Item 2.65)	510	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
82.	CATHODIC TEST STATION (Pay Item 2.66)	6	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
83.	TUNNEL AND TUNNEL LINER (84") (Pay Item 2.68)	105	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
84.	STOPOAQ COATING 36" (Pay Item 2.73)	620	LF	_____	_____
				Numerals	Numerals

				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
85.	LOW DENSITY CELLULAR CONCRETE 84" Tunnel/54" WM (Pay Item 2.75)	105	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
86.	TEMPORARY SILT FENCE (Pay Item 2.35)	10,440	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
87.	ROCK CHECK DAM (Pay Item 2.37)	20	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
88.	RIP-RAP (Pay Item 2.38)	490	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
89.	CONSTRUCTION EXIT (Pay Item 2.39)	10	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
90.	STRAW MULCH STABILIZATION (Ds1) (Pay Item 2.40)	13,710	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
91.	GRASSING Temporary Grassing (Ds2) (Pay Item 2.41)	13,710	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
92.	GRASSING Permanent Grassing (Ds3) (Pay Item 2.41)	13,710	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
93.	SODDING (Ds4) (Pay Item 2.70)	1,380	SY	_____	_____
				Numerals	Numerals

				Unit Price in Words	
94.	INLET SEDIMENT TRAP (Pay Item 2.43)	30	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
95.	STORM DRAIN OUTLET PROTECTION (Pay Item 2.44)	2	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
96.	TREE SAVE FENCE (Pay Item 2.45)	10,440	LF	_____	_____
				Numerals	Numerals

				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
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ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
97.	EROSION MAT (Pay Item 2.42)	2,570	SY	Numerals	Numerals
				Unit Price in Words	
98.	NPDES PERMIT COMPLIANCE (Pay Item 2.47)	1	LS	Numerals	Numerals
				Unit Price in Words	
CCMWA WATER MAIN BASE BID SUBTOTAL (Item 1 through 98)				\$ Numerals	
				Subtotal in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
WATER MAIN ALLOWANCES					
A1	Allowance for Force Account Work	1	LS	\$ <u>1,000,000.00</u> Numerals	\$ <u>1,000,000.00</u> Numerals
One Million and no/100 Unit Price in Words					
A2	Allowance for Testing	1	LS	\$ <u>250,000.00</u> Numerals	\$ <u>250,000.00</u> Numerals
Two Hundred Twenty-five Thousand and no/100 Unit Price in Words					
A3	Allowance for Utility Relocation By Others	1	LS	\$ <u>200,000.00</u> Numerals	\$ <u>200,000.00</u> Numerals
Two Hundred Thousand and no/100 Unit Price in Words					
A4	Allowance for Landscaping	1	LS	\$ <u>100,000.00</u> Numerals	\$ <u>100,000.00</u> Numerals
One Hundred Thousand and no/100 Unit Price in Words					
A5	Allowance for Traffic Control	1	LS	\$ <u>1,000,000.00</u> Numerals	\$ <u>1,000,000.00</u> Numerals
One Million and no/100 Unit Price in Words					
A6	Allowance for Corrosion Control	1	LS	\$ <u>25,000.00</u> Numerals	\$ <u>25,000.00</u> Numerals
Twenty-five Thousand and no/100 Unit Price in Words					

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Cobb County-Marietta Water Authority					
WATER MAIN ALLOWANCES					
A7	Allowance for Water Main Disinfection	1	LS	\$ <u>50,000.00</u> Numerals	\$ <u>50,000.00</u> Numerals
				<u>Fifty Thousand and no/100</u> Unit Price in Words	
A8	Allowance for Temporary Bus Stop Removal	1	LS	\$ <u>50,000.00</u> Numerals	\$ <u>50,000.00</u> Numerals
				<u>Fifty Thousand and no/100</u> Unit Price in Words	
A9	Allowance for Gate Valves	1	LS	\$ <u>400,000.00</u> Numerals	\$ <u>400,000.00</u> Numerals
				<u>Two Hundred Thousand and no/100</u> Unit Price in Words	
ALLOWANCES SUBTOTAL				\$ <u>3,075,000.00</u>	
(Items A1 through A9)				Numerals	
				<u>Three Million Seventy-five Thousand and no/100</u> Subtotal in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
1.	WATER MAINS 16" DIP, Pressure Class 350 (Pay Item 2.01)	5,250	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
2.	WATER MAINS 12" DIP, Pressure Class 350 (Pay Item 2.01)	70	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
3.	WATER MAINS 8" DIP, Pressure Class 350 (Pay Item 2.01)	80	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
4.	WATER MAINS 6" DIP, Pressure Class 350 (Pay Item 2.01)	110	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
5.	RESTRAINED JOINTS / FITTINGS 16" Pipe (Pay Item 2.02)	71	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
6.	RESTRAINED JOINTS / VALVES 16" Pipe (Pay Item 2.02)	24	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST.</u> <u>QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
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Marietta Board of Lights and Water

WATER MAIN BASE BID

7.	RESTRAINED JOINTS / PIPE RESTRAINT 16" Pipe (Pay Item 2.02)	146	EA	Numerals	Numerals
				Unit Price in Words	
8.	RESTRAINED JOINTS / FITTINGS 12" Pipe (Pay Item 2.02)	11	EA	Numerals	Numerals
				Unit Price in Words	
9.	RESTRAINED JOINTS / VALVES 12" Pipe (Pay Item 2.02)	2	EA	Numerals	Numerals
				Unit Price in Words	
10.	RESTRAINED JOINTS / PIPE RESTRAINT 12" Pipe (Pay Item 2.02)	6	EA	Numerals	Numerals
				Unit Price in Words	
11.	RESTRAINED JOINTS / FITTINGS 8" Pipe (Pay Item 2.02)	15	EA	Numerals	Numerals
				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
12.	RESTRAINED JOINTS / VALVES 8" Pipe (Pay Item 2.02)	4	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
13.	RESTRAINED JOINTS / PIPE RESTRAINT 8" Pipe (Pay Item 2.02)	3	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
14.	RESTRAINED JOINTS / FITTINGS 6" Pipe (Pay Item 2.02)	30	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
15.	RESTRAINED JOINTS / VALVES 6" Pipe (Pay Item 2.02)	20	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
16.	RESTRAINED JOINTS / PIPE RESTRAINT 6" Pipe (Pay Item 2.02)	10	EA	_____	_____
				Numerals	Numerals

				Unit Price in Words	
17.	DUCTILE IRON FITTINGS (Pay Item 2.03)	15,740	LB	_____	_____
				Numerals	Numerals

				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST.</u> <u>QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
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Marietta Board of Lights and Water

WATER MAIN BASE BID

18.	VALVES 16" Gate Valve, MJ x MJ (Pay Item 2.04)	12	EA	Numerals	Numerals
				Unit Price in Words	
19.	VALVES 12" Gate Valve, MJ x MJ (Pay Item 2.04)	1	EA	Numerals	Numerals
				Unit Price in Words	
20.	VALVES 8" Gate, MJ x MJ (Pay Item 2.04)	3	EA	Numerals	Numerals
				Unit Price in Words	
21.	VALVES 6" Gate Valve, MJ x MJ (Pay Item 2.04)	9	EA	Numerals	Numerals
				Unit Price in Words	
22.	POLYETHYLENE ENCASEMENT 16" Encasement (Pay Item 2.08)	5,250	LF	Numerals	Numerals
				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
23.	POLYETHYLENE ENCASEMENT 12" Double Encasement (Pay Item 2.08)	70	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
24.	POLYETHYLENE ENCASEMENT 8" Encasement (Pay Item 2.08)	80	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
25.	POLYETHYLENE ENCASEMENT 6" Encasement (Pay Item 2.08)	110	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
26.	STEEL CASING (24" Diameter,0.375" W.T.) Jack and Bore@Franklin Rd (Pay Item 2.10)	87	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
27.	ADD'L COMPENSATION FOR ROCK IN BORE (Pay Item 2.10) @Franklin Rd	87	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
28.	STEEL CASING (24" Diameter, 0.375" W.T.) Jack and Bore @ Airport Industrial Dr (Pay Item 2.10)	95	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
29.	ADD'L COMPENSATION FOR ROCK IN BORE (Pay Item 2.10) @ Airport Industrial Dr	95	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
30.	CASING SPACERS (24" x 16") (Pay item 2.11)	19	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
31.	CONNECTION TO MBLW 12" WATER MAIN HWY 41 Sta 0+25 (Pay Item 2.12)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
32.	CONNECTION TO MBLW 12" WATER MAIN HWY 41 Sta 46+00 (Pay Item 2.12)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
33.	CONNECTION TO MBLW 8" WATER MAIN Hwy 41 Sta 24+50 (Pay Item 2.12)	2	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
34.	CONNECTION TO MBLW 8" WATER MAIN Hwy 41 Sta 50+00 (Pay Item 2.12)	1	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
35.	INSTALLATION OF LOCATOR BALLS (Pay item 2.15)	60	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
36.	SUBGRADE STABILIZER STONE (Pay Item 2.17)	4,670	TN	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
37.	SOLID ROCK EXCAVATION IN TRENCH (Pay Item 2.18)	300	CY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
38.	MISCELLANEOUS CONCRETE (Pay Item 2.19)	160	CY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
39.	GRADED AGGREGATE BASE (Pay Item 2.22)	741	TN	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
40.	MILLING EXISTING PAVEMENT 1.5" DEPTH (Pay item 2.25)	240	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
41.	PAVEMENT OVERLAY 1.5" DEPTH (12.5 mm SUPERPAVE) (Pay item 2.26)	240	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
42.	PAVEMENT TRENCH BASE 6" BASE COURSE (25 mm) (Pay item 2.27)	240	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
43.	PAVEMENT TRENCH BASE 5" BINDER (19mm) (Pay item 2.27)	240	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
44.	REMOVE & REPLACE ASPHALT DRIVEWAYS AND PARKING LOTS (Pay Item 2.28)	1,640	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
45.	REMOVE & REPLACE CONCRETE SIDEWALK (Pay Item 2.31)	100	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
46.	REMOVE & REPLACE CURB AND GUTTER (Concrete) (Pay Item 2.32)	530	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
47.	TRAFFIC STRIPE - THERMOPLASTIC (Pay item 2.34)	1	LM	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
48.	CUT AND PLUG EXISTING WATER MAIN (Pay Item 2.46)	6	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
49.	REMOVAL OF EXISTING FIRE HYDRANTS (Pay Item 2.48)	4	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
50.	INSTALLATION OF NEW FIRE HYDRANT (Pay Item 2.49)	9	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
51.	FIRE HYDRANT EXTENSIONS (Pay Item 2.49)	18	VF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
52.	3/4" -1" COPPER SERVICE (Pay Item 2.50)	210	LF	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
53.	WATER SERVICE INSTALLATION (3/4 inch) (Pay Item 2.51)	8	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
54.	WATER SERVICE INSTALLATION (1 inch) (Pay Item 2.51)	3	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
55.	VIDEO DOCUMENTATION (Pay Item 2.62)	1	LS	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
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Marietta Board of Lights and Water

WATER MAIN BASE BID

56.	VALVE MARKERS (Pay Item 2.72)	16	EA	Numerals	Numerals
				Unit Price in Words	
57.	TEMPORARY SILT FENCE (Pay Item 2.35)	10,000	LF	Numerals	Numerals
				Unit Price in Words	
58.	ROCK CHECK DAM (Pay Item 2.37)	2	EA	Numerals	Numerals
				Unit Price in Words	
59.	RIP-RAP (Pay Item 2.38)	10	SY	Numerals	Numerals
				Unit Price in Words	
60.	CONSTRUCTION EXIT (Pay Item 2.39)	2	EA	Numerals	Numerals
				Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN BASE BID					
61.	STRAW MULCH STABILIZATION (Ds1) (Pay Item 2.40)	11,670	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
62.	GRASSING Temporary Grassing (Ds2) (Pay Item 2.41)	11,670	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
63.	GRASSING Permanent Grassing (Ds3) (Pay Item 2.41)	11,670	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
64.	SODDING (Ds4) (Pay Item 2.70)	1,170	SY	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
65.	INLET SEDIMENT TRAP (Pay Item 2.43)	5	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	
66.	STORM DRAIN OUTLET PROTECTION (Pay Item 2.44)	5	EA	_____ Numerals	_____ Numerals
				_____ Unit Price in Words	

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST.</u> <u>QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
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Marietta Board of Lights and Water

WATER MAIN BASE BID

67.	TREE SAVE FENCE (Pay Item 2.45)	5,500	LF	<hr/>	<hr/>
				Numerals	Numerals
				<hr/>	
				Unit Price in Words	

**MBLW WATER MAIN
BASE BID SUBTOTAL
(Item 1 through 67)**

\$

Numerals

Subtotal in Words

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST. QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
Marietta Board of Lights and Water					
WATER MAIN ALLOWANCES					
A1	Allowance for Force Account Work	1	LS	\$ <u>100,000.00</u> Numerals	\$ <u>100,000.00</u> Numerals
				<u>One Hundred Thousand and no/100</u> Unit Price in Words	
A2	Allowance for Testing	1	LS	\$ <u>50,000.00</u> Numerals	\$ <u>50,000.00</u> Numerals
				<u>Fifty Thousand and no/100</u> Unit Price in Words	
A3	Allowance for Utility Relocation By Others	1	LS	\$ <u>50,000.00</u> Numerals	\$ <u>50,000.00</u> Numerals
				<u>Fifty Thousand and no/100</u> Unit Price in Words	
A4	Allowance for Landscaping	1	LS	\$ <u>25,000.00</u> Numerals	\$ <u>25,000.00</u> Numerals
				<u>Twenty-five Thousand and no/100</u> Unit Price in Words	
A5	Allowance for Traffic Control	1	LS	\$ <u>200,000.00</u> Numerals	\$ <u>200,000.00</u> Numerals
				<u>One Hundred Thousand and no/100</u> Unit Price in Words	
A6	Allowance for Water Main Disinfection	1	LS	\$ <u>10,000.00</u> Numerals	\$ <u>10,000.00</u> Numerals
				<u>Ten Thousand and no/100</u> Unit Price in Words	

Cobb County-Marietta Water Authority
 Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
 CCMWA Project No. 41 IS 2701
 ATKINS Project No. 100032548
PROPOSAL

<u>NO.</u>	<u>DESCRIPTION</u>	<u>EST.</u>	<u>QTY.</u>	<u>UNIT</u>	<u>UNIT PRICE</u>	<u>TOTAL AMOUNT</u>
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Marietta Board of Lights and Water

WATER MAIN ALLOWANCES

ALLOWANCES SUBTOTAL
(Items A1 through A6)

\$ 435,000.00
 Numerals

Four Hundred Thirty Five Thousand and no/100
 Subtotal in Words

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

1 CCMWA WATER MAIN BASE BID SUBTOTAL \$ _____
Numerals

Subtotal in Words

2 CCMWA WATER MAIN ALLOWANCE SUBTOTAL \$ 3,075,000.00
Numerals

Three Million Seventy-five Thousand and no/100
Subtotal in Words

3 CCMWA TOTAL (1 plus 2) \$ _____
Numerals

Total in Words

4 MBLW WATER MAIN BASE BID SUBTOTAL \$ _____
Numerals

Subtotal in Words

5 MBLW WATER MAIN ALLOWANCES SUBTOTAL \$ 435,000.00
Numerals

Four Hundred Thirty Five Thousand and no/100
Subtotal in Words

6 MBLW TOTAL (4 plus 5) \$ _____
Numerals

Total in Words

Cobb County-Marietta Water Authority
Hwy 41 - Phase 4 Water Main (From Franklin Drive to Herodian Way)
CCMWA Project No. 41 IS 2701
ATKINS Project No. 100032548
PROPOSAL

7 **GRAND TOTAL (3 plus 6)**

\$ _____
Numerals

Total in Words

{THIS SPACE LEFT BLANK INTENTIONALLY}

4. BIDDER will complete the Work in accordance with the Contract Documents for the following price(s):

Unit prices have been computed in accordance with paragraph 11.03.B of the General Conditions. All specific cash allowances are included in the price(s) and have been computed in accordance with paragraph 11.02.A of the General Conditions.

BIDDER acknowledges that quantities are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents.

5. BIDDER agrees that the Work will be substantially complete within 330 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 360 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.

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

- (a) Required Bid Security in the form of Bid Bond, Certified Check, Cashier's Check, or Cash.
(Strikeout inapplicable terms)
- (b) 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.
- (c) Required Non-Collusion Affidavit of Bidder.

7. 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 Mailing Address _____
(if different) _____

Bidder's Phone # _____
Bidder's Telecopier # _____ (optional)

8. 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____.

If BIDDER is:

An Individual

By _____ (SEAL)

(Individual's Name)

doing business as _____

Business address: _____

Phone No.: _____

A Partnership

By _____ (SEAL)

(Firm Name)

(general partner)

Business address: _____

Phone No.: _____

A Corporation

By _____ (SEAL)

(Corporation Name)

(state of incorporation)

By _____ (SEAL)

(name of person authorized to sign)

(Title)

(Corporate Seal)

Attest

Business address: _____

Phone No.: _____

Date of Qualification to do business is _____

A Joint Venture

By _____ (SEAL)

(Name)

(Address)

By _____ (SEAL)

(Name)

(Address)

Phone Number and Address for receipt of official communications

(Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above).

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 Drive
Marietta, Georgia 30066

BID

BID DUE DATE: April 2, 2015
PROJECT: Highway 41 Water Main, Phase IV

The project consists of new 36" and 42" water mains connecting to the Cobb County-Marietta Water Authority's existing water transmission system and includes a new 16-inch water main connecting to the Marietta BLW existing distribution system.

BOND

BOND NUMBER _____
DATE: *(Not later than Bid Due Date):* _____
PENAL SUM: **5 PERCENT OF 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 and 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 120 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:

(Signature)

Principal

By: _____
(Signature) (SEAL)

Title: _____

Witness as to Surety:

(Signature)

Surety

By: _____
Attorney-in-Fact

Typed Name of Attorney-in-Fact

Address of Attorney-in-Fact

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

Non-Collusion Affidavit of Bidder

STATE OF _____ COUNTY OF _____

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

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

of _____, 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) My Commission Expires: _____

(SEAL)

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

CONTRACTOR'S 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

***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 year 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:

SUBSCRIBED AND SWORN
BEFORE ME ON THIS THE

____ DAY OF _____, 20____

*

Alien Registration number for non-citizens

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:

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:

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

Name of Project

Name of Public Employer

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

Executed on _____, _____, 201__ 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 _____, 201__.

NOTARY PUBLIC

My Commission Expires:

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 (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 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

Highway 41 Water Main, Phase IV
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 _____, __, 201__ 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 _____, 201__.

NOTARY PUBLIC

My Commission Expires: _____

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 (name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract) and (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 (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 (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
Highway 41 Water Main, Phase IV
Name of Project

Name of Public Employer

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

Executed on _____, ____, 201__ 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 _____, 201__.

NOTARY PUBLIC

My Commission Expires:

NOTICE OF AWARD

Dated: _____

TO: _____
(BIDDER)

ADDRESS: _____

Contract: Highway 41 Water Main, Phase IV
(Insert name of Contract as it appears in the Bidding Documents)

Project: _____

OWNER's Contract No. _____

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

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

The Contract Price of your Contract is _____ Dollars (\$ _____).

[Insert appropriate data if Unit Prices are used. Change language for Cost-Plus contracts]

Six (6) copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award. Six (6) 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, that is by _____.

1. Deliver to the OWNER ___ fully executed counterparts of the Contract Documents. [Each of the Contract Documents must bear your signature on ()].
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. (list other conditions precedent).

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.

(OWNER)

By: _____
(AUTHORIZED SIGNATURE)

(TITLE)

Copy to ENGINEER
(Use Certified Mail,
Return Receipt Requested)

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

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

The installation of new 36" and 42" water mains connecting to the Cobb County-Marietta Water Authority's existing water transmission system and installation new 16-inch water main connecting to the Marietta BLW existing distribution system.

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

HIGHWAY 41 WATER MAIN, PHASE IV

Article 2. ENGINEER

The Project has been designed by Atkins North America, 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 330 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 360 days after the date when the Contract Times commence to run.

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. 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 **Three thousand dollars (\$3,000)** 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 **One thousand five Hundred dollars (\$1,500)** 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 and 4.2 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 11.8 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 times the quantity of that item as indicated in CONTRACTOR's Bid;

SUM OF ALL LUMP SUM PRICES AND ALL UNIT PRICES: Contract Dollar Amount in Words & .XX/100 (\$X,XXX.XXX.XX).

As provided in paragraph 11.03.A 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 9.08 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 (and in the case of Unit Price Work based on the number of units completed), 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 (10%) percent of each progress payment requested; provided, however, when fifty (50%) percent 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 its sole discretion, the OWNER shall withhold no more retainage on additional work completed. The

CONTRACTOR shall be entitled to withhold retainage from subcontractors accordingly. 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.

5.1.2. 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 withhold retainage from subcontractors accordingly.

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 30 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 (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 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 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.

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

5.3. *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 as of the effective date of this agreement, for ninety (90) day certificates of deposit at First Union National Bank of Georgia.

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 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 (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.02 of the General Conditions. CONTRACTOR accepts any determination set forth in paragraph SC-4.02 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.02 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional 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 CONTRACTOR and safety precautions and programs incident thereto.

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

7.5. 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.

7.6. 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.

7.7. 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:

{THIS SPACE LEFT BLANK INTENTIONALLY}

- 8.1 This Agreement (pages 00 52 00-1 to page 00 52 00-8, inclusive).
- 8.2 Advertisement for Bidders (pages 00 11 13-1 to page 00 11 00-3, inclusive).
- 8.3 Instructions to Bidders (pages 00 21 13-1 to 00 21 13-8, inclusive).
- 8.4 Bid Form (pages 00 41 13-1 to 00 41 13-6, inclusive). This includes the CONTRACTOR's Bid (pages BF-3.1 to BF-3.38), also identified as Exhibit A.
- 8.5 Bid Bond (pages 00 43 13-1 to 00 43 13-3, inclusive).
- 8.6 Non-Collusion Affidavit of Bidder (page 00 45 19-1)
- 8.7 Construction Payment Bond, identified as Exhibit B, and consisting of a total of 3 pages.
- 8.8 Construction Performance Bond, identified as Exhibit C, and consisting of a total of 3 pages.
- 8.9 Certification of Owner's Attorney, identified as Exhibit D, and consisting of 1 page.
- 8.10 Pre-Construction Oath (page 00 54 14-1).
- 8.11 General Conditions (pages 00 72 00-1 to 00 72 00-82, inclusive).
- 8.12 Supplementary Conditions (pages 00 73 00-1 to 00 73 00-9, inclusive).
- 8.13 Affidavit of Contractor (page 00 45 48-1).
- 8.14 Notice of Award (pages 00 51 00-1 to 00 51 00-2, inclusive).
- 8.15 Notice to Proceed (page 00 55 00-1).
- 8.16 Specifications bearing the title Highway 41 Water Main, Phase IV as listed in table of contents thereof.
- 8.17 Drawings consisting of a cover sheet and sheets numbered X through X, inclusive, consisting of a total of XX sheets with each sheet bearing the following general title:
HIGHWAY 41 WATER MAIN, PHASE IV
- 8.18 Addenda number(s) to ,
- 8.19 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 SPACE LEFT BLANK INTENTIONALLY}

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: Contractor Company's Legal Full Name

By: _____

By: _____

Title: _____

Title: _____

[SEAL]

[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.)

PRE-CONSTRUCTION OATH

PROJECT NAME: Highway 41 Water Main, Phase IV

CCMWA PROJECT NUMBER: 41 IS 2701

DATE: _____

STATE OF GEORGIA

COUNTY OF _____

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__.

(Notary Public) My Commission Expires: _____

(SEAL)

NOTICE TO PROCEED

Dated _____

TO: _____
(Contractor)

ADDRESS: _____

Contract: _____
(Insert name of Contract as it appears in the Contract Document)

Project: Highway 41 Water Main, Phase IV

OWNER'S CONTRACT NO. _____

You are notified that the Contract Times under the above contract will commence to run on _____. By that date, you are to start performing 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 2.05.C 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)

Copy to ENGINEER
(Use Certified Mail
Return Receipt Requested)

(Title)

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 their 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 **Highway 41 Water Main, Phase IV** 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 Owner 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 Owner of the lowest responsible qualified bidder, arrange for a contract between such bidder and Owner and make available as the work progresses (even though there should be a default or succession of defaults under the 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 Owner the funds required by this Paragraph prior to the payment of the Owner of the balance of the contract price, or any portion thereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the Owner to the Contractor under the 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 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)

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 _____ (\$ _____), 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 **Highway 41 Water Main, Phase IV**, 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.

{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__.

Principal

By: _____
(Signature)

Witness

Typed name and title

Typed name of witness

Typed address of witness

(Surety)

By: _____
Its: Attorney-in-Fact

Witness

Typed name of Attorney-in-Fact

Typed name of witness

Typed address of witness

(Address of Surety's Home Office)

CCMWA
Forms - 2 Payment Bond
2/20/01

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]

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:

INSURANCE CERTIFICATE CHECKLIST

Name of Vendor/Contractor: _____
Contract Name/Number: _____
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?
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-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

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 Highway 41 Water Main, Phase IV (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

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES



ASCE *American Society
of Civil Engineers*

P/E *National Society of
Professional Engineers*
Professional Engineers in Private Practice

AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

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A Practice Division of the
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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1 – Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology.....	5
Article 2 – Preliminary Matters.....	6
2.01 Delivery of Bonds and Evidence of Insurance.....	6
2.02 Copies of Documents.....	7
2.03 Commencement of Contract Times; Notice to Proceed.....	8
2.04 Starting the Work.....	8
2.05 Before Starting Construction.....	8
2.06 Preconstruction Conference; Designation of Authorized Representatives.....	9
2.07 Initial Acceptance of Schedules.....	9
2.08 Licensing.....	9
Article 3 – Contract Documents; Intent, Amending, Reuse.....	10
3.01 Intent.....	10
3.02 Reference Standards.....	10
3.03 Reporting and Resolving Discrepancies.....	11
3.04 Amending and Supplementing Contract Documents.....	12
3.05 Reuse of Documents.....	13
3.06 Electronic Data.....	13
Article 4 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions; Reference Points.....	13
4.01 Availability of Lands.....	13
4.02 Subsurface and Physical Conditions.....	14
4.03 Differing Subsurface of Physical Conditions.....	15
4.04 Underground Facilities.....	16
4.05 Reference Points.....	17
4.06 Hazardous Environmental Condition at Site.....	18
Article 5 – Bonds and Insurance.....	20
5.01 Performance, Payment, and Other Bonds.....	20
5.02 Licensed Sureties and Insurers.....	21
5.03 Certificates of Insurance.....	21
5.04 Contractor’s Insurance.....	21
5.05 Owner’s Liability Insurance.....	23
5.06 Property Insurance.....	23

5.07	Waiver of Rights	25
5.08	Receipt and Application of Insurance Proceeds	25
5.09	Acceptance of Bonds and Insurance; Option to Replace.....	26
5.10	Partial Utilization, Acknowledgment of Property Insurer	26
 Article 6 – Contractor’s Responsibilities		27
6.01	Supervision and Superintendence.....	27
6.02	Labor; Working Hours.....	27
6.03	Services, Materials, and Equipment	28
6.04	Progress Schedule	29
6.05	Substitutes and “Or-Equals”	30
6.06	Concerning Subcontractors, Suppliers, and Others	33
6.07	Patent Fees and Royalties	35
6.08	Permits.....	35
6.09	Laws and Regulations	35
6.10	Taxes	36
6.11	Use of Site and Other Areas	37
6.12	Record Documents.....	37
6.13	Safety and Protection	38
6.14	Safety Representative.....	39
6.15	Hazard Communication Programs	39
6.16	Emergencies	39
6.17	Shop Drawings and Samples	39
6.18	Continuing the Work.....	41
6.19	Contractor’s General Warranty and Guarantee.....	42
6.20	Indemnification	42
6.21	Delegation of Professional Design Services	43
 Article 7 – Other Work at the Site.....		44
7.01	Related Work at Site	44
7.02	Coordination.....	45
7.03	Legal Relationships.....	45
7.04	Claims Between Contractors	45
 Article 8 – Owner’s Responsibilities		46
8.01	Communications to contractor.....	46
8.02	Replacement of Engineer.....	46
8.03	Furnish Data	46
8.04	Pay When Due	46
8.05	Lands and Easements; Reports and Tests	46
8.06	Insurance	47
8.07	Change Orders.....	47
8.08	Inspections, Tests, and Approvals	47
8.09	Limitations on Owner’s Responsibilities	47
8.10	Undisclosed Hazardous Environmental Condition.....	47
8.11	Evidence of Financial Arrangements	47

8.12 Compliance with Safety Program.....	47
Article 9 – Engineer’s Status During Construction	47
9.01 Owner’s Representative.....	47
9.02 Visits to Site	48
9.03 Project Representative	48
9.04 Authorized Variations in Work	48
9.05 Rejecting Defective Work	49
9.06 Shop Drawings, Change Orders and Payments	49
9.07 Determinations for Unit Price Work	49
9.08 Decisions on Requirements of Contract Documents and Acceptability of Work	49
9.09 Limitations on Engineer’s Authority and Responsibilities.....	50
9.10 Compliance with Safety Program.....	50
Article 10 – Changes in the Work; Claims	51
10.01 Authorized Changes in the Work	51
10.02 Unauthorized Changes in the Work	51
10.03 Execution of Change Orders.....	51
10.04 Notification to Surety.....	52
10.05 Claims and Disputes	53
Article 11 – Cost of the Work; Allowances; Unit Price Work.....	54
11.01 Cost of the Work	54
11.02 Allowances	57
11.03 Unit Price Work	57
Article 12 – Change of Contract Price; Change of Contract Times.....	58
12.01 Change of Contract Price.....	58
12.02 Change of Contract Times	60
12.03 Delays.....	60
Article 13 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work.....	61
13.01 Notice of Defects	61
13.02 Access to Work	61
13.03 Tests and Inspections	61
13.04 Uncovering Work.....	62
13.05 Owner May Stop the Work.....	63
13.06 Correction or Removal of Defective Work.....	63
13.07 Correction Period	63
13.08 Acceptance of Defective Work.....	64
13.09 Owner May Correct Defective Work	65
Article 14 – Payments to Contractor and Completion.....	65
14.01 Schedule of Values	65
14.02 Progress Payments	66
14.03 Contractor’s Warranty of Title	71

14.04 Substantial Completion.....	71
14.05 Partial Utilization.....	73
14.06 Final Inspection.....	73
14.07 Final Payment.....	73
14.08 Final Completion Delayed.....	75
14.09 Waiver of Claims.....	75
Article 15 – Suspension of Work and Termination.....	75
15.01 Owner May Suspend Work.....	75
15.02 Owner May Terminate for Cause.....	76
15.03 Owner May Terminate For Convenience.....	77
15.04 Contractor May Stop Work or Terminate.....	78
Article 16 – Dispute Resolution.....	79
16.01 Methods and Procedures.....	79
Article 17 – Miscellaneous.....	79
17.01 Giving Notice.....	79
17.02 Computation of Times.....	80
17.03 Cumulative Remedies.....	80
17.04 Survival of Obligations.....	80
17.05 Controlling Law.....	80
17.06 Headings.....	80
17.07 Addresses.....	81
17.08 Forms and Record.....	81
17.09 Assignment.....	82

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.

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.

- 6.09 *Laws and Regulations*
- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's 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 Engineer 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

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 May 22, 2013, prepared by GEO-HYDRO Engineers, Inc., entitled "Report of Subsurface Exploration and Geotechnical Engineering Evaluation – Highway 41 Water Main – Phase IV".

4.02.C.2 Report dated December 9, 2013, prepared by GeoHydro Engineers, entitled "Report of Supplemental Subsurface Exploration and Geotechnical Engineering Evaluation – Tunnel Section - STA 52+55 to STA 86+00 - Highway 41 Water Main – Phase IV".

4.02.C.3 Report dated February 18, 2015, prepared by GeoHydro Engineers, entitled "Geotechnical Exploration Summary – Tunnel Section - STA 54+65 - Highway 41 Water Main – Phase IV".

4.02.C.4 Report dated February 2015, prepared by GeoHydro Engineers, entitled "Corrosion Needs Assessment – CCMWA Hwy 41 Water Main.

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 As-Built Record Drawings – Hwy 41 Ph 3 – Welker and Associates, Inc. Project #97-437, dated April 2002, consisting of 41 sheets; and

4.02.D.2 As-Built Record Drawings – U.S.41 PHASE 5 - Welker and Associates, Inc. Project #96-1221, dated October 1997, consisting of 12 sheets;

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; and
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.
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 \$90.00/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.

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

SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

The work described by these specifications is located in Cobb County, Georgia along Highway 41 between Franklin Road and Herodian Way. The project consists of new 36", 42" and 54" water mains connecting to the Cobb County-Marietta Water Authority's existing water transmission system. The project will also include new 16-inch water main connecting to the Marietta BLW existing distribution system.

PART 2 - PRODUCT

- 2.1 The work to be done consists of furnishing all labor, equipment and materials required to construct the water main and appurtenances as shown in the contract drawings.
- 2.2 Major items of construction are:
1. Approximately 5,590 LF of 36" DIP Water Main.
 2. Approximately 3,750 LF of 42" DIP Water Main.
 3. Approximately 595 LF of 54" DIP Water Main.
 4. Connection to existing 36" Water Main at Franklin Drive.
 5. Connection to existing 36" Water Main at Caswell Drive and existing 42" Water Main south of Windy Hill Road.
 6. Connection to existing 36" Water Main at Herodian Way.
 7. Connections to existing water distribution mains for the Cobb County Water System.
 8. Approximately 5,250 LF of 16" DIP Water Main.
 9. Connection to existing water distribution mains for the Marietta Board of Lights and Water.
 10. 4 Large Diameter Gate Valve installations.
 11. 1 - 84" Tunnel installation.

PART 3 - EXECUTION

Coordinate and install the proposed water main and appurtenances as shown in the contract documents.

END OF SECTION

SECTION 01 21 16
ALLOWANCES

PART 1 - GENERAL

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. 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.

PART 2 - SCHEDULE OF ALLOWANCES

Allowance Accounts are allocated to the Cobb County-Marietta Water Authority (CCMWA) and the Marietta Board of Lights and Water (BLW).

2.1 The following Allowance Accounts are allocated to the CCMWA.

2.1.1 ALLOWANCE FOR FORCE ACCOUNT WORK

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.

2.1.2 ALLOWANCE FOR TESTING

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.

2.1.3 ALLOWANCE FOR UTILITY RELOCATION BY OTHERS

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.

2.1.4 ALLOWANCE FOR LANDSCAPING

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.

2.1.5 ALLOWANCE FOR TRAFFIC CONTROL

The purpose for this allowance is to reimburse the Contractor for the services of a firm specializing in development of traffic control plans and the implementation of traffic control. This allowance shall be used to reimburse the Contractor for the use of police officers to control traffic if required. This allowance will be used to reimburse Contractor for development of a travel control plan, the implementation of the traffic control plan, safety barriers, traffic signal men, and other items required to maintain safety on the project site. 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.

Approved vendors are:

1. U.S. Traffic Technologies
3151 Nifda Blvd SE
Smyrna, GA 30080
404-350-0441
2. Traffic Specialties, Inc
4611 Greer Circle, Suite M
Stone Mountain, GA 30083
678- 990-1324

2.1.6 ALLOWANCE FOR CORROSION CONTROL

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.

2.1.7 ALLOWANCE FOR WATER MAIN DISINFECTION

The purpose for this allowance is to reimburse the Contractor for the services of a firm specializing in disinfection of water mains and in the development of disinfection 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. The Contractor shall coordinate all work with the water mains 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.

2.1.8 ALLOWANCE FOR TEMPORARY BUS STOP REMOVAL

The purpose for this allowance is to reimburse the Contractor for temporary removal of CCDOT bus stops. Costs under this allowance item will be for the temporary removal of the bus stop before construction and the re-installation of the bus stop after construction. The work shall be performed by CCDOT or the CCDOT's contractor. The Contractor is responsible for the coordination of such work with the Contractor's work. 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.

In order to be eligible for payment under each allowance item, the Contractor must submit a written proposal, for the Owner's approval, prior to beginning work covered under said allowance.

2.1.9 ALLOWANCE FOR GATE VALVE PURCHASE

The purpose for this allowance is to reimburse the Contractor for the purchase of pre-selected Gate Valves:

1. 1 - 36" Gate Valve with flex ring joints.
2. 1 - 42" Gate Valve with flex ring joints.

3. 1 - 48" Gate Valve with flex ring joints.
4. 1 - 48" Gate Valve with flex ring joint and with 48"x54" Increaser

The supplier of the equipment is responsible for the following: Preparation of shop drawings associated with the equipment supplied, Preparation of Operation and Maintenance Manuals, Freight to the job site, and Equipment warranty. The Contractor shall be responsible for, but not limited to, all work and construction of all items listed below: The Contractor to coordinate all work, The Contractor is responsible for unloading the equipment at the jobsite, providing temporary storage as necessary, and installing the equipment and materials in place, Installation of pre-selected Gate Valves, The furnishing and installation of all piping, valves and appurtenances not supplied by the pre-selected supplier or as shown on Drawings, Installing all equipment in accordance with Manufacturer's Instructions, Providing field painting of equipment, Insurance to cover damages or loss after equipment is delivered to the site, and Payment of sales tax related to equipment under this work. 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.

2.2 The following Allowance Accounts are allocated to the Marietta BLW.

2.2.1 ALLOWANCE FOR FORCE ACCOUNT WORK

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.

2.2.2 ALLOWANCE FOR TESTING

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.

2.2.3 ALLOWANCE FOR UTILITY RELOCATION BY OTHERS

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.

2.2.4 ALLOWANCE FOR LANDSCAPING

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.

2.2.5 ALLOWANCE FOR TRAFFIC CONTROL

The purpose for this allowance is to reimburse the Contractor for the services of a firm specializing in development of traffic control plans and the implementation of traffic control. This allowance shall be used to reimburse the Contractor for the use of police officers to control traffic if required. This allowance will be used to reimburse Contractor for development of a travel control plan, the implementation of the traffic control plan, safety barriers, traffic signal men, and other items required to maintain safety on the project site. 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.

Approved vendors are:

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2. Traffic Specialties, Inc
4611 Greer Circle, Suite M
Stone Mountain, GA 30083
678-990-1324

2.2.6 ALLOWANCE FOR WATER MAIN DISINFECTION

The purpose for this allowance is to reimburse the Contractor for the services of a firm specializing in disinfection of water mains and in the development of disinfection 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. The Contractor shall coordinate all work with the water mains 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.

****END OF SECTION****

SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 GENERAL

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.

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.

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 plans and called for in the specifications.

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.

PART 2 - PAY ITEMS

2.1 WATER MAINS

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.

The unit price bid for pipe shall include all of the materials, labor and incidentals necessary for the completion of the pipeline as called for under SECTION 33 11 13, WATER MAIN CONSTRUCTION and/or SECTION 02601 BLW WATER MAIN CONSTRUCTION, except as specifically called for in other pay items herein.

The unit price bid for water line shall include and cover all clearing and grubbing on the entire pipeline right-of-way and the disposal of all debris in dressing and finishing after the line is laid. There will be no additional pay where extra depth is incurred due to valve locations, tie-ins, restrained joint requirements, conflicts with other utilities, or other field conditions.

The Contractor shall be responsible for the reuse of acceptable in-place material including

the drying or wetting to obtain suitable moisture content for compaction during backfill operations under Pay item 2.1. All excess excavated material shall be disposed of without extra cost to the Owner.

Pipe will be paid for at the unit price bid for various sizes and types.

2.2 RESTRAINED JOINTS / RETAINER GLANDS

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.

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.

In the case of Owner furnished restrained joints, this extra payment for each restrained joint will be paid separate from the unit price bid for each valve or fitting. This extra payment shall include all materials, labor and incidentals necessary for a complete installation necessary to install the restrained joint and make ready for operation of the water main.

2.3 DUCTILE IRON FITTINGS

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 C110 weight or AWWA C153 weight for the lightest weight fitting as appropriate for service intended not including joint accessories.

Fittings that will be counted for payment under this item will include: (a) main-line fittings that are labeled on the plans, (b) plugs that are shown on stub-outs and temporary ends for future connections, (c) fittings on blow-off piping. Fittings for special cross connections and existing water main tie-ins shall be measured and paid for under a separate bid item. Fittings installed for the Contractor's convenience or negligence will not be counted for payment.

Additional fittings called for in the bid proposal and not shown on the drawings shall be

installed as directed by the Engineer or Owner. If the additional fittings are not installed, they shall be delivered to the Owner to be placed in the Owner's inventory.

All straight pipes 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

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.

Access manholes for valves shall be paid for under a separate bid item. Other valves and valve boxes will be paid for at the unit price bid for valves per each, for each size and type of valve listed in the proposal. Unit price shall include all excavation, furnishing and installing of the valves, valve boxes, and valve extensions as required, concrete collar around the valve boxes, operator and all necessary incidentals to complete the work.

2.5 PIPE OUTLETS

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.

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.

Blind Flange with Flanged outlets or welded-on bosses, which are not included for payment under other bid items, will be counted in place and paid for at the unit price bid for each type and size listed in the proposal.

Provide all blind flanges require flanged outlets of the size shown on the drawings. For manway applications, provide blind flanges as required.

2.6 AIR & VACUUM VALVE

Measurement of each air and vacuum relief valve shall be measured in place and payment made for approved air and vacuum relief valve installation per each installed. The unit price bid for air and vacuum relief valves shall include all materials, labor and incidentals necessary for the complete installation of each air and vacuum relief valve and associated gate valve as called for in these specifications.

2.7 CONCRETE MANHOLE ASSEMBLY

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.

Unit price for each concrete manhole assembly shall include up to ten vertical feet of complete manhole assembly. 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, a reducer section, grade rings, manhole ring, and manhole cover. The manhole assembly shall provide a means of egress via embedded ladder rungs or other as shown on the contract drawings. No extra payment for grade ring adjusters for final grade shall be paid.

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.

2.8 POLYETHYLENE ENCASEMENT

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 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.

2.9 SAMPLE TEST STATION

Measurement of sample test station shall be measured in place and payment made for approved test station installations per each inline valve at which test stations are 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 two saddles, two pipe taps, two corporation cocks, copper tubing Type K in the size shown, copper fittings, two test hydrants as specified, and piping supports.

Each test station is inclusive of all work shown at each inline valve location.

2.10 STEEL CASING

Measurement of steel casing shall be measured in place and payment made for approved steel casing installation per lineal foot installed. The unit price bid for steel casing shall include all materials, labor, jacking, boring, and/or open trench installation, sealing the ends of the casing pipe, stabilize the carrier pipe inside the casing against movement and

floatation, and incidentals necessary for the complete installation of each steel casing as called for in these specifications.

Additional payment for rock will be made when rock is encountered. Rock for bores is defined as the same as ROCK EXCAVATION in Specification SECTION 33 11 13 - WATER MAIN CONSTRUCTION. For open trench installation of casing, additional payment for rock will be made at the unit bid price for SOLID ROCK EXCAVATION IN TRENCH. For jack and bore installation of casing, additional payment for rock will be made at the unit bid price for ADDITIONAL COMPENSATION FOR ROCK ENCOUNTERED IN BORE. Payment will be made only after the Engineer has been notified and has verified presence of rock and the requirement to use a rock boring head. Extra payment will be made for the removal of rock encountered in the bore. Measurement will be made from the point of the bore where rock is first encountered to the point of the bore where evidence indicates that soil is encountered. The length of the bore affected by rock shall be measured and recorded for basis of payment of additional compensation.

Carrier pipe inside the steel casing shall be paid for separately. Spacers used on the water main inside the casing will also be paid for separately.

2.11 CASING SPACERS IN STEEL CASING

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

Casing spacers used in steel casing will be paid for at the unit per each size as listed in the proposal.

2.12 CONNECTION TO EXISTING WATER MAINS

Payment for this item will be at the unit price bid for each location and size listed in the bid proposal. Payment shall be full compensation for locating, cutting-in and connecting to the existing facilities and removal of existing piping as necessary to complete the connection. Pipe and special fittings used in making the connection will be paid for separately.

2.13 CONNECT BLOW-OFF TO STORM DRAIN FACILITY

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 connecting to the existing storm drainage structure. Piping and fittings will be paid for separately.

2.14 WATER MAINS REMOVE & DISPOSE

Measurement of the water main removed will be along the main axis of the pipeline in place. No deduction in the length of pipe will be made for space occupied by valves, specials, and fittings.

The unit price bid for pipe shall include all of the materials, labor and incidentals necessary for the complete removal and suitable disposal of the pipeline except as specifically called for in other pay items herein.

The unit price bid for water line shall include and cover all excavation, backfilling, and the disposal of all debris, after the water main is removed. There will be no additional pay where extra depth is incurred due to valve locations, tie-ins, restrained joint requirements, conflicts with other utilities, or other field conditions.

Measurement of the meter vaults removed will be for each removed in place.

The unit price bid for meter vault removal shall include all of the materials, labor and incidentals necessary for the complete removal and suitable disposal of the materials within the vault and the vault except as specifically called for in other pay items herein.

The unit price bid for meter vault removal shall include and cover all excavation, backfilling, and the disposal of all debris, after the line is removed. There will be no additional pay where extra depth is incurred due to valve locations, tie-ins, restrained joint requirements, conflicts with other utilities, or other field conditions.

2.15 LOCATOR BALL INSTALLATION

The locator 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 plans. The Contractor is responsible for installation PVC pipe at the time of construction, maintaining pipe during construction, installation of backfill after pipe location has been surveyed, furnishing and installation of locator balls with appropriate information, capping of pipe, and backfilling.

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

2.16 FLUSHING AND DISINFECTING OF WATER MAINS

Payment for flushing and disinfecting water mains shall be made under an allowance item. The payment from this allowance shall be full compensation for all tools, labor, equipment, materials, and any incidentals necessary for the flushing and disinfecting of water mains as required.

Pressure testing of the pipeline is the responsibility of the Contractor and the cost of this testing shall be included in the cost of the installation of the pipeline. Cleanliness of pipeline is the responsibility of the Contractor and the cost of cleaning and maintaining

the cleanliness of the pipeline shall be included in the cost of the installation of the pipeline.

2.17 SUBGRADE STABILIZER STONE

Measurement for payment for subgrade stabilizer stone will be made by the ton.

Weight for payment will be taken from dray tickets for stone actually placed in accordance with the following limitations:

- a. Stone used for stabilizing trench bottom in wet areas will be paid for.
- b. Stone used for type 4 and type 5 bedding conditions will be paid for.
- c. Stone used for constructing temporary driveways will be paid for.
- d. Stone used for constructing temporary travel lane adjacent to existing roadway will be paid for.
- e. Stone used for construction haul roads will not be measured for payment, nor will that which is placed contrary to contract requirements.

2.18 SOLID ROCK EXCAVATION IN TRENCH

Rock will be measured in place, and the quantity paid for shall be the length of the excavation, measured along the centerline of the pipe, times the average depth of the excavation, times the width equal to the nominal diameter of the pipe plus four feet.

2.19 MISCELLANEOUS CONCRETE

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

2.20 STRUCTURAL CONCRETE

The unit price shall include all delivery, placing, and curing costs associated with installing concrete within formwork. The concrete volume will be measured in place and paid for at the unit price bid per cubic yard. Only work directed by the Engineer will be paid for. Concrete structures damaged or replaced due to Contractor error or negligence will not be paid for. No compensation will be allowed for removal of existing concrete.

2.21 REINFORCING STEEL

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 pound. Only work directed by the Engineer will be paid for.

2.22 GRADED AGGREGATE BASE

Graded aggregate base is measured by the ton, mixed and accepted in place.

Graded aggregate base will be paid for at the contract unit price per ton. This unit price shall be full compensation for materials, the shaping and the compaction of the existing roadbed, loading, hauling, and unloading, crushing and processing, mixing, spreading, watering, compacting and shaping, maintenance, priming, when required, and all incidentals necessary to complete the work.

2.23 BORROW MATERIAL

Borrow material is measured by the cubic yard, compacted to specified soil density, and accepted in place.

Borrow material will be paid for at the contract unit price per cubic price. This unit price shall be full compensation for materials, the shaping and the compaction of the existing roadbed or pipe trench, loading, hauling, and unloading, processing, mixing, spreading, watering, compacting and shaping, maintenance, priming, when required, and all incidentals necessary to complete the work. This unit price includes the geotechnical engineering services and testing necessary to document the suitability of the borrow material as backfill material.

2.24 GEOGRID SOIL REINFORCEMENT

Geogrid soil reinforcement, complete and accepted, is measured for payment by the square yard.

Payment for geogrid soil reinforcement will be made at the unit price bid per square yard for work complete in place and accepted. The unit price bid shall be full compensation for all tools, labor, equipment, materials, traffic control, protection of concrete against traffic and weather and any incidentals necessary for the installation of the geogrid soil reinforcement as required.

2.25 MILLING EXISTING PAVEMENT

Milling existing pavement is measured by the square yard.

Milling existing pavement will be paid for at the contract unit price per square yard. Payment is full compensation for furnishing labor and equipment, milling, hauling, disposing of milled material, and satisfactorily performing the work.

2.26 PAVEMENT OVERLAY

Pavement overlay is measured by the square yard.

Pavement overlay will be paid for at the contract unit price per square yard. The unit price shall include the application of a tack coat prior to pavement overlay and the placement of a surface pavement of the type shown on drawings and to the depth shown on drawings.

Payment is full compensation for furnishing labor, material, and equipment, applying tack coat, placing pavement overlay, and satisfactorily performing the work.

2.27 PAVEMENT TRENCH BASE

Pavement trench base is measured by the square yard.

Pavement trench base will be paid for at the contract unit price per square yard. The unit price shall include the application of a tack coat prior to pavement trench base and the placement of either base or binder course of the type and to the depth shown on drawings. Payment is full compensation for furnishing labor, material, and equipment, applying tack coat, placing pavement, and satisfactorily performing the work.

2.28 REMOVE & REPLACE ASPHALT DRIVEWAYS AND PARKING LOTS

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.

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.

2.29 REMOVE & REPLACE CONCRETE DRIVEWAYS AND PARKING LOTS

Measurement shall be the length of the pavement replaced, measured along the centerline of the pipe multiplied by the trench width plus two feet. The unit of measurement shall be the square yard.

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.

2.30 REMOVE AND REPLACE GRAVEL DRIVEWAY

Gravel driveways will be measured in place and the unit of measurement shall be the

square yard.

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 12" thick layer of graded aggregate base. Maintenance of the driveway during construction shall be included in unit price.

2.31 REMOVE & REPLACE CONCRETE SIDEWALK

Sidewalks removed and replaced shall be measured in place and the unit of measurement shall be the square yard.

Sidewalks removed and replaced shall be measured in place and shall be paid for at the unit price bid per square yard. 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 the existing sidewalk. Sidewalks shall be constructed in accordance with GDOT standard specifications and details. The work shall include the installation of ramps for handicap accessibility, the installation of detectable warning surfaces, and other work necessary to comply with current GDOT requirements.

2.32 REMOVE & REPLACE CURB AND GUTTER (ALL TYPES & SIZES)

Curb or curb and gutter completed in place and accepted is measured in linear feet along the face of the curb.

Each type of curb and curb and gutter remove 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.

2.33 REMOVE AND REPLACE FENCE (All Sizes & Types)

Payment for this item will be at 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.

2.34 TRAFFIC STRIPE

Traffic Stripe (all types) is measured by the linear mile.

Payment for applying traffic stripe will be made at the unit price bid per linear mile. The

unit price bid shall be full compensation for all tools, labor, equipment, materials, traffic control, protection of traffic stripe against traffic and weather and any incidentals necessary for the installation of the traffic stripe as required. The unit bid shall be for solid and skip traffic stripe of any size and color required.

2.35 TEMPORARY SILT FENCE

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.

2.36 HAY BALE BARRIER

Hay bale barriers will be measured in place and paid for the unit price bid per linear foot. 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.

2.37 ROCK CHECK DAM

Rock check dams 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 check dams. No payment will be made for check dams placed without the approval of the engineer.

2.38 RIP-RAP

Rip-Rap will be measured in place paid for at the unit price bid per square yard. Placement of Rip-Rap will be as directed by the engineer. Unit price bid shall be full compensation for all labor, materials and equipment required to furnish and install required rip-rap.

2.39 CONSTRUCTION EXIT

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.

2.40 STRAW MULCH STABILIZATION

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.

2.41 GRASSING

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 40 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. No modification shall be made in the unit price.

2.42 EROSION MAT (SLOPES)

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.

2.43 INLET SEDIMENT TRAP

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.

2.44 STORM DRAIN OUTLET PROTECTION

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.

2.45 TREE SAVE FENCE

Temporary tree save 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 tree save fence as specified in the contract documents. Tree save fence will only be measured for payment once.

2.46 CUT AND PLUG EXISTING WATER MAIN

Water mains cut and plugged with a mortared brick wall 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.

2.47 NPDES PERMIT COMPLIANCE

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 01 41 00 including the employment of an Environmental Professional for specified services. This item is inclusive of all associated fees to the Georgia Environmental Protection Division (EPD), Cobb County, and other agencies as necessary for the compliance with erosion control requirements as specified and shown on drawings and required by law or regulation.

2.48 REMOVAL OF EXISTING FIRE HYDRANT

The unit price for this item shall be full compensation for removing the existing fire hydrant in good condition and delivering it to the Owner's yard.

2.49 INSTALLATION OF NEW FIRE HYDRANT

Fire hydrants will be counted in place.

Fire hydrants will be paid for at the unit price bid for each. Fire hydrant extension shall be paid for at the unit price bid per vertical foot.

The unit price shall be full compensation for the cost of excavation, preparation of foundation, furnishing and placing stone, blocking hydrant, setting hydrant, testing hydrant, and all expenses incidental to completing the work. The connecting pipe between the fire hydrant and the main will be paid for separately at the unit price bid for the size pipe used. Locked hydrant adapters and locked hydrant tees are paid for under miscellaneous fittings.

2.50 COPPER TUBING

Copper tubing for service connections shall be paid for at the unit price bid per linear foot of pipe installed. The cost of corporation cocks, curb stops, service fittings, and service saddles shall be included in the payment of this item.

2.51 WATER SERVICE INSTALLATION

Water service installation shall be paid for at the unit price bid per each existing service connected. The price shall be compensation for all labor, tools, equipment, and materials necessary to complete the installation as shown on the plans. The Contractor shall connect new water services to existing meter, meter box, and backflow preventer relocated to back of right of way by the contractor and reconnected to existing water

service by contractor.

2.52 TEMPORARY WATER MAIN

Where required, the Contractor shall install temporary water main of the size and type indicated to meet the needs of the property owners. The water main shall be buried to the depth necessary for protection from damage by traffic. The cost of the removal shall be included in the unit price bid. The cost of a temporary connection to an existing water main or fire hydrant shall be included in the unit price bid. The water main shall be installed only at the direction of the Engineer. Bid price shall include all labor, material, tools, and equipment necessary for the installation and maintenance of the temporary water main. Payment under this item shall be made at the unit price bid per linear foot of temporary water main installed.

2.53 TEMPORARY WATER SERVICE

Where required, the Contractor shall install temporary water service of the size and type required to meet the needs of the property owners. The water service shall be buried to the depth necessary for protection from damage by traffic. The cost of the removal shall be included in the unit price bid. The water service shall be installed only at the direction of the Engineer. Bid price shall include all labor, material, tools, and equipment necessary for the installation, connection, and maintenance of the temporary water service. Payment under this item shall be made at the unit price bid per linear foot of temporary water service installed.

2.54 TEMPORARY SEWER SERVICE

Where required, the Contractor shall install a temporary sewer service of the size and type required to meet the needs of the property owners. The temporary sewer service shall be installed to the line and grade necessary to maintain flow. The cost of the removal shall be included in the unit price bid. The temporary sewer service shall be installed only at the direction of the Engineer. Bid price shall include all labor, material, tools, and equipment necessary for the installation, connection, and maintenance of the temporary sewer service. Payment under this item shall be made at the unit price bid per linear foot of temporary sewer service installed.

2.55 PERMANENT SEWER SERVICE

Where required, the Contractor shall install a permanent sewer service of the size and type indicated to meet the needs of the property owners. The permanent sewer service shall be installed to the line and grade necessary for maintain flow. The permanent sewer service shall be installed only at the direction of the Engineer. Bid price shall include all labor, material, tools, and equipment necessary for the installation of the permanent sewer service. Payment under this item shall be made at the unit price bid per linear foot of permanent sewer service installed.

2.56 GROUTING EXISTING WATER MAIN

Measurement for the grouting of existing water mains shall be on the linear foot basis for each size of water main as measured in place.

Payment for grouting existing water main shall be made under a unit price bid per linear feet. The unit price bid shall be full compensation for all work including cutting of existing water main, installation of vents as required, grout materials compliant with GDOT requirements, installation of grout, and removal of vents.

2.57 FLOWABLE FILL

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 place flowable fill within Project. Payment shall be based on the actual length of the pipeline times the depth and width of pipeline trench. The Engineer prior to placement must approve calculation of the amount of material to be placed.

2.58 WATER SERVICE CASING AND PIPE BURSTING

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 either install PVC casing pipe under an existing roadway or burst an existing water service for installation of a new water service. Measurement for payment shall be based on the actual length of the installed casing pipe or actual length of bursted water service.

2.59 COUPLINGS

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 place either install pipe couplings jointing pipes of different material. Measurement for payment shall be based on each coupling installed.

2.60 REMOVE & REPLACE CULVERT PIPE (ALL TYPES & SIZES)

Culvert pipe completed in place and accepted is measured in linear feet along the center line of the pipe.

Each type of culvert pipe removed and replaced shall be paid for at the contract unit price bid per linear foot. Payment is full compensation for removal of existing culvert pipe, furnishing of materials, preparing bedding and installing backfill and subgrade materials, installing, and maintaining culvert pipe installed and connecting new culvert pipe to existing culvert pipe.

2.61 CONSTRUCT BLOWOFF STRUCTURE

The blowoff structure shall be counted in place.

The blow structure shall be paid for at the unit price for each. This price shall include all cost for materials to be supplied and shown on contract drawings, all labor, tools, equipment, and incidental material necessary to construct the blowoff structure at the structure location.

The cost of any concrete, gravel, pipe fittings, valves, or other materials included within other unit price bids necessary to construct the structure, or that is contained within the structure shall be paid under that price bid.

2.62 VIDEO DOCUMENTATION

Video documentation will be paid for under a lump sum bid. This price shall include all cost for all materials, all labor, tools, equipment, and incidentals necessary to video record the project.

The Contractor shall employ the services of a professional video company to record the project conditions prior to construction. The video record shall document the project from beginning to end within the construction limits. The Pre-Construction Video shall document existing damage to curbs, streets, sidewalks, driveways, trees, poles, and surrounding structures. The video recording shall be time and date stamped and geo-coded with northings, eastings, and direction of view. The video recording shall be suitable for legal proceedings.

2.63 REMOVE & REPLACE GUARDRAIL

Guardrail will be measured in place and the unit of measurement shall be in linear feet.

Payment for removing and replacing guardrail will be made at the unit price bid per linear foot. The unit price bid shall be full compensation for all tools, labor, equipment, materials, traffic control, temporary guardrail for the protection of traffic, weather and any incidentals necessary for the removal and replacement of guardrail. The unit bid shall be for guardrail of any size and type. Existing guardrail shall be removed and replaced the type of guardrail matching the existing and compliant with current GDOT specifications and standards.

2.64 TAPPING SLEEVE, VALVE, AND BOX

Tapping sleeves and valves will be paid for at the unit price bid for each size and type. The price bid for tapping sleeve and valve shall include required tapping sleeve, tapping valve, valve box with concrete collar and all other materials and labor to complete a tap on an existing water main.

2.65 BONDED JOINTS

- A. Measurement for the bonding of joints shall be for each pipe joint bonded.
- B. Payment at the unit price bid will include installation of double bonding of joints as shown. Payment for bonded joints will be made after successful testing of joints.

2.66 CATHODIC TEST STATIONS

- A. Measurement for the cathodic test stations shall be for each station installed.
- B. Payment at the unit price bid will include installation of cathodic test stations as shown. Payment of cathodic test stations will be made after successful testing of test stations.

2.67 WATER METER AND CONCRETE VAULT

Measurement of water meter and concrete vault shall be for installed and in place.

Payment for water meter and concrete vault shall be made on the basis of lump sum bid price. Water meters and all other materials are to be supplied by the Contractor unless noted otherwise. This price shall include all cost for materials to be supplied and shown in contract drawings, all labor, tools, equipment, and all incidental material necessary to construct or set the vault, transport and assemble the meter, and connect to the water mains at the meter location.

The cost of any concrete, gravel, steel reinforcement, pipe, pipe fittings, associated valves, or other material necessary to construct the vault, or that is contained within the vault shall be included in the price bid.

Any concrete, gravel, pipe, pipe fittings, or other material necessary to construct the pipeline outside the vault will be paid for separately as outlined in the "Measurement and Payment Section" of these Contract Documents.

2.68 CONCRETE VALVE MARKERS

Valve markers will be counted in place, and will be paid for at the unit price bid per each.

2.69 STOPAQ

The application of Stopaq corrosion protection wrap will be measured in place along the length of pipe and paid for at the unit price bid per linear foot as listed in the bid proposal.

The unit price bid shall include all materials, labor, equipment, and incidentals necessary for the complete installation of Stopaq wrap.

2.70 SODDING

Sodding shall be paid for at the unit price bid per square yard of sod. Contractor shall be responsible for placing sod required during installation of water main. Sodded area measured for payment will be measured along the length of the water main for the width of sod. Where sodding 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. No modification shall be made in the unit price.

****END OF SECTION****

SECTION 01 29 00
APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

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

PART 2 - FORMAT AND DATA REQUIRED

- 2.1 Submit applications on the form approved by Engineer, with itemized data typed in proper format.

PART 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:
 - 3.1.1 Project.
 - 3.1.2 Application number and date.
 - 3.1.3 Detailed list of enclosures.
 - 3.1.4 For stored products:
 - 3.1.4.1 Item number and identification as shown on application.
 - 3.1.4.2 Description of specific material.
 - 3.1.5 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.

3.2.1 Number: Six copies of each application.

3.2.2 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

PART 1 - GENERAL

1.1 GENERAL

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.

1.2 EXISTING UTILITIES

1.2.1 The existing water mains will remain in operation while the new construction is in progress.

1.2.2 The Contractor shall coordinate his work with the Owner so that the construction will not restrain or hinder the operation of the existing Water Authority or BLW 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.

1.2.3 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.

1.2.4 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

1.3.1 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 or cause the utility owner 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.

END OF SECTION

SECTION 01 32 16
CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 GENERAL

- 1.1.1 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.
- 1.1.2 Submit revised progress schedules as necessary.

PART 2 - PRODUCT

2.1 FORM OF SCHEDULES

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

2.2 CONTENT OF SCHEDULES

2.2.1 Construction Progress Schedule:

- 2.2.1.1 Show the complete sequence of construction by activity.
- 2.2.1.2 Show the dates for the beginning, and completion of, each major element of construction.

2.2.2 Products Delivery Schedule Dates.

2.2.3 Provide sub-schedules to define critical portions of prime schedules.

2.3 PROGRESS REVISIONS

2.3.1 Indicate progress of each activity to date of submission.

2.3.2 Show changes occurring since previous submission of schedules:

- 2.3.2.1 Major changes in scope.
- 2.3.2.2 Activities modified since previous submission.
- 2.3.2.3 Revised projections of progress and completion.
- 2.3.2.4 Other identifiable changes.

2.3.3 Provide a narrative report as needed to define:

2.3.3.1 Problem areas, anticipated delays, and the impact on the schedule.

2.3.3.2 Corrective action recommended, and its effect.

PART 3 - EXECUTION

3.1 SUBMISSIONS

3.1.1 Submit initial schedules within 15 days after award of Contract.

3.1.1.1 The Engineer will review schedules and return review copy within 15 days after receipt.

3.1.1.2 If required, resubmit within 7 days after return of review copy.

3.1.2 Submit revised progress schedules with each application for payment.

3.1.3 Submit one reproducible transparency and one opaque reproduction.

3.2 DISTRIBUTION

3.2.1 Distribute copies of the reviewed schedules to:

3.2.1.1 Job site file.

3.2.1.2 Subcontractors.

3.2.1.3 Other concerned parties.

3.2.2 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

PART 1 - GENERAL

1.1 GENERAL

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

PART 2 - PRODUCT

2.1 SURVEY REFERENCE POINTS

- 2.1.1 Existing basic horizontal and vertical control points for the project are those designated on drawings.
- 2.1.2 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.
 - 2.1.2.1 Make no changes or relocation without prior written notice to Engineer.
 - 2.1.2.2 Report to Engineer when any reference point is lost or destroyed, or requires relocation due to changes in the scope of the project.
 - 2.1.2.3 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

- 2.2.1 Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means.

2.2.2 Construction Staking

2.2.2.1 Stakes for pipeline alignment.

2.2.2.2 Invert elevations.

2.2.2.3 From time to time, verify layouts by the same methods.

PART 3 - EXECUTION

3.1 RECORDS

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

3.2 SUBMITTALS

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

****END OF SECTION****

SECTION 01 33 00
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.1 GENERAL

- 1.1.1 Submit shop drawings, product data and samples required by the Contract Documents.
- 1.1.2 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

- 1.2.1 Shop drawings shall be submitted in a clear and thorough manner to the Engineer. Copies returned to the Contractor will be marked as follows:

- ◆ "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.
- ◆ "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.
- ◆ "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.
- ◆ "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.
- ◆ "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.

- 1.2.2 Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Contract Drawings.

1.3 PRODUCT DATA

1.3.1 Preparation

1.3.1.1 Clearly mark each copy to identify pertinent products or models.

1.3.1.2 Show performance characteristics and capacities.

1.3.1.3 Show dimensions and clearances required.

1.3.1.4 Show wiring or piping diagrams and controls.

1.3.2 Manufacturer's standard schematic drawings and diagrams:

1.3.2.1 Modify drawings and diagrams to delete information which is not applicable to the work.

1.3.2.2 Supplement standard information to provide information specifically applicable to the work.

1.4 SAMPLES

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

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

1.5 CONTRACTOR RESPONSIBILITIES

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

1.5.2 Determine and verify:

1.5.2.1 Field measurements.

1.5.2.2 Field construction criteria.

1.5.2.3 Catalog numbers and similar data.

1.5.2.4 Conformance with specifications.

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

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

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

1.6 SUBMISSION REQUIREMENTS

1.6.1 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.

1.6.2 Number of submittals required:

1.6.2.1 Shop drawings: Submit the number of opaque reproductions which the Contractor requires plus three copies which will be retained by the Engineer.

1.6.2.2 Product data: Submit the number of copies which the Contractor requires, plus three which will be retained by the Engineer.

1.6.2.3 Samples: Submit the number stated in each specification section.

1.6.3 Submittals shall contain:

1.6.3.1 The date of submission and the dates of any previous submissions.

1.6.3.2 The project title and number.

1.6.3.3 Contract identification.

1.6.3.4 The names of:

1.6.3.4.1 Contractor.

1.6.3.4.2 Supplier.

1.6.3.4.3 Manufacturer.

1.6.3.5 Identification of the product, with the specification section number.

1.6.3.6 Field dimensions, clearly identified as such.

1.6.3.7 Relation to adjacent or critical features of the work or materials.

- 1.6.3.8 Applicable standards, such as ASTM or Federal Specifications numbers.
- 1.6.3.9 Identification of deviations from contract documents.
- 1.6.3.10 Identification of revisions on resubmittals.
- 1.6.3.11 An 8 in. x 3 in. blank space for Contractor and Engineer stamps.
- 1.6.3.12 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

- 1.7.1 Make any corrections or changes in the submittals required by the Engineer and resubmit until approved.
- 1.7.2 Shop Drawings and Product Data:
 - 1.7.2.1 Revise initial drawings or data, and resubmit as specified for the initial submittal.
 - 1.7.2.2 Indicate any changes which have been made other than those requested by the Engineer.
- 1.7.3 Samples: Submit new samples as required for initial submittal.

****END OF SECTION****

SECTION 01 35 13
SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 PROJECT MANAGEMENT

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, 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.

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.

The Contractor shall appoint a qualified representative to act as the, "Project Coordinator, Project Manager or the 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.

The Contractor shall give daily notice of all activities via internet communications to the following:

1. Georgia DOT
2. Cobb DOT.
3. Cobb Police.
4. Cobb Fire & Emergency.
5. Cobb County Water System
6. Marietta Police.
7. Marietta Fire & Emergency.
8. Smyrna Police.
9. Smyrna Fire & Emergency.
10. Smyrna Utility Services.
11. Owner.
12. Engineer.

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. Should the Engineer demand, the Contractor shall immediately remove any Superintendent, Foreman or worker

whom the Engineer considers incompetent, or undesirable, or both.

1.2 CREW SUPERVISION

The contractor's laborers, pipelayer(s) and equipment operator(s) must be supervised by a non-operator certified foreman or certified superintendent experienced in laying 36" and 42" ductile iron pressure water main. The foreman's and superintendent's resume, including OSHA certification status must be submitted to the Engineer and Owner for review prior to award of the contract.

1.3 WORK HOURS AND RESTRICTIONS

Except in the case of an emergency or other unusual circumstance, no work shall be done 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.

There shall be no traffic lane closures during weekdays between the hours of 5 AM to 9 AM and 3 PM to 6 PM. Exception to this requirement will only be made the approval of the Georgia DOT.>>> Week end?

Work within the Caswell Parkway, affecting ingress and egress to the residents on Caswell Parkway is limited to 30 days. Access by emergency vehicles must be maintained.

If milling or excavation is performed within 1,000 feet of any existing traffic signal or flashing beacon, contact GDOT District 7 District Traffic Operations (DTO) at 770-986-1765.

1.4 CLOSING VALVES

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

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

The Contractor shall be responsible for ensuring vehicular access to business and residences 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.

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

Certain materials may be furnished by the Owner and are currently stored at the Wyckoff Water Plant located off Mars Hill Road, Acworth, Georgia. Contractor is responsible for loading, transporting, and unloading these materials at the job site. These Owner furnished items have been paid for by the Owner.

The Owner is furnishing no materials for this project.

1.8 TIE-INS

All tie-ins to the CCMWA's and other utilities' existing water mains shall be performed in a timely and efficient manner in order to minimize the 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

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 sections 01 41 00 and 31 25 00 for further details on regulatory requirements and erosion control methods.

1.10 WORK ZONE TRAFFIC CONTROL

The Contractor shall provide, erect and maintain all necessary barricades, 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.

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.

It is the Contractor's responsibility to submit and obtain approval for traffic control from the appropriate governing authority. The Contractor shall employ a firm that provides traffic control planning on a professional basis and shall submit that firm and its qualifications for review. All traffic control plans shall be prepared in accordance with Manual on Uniform Traffic Control Devices (MUTCD).

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. The Certified Traffic Control Supervisor's sole duty shall be to supervise traffic safety and shall perform no other duties on the project.

1.11 CREEK CROSSING

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 Community Development Department.

1.12 CLOSURES

Closures shall be made in straight sections of pipe using a solid long body mechanical joint sleeve. Installation shall include a filler/spacer ring to compensate for the final lap joint. Fit shall be 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

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. 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. 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 PIPE STORAGE

Pipe storage is subject to approval by the Georgia Department of Transportation.

1.15 Not Applicable

1.16 SCHEDULE REQUIRMENTS

Connection to 36" Water Main north of Windy Hill Road and to the 42" Water Main south of Windy Hill Road can only be made after February 25, 2016.

1.17 TEST REQUIRMENTS

The Contractor is responsible for providing temporary pipe restraint necessary to restrain the water main during hydrostatic test. The hydrostatic test pressure for this project is 250 psi. Water mains shall be tested independently of any existing water main prior to connection.

1.18 ROADWAY MAINTENANCE

The Contractor shall maintain the surface of the roadway in a suitable condition for the safe traverse by traffic.

1. At the end of each work day, in those work areas within the roadway, place a temporary asphalt surface. Provide 3" 12.5 mm SuperPave asphalt.
2. Maintain traffic surface until asphalt base and binder has been placed.
3. Place asphalt base and binder courses after 500 feet of water main have been installed.
4. Mill and overlay pavement after completion of water main construction.

Steel plates will only be used with the agreement of the Engineer. Any steel plate installed within a travel lane must have edges asphalted and pinned and comply with the requirements

of the Utility Accommodation Manual.

1.19 METERS

The following is a list of existing BLW meters to be connected with new water services.

	METER ADDRESS	Meter Number	Meter Size
1690	COBB PKWY SOUTH	96029030	1
1702	COBB PKWY SOUTH	F00433	0.75
1710	COBB PKWY SOUTH	9452	0.75
1736	COBB PKWY SOUTH	V02313	0.75
1740	COBB PKWY SOUTH		0.75
1750	COBB PKWY SOUTH	756	0.75
1764	COBB PKWY SOUTH	V03061	0.75
1770	COBB PKWY SOUTH	51606525WR	0.75
1800	COBB PKWY SOUTH	L00970	0.75
1830	COBB PKWY SOUTH	VL3849	1

Contractor is field verify meters and meter sizes.

1.20 DISPOSAL OF MATERIALS

The Owner reserves the right to retain ownership of existing materials; 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

PART 1 - GENERAL

1.1 GENERAL

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.

PART 2 - PRODUCT

2.1 EQUIPMENT

The Contractor shall follow all the requirements stipulated in 29 CFR 1910.146 and shall provide equipment necessary to perform confined space entry in accordance with 29 CFR 1910.146. Equipment shall include but not be limited to the following:

2.1.1 Tripod, Hoist and Harness

2.1.2 Gas Monitor

2.1.3 Two Way Radios

2.1.4 Cellular Telephone

2.2 PERSONNEL

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

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.

PART 3 - EXECUTION

3.1 GENERAL

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.

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

PART 1 - GENERAL

1.1 BARRICADES, LIGHTS AND WATCHMEN

1.1.1 The Contractor shall furnish and erect such barricades, fences, 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.

1.1.2 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.

** END OF SECTION **

SECTION 01 41 00
REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

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

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

The Contractor shall be required to become the primary permittee under the General Permit GAR100002 "Storm Water Discharges Associated with Construction Activity for Infrastructure Construction Projects". The Contractor shall be responsible for the filing of the Notice of Intent (NOI) and NPDES fee payment associated with the 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" and NPDES fee payment record 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.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

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

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 PROFESSIONAL CERTIFIED PERSONNEL

The Contractor shall employ the services of Professional Certified Personnel as defined in the GAR 10002 for the purpose of monitoring and reporting upon the Contractor's erosion and sediment control. The Contractor shall submit to the Owner and Engineer the qualifications of the Professional Certified Person for review. The Professional Certified Person or an individual under the direct supervision of the Professional Certified Person shall perform the following duties:

- 3.3.1 Inspect and monitor the site as required by the General Permit GAR100002 "Storm Water Discharges Associated with Construction Activity for Infrastructure Construction Projects". Within 24 hours of any inspection or site monitoring, submit electronic copies of any report to the Engineer and the Owner. Within 7 days of any inspection or site monitoring, submit written reports 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

The Contractor as a minimum shall perform the following duties:

- 3.4.1 Maintain the Erosion, Sedimentation and Pollution Control Plans and the Comprehensive Monitoring Plan on the project site until the project is closed by filing the NOT.
- 3.4.2 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

PART 1 - GENERAL

1.1 GENERAL

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:

1.1.1 Soils compaction control.

1.1.2 Disinfection.

1.1.3 Cement.

1.1.4 Fine Aggregate.

1.1.5 Coarse Aggregate.

1.1.6 Concrete.

1.1.7 Reinforcing Steel

1.1.8 Brick.

1.1.9 Ductile Iron Pipe.

1.1.10 Joint Materials.

1.1.11 Asphaltic Concrete.

PART 2 - PRODUCT

2.1 Meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories.

2.2 Meet basic requirements of ASTM E 329, "Standards of Recommended Practice for Inspection and Testing Agencies for concrete and steel as used in construction."

2.3 Authorized to operate in the State in which the Project is located.

2.4 Laboratory Duties

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:

- 2.4.1 Date issued.
- 2.4.2 Project title and number.
- 2.4.3 Testing laboratory name, address and telephone number.
- 2.4.4 Name and signature of laboratory inspector.
- 2.4.5 Date and time of sampling or inspection.
- 2.4.6 Record of temperature and weather conditions.
- 2.4.7 Date of test.
- 2.4.8 Identification of product and specification section.
- 2.4.9 Location of sample or test in the project.
- 2.4.10 Type of inspection or test.
- 2.4.11 Results of tests and compliance with contract documents.
- 2.4.12 Interpretation of test as required by the Engineer or the Owner.
- 2.4.13 Perform additional tests as required by the Engineer or the Owner.

2.5 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- 2.5.1 Laboratory is not authorized to:
- 2.5.2 Release, revoke, alter or enlarge on requirements of Contract Documents.
- 2.5.3 Approve or accept any portion of the work.
- 2.5.4 Perform any duties of the contractor.

PART 3 - EXECUTION

- 3.1 Cooperate with laboratory personnel to provide access to work, to Manufacturer's operations.

- 3.2 Secure and deliver to the laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.
- 3.3 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.
- 3.4 Furnish copies of products test reports as required.
- 3.5 Furnish incidental labor and facilities:
 - 3.5.1 To provide access to work to be tested.
 - 3.5.2 To obtain and handle samples at the project site or at the source of the product to be tested.
 - 3.5.3 To facilitate inspections and tests.
 - 3.5.4 For storage and curing of test samples.
- 3.6 Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
- 3.7 When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.
- 3.8 Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required:
 - 3.8.1 For the Contractor's convenience.
 - 3.8.2 When initial tests indicate work does not comply with Contract Documents.

END OF SECTION

SECTION 01 51 00
TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

Furnish, install and maintain temporary utilities required for construction, remove on completion of work.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

1.2.1 Comply with National Electric Code.

1.2.2 Comply with Federal, State and local codes and regulations and with utility company requirements.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

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

2.2.1 Arrange with utility company, provide service required for power and lighting, and pay all costs for service and for power used.

2.2.2 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

2.3.1 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.

2.3.2 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.

2.3.3 Portable heaters shall be standard approved units complete with controls.

2.3.4 Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.

2.4 TEMPORARY WATER

2.4.1 Arrange to provide metered water for construction purposes; pay all costs for installation, maintenance and removal, and service charges for water used.

2.4.2 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

2.5.1 Provide sanitary facilities in compliance with laws and regulations.

2.5.2 Service, clean and maintain facilities and enclosures.

PART 3 - EXECUTION

3.1 GENERAL

3.1.1 Maintain and operate systems to assure continuous service.

3.1.2 Modify and extend system as work progress requires.

3.2 REMOVAL

3.2.1 Completely remove temporary materials and equipment when their use is no longer required.

3.2.2 Clean and repair damage caused by temporary installations or use of temporary facilities.

****END OF SECTION****

SECTION 01 56 17
DUST CONTROL & PROPERTY PROTECTION

PART 1 - GENERAL

1.1 DUST CONTROL

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

1.2.1 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

PART 1 – GENERAL

1.1 GENERAL

- 1.1.1 Comply with requirements stated in conditions of the contract and in specifications for administrative procedures in closing out the work.
- 1.1.2 Related requirements in other parts of the contract documents.
 - 1.1.2.1 Fiscal provisions, legal submittals and additional administrative requirements: Conditions of the Contract.
- 1.1.3 Related requirements specified in other sections:
 - 1.1.3.1 NA

1.2 SUBSTANTIAL COMPLETION

- 1.2.1 When contractor considers the work is substantially complete, he shall submit to Engineer:
 - 1.2.1.1 A written notice that the work or designated portion thereof, is substantially complete.
 - 1.2.1.2 A list of items to be completed or corrected.
- 1.2.2 Within a reasonable time after receipt of such notice, the Engineer will make a construction review to determine the status of completion.
- 1.2.3 Should Engineer determine that the work is not substantially complete:
 - 1.2.3.1 Engineer will promptly notify the contractor in writing giving the reasons therefore.
 - 1.2.3.2 Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the Engineer.
 - 1.2.3.3 Engineer will again review the work for completion status.
- 1.2.4 When the Engineer finds that the work is substantially complete, he will:

1.2.4.1 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.

1.2.4.2 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 definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.3 FINAL CONSTRUCTION REVIEW

1.3.1 When Contractor considers the work is complete, he shall submit written certification that:

1.3.1.1 Contract documents have been reviewed.

1.3.1.2 Work has been reviewed for substantial compliance with contract documents.

1.3.1.3 Work has been completed generally in accordance with contract documents.

1.3.1.4 Equipment and systems have been tested in the presence of the Owner's representative and are operational.

1.3.1.5 Work is completed and ready for final construction review.

1.3.2 Engineer will perform a review to verify the status of completion with reasonable promptness after receipt of such certification.

1.3.3 Should Engineer consider that the work is incomplete or defective:

1.3.3.1 Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.

1.3.3.2 Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Engineer that the work is complete.

1.3.3.3 Engineer will again review the work.

1.3.4 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

1.4.1 Operating and maintenance data, instructions to Owner's personnel.

1.4.2 Evidence of Payment and Release of Liens: To requirements of General and Supplementary Conditions.

1.4.3 Certificate of Insurance for Products and Completed Operation.

1.5 FINAL ADJUSTMENT OF ACCOUNTS

1.5.1 Submit a final statement of accounting to the Engineer.

1.5.2 Statement shall reflect all adjustments to the Contract Sum:

1.5.1.1 The original Contract Sum.

1.5.1.2 Additions and deductions resulting from:

1.5.1.2.1 Previous change orders.

1.5.1.2.2 Allowances.

****END OF SECTION****

SECTION 02 32 13
SUBSURFACE CONDITIONS

PART 1 - GENERAL

1.1 GENERAL

The following soils investigation report has been prepared for the site:

1. "Report of Subsurface Exploration and Geotechnical Engineering Evaluation – Highway 41 Water Main – Phase IV"
Dated: May 22, 2013 By: GEO-HYDRO Engineers, Inc.
2. "Report of Supplemental Subsurface Exploration and Geotechnical Engineering Evaluation – Tunnel Section - STA 52+55 to STA 86+00 - Highway 41 Water Main – Phase IV"
Dated: December 9, 2013 By: GEO-HYDRO Engineers, Inc.
3. "Geotechnical Exploration Summary – Tunnel Section – STA 54+65 - Highway 41 Water Main – Phase IV".
Dated: February 18, 2015 By: GEO-HYDRO Engineers, Inc.

PART 2 - PRODUCTS

2.1 REPORT

This soils investigation report is available from the Engineer.

****END OF SECTION****

SECTION 09 06 91
SUBGRADE SERVICE CONCRETE COATING

PART 1 - GENERAL

1.1 DESCRIPTION

Provide all materials, tools, labor, scaffolding and miscellaneous other items necessary to clean, and paint the exterior surfaces of precast concrete structures for subgrade service. Paint only the surfaces called for on the plans and or specified herein.

1.2 SCOPE OF WORK

1.2.1 Areas to be painted shall be the exterior surfaces of precast concrete structures to be exposed to earth.

1.2.2 If noted on the plans or called for elsewhere in the specifications additional masonry surfaces exposed to earth may be coated as specified herein.

1.3 SUBMITTALS

Submit the manufacturer's product data sheet for each coating to be used. Indicate the site location where the product is to be used and the items to be coated.

1.4 QUALITY ASSURANCE

1.4.1 Work shall be performed by skilled workmen thoroughly trained in necessary crafts and completely familiar with the specific requirements, reference standards, and methods specified herein.

1.4.2 There shall be at least one painter or foreman, fluent and literate, in the English language, on site anytime surface preparation or coating work is performed.

1.4.3 Materials for any one coating application shall be of a single manufacturer.

1.4.4 The contractor shall maintain a daily log of painting activities throughout the project. Entries into the log shall be: date, air temperature, humidity, substrate temperature, weather conditions, location and nature of work, and total number of workers. Upon request, the contractor shall produce the log for the engineer's inspection.

1.4.5 There shall be a mandatory meeting of representatives of the prime contractor, coating subcontractor, engineer, and owner, prior to any surface preparation or paint application. The purpose of the meeting shall be to review the items to be coated, the types of surface preparation and coating to be used and the location of areas to

be used as quality control samples.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

1.5.1 Deliver materials in factory-sealed containers with manufacturer's labels intact and legible. Containers without legible labels shall be removed from the project site. All containers shall be subject to inspection by the engineer.

1.5.2 Paint and related materials and equipment shall be stored in a lockable metal storage container, trailer, or other securable structure. The container or trailer shall be at a suitable location on the project site away from work areas and other storage areas.

1.5.3 Store materials at a temperature between 35°F and 110°F . Materials stored at temperatures below 50°F shall be warmed to 50°F before use.

1.5.4 Paint, thinner, and other materials not approved for use on this project may not be stored on the job site.

1.6 JOB CONDITIONS

1.6.1 Apply coatings only with the engineer's prior approval, when prevailing weather conditions permit. The air and substrate surface temperatures may not be below 45°F or above 120°F. The relative humidity may not be above 85 percent. Follow the manufacturer's recommendations if more stringent than those indicated above.

1.6.2 The Contractor shall cover or otherwise protect the finished work of other trades, surfaces not being coated concurrently, and/or surfaces, which are not to be painted. Any injury or damage to such surfaces shall be remedied to the satisfaction of the Owner at the expense of the Contractor before final acceptance, and no separate payment will be made.

1.7 REFERENCE STANDARDS

1.7.1 Steel Structures Painting Council Surface Preparation Standards (SSPC)

1.7.2 American Society for Testing Materials (ASTM)

1.7.3 American Water Works Association (AWWA)

1.7.4 National Association of Corrosion Engineers (NACE)

1.8 RELATED SPECIFICATIONS

1.8.1 SECTION 03400 - PRECAST CONCRETE STRUCTURES

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- 2.1.1 Products specified herein are manufactured by the CARBOLINE Company of St. Louis, Missouri, or the TNEMEC Company Inc., Kansas City, Missouri, and are specified as standards of quality, not necessarily as a brand preference. Equivalent materials of other manufacturers may be acceptable.
- 2.1.2 Materials used shall be first line products of the manufacturers specified. Manufacturer's catalogue numbers are provided for the purpose of identifying each item.

2.2 PAINT SCHEDULE

Exterior of Concrete Precast Structures: Note that two manufactures are listed but only one manufacturer shall be selected.

Carboline Bitumastic 50: Two Coats 8.0 to 10.0 mils per coat.

Tnemec H. B. Tnemecol 46-465: Two Coats 8.0 to 10.0 mils per coat.

Total Required Film Thickness: 16 to 20 mils. No additional payment will be made for extra coats required to meet the required film thickness.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

The Contractor shall examine the surfaces scheduled to receive coating. Protrusions such as form burrs, sharp edges, fins and concrete spatter shall be removed. Voids and other defects at or near the surface shall be exposed and repaired. After the surface has been repaired it shall be cleaned so that no dirt, oil, grease or other contaminates that might impede adhesion of the coating is removed. The resulting surface shall be clean, dry, and have a texture with a profile not less than that of 80 grit sand paper. The concrete shall have had a minimum curing time of 28 day cure.

3.2 APPLICATION CONDITIONS

Apply coatings only when the air and surface temperatures are greater than 45° F and less than 120° F, the relative humidity is not above 85 percent and the surface temperature is at least 5 degrees Fahrenheit above the dew point. Follow manufacturer's recommendations regarding application conditions if more stringent than listed above. Protect all surfaces not to be coated.

3.3 APPLICATION

Apply coatings smoothly uniform in thickness free of bubbles, runs, skipped, or missed areas. Application method shall be in accordance with the manufacturer's recommendations.

3.4 CLEAN UP

The Contractor shall cleanup at the end of each day's work. Trash may be kept on site for final disposal at the project's completion provided it is kept out of view and generates no offensive odors or habitat for unwanted wildlife. Upon completion, the contractor shall remove all rubbish, containers, rags and other waste materials from the site and properly dispose of them. The site shall be left in a clean condition, acceptable to the Owner. The Contractor shall adhere to all federal, state and local regulations regarding the disposal of paint containers, paint, paint contaminated rags, and other hazardous materials associated with application of paint.

****END OF SECTION****

SECTION 31 11 00
SITE PREPARATION

PART 1 - GENERAL

1.1 DEFINITIONS

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

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:

1.2.1 Observation of the following clearing limits. Clearing at construction sites shall be limited to the disturbed area as shown on the Drawings.

1.3 QUALITY ASSURANCE

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.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 WORKMANSHIP

3.1.1 Clear all trees, shrubs, and ground vegetation from the site as necessary to install the proposed water main. These cleared materials shall be chipped and spread uniformly over cleared area after construction or burned in accordance with Georgia D.O.T. Specifications and local laws. Pits for burning must be approved by the Engineer.

3.1.2 Those areas which 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; at the Engineer's discretion, trees that are damaged during construction may have their wounds dressed and coated with an approved pruning paint.

3.2 ENVIRONMENTAL PROTECTION

3.2.1 Defined in Section 31 25 00.

3.2.2 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

PART 1 - GENERAL

- 1.1 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.
- 1.2 Where permeable soils are encountered at subgrade elevations the Contractor shall maintain the groundwater level a minimum of 3' below the bottom of the trench.
- 1.3 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.
- 1.4 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.

PART 2 - PRODUCT

- 2.1 Equipment used for dewatering is optional to the Contractor.
- 2.2 Mechanical equipment used shall be in good working order and suitable for use under the anticipated conditions.
- 2.3 Wells and well points if used shall be installed with suitable screens and filters so that continuous pumping of fines does not occur.

PART 3 - EXECUTION

- 3.1 The Contractor shall maintain and operate his dewatering equipment until the water main installed in areas where ground water is present.
- 3.2 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.
- 3.3 Dewatering discharge shall be accessible for collection of samples by the Engineer.
- 3.4 Water shall be disposed of in accordance with applicable 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
SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

- 1.1.1 Work under this section shall include furnishing, installing, maintaining, and upon satisfactory completion, removing a water permeable filter fabric silt fence complete with posts and miscellaneous hardware. Work shall also include erosion matting. The quantity of silt fence or erosion matting may be increased or decreased from what is shown on the plans, upon direction of the Engineer or local government authority. Such variations in quantity will not be considered alteration of the scope of the work.
- 1.1.2 Obtain proper permits from local government before land disturbing activities begin. Silt fence or other erosion control devices shall be installed prior to any land disturbing activities.
- 1.1.3 Temporary erosion control measures shall control erosion and sedimentation to an extent such that the turbidity of streams immediately downstream of the project shall not have an increase in turbidity of more than 50 Nephelometric turbidity units (NTU).

1.2 SUBMITTALS

Shop drawings and product data shall be submitted as described in Section 01 33 00.

1.3 PRODUCT HANDLING

- 1.3.1 Protection: Use all means necessary to protect the materials of this Section before, during and after installation.
- 1.3.2 Storage: The fabric shall be wrapped in a heavy duty protective coating. The coating shall be capable of protecting the fabric from mud, dust, dirt, debris and sunlight. The fabric shall not be exposed to temperatures exceeding 140 degrees F.
- 1.3.3 Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer, and at no additional cost to the owner.

PART 2 - PRODUCT

2.1 FILTER FABRIC

2.1.1 Filter fabrics shall be composed of strong rot-proof synthetic fibers formed into either woven or nonwoven fabric. The fabric shall contain stabilizers and or inhibitors for protection against damage due to exposure to direct sunlight. The fabric shall be of stable construction. Fibers shall maintain their relative position, in the fabric, under normal handling, installation, and service. Edges of the fabric shall be finished to prevent the outer yarn from pulling away from the fabric. Fabrics shall be free of defects and or flaws which would affect their physical or filtering properties. Fabrics may be manufactured with pockets for posts, hems with cord, or with posts pre-attached using staples or button head nails. The manufacturer shall have either an approved color mark yarn in the fabric, or label the fabric with the company's name at minimum 100 foot intervals.

2.1.2 Type A Filter Fabric

Type A filter fabric shall be 36" wide. Woven fabric construction shall allow slit tape yarns in one direction (warp or fill) only. The fabric shall meet the following physical and dimensional requirements.

Tensile Strength (ASTM D-4632) Warp.....120 lbs
Tensile Strength (ASTM D-4632) Fill.....100 lbs
Elongation (ASTM D-4632).....40% Max
Apparent Opening Size (ASTM D-4751).....#30
Flow Rate Min.....25 Gal/Min/Ft²

Fabric ultraviolet stability shall conform to ASTM D-4632 after 300 hours weathering in accordance with ASTM D-4355. The fabric bursting strength shall be no less than 175 PSI when tested in accordance with ASTM D-3786 diaphragm bursting strength tester.

2.1.3 Type B Filter Fabric

Type B filter fabric shall be 22" wide. Type "B" shall meet the same physical requirements as type A listed above, with the exception of width.

2.1.4 Type C Filter Fabric

Type C filter fabric shall be 36" wide of a non-calendered woven fabric constructed of monofilament yarns or fibrillated yarn textiles only. The fabric shall meet the following physical and dimensional requirements.

Tensile Strength (ASTM D-4632) Warp.....260 lbs
Tensile Strength (ASTM D-4632) Fill.....180 lbs
Elongation (ASTM D-4632).....40% Max
Apparent Opening Size (ASTM D-4751).....#30
Flow Rate Min.....70 Gal/Min/Ft²

Fabric ultraviolet stability shall conform to ASTM D-4632 after 300 hours

weathering in accordance with ASTM D-4355. The fabric bursting strength shall be no less than 175 PSI when tested in accordance with ASTM D-3786 diaphragm bursting strength tester.

2.1.5 Approved Manufacturers

Manufacturers' products must either be on the Georgia Department of Transportation "Qualified Products List 36" (latest version) or have the Engineer's prior approval.

2.2 POSTS AND WOVEN WIRE SUPPORTS

2.2.1 Type "A" Fence

Posts shall be a minimum of 4 feet long and constructed of either wood or steel. Soft wood posts shall be at least 3" in diameter or a nominal 2" X 4" straight enough to provide a fence without noticeable misalignment. Hard wood posts shall be 1-1/2" X 1-1/2" or have a cross sectional area of no less than 2.25 inches square. Steel posts shall be "U", "T", or "C" shapes with a minimum weight off 1.3 pounds per foot, and have projections for fastening the fence to the posts. The maximum post spacing for Type "A" fencing shall be 6 feet.

2.2.2 Type "B" Fence

Posts shall be a minimum of 3 feet long and constructed of either wood or steel. Soft wood posts shall be at least 2" in diameter or a nominal 2" X 2" straight enough to provide a fence without noticeable misalignment. Hard wood posts shall be 1" X 1" or have a cross sectional area of no less than 1 inch square. Steel posts shall be "U", "T", or "C" shapes with a minimum weight off .75 pounds per foot. The maximum post spacing for Type "B" fencing shall be 6 feet.

2.2.3 Type "C" Fence

Posts shall be a minimum of 4 feet long and constructed of steel. Posts shall be "U", "T", or "C" shapes with a minimum weight off 1.3 pounds per foot, and have projections for fastening the fence to the posts. The maximum post spacing for Type "C" fencing shall be 4 feet. Woven wire fence shall be used with Type "C" fence. The wire fence fabric shall be at least 32" high and have at least 6 horizontal wires. Vertical wires shall have a maximum spacing of 12 inches. The top and bottom wires shall be at least 10 gauge and all other wires shall be at least 12.5 gauge. The filter fabric shall be attached to the top of the woven wire fence at the midpoint between posts.

2.3 FASTENERS FOR WOODEN POSTS

2.3.1 Wire Staples

Wire staples shall be 17 gauge minimum, have a crown of at least 3/4" inch wide and legs at least 1/2" long. Staples shall be evenly spaced at least 5 per post for Type "A" fence, 4 per post for Type "B" fence.

2.3.2 Nails

Nails shall be 14 gauge minimum, 1" long with 3/4" button heads. Nails shall be evenly spaced with at least 5 per post for Type "A" fence, 4 per post for type "B" fence.

2.4 EROSION MATTING

2.4.1 Mat Specification

The mat shall be constructed of coconut coir mattress fiber, wheat straw, wood, and jute materials. The mat shall be biodegradable over a 4 to 6 year time period. The netting shall be an open weave design that allows the seeding both before and after the mat has been installed.

2.4.2 Mat Requirements

Openings	0.3" x 0.45"
Weight	980 g/m ²
Slope	>1:1
Flow	16 fps
Shear Stress	5 lbs/ sq ft

2.4.2 Basis of Design

Control Mat 90 by Granite Environmental.

2.5 TURF REINFORCEMENT MAT

2.5.1 Turf Reinforcement Mats for slopes and waterways shall comply with the requirements stated on the Contract Drawings.

2.5.2 Turf reinforcement mat for slopes and water ways shall withstand a maximum velocity of 10 ft/s in an unvegetative state, and 20 ft/s in a vegetative state. The mat shall be designed to be installed on a 1:1 or greater slope.

2.5.3 Basis of Design

The turf reinforcement mats shall be PYRAMAT High Performance Turf Reinforcement Mat's produced by Propex Operating Company, Chattanooga, Tennessee, P550 Turf Reinforcement Mat produced by Tensar International Corporation, Poseyville, Indiana, or approved equivalent material and manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

The contractor shall install temporary silt fence as shown on the plans specified herein, or as directed by the Engineer.

3.2 INSTALLATION

3.2.1 Excavate a trench to a depth of 6" by mechanical means. Excavate by hand if mechanical excavation is not possible.

3.2.2 Begin post installation at the center of the low point of the fencing run. Space post according to fence type to a depth of at least 18". Where ground conditions will not allow a depth of 18", secure posts well enough to prevent overturning by sediment loading.

3.2.3 Attach filter fabric to posts by wire, cord, pockets, staples, nails, or other acceptable means. The fabric shall overlap at least 18" at all splice joints. The filter fabric shall be attached so that 6" - 8" minimum fabric is left at the bottom to be buried.

3.2.4 Install the fabric in the trench with 2-4 inches across the trench bottom in the upstream direction; install the remaining 4-6 inches against the side of the trench. Backfill and compact so that no flow can pass under the barrier.

3.3 INSPECTION OF SILT FENCING

Upon completion of installation the Engineer or local government authority shall inspect the silt fencing for proper installation, flaws, defects, rips, holes, or other damage that may have occurred. The contractor shall repair or replace the damaged portions as directed by the engineer or local government authority.

3.4 MAINTENANCE OF SILT FENCING

The contractor shall maintain the silt fence until the project is accepted or the fence is removed. Maintenance of the fence shall include; removal and disposal of silt accumulations at the silt fence, replacement of damaged or deteriorated filter fabric, repair or replacement of fence posts, and the installation of additional fencing should the fencing installed prove to be inadequate. Silt shall be cleaned out once it has accumulated to 1/2 the height of the silt fencing.

3.5 REMOVAL OF SILT FENCING

Silt fencing shall remain in place unless the Engineer or local government authority directs its removal. Silt fencing that has been removed shall be the property of the contractor and may be reused at another location if in good condition. Damaged or otherwise unwanted silt fencing shall be removed from the site and disposed of properly. After silt fence removal the contractor shall dress out the area and grass according to the specifications Section 32 92 00.

3.5 EROSION MAT INSTALLATION

Install per manufacturer's directions.

****END OF SECTION****

SECTION 31 37 00
RIP RAP

PART 1 - GENERAL

1.1 DESCRIPTION

The work of this section consists of furnishing and hand placing stone riprap for embankment protection.

1.2 SUBMITTALS

As specified in Section 01 33 00.

Submit Manufacturer's installation instructions for geotextile fabric.

PART 2 - PRODUCTS

2.1 GEOTEXTILE FABRIC

Fabric shall be permeable synthetic material, having the following properties:

2.1.1 Grab tensile strength, shall be 200 pounds minimum, tested by ASTM D1682-64.

2.1.2 Grab elongation shall be 15-50% as tested by ASTM D1682-64.

2.1.3 Burst strength shall be 500 lbs. as tested ASTM D751-79.

2.2 RIP RAP

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, Latest Edition, 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.

PART 3 - EXECUTION

3.1 EXCAVATION

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 riprap. 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

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 HANDLAID RIPRAP

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****

SECTION 32 12 16
ASPHALT CONCRETE PAVING

PART 1 - GENERAL

1.1 WORK INCLUDED

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

1.2.1 Testing Laboratory Services: Section 01 45 29

1.3 PAVING CONTRACTOR REQUIREMENTS

1.3.1 A Ga. DOT prequalified General Contractor shall provide all the work described under this specification.

1.3.2 The name of the Paving Contractor shall be submitted to the Owner 5 days after the bid.

PART 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.

2.3 ASPHALTIC CONCRETE BASE COURSE

Section 828, GDOT Specifications, latest edition; 25 mm.

2.4 ASPHALTIC CONCRETE BINDER COURSE

Section 828, GDOT Specifications, latest edition; 19.5 mm.

2.5 BITUMINOUS TACK COAT

Section 822, GDOT Standard Specifications, latest edition. Grade SS-1 or SS-1h.

2.6 ASPHALTIC CONCRETE SURFACE COURSE

Section 828, GDOT Standard Specifications, latest edition; 12.5 mm.

2.7 PAINT TRAFFIC STRIPING

Section 652, GDOT Standard Specifications, latest edition.

2.8 THERMOPLASTIC TRAFFIC STRIPE

Section 653, GDOT Standard Specifications, latest edition.

2.9 COLD MIX FOR PATCHING

Section 401, GDOT Standard Specifications, latest edition.

PART 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 base and binder courses 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 Georgia DOT acceptance for smoothness and trafficability.

****END OF SECTION****

SECTION 32 31 13
CHAIN LINK FENCE AND GATES

PART 1 - GENERAL

1.1 GENERAL

Provide and install non-climbable chain link fence and gates of the types and sizes and at the locations shown on the drawings.

PART 2 - PRODUCTS

2.1 GENERAL

All components shall be galvanically compatible.

2.2 CHAIN LINK FABRIC

Conform to FS RR-F-00191/1 Type A, Class I, two inch mesh, one piece fabric, full height. Wire diameter shall be 0.148 inch.

2.3 VINYL COATED CHAIN LINK FABRIC

Conform to FS RR-F-191/1C Type IV, two inch mesh, 6-gauge, PVC over zinc coated steel, one piece fabric, full height. When Vinyl coated fabric is specified all posts, gates and accessories shall be vinyl coated to match the color of the fabric. Fabric color to be chosen by the Owner.

2.4 GATES

Conform to FS RR-F-00191/2 Type A single swing or double swing as shown. Frames shall be round zinc-coated steel assembled with corner fittings and 3/8 inch steel truss rods. Fabric shall be same as for fence. Hinges shall allow for swinging the gate open through a 180 degree arc. Latches for double gates shall be of the plunge bar type operable from either side of the gate with integral padlock clasp. Keepers shall be provided for double gates.

2.5 POSTS

Conform to FS RR-F-00191/3, Type 1, Class 1, diameters as follows:

Line post	2 inches diameter
Corner post	3 inches diameter
Gate post	4 inches diameter.

2.6 TOP RAILS AND BRACES

Conform to FS RR-F-00191/3 Type II Class 1, with top rail and braces 1-5/8 inches in diameter.

2.7 BARRED WIRE SUPPORT ARMS

Conform to FS RR-F-00191/4 Type X.

2.8 BARBED WIRE

Shall be four point pattern, two strand No. 12-1/2 gauge Aluminumized steel after weaving with large barbs placed 3 inches apart. When vinyl coating is specified for fence fabric, barbed wire shall also be vinyl coated with the exception of the barbs.

2.9 CONCRETE

Class B, as described in Section 03 30 00.

2.10 BOTTOM TENSION WIRE

The bottom tension wire shall be not less than no. 7 gage wire. Tie or clips shall be provided for attaching the wire to the fabric at intervals not exceeding 2 feet.

PART 3 - EXECUTION

3.1 INSPECTION

3.1.1 Stake out location of fence and gate prior to installation. Obtain approval of fencing and gate location from Owner prior to any installation.

3.1.2 Verify that final grading in fence location is completed without irregularities which would interfere with fence installation. Assure that maximum gap between fence fabric and ground will be no greater than 3 inches.

3.2 PREPARATION

3.2.1 Measure and lay out complete fence line.

3.2.2 Measure parallel to surface of ground.

3.2.3 Locate and Mark position of posts.

3.2.4 Locate line posts at equal distance spacing, not exceeding 10 foot centers.

3.2.5 Locate corner posts at positions where fence changes direction more than 10 degrees.

3.3 INSTALLATION

3.3.1 Posts

3.3.1.1 Minimum post hole diameter three times outside post diameter.

3.3.1.2 Minimum post hole depth 3 in. below post bottom.

3.3.1.3 Place concrete in hole to depth of post bottom.

3.3.1.4 Set post plumb to 1/4 in. in 10 ft.

3.3.1.5 Fill hole with concrete to 2 in. above grade.

3.3.1.6 Crown surface of concrete to slope away from post.

3.3.2 Fence Fabrics

3.3.2.1 Stretch fabric tight between terminal post.

3.3.2.2 Position bottom of fabric approximately 1 in. to 2 in. above ground level at each post.

3.3.2.3 Join ends of fabric by weaving with single strand of fabric wire to form continuous mesh pattern with selvage twisted to match balance of fabric.

3.3.2.4 Attach fabric to line posts using wire ties or clips, spacing not to exceed 15 in. o.c.

3.3.2.5 Attach top edge of fabric to top rail using wire ties or clips, spacing not to exceed 24 in. o.c.

3.3.2.6 Attach bottom edge of fabric to bottom tension wire using wire ties or clips not to exceed 24 in. o.c.

3.3.3 Gates

3.3.3.1 Install gates plumb and level 1/4 in. in 10 ft.

3.3.3.2 Install ground-set items in concrete.

3.3.3.3 Adjust hardware to provide smooth operation.

3.4 ADJUST AND CLEAN

3.4.1 Adjust brace rails and tension rods for rigid installation.

3.4.2 Tighten hardware, fasteners, and accessories.

3.4.3 Remove excess and waste materials from project site.

****END OF SECTION****

SECTION 32 92 00
GRASSING AND MULCHING

PART 1 - GENERAL

1.1 GENERAL

1.1.1 This work shall consist of ground preparation, furnishing and planting, seeding, fertilizing, sodding and mulching of all disturbed areas.

1.1.2 Areas to be grassed or permanently mulched:

1.1.3 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, Slope Protection and Erosion Control.

PART 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

PART 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:

<u>Application</u>		
<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
Kentucky 31 Fescue

45

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 Engineers 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 ¹ / ₂ 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****

SECTION 33 05 16.13
PRECAST ONCRETE UTILITY STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

- 1.1.1 Section Includes: Requirements for providing precast concrete structures, manholes, wet wells, vaults, and other miscellaneous structures or members.

1.2 REFERENCE STANDARDS

- 1.2.1 All work hereinafter shall comply with current and applicable portions of the following:

1.2.1.1 American Concrete Institute (ACI) Publications.

1.2.1.2 American Society for Testing and Materials (ASTM) Publications.

1.2.1.3 American Welding Society (AWS) Publications.

1.2.1.4 ACI 318, Building Code Requirements for Reinforced Concrete.

1.2.1.5 Precast/Prestressed Concrete Institute (PCI).

1.3 RELATED SPECIFICATIONS

- 1.3.1 SECTION 09 06 91 - SUBGRADE SERVICE CONCRETE COATING

1.4 QUALITY ASSURANCE

- 1.4.1 Acceptable Manufacturers and Erectors shall have had a minimum of 5 years 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.

1.4.2 Design

- 1.4.2.1 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.

1.4.2.2 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.

1.4.2.3 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.

1.4.2.4 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.

1.4.3 Allowable Tolerances

1.4.3.1 Dimensions and cambers shall be within the tolerances as described in PCI MNL-116, Division V, Section 5.

1.4.3.2 Deflection: Deflection under design live load shall not exceed calculated deflection by more than 10 percent.

1.4.4 Sampling and Testing

1.4.4.1 General

1.4.4.1.1 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.

1.4.4.2 Concrete Testing

1.4.4.2.1 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.

1.4.4.3 Slump Tests

1.4.4.3.1 Slump tests shall be in accordance with ASTM C 143.

1.4.4.4 Failure to Meet Strength Requirements

1.4.4.4.1 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.

1.5 SUBMITTALS

1.5.1 Shop Drawings

1.5.1.1 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.

1.5.2 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.

1.5.3 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.

1.5.4 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.

1.5.5 Design loads, used in design of the precast concrete section, shall be indicated on the shop drawings.

1.5.6 Certificates of Conformance

1.5.6.1 Before delivery of materials and equipment, 4 notarized certificates attesting that materials and equipment meet the requirements specified shall be submitted to the Engineer for review.

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Delivery

1.6.1.1 Precast structures and members shall be inspected upon delivery to the erection site and stored in a manner that will prevent staining and damage.

1.6.1.2 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.

1.6.1.3 The Engineer's decision will be final in determining unsuitable units.

1.6.2 Handling

1.6.2.1 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.

1.6.2.2 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.

1.6.2.3 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.

1.6.3 Storage

1.6.3.1 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.

1.6.4 Repair or Replacement

1.6.4.1 Repair damage or defects if Engineer deems repairable and at his direction.

1.6.4.2 Remove and replace at no cost to the Owner if Engineer deems damage or defects are not repairable by Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Reinforced Concrete Materials: As modified herein, except that slump requirement shall not apply to manholes.

2.1.2 Precast Concrete Manholes: ASTM C478 except:

2.1.2.1 Compressive Design Strength of Concrete

2.1.2.1.1 Minimum 5,000 psi using Type II cement.

2.1.2.1.2 Minimum compression cylinder test of 4,000 psi at time of shipment.

2.1.2.2 Configurations: Follow Drawings and Standard Details.

2.1.2.3 Joints: ASTM C443.

2.1.2.4 Appurtenances.

2.1.2.4.1 Steps: Manufacture standard details.

2.1.2.4.2 Bolt inserts: Follow Standard Details.

2.1.2.4.2.1 Embed one of following a minimum of 3 inches, to accommodate ¾-inch diameter bolts.

2.1.2.4.2.1.1 Heckman Building Products Corporation, No. 444 Star Threaded Inserts.

2.1.2.4.2.1.2 Pennsylvania Insert Corporation, the Liberator.

2.1.2.4.2.1.3 Atlantic Concrete Products Co., Bolt Slot Insert System.

2.1.2.4.2.1.4 Strut Service Company inserts.

2.1.2.5 Manhole Identification: Clearly marked on inside near top where applicable.

2.1.2.5.1 ASTM Specification designation.

2.1.2.5.2 Manhole setting number (bases only) and Owner project number.

2.1.2.5.3 Date of manufacture.

2.1.2.5.4 Production control number for tracking manufacture phases of item and name or trademark of manufacturer.

2.1.2.5.5 Manhole sections with flexible connectors:

2.1.2.5.5.1 Marked above connector openings with type and size, and type of pipe for which connector is designed.

2.1.2.5.5.2 Engraved or stenciled markings with waterproof paint or ink in minimum 1-inch high letters.

2.1.2.5.6 Lined manholes: Stenciled with waterproof paint or ink markings as noted herein that cannot be easily removed from lining or epoxy coated surfaces.

2.1.2.6 Precast Manhole Sections

2.1.2.6.1 Approved Manufacturers:

2.1.2.6.1.1 Tindall

2.1.2.6.1.2 Old Castle

2.1.2.6.1.3 Or approved equal

2.1.2.7 Precast Concrete Grade Rings: ASTM C478, except:

2.1.2.7.1 Compressive Design Strength of Concrete: Minimum 5,000 psi using Type II cement.

2.1.2.7.2 Configurations: Follow Standard Details.

2.1.2.7.3 Rings: Drilled with holes 1½- to 2-inch diameter to accommodate frame anchor bolts.

2.1.2.7.3.1 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.

2.1.2.7.3.2 Rings with damaged edges which will prevent making satisfactory joint in the opinion of the Engineer will be rejected.

2.1.2.7.3.3 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.

2.1.2.7.3.4 Protection

2.1.2.7.3.4.1 On lined manholes: Follow manufacturer's recommendations.

2.1.2.7.4 Approved manufacturers:

2.1.2.7.4.1 Atlantic Concrete Products Company

2.1.2.7.4.2 Americast

2.1.2.7.4.3 Contractors Precast Corporation

2.1.2.7.4.4 Hanson Concrete Products

2.1.2.7.4.5 Dal-Col Products, Inc.

2.1.2.7.4.6 Prism Precast Products, Inc.

2.1.2.7.4.7 Frederick Precast Concrete, Inc.

2.1.2.7.4.8 Or approved equal

2.1.2.8 Precast Concrete Vaults and Wet Well: ASTM C858

2.1.2.8.1 Configurations: Follow drawings.

2.1.2.8.2 Identification: Clearly mark inside of each precast concrete vault section.

2.1.2.8.2.1 ASTM Designation.

2.1.2.8.2.2 Structure size.

2.1.2.8.2.3 Date of manufacture.

2.1.2.8.2.4 Project station location and Owner project number.

2.1.2.8.2.5 Name or trademark of manufacturer.

2.1.2.8.2.6 Mark slabs on top and bottom surfaces.

2.1.2.8.3 Design Mixes

2.1.2.8.3.1 5,000 psi at 28 days using Type II cement.

2.1.2.8.3.2 Mix proportion: ACI 318.

2.1.2.8.4 Approved Manufacturers

2.1.2.8.4.1 Tindall

2.1.2.8.4.2 Old Castle

2.1.2.8.4.3 Or approved equal

2.1.2.8.5 Vault Access Doors

2.1.2.8.5.1 Vault access doors shall be fabricated aluminum, 4 feet wide by 4 feet long, unless otherwise specified by the Engineer. Access doors shall mount flush with the surrounding area.

2.1.2.8.5.2 Access doors shall be equipped with heavy brass hinges, stainless steel pins, compression spring operators, an automatic hold-open arm with release handle and a locking device, to receive a padlock.

2.1.2.8.5.3 All vault access doors shall be H-20 rated traffic doors.

2.1.2.8.5.4 Access doors shall be Type JD-AL as manufactured by the Bilco Company, New Haven, Connecticut, or approved equal.

2.1.2.8.6 Ladders

2.1.2.8.6.1 Ladders shall be of aluminum construction. Rung diameter shall be 1-inch minimum, with 12 inches between rungs, and 18 inches between side bars. Ladders shall exceed the requirements of CAL/OSHA and ANSI standards.

2.1.2.8.6.2 Material for ladders shall be high strength 6061-T6 aluminum alloy.

2.1.2.8.6.3 Appropriate Bilco, or approved equal, ladder-up safety post for each ladder installation shall be provided.

2.1.2.8.7 Sump

2.1.2.8.7.1 Vault floor shall contain an 18-inch-diameter hole for installation of a 24-inch-deep sealed sump with a removable expanded metal safety grate. The vault floor shall be constructed such that there is a positive slope to the sump. A minimum 6-inch drain shall be provided where applicable or as directed by the Engineer.

2.1.2.8.7.2 Sump pump shall be Zoeller Model #M53, or approved equal.

2.1.2.9 Miscellaneous Materials

2.1.2.9.1 Granular Bedding: ASTM C33 coarse aggregate size number 4.

2.1.2.9.2 Weep holes: Service weight cast iron covered with non-erodible filter on earth side.

2.1.2.10 Manhole Ring and Cover

2.1.2.10.1 Manhole rings shall be made from gray or ductile iron and manhole cover shall be ductile iron. Castings shall be made in the USA and shall be ERGO® Access Assembly with EJ product number 41600533L01 or approved equal. Approved equal must meet the requirements of this specification.

2.1.2.10.2 Material: Manufacturer shall certify that the ductile iron conforms to ASTM A536 grade 70-50-05 or 80-

55-06. Castings must contain a minimum of 85% recycled content.

2.1.2.10.3 Markings: The top of manhole covers shall have the country of origin and manufacturers identification. The cover shall have "WATER" permanently cast into the cover in 2" Gothic lettering. The bottom of the casting shall have the product name or series number, part number, production date (example: mm/dd/yy) for tracking purposes, and material quality (such as ASTM A536) to verify the materials used. Castings without proper markings shall be rejected.

2.1.2.10.4 Product Specifics:

Cover: Covers and grates shall be provided with a continuous vulcanized one piece EPDM gasket with a shore durometer of 70 ± 5 permanently attached to the cover. An integrated Slip Resistant surface shall be cast into the cover surface. The hinge shall have a drain to allow for proper debris and foreign object removal. The cover or grate shall positively lock at 90° to prevent accidental closure and open fully to 120° . For ergonomic purposes the cover or grate must be removable at 120° . The cover shall also include a single multi-tool lifting slot adjacent to the edge of the cover and opposite to the hinge to facilitate opening/lifting/prying once unlocked. The lifting slot must be open to the edge of the cover to allow for prying. The cover shall have no less than 24 each, one inch diameter vent holes. Nominal cover diameter shall be 38" with a 36" clear opening.

Frame: Frame shall have a 36" clear opening. Frames shall have a minimum of four 1" holes/slots for anchoring purposes. Frames shall be 6" in height. Slots for embedment/lightening are not allowed in frame flange.

2.1.2.10.5 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").

2.2 SOURCE QUALITY CONTROL

2.2.1 Test Equipment: Instruments, gages, and other testing and measuring equipment of proper range, type, and accuracy to verify conformance with specification requirements.

2.2.1.1 Ensure equipment is calibrated and certified at annual intervals.

2.2.1.2 Calibrate against measurement standards with known relationship to existing national standards.

2.2.1.3 Calibrate and certify gages on equipment to which they belong, and keep them on equipment following certification.

2.2.1.4 Do not use instruments, gages, testing, and measuring equipment found to be out of calibration or adjustment until applicable requirements have been met.

2.2.1.5 Calibration by agency regularly engaged in this type of activity.

2.2.2 Precast Manhole Testing

2.2.2.1 Joint and Barrel Testing: ASTM C443.

2.2.2.1.1 Plant vacuum testing: ASTM C1244.

2.2.3 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.

2.2.3.1 Concrete Design Mix Approval: Based on submittal specified above herein.

2.2.3.1.1 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.

2.2.3.1.1.1 Every 3 years thereafter, and under failure conditions stated above resubmit concrete design mix for approval.

2.2.3.1.1.2 Production from mixes other than those approved will be rejected.

2.2.3.1.2 Compressive strength test: ACI 301 and ACI 318.

2.2.4 Vaults and Other Precast Concrete Structures

- 2.2.4.1 Determination of concrete compressive strength: from compressive tests made on concrete cylinders.
- 2.2.4.2 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.
 - 2.2.4.2.1 Furnish test results to Engineer.
 - 2.2.4.2.2 Engineer may require core samples of finished products.
 - 2.2.4.2.3 When requested by Engineer, furnish compressive test specimens for testing in addition to requirements above, and continue to monitor quality of concrete.
- 2.2.4.3 Notify Engineer at least 10 working days prior to pouring any structure.
- 2.2.4.4 The Owner may perform random or full inspections of manufacture of boxes, vaults, and precast structures to inspect:
 - 2.2.4.4.1 Steel placement and size.
 - 2.2.4.4.2 Overall fabrication.
 - 2.2.4.4.3 Workmanship.
 - 2.2.4.4.4 Other general or specific aspects of production and specification compliance.

PART 3 - EXECUTION

3.1 EARTHWORK

- 3.1.1 The Contractor shall prepare an excavation large enough to accommodate the structure and permit grouting of openings and backfilling operations.
- 3.1.2 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.
- 3.1.3 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

- 3.2.1 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.
- 3.2.2 Upon completion of installation, all voids or openings in the vault walls around pipes shall be filled with 3,000 psi non-shrink grout.
- 3.2.3 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.
- 3.2.4 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. The outside of the entire structure shall be coated with an approved waterproofing material.
- 3.2.5 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.
- 3.2.6 Ladders shall be installed using Type 316 stainless steel capsule anchors.
- 3.2.7 Ladders shall be attached a minimum of 3 places to the vault wall.
- 3.2.8 Ladder shall be centered under access door opening.

3.3 FIELD QUALITY ASSURANCE

- 3.3.1 Perform field testing of precast concrete structures required under other sections of these specifications.

*** END OF SECTION ***

SECTION 33 11 13
WATER MAIN CONSTRUCTION

PART 1 - GENERAL

1.1 SCOPE OF WORK

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

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 single pipe manufacturer will be responsible for providing all 36" and larger pipe, proprietary restraint joint pipe, and proprietary restraint joint fittings on this project. This pipe manufacturer will be responsible for the quality of all materials and shall provide a one year warranty for all materials supplied for this project.

1.4 SUBMITTALS

The Contractor shall submit for review a pipe laying schedule for the project. The schedule shall be provided by the pipe manufacturer. Both the schedule shall include all pipe, fittings, and valves to be installed for this project.

PART 2 - PRODUCTS

2.1 GENERAL

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

2.2.1 Pipe - Pipe for water mains shall be ductile iron (D.I.P.) 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.

The Pressure Class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the manufacture'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.

Ductile Iron Pipe shall have an outside asphaltic coating in accordance with the latest revision of ANSI A21.51-81. 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.

The manufacturer of pipe shall be capable of producing the full range of pipe sizes used by the CCMWA, 6" through 54".

CCMWA has found that pipe manufactured by American Cast Iron Pipe Company, and US Pipe meet the requirements of this specification. Therefore, pipe shall be as manufactured by the above named manufacturers. No substitution is permitted.

2.2.2 Pipe Joints - Pipe joints shall be as the type specified on the project plans. Restrained Joint Pipe shall be:

1. For 6" through 20" DIP water main, restrained by Fast-Grip gaskets inserted in Push-On Joints or approved equal.
2. For 24" through 48" DIP water main, restrained by Flex-Ring joints or approved equal.
3. For 54" through 64" DIP water main, restrained by Lok-Ring joints or approved equal.
4. For all mechanical joints, restrained by Megalug Glands by EBAA Iron, Inc. or approved equal.

Standard "Push-On" type joints shall be in accordance with the latest revision of ANSI/AWWA C111/A21.11 and furnished complete with gaskets.

2.2.3 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.

2.2.4 Fittings shall be ductile iron. Fittings shall conform to the latest revision of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53. Fittings shall have a standard asphaltic coating on the exterior. Fittings shall also have a cement-mortar lining on the interior in accordance with ANSI/AWWA C104/A21.4, of latest

revision.

Fittings and accessories shall be furnished with Mechanical Type Joints in accordance with ANSI/AWWA C111/A21.11, or latest revision. Fittings may be furnished with a proprietary joint provided by an approved pipe manufacturer subject to approval by the Engineer.

Fittings with Mechanical Type Joints will be restrained by Megalug Glands by EBAA Iron, Inc. or approved equal.

CCMWA has found that fittings with Mechanical Type Joints manufactured by American Cast Iron Pipe Company, US Pipe, Sigma Corporation, or Star Pipe Products meet the requirements of this specification. Therefore, pipe shall be as manufactured by the above named manufacturers. No substitution is permitted.

2.2.5 Outlets shall be of the type shown on plans and shall be furnished by the pipe manufacturer.

2.2.6 Gaskets for use with flanged surfaces, either on a fitting, valve, or outlet shall be full face bulb gasket, American Toruseal Flange Gasket or approved equal.

2.3 ENCASEMENT

2.3.1 POLYETHYLENE

Polyethylene encasement for corrosion protection shall consist of three layers of co-extruded linear low density polyethylene (LLDPE) that are fused into one. The inside surface shall be infused with a anti-microbial biocide and a volatile corrosion inhibitor. The encasement shall meet all requirements of ANSI/AWWA C105/A21.5. Tape for polyethylene tubing shall be as provided by the manufacturer for this specific purpose.

2.3.2 STOPAQ

See SECTION 15250, CORROSION WRAP COATING.

2.4 BUTTERFLY VALVES

2.4.1 Class 250B Butterfly Valve

Valves shall be designed, manufactured, and tested in accordance with AWWA C504, latest revision, and include design features for additional working pressure. Valves shall be rated and tested for absolute zero leakage shut-off. The closed seat shall be tested to 250 psi and the valve body shall be tested to 500 psi. Certification of test may be required by Owner.

Valve body shall be cast iron per ASTM A126 Class B or ductile iron per ASTM A536 Grade 65-45-12. Flanged end valves shall be faced and drilled per ANSI B16.1, Class 250, or as specified by Owner. Mechanical joint ends shall be per ANSI A21.11 and include MJ accessories. If the manufacturer includes a stainless steel seat ring retained in the valve body, it must do so without the use of clamping devices, adjustment segments, or other hardware being in the waterway.

Valve disc shall be cast iron per ASTM A126 Class B or ductile iron per ASTM A536 Grade 65-45-12. The resilient seat shall be located either on the valve disc or in the valve body. Replacement or repair of valve resilient seat in the field shall be possible without valve disassembly.

The disc shall be connected to the offset stainless steel shaft by locked taper wedge keys and stainless steel retaining nuts on the back side of the disc, or by a similar method. Taper keys shall be heat treated 416 Stainless Steel for added strength. Valve shaft shall be per ASTM A564 type 630/1100-1150. Minimum diameter shall conform to Table 3 of AWWA C504, latest revision. Shaft shall be equipped with adjustable thruster for centering the disc on 30" and larger valves if required, or shall be permanently centered at the factory.

Shaft shall have nylon sleeve or woven teflon fiberglass backed sleeve for bearing surfaces. Bearings shall be self lubricating.

Manual actuators shall be manufactured and assembled to the valve by the valve manufacture. They shall be direct mounted to the valve or be located on top of an extended bonnet as required. Actuator shall be designed with field adjustable stops and be capable of holding disc stationary in any position under full rated pressure. Stop-limiting devices must withstand 450 ft./lbs. of input torque without failure. Actuators shall be sized based on 250 psi pressure differential and 16 ft./sec. flow velocity unless stipulated otherwise. Manufacturer shall provide certification of having produced valves in this pressure class for minimum of 5 years. Valves shall open-left.

Exterior coating shall be asphaltic varnish per Federal Specification TT-V-51, or equal. All interior ferrous surfaces of valves shall have a fusion bonded epoxy coating meeting the requirements of AWWA C550, latest revision, for potable water service and NSF Standard 61.

Field service is critical to Owner. Therefore, all pre-approved manufacturers shall show a history of supplying field service within 24 hours of being notified of a problem.

CCMWA has found that butterfly valves manufactured by Val-Matic, Mueller Co., Henry Pratt Co., and M&H Valve Company meet the requirements of this specification. Therefore, butterfly valves shall be as manufactured by the above

named manufacturers. No substitution is permitted.

2.4.2 Class 150B Butterfly Valve

Valves shall be designed, manufactured, and tested in accordance with AWWA C504, latest revision, and include the following design features. Valves shall be rated and tested for absolute zero leakage shut-off. The closed seat shall be tested to 150 psi and the valve body shall be tested to 300 psi per AWWA C504. Certification of test may be required by owner.

Valve body shall be cast iron per ASTM A126 Class B or ductile iron per ASTM A536 Grade 65-45-12. Flanged end valves shall be faced and drilled per ANSI B16.1, Class 125, or as specified by Owner. All castings must be manufactured in the U.S. Mechanical joint ends shall be per ANSI A21.11 and include MJ accessories (USA manufacture only). If the manufacture includes a stainless steel seat ring retained in the valve body, it must do so without the use of clamping devices, adjustment segments, or other hardware being in the waterway.

Valve discs shall be cast iron per ASTM A126 Class B or ductile iron per ASTM A536 Grade 65-45-12. All castings must be manufactured in the U.S. The resilient seat shall be located either on the valve disc or in the valve body. Replacement or repairing of valve resilient seat in the field shall be possible without valve disassembly.

The disc shall be connected to the offset stainless steel shaft by locked taper wedge keys and stainless retaining nuts on the back side of the disc, or by a similar method. All trim material shall be 304 Stainless Steel, ASTM A276. Shafts shall be either one piece or stub type for all valves 14" in diameter and larger. Shaft shall have nylon sleeve or woven teflon lined-fiberglass backed sleeve for bearing surfaces. Bearings shall be self lubricating.

Manual actuators shall be manufactured and assembled to the valve by the valve manufacturer. They shall be direct mounted to the valve or be located on top of an extended bonnet as required. Actuator shall be designed with field adjustable stops and be capable of holding disc stationary in any position under full rated pressure. Stop-limiting devices must withstand 300 ft/lbs of input torque without failure. The disc travel stop cannot be made against the actuator housing. Actuators shall be fully enclosed and designed for buried service. Valve shall open-left.

Exterior coating shall be asphaltic varnish per Federal Specification TT-V-51, or equal. All interior ferrous surfaces of valves shall have a fusion bonded epoxy coating meeting the requirements of AWWA C550, latest revision, for potable water service and NSF Standard 61.

Field service is critical to Owner. Therefore, all preapproved manufacturers shall

show a history of supplying field service within 24 hours of being notified of a problem.

CCMWA has found that butterfly valves manufactured by Val-Matic, Mueller Co., Henry Pratt Co., and M&H Valve Company meet the requirements of this specification. Therefore, butterfly valves shall be as manufactured by the above named manufacturers. No substitution is permitted.

2.5 GATE VALVES

Valves 14"-16" shall be resilient wedge gate valves, of a non-rising stem design and rated for 250 psig cold water working pressure. All cast ferrous components shall be ductile iron, ASTM A536. Valves shall meet or exceed all applicable requirements of AWWA C515.

The wedge shall be ductile iron fully encapsulated with EPDM rubber. The wedge shall be symmetrical and seal equally well with flow in either direction. The wedge nut shall be independent of the wedge and held in place on three sides by the wedge to prevent possible misalignment.

Bolting materials shall be 304 stainless steel unless otherwise specified. Bolts may have either regular square or hexagonal shaped heads with dimensions conforming to ANSI B18.2.1. Metric size socket head cap screws are not allowed. The operating nut shall be constructed of ductile iron. All gaskets shall be pressure-energized O-Ring type seals. Stem shall be sealed by three O-Rings. O-Rings set in a cartridge shall not be allowed. The valve shall have thrust washers located with (1) above and (1) below the thrust collar to assist operation of the valve.

All internal and external surfaces of the valve body and bonnet shall have an epoxy coating, complying with ANSI/AWWA C550.

Valves shall be Certified to NSF 61-G.

The valves shown as flanged shall have a flange connection conforming to ANSI B 16.1 when flanges are shown on the plans. Valves with mechanical joints shall be fitted with Megalug restraining glands.

Gate valves shall be Series 2500 Ductile Iron Resilient Wedge Gate Valve, American Darling as manufactured by American Flow Control or as approved equal.

2.6 VALVE BOXES

Valve boxes shall be provided for all buried valves. Valve boxes for valves shall be approved standard cast iron, adjustable-shaft boxes having a minimum shaft diameter of 5-1/4 inches. The casting shall be coated with two coats of coal tar pitch varnish. The lids of all boxes shall bear the word "Water" or the letter "W". Boxes shall be equal to Vulcan Pattern VVB-

4. Valve boxes shall be flush with the final grade after grading and / or paving.

Valve extension stems shall be constructed with standard valve operating nut, 4-1/2" diameter x 1/4" steel guide plate, 1-1/4" square solid steel stem, and standard operating wrench coupling with four 3/8" set screws. The material shall be galvanized. The extension stem must be capable of surviving a torque test to 1000 ft-lb without failure.

The valve box top and lid shall be constructed of ductile iron.

2.7 VALVE MARKER

One concrete valve marker shall be furnished and set at each line valve. 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.

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 FIRE HYDRANT

All hydrants shall meet or exceed AWWA C-502, latest revision for dry-top fire hydrants. Hydrants must meet UL-FM standards on allowable configurations. The hydrant shall be of traffic-model type, rated at 250 psi and hydrostatically tested at 500 psi. The hydrant main valve shall be of compression type opening against pressure and closing with pressure and shall not be less than 5 1/4" valve opening.

All operating parts shall be bronze in full compliance with AWWA C-502, section 2.2.5-01. The seat and drain ring must be bronze. Bronze to cast iron seating will not be accepted. The hydrant shall be a three way design, with two-2 1/2" hose nozzles and one-4 1/2" pumper nozzle. The nozzle threads, operating nut dimensions and opening direction must meet county specifications. Hydrant must have a breakaway traffic feature and designed for 360 degree rotation of nozzle section. Friction loss through the pumper nozzle shall not exceed 3.0 psi per 1000 gpm at 60 psi working pressure.

The hydrant base and lower barrel shall be made of ductile iron material. Hydrant shall allow for easy installation of extensions and repair at the ground line. All interior parts shall be accessible through the top of the hydrant without excavation. Lubrication chamber must be self-lubricating and can be either grease or oil. Allen head screws may be used in location of inserting lubrication, otherwise no Allen head screws or metric bolting will be allowed. The bolts shall meet ASTM A-307 grade B, in accordance with the requirements of specification of ASTM B-633. The hydrant valve assembly shall be a three piece design consisting of a valve top, valve bottom and the hydrant valve rubber. A one piece valve assembly will not be accepted.

Upon request, all hydrant manufacturers shall furnish a list of ten owners that have used the submitted hydrant for at least ten years. All hydrants must have a ten year warranty, identified from the cast date on the upper barrel of the hydrant.

Hydrants shall be American Darling B-62-B, American AVK 2700 & 2780, Mueller Centurion & Improved, U.S. M-94, Kennedy K81-A, M&H 129 & 929, and Clow Medallion.

Leads from the main line to the fire hydrant shall use 6" ductile iron pipe and shall have a 6" gate valve between the main line and fire hydrant. The valve shall be connected to the main line by using a locked hydrant tee, equal to American Pipe model A-10180. Retainer glands or steel rods must be used to insure adequate connection of fire hydrant to valve. When the hydrant is close enough to the valve to allow its use, the hydrant shall be connected to the valve by using a locked hydrant adapter, equal to American Pipe model A-10895.

2.9 AIR AND VACUUM RELEASE VALVES

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 valve rated working pressure. The intake orifice shall be equal to the nominal size of the valve. The flat face or the control float seating against a nitrate rubber o-ring housed in a dovetail groove circumferentially surrounding the orifice shall affect 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 NPT.

The valve shall be Vent-O-Mat series RBX. No substitution permitted.

2.10 MEGALUGS

Restraint devices for nominal pipe sizes 3 inch through 48 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 18-48 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.

Restraint devices shall be Listed by Underwriters Laboratories (3" through 24" inch size) and Approved by Factory Mutual (3" through 12" inch size).

CCMWA 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.

2.11 STEEL CASING

Casing pipe, for boring and jacking and open cut installation shall be steel pipe conforming to ASTM Designation A-139, Grade B, electric fusion longitudinally welded steel pipe. The pipe shall have a minimum tensile strength of 35,000 psi. The exterior and interior of the pipe shall have a coal tar epoxy coating. Wall thickness shall be as shown on plans.

2.12 CASING SPACERS

Application: For casings 48" in diameter or less and for lengths 500' and less
Casing spacer shall be made from T-304 stainless steel of a minimum 14 gauge thickness. Each shell section shall be a minimum of 8" wide and shall be a two piece design. Each shell shall be lined with a 0.090" thick, ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. Risers shall be made of T-304 stainless steel of 10 gauge thickness. Risers shall be MIG welded to shell. Bottom risers 6" and over in height shall be reinforced. Bearing surfaces (runners) shall be ultra high molecular weight polyethylene (UHMW) to provide abrasion resistance and a low coefficient of friction (0.12). Runners shall be attached to support structures (risers) at appropriate positions to support carrier pipe within casing pipe. The runners shall be mechanically bolted to riser. Bolt heads shall be welded to the inside of risers. Casing spacers shall position the carrier pipe centered and restrained within the carrier pipe with a top clearance of 3/4" minimum. Casing spacers shall be as manufactured by Cascade Waterworks Manufacturing Company or approved equal. Spacers for D.I.P. carrier pipe shall be Model CCS. Insulators shall be located within 2' of each end of the casing and spaced no more than 10' apart within the casing. .

Application: For casings greater than 48" in diameter and for lengths greater than 500'
Casing spacer shall be made from T-304 stainless steel of a minimum 14 gauge thickness. Each shell section shall be a minimum of 12" wide and shall be a two piece design. Each shell shall be lined with a 0.090" thick, ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. Risers shall be made of T-304 stainless steel of 10 gauge thickness. Risers shall be MIG welded to shell. Bottom risers 6" and over in height shall be reinforced. Bearing surfaces (runners) shall be ultra high molecular weight polyethylene (UHMW) to provide abrasion resistance and a low coefficient of friction (0.12). Runners shall be attached to support structures (risers) at appropriate positions to support carrier pipe within casing pipe. The runners shall be mechanically bolted to riser. Bolt heads shall be welded to the inside of risers. Each shell section shall have a stud bard and receiver bar TIG welded to the shell. Studs shall be T-304 and threaded as 5/8-11x7" long. Each stud

bar shall include up to three studs. Casing spacers shall position the carrier pipe centered and restrained within the carrier pipe with a top clearance of $\frac{3}{4}$ " minimum. Casing spacers shall be as manufactured by Cascade Waterworks Manufacturing Company or approved equal. Spacers for D.I.P. carrier pipe shall be Model CCS-ER. Insulators shall be located within 2' of each end of the casing and spaced no more than 8' apart within the casing.

2.13 TUNNEL LINER

Tunnel shall be of the diameter and gage as shown on the construction plans, and shall be of 2 or 4-flange type. Liner plate design shall be in accordance with the design criteria for joint strength, stiffness, buckling, and deflection as defined in the AASHTO Standard specifications for Highway Bridges, latest edition.

Liner plate shall be fabricated from structural quality, hot-dipped galvanized, bituminous coated steel sheets or plates conforming to ASTM Specification A 569. Plates shall have the following mechanical properties before cold forming: tensile strength = 42,000 psi, yield strength = 28,000 psi, elongation, 2 inches @ 30%. Plates shall be accurately curved to suit the tunnel cross section and shall be of uniform fabrication to allow plates of similar curvature to be interchanged.

All plates shall be punched for bolting on both longitudinal and circumferential seams and shall be fabricated as to permit complete erection from the inside of the tunnel. The longitudinal seam shall be of the lap type, with an offset equal to gage of metal for the full width of plate to allow the cross section of the plate to be continuous through the seam. Circumferential hole spacing will be a multiple of plate length to allow staggering of the longitudinal seam.

Grout holes shall be two inches (2") in diameter and shall be provided in the top plates at intervals not to exceed ten feet (10') to permit grouting as the assembly of the liner plate proceeds. All grout holes shall be tapped or welded with coupling. Tapped holes shall be provided with a pipe plug or screwed in place.

Material shall be galvanized, zinc coated in accordance with ASTM Specification A123, except that the zinc shall be applied at the rate of two (2) ounces per square foot total for both sides.

Bolts and nuts shall be of the diameter and length as recommended by the manufacturer and shall be galvanized to conform to ASTM Specification A153. The materials to be used for the construction of the tunnels shall be new and unused and suitable for the purpose intended.

2.14 SUBGRADE STABILIZER

Subgrade stabilizer shall consist of crushed stone meeting size and gradation requirements for GDOT #67 designation and complying with the requirements of GDOT section 800 - Coarse Aggregate.

2.15 CONCRETE

Concrete for blocking, replacing curb and gutter, replacing sidewalks and miscellaneous concrete shall have a minimum compressive strength of 3000 pounds at 28 days. Concrete shall be Type A as defined in GDOT Section 500 – Concrete Structures, latest revision. Provide mix design, showing amounts of each ingredient for each type mix, for review by Engineer.

2.16 CONCRETE GROUT

Concrete grout shall be Type A as defined in GDOT Section 500 – Concrete Structures, latest revision minus coarse aggregate. Provide mix design, showing amounts of each ingredient for each type mix, for review by Engineer.

2.17 SAND FOR BACKFILL

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 the Engineers.

2.18 BRICK

All brick shall be best grade. All hard burned common, acceptable to the Engineers and giving a ringing sound when struck and presenting a regular and smooth face, shall be used. When submerged in water for 24 hours, they will not absorb more than 10% of their weight in water.

Bricks shall be culled when delivered on the site and all imperfect brick are to 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.

2.19 BITUMINOUS PAVEMENT REPLACED

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; referenced in Section 32 12 16 - Asphalt Paving.

2.20 TRAFFIC STRIPE

Materials used in painting traffic stripes shall comply with Georgia DOT Specification 652, latest revision; referenced in Section 32 12 16 - Asphalt Paving.

2.21 FLOWABLE FILL

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.

2.22 LOCATOR BALLS

Locator balls shall be 3M Series EMS iD Ball Markers. The model number shall be 1423-XR/iD.

2.23 BORROW MATERIAL

Borrow material shall be material hauled from borrow areas outside the project area.

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 specified soil density. Final determination of the suitability of the material is the responsibility of the Engineer.

The material shall be Class IIB3 or better in accordance with GDOT Standard Specifications, latest revision.

2.24 GEOGRID SOIL REINFORCEMENT

Geogrid soil reinforcement shall be Tensar TriAx TX 170 Geogrid soil reinforcement or approved equal.

2.25 TEST STATION APPURTENANCES

Flushing Hydrant shall be of automatic freeze-proof design with weep hole installed within a 2" ball valve. Valve will be 600 lb. WOG bronze body with chrome plated brass ball and Teflon seals. Ball Valve to be ISO 9001 Certified. Hydrant barrel must be of black iron pipe. Exterior shall receive 4 mil thickness of electrostatically applied Sherwin-Williams Fast Dry Acrylic Enamel, catalyzed with Polane for durability. All standpipes to be painted red and all buried pipes will be painted black. Overall length of hydrant will vary, according to the depths of water systems. Barrel and standpipe shall be joined with a breakable malleable union. A brass hose connection, 2 1/2" NSFT with attached cap & chain, shall be provided for convenience in flushing. Operating device shall be of key type design, with permanent attachment to the valve stem. Valve stem must be full length of the hydrant barrel with permanent attachment to the valve. Hydrant must have provision for lock up to prevent tampering. Flushing Hydrant to be AQUARIOUS GP "POST HYDRANT" as manufactured by GIL Industries, Inc., Pensacola, Florida, or approved equal.

2.26 FLEXIBLE (TRANSITION) COUPLINGS

Flexible couplings shall be Catalog No. 441 as manufactured by Smith-Blair, JCM 215 Long DI Coupling by JCM Industries, or approved equal.

2.27 PIPE CONNECTION COUPLINGS

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", M.J. 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.

2.28 COPPER TUBING FOR SERVICES

House water service pipe 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. Flair joints shall be used.

2.29 CURB STOPS

All metal parts of curb stops shall be made of bronze. The stops shall be approved by Owner. The cock shall be operated with a combined cap and tee and shall open when turned counter-clockwise. Curb Stops shall be Hayes 5060, or approved equal.

2.30 CORPORATION COCKS

All metal parts of the cock assembly shall be made of all bronze or bronze suitable for 200 psi operating pressure. The cock shall be operated with a tee head and shall open when turned counter-clockwise. The cock shall be Mueller Co. H-15000, Hayes Model 5200, or approved equal.

2.31 METER BOXES

Not Applicable.

2.32 SERVICE SADDLES

Service saddles shall be equal to Smith-Blair 313 double strap clamps or Superior Style 32 suitable for use with ductile iron or PVC pipe. Service saddles are required for taps 1" in diameter and larger.

2.33 METERS

See Section 15900.

2.34 BACKFLOW PREVENTERS

Not Applicable.

2.35 PVC PIPING

As-built/Locator pipe shall be Polyvinyl Chloride (PVC) designed and manufactured in accordance with SDR-35.

Service casing pipe shall be Polyvinyl Chloride (PVC), schedule 80.

Water pipe shall be Polyvinyl Chloride (PVC), schedule 80, compliant with ASTM D1785.

2.36 NA

2.37 PIPE FOR GRAVITY SEWER

2.37.1 Pipe - Pipe for gravity sewer shall be ductile iron (D.I.P.) designed and manufactured in accordance with the latest revision of AWWA/ANSI C150/A21.50. Pipe wall thickness shall be in accordance requirements of the Pressure Class 350.

Ductile Iron Pipe shall have an outside asphaltic coating in accordance with the latest revision of ANSI A21.51.

Pipe interior shall be polybond, polyline, polyurethane, or 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.

2.37.2 Pipe Joints - Pipe joints shall be as the type specified on the project plans. Restrained Joint Pipe shall be Standard "Push-On" type joints shall be in accordance with the latest revision of ANSI/AWWA C111/A21.11 and furnished complete with restraining gaskets.

2.38 MECHANICAL JOINT TAPPING SLEEVE

- A. Tapping sleeves shall be of split mechanical joint design with separate end and joint gaskets.
- B. For tapping sleeves 24-inch and smaller, tapping sleeves shall be ductile iron construction meeting ASTM A536. Side flange seals shall be of the O-Ring type of either round, oval or rectangular cross-sectional shape. All sleeves are to include the end joint accessories and split glands necessary to assemble sleeve to pipe. No special tools are required other than a standard socket

wrench. Sleeve shall be coated with asphaltic varnish in compliance with NSF-61.

American Flow Control Series 2800 or approved equal.

- C. For tapping sleeves 30-inch and larger, tapping sleeves shall be stainless steel 304. Glands shall be 304 stainless steel and bolts shall be stainless steel 18-8 Type 304. Gasket shall be Nitrile Buna-N. Side flange seals shall be of the O-Ring type of either round, oval or rectangular cross-sectional shape. All sleeves are to include the end joint accessories and split glands necessary to assemble sleeve to pipe. No special tools are required other than a standard socket wrench. Sleeve shall be in compliance with NSF-61.

JCM 414 Series or approved equal.

2.39 TAPPING VALVE

- A. Tapping valves shall be resilient wedge type with bodies and bonnets made of ductile iron for 250 psig working pressure. Tapping valves shall accept full-size shell cutters.
- B. The alignment ring dimensions of the tapping valve flange shall conform to MSS SP 60. The outlet end of the valve shall have the desired joint connection for the intended pipe.
- C. All tapping valves shall include a minimum 3/8-inch NPT pipe plug on the bonnet of the valve body for field testing of the valve.
- D. All wedges shall be full encapsulated with EPDM rubber. All wedges shall be provided with guide covers.
- D. All interior and exterior ferrous surfaces shall be protected by fusion-bonded epoxy coating. The coating shall be applied prior assembly to assure coverage of all exposed surfaces including bolt holes.

American 4-inch – 48-inch Series 2500 Ductile Iron or approved equal.

PART 3 - EXECUTION

3.1 SURVEY AND STAKING

Establish line and grade for the project and establish construction staking for installation of the water main. Provide such services in accordance with SECTION 01 32 23 - FIELD ENGINEERING.

3.2 CLEARING AND GRUBBING

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.

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.

3.3 FENCES

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.

3.4 PROTECTION OF TREES

The Contractor shall remove only such trees on or along the work as necessary, and shall carefully protect all other trees adjacent to the work. 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.

3.5 INTERFERENCE WITH EXISTING STRUCTURES

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.

3.6 INFORMATION CONCERNING CONDITIONS

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., are 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.

3.7 CLEAN UP

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.

If at any time during the course of the work, the clean up, 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 clean up, grassing and/or pavement replacement is caught up to the work in progress.

3.8 TRENCH EXCAVATION

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 construction plans. The excavation shall permit the placement of compacted stabilizer stone with a minimum of 8" under pipe. Suitable materials shall be clean and free of rock larger than 2-inches at its largest dimension, organics, cinders, stumps, limbs, frozen earth or mud, man-made wastes and other unsuitable materials; Unsuitable soils for backfill are MH, CH, OL, and Pt. Should the material excavated from the trench be saturated, the saturated material may be used as earth material, provided it is allowed to dry properly and it is capable of meeting the specified compaction requirements. The bottom of the trenches shall be dressed so that the pipe has an even bearing on bedding material throughout the entire length of the pipe barrel.

All trenches shall be of sufficient width to provide ample working space on each side of the pipe for maintaining a straight line of pipe, and bell or coupling holes of sufficient size to allow making perfect joints shall be provided at all joints.

Water lines shall have a minimum cover of 120 inches unless otherwise specified or shown on the drawings. The depth of cover shall be a minimum of 120" below grade, 120" below the edge of pavement, or 120" below the drainage ditch paralleling the road, whichever is deepest. All changes in grade shall be made gradually.

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.

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.

The Engineer shall have the right to limit the amount of trench open at any one time.

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.

3.9 LAYING PIPE

All pipes, 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.

All pipes 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.

Trench dewatering methods (gravel bedding with pumps, etc.) must be used where necessary to maintain a dry ditch during pipe laying operations. Dewatering will be done in accordance with SECTION 31 23 19 - CONSTRUCTION DEWATERING.

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.

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. Restrained pipe joints will be full engaged.

Contractor shall bear all costs for his failure to maintain a clean pipe. These costs include but are not limited to flushing water, temporary fittings, piping, and connections, labor, equipment, materials, and other items necessary to clean the line.

3.10 BACKFILLING

After the pipe has been laid and all joints have been made, the trench shall be backfilled as described on the detail sheet of the construction plans for the Type 5 condition that shall be used throughout this project.

3.10.1 Type 5:

Backfill shall be granular or select material free from rocks and foreign material compacted to one foot above the top of the pipe. It shall be tamped in layers not over 6 inches thick to at least 95% standard proctor, AASHTO T-99. Remainder of backfill to top of trench shall be tamped in layers not over 12 inches thick (6 inches under roads) to 95% standard proctor,

AASHTO T-99. Under road ways, the top 12 inches of backfill shall be compacted to 100% standard proctor, AASHTO T-99.

Tamping shall be done with mechanical tamps in such a manner as to meet compaction requirements without moving or injuring pipes. Compaction shall be done with either pneumatic hand tamps, hydro-tamps or other approved methods. Compaction tests will be run as directed by Engineer to insure that the above specifications are being met.

In rock excavation, the backfill from the bottom of the trench to two feet above the top of the pipe shall be granular or select material, free from rocks and stones. The rest of 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 12" carefully compacted backfill shall separate bottom of pipe from rock or unyielding material.

3.11 ENCASEMENT

3.11.1 POLYETHYLENE:

Polyethylene encasement shall be installed in accordance with AWWA C105 (ANSI A21.5-82) "Method A" as follows:

Cut polyethylene tubes to a length approximately 2 ft. longer than that of the pipe section. Slip the tubes 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.

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 tubes.

After assembling the pipe joint, make the overlap of the polyethylene tubes. 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 downward fold at quarter points.

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. The second layer of polyethylene encasement shall be installed in the same manner as the first.

Cover bends, reducers, offsets, and other pipe-shaped appurtenances with polyethylene in the same manner as the pipe.

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.

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.

3.11.2 STOPAQ:

Install Stopaq Corrosion Wrap in accordance with SECTION 15250 - CORROSION WRAP COATING.

3.12 ROCK EXCAVATION

All material shall be considered as trench rock if the material has a original volume of at least on-half cubic yard and the material cannot be excavated with a hydraulic excavator having a minimum flywheel power rating of 123 kw (165 hp); such as a Caterpillar 322 C L, John Deere 230 C LC or a Komatsu PC220L-C-7; equipped with a short tip radius bucket not wider than 42 inches.

The Contractor shall notify the Engineer when rock is encountered. Measurement of rock will normally be made from rock profile on the trench wall after excavation. Rock will be removed to a depth of twelve inches below normal bottom and this area below the pipe will be backfilled with select material.

All material shall be considered as casing rock which cannot be excavated by normal boring operations including a rock head and requires blasting. Measurement of rock volume will normally be made based upon area of casing times actual length of casing installed in rock. Contractor shall notify engineer when casing rock is encountered.

Rock excavation by blasting shall be at least 75 feet in advance of pipe laying.

Before blasting, the Contractor shall cover the excavation with heavy timbers and mats in

such manner as to protect the adjacent property Owners from damage. The Contractor will be held responsible for all damage done.

3.13 THRUST RESTRAINT

3.13.1 GENERAL

At changes in direction of the main and at other points shown on the plans 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.

3.13.2 RESTRAINED JOINTS

Where restrained joint are called for on the construction plans, 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 have tightened to manufacturer's recommendations.

3.13.3 CONCRETE BLOCKING

The Engineer shall be notified by the Contractor before blocking is placed. Blocking will be of the dimensions called for on the construction plans and will be placed against a vertical surface of undisturbed soil that has been cleared of all loose material.

3.13.4 REINFORCED CONCRETE COLLARS

Reinforced concrete collars shall be cast in place as shown on detailed plans and as specified in ACI 318-83.

3.13 LEAKAGE TEST

3.13.1 PRESSURIZATION

After the pipe has been laid, all newly laid pipes or any valved section thereof shall be subjected to a hydrostatic pressure of 1.5 times the working pressure at the point of testing. Each valved section of pipe shall be slowly filled with water, and the specified test pressure, based on the elevation of the lowest point of the line or section under test 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 which 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.

3.13.2 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 points, 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.

3.13.3 LEAKAGE DEFINED

Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipes 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.

3.13.4 ALLOWABLE LEAKAGE

No pipe installation will be accepted if the leakage is greater than 15 gallons per day per inch diameter per mile of pipeline. This rate is shown in the following table:

ALLOWABLE LEAKAGE PER 1,000 FEET OF PIPELINE
(Based on 15gpd/in/mile)

<u>Pipe Diameter</u> <u>(inches)</u>	<u>Allowed</u> <u>Leakage</u> <u>Per Day</u> <u>(Gallons)</u>	<u>Allowed</u> <u>Leakage</u> <u>Per Hour</u> <u>(Gallons)</u>
6	17.0	0.71
8	22.7	0.95
10	28.4	1.18
12	34.1	1.42
14	39.8	1.66
16	45.5	1.89

20	56.8	2.37
24	68.2	2.84
30	85.2	3.55
36	102.3	4.26
42	119.3	4.97
48	136.4	5.68
54	153.4	6.39
60	170.5	7.10

3.13.5 TEST RESTRICTIONS

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.

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 is desired.

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

After leakage testing and all necessary repairs have been made, the lines shall be flushed clean and then disinfected in strict accordance with AWWA Standard For Disinfecting Water Mains, C651- latest edition, subject to the following special conditions:

3.14.1 The method of disinfection shall be either the Continuous-Feed Method or the Slug Method. The Tablet Method is not acceptable.

3.14.2 The form of chlorine may be either: (1) a 1 percent solution made from either sodium hypochlorite or calcium hypochlorite and pumped and metered into the pipeline; or (2) liquid chlorine fed from a pressurized cylinder through a gas-flow chlorinator and metered into the pipeline. With either form, 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.

3.14.3 Unless otherwise approved by the Owner, Contractor shall dechlorinate the highly-chlorinated water being flushed from the pipeline.

3.14.4 The Owner shall be responsible for bacteriological sampling and testing water from the disinfected pipeline.

3.14.5 Before any flushing or disinfection work is begun, the Contractor shall outline his planned procedures for these tasks and obtain approval of the Owner.

The Contractor is responsible for the installation and removal of sample points as required by AWWA C651 on the water main.

3.15 DECHLORINATION

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 neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water.

The chlorine residual of the water being disposed may be neutralized by treating the water with ascorbic acid or sodium ascorbate. 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	Sodium Ascorbate
1 Kg	2.5 Kg	2.8 Kg
1 Lb	2.5 Lb	2.8 Lb

3.16 CONNECTION TO EXISTING WATER MAINS

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.

Where existing pipe is to be abandoned, the Contractor shall plug the opening by pouring concrete in an around the opening as needed to completely seal the opening.

3.17 SETTING VALVES

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

Valve stem extensions shall be installed all buried valves except for those for which a manhole is being provided.

3.19 AIR AND VACUUM ASSEMBLIES

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

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 FLANGED OUTLETS

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 either a mechanical tapping machine or by use of a cutting torch.

3.22 MEGALUG

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. Tighten the twist-off bolts per manufacturer's recommendation. Should removal of this application be necessary, this should be done in accordance with manufacturer's recommendation.

3.23 SPECIALS AND FITTINGS

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

Where the lines cross railroads and/or highways under the jurisdiction of the State Highway Department, or railroad, the Owner will obtain written permission from the controlling authority before any work can be done within the right-of-way. After the Owner notifies the Contractor that the permit or permits have been obtained, the Contractor shall coordinate his activities and construction procedure with the proper authority of the Railroad or the Highway Department and shall conform with the requirements thereof. The Contractor will be required to furnish a release from the said controlling authority before final acceptance of the work. The Contractor will be responsible for all damage and injuries to persons and property inflicted or caused by said work.

3.25 PLACING OF STEEL CASING PIPE

Steel Casing pipe shall be installed by the "Jack and Bore" procedure or the "Open-Cut" method. Steel casing pipe shall be installed at the specific locations called for on the plan sheets and the installation method shall be by the "Jack and Bore" procedure unless specifically stated to be installed by the "Open-Cut" method.

The "Jack and Bore" installation procedure shall be by the dry-bore method. The hole is to be mechanically bored and cased through the soil by a cutting head on a continuous auger mounted inside the casing pipe. The cutting head shall be suitable for all soils that may be encountered; varying from loose soil to rock. The cutting head shall be steerable to maintain the line and grade. The cutting head must be steered continuously, either from the bore pit or from an operator's console within the machine's shield. Steering shall be accomplished via a laser is set up in the back of the bore pit and projected onto a target inside the machine. The operator can then control the machine using stabilizer pads and hydraulic articulation cylinders that pivot the machine on an articulation joint.

The installation of the casing and boring of the hole shall be done simultaneously by jacking. Lengths of pipe are to be continuously welded the full circumference of the pipe diameter to the preceding section installed. Excavation material will be removed and placed at the top of the working pit. Backfill materials and methods of backfilling and tamping shall be as required under BACKFILLING. For this method of installation, rock is defined as material defined in Paragraph 3.12 ROCK EXCAVATION.

The "Open-Cut" method consists simply of excavating the trench along the pipeline route and placing the steel casing in the trench. Special care shall be taken not to damage any existing utilities as the sections of casing are maneuvered into the open trench. Lengths of

pipe are to be continuously welded the full circumference of the pipe diameter to the adjacent sections. Backfill materials and methods of backfilling and tamping shall be as required under BACKFILLING. For this method of installation, rock is defined as material defined in Paragraph 3.11 ROCK EXCAVATION.

Casing insulators shall be used while installing the water main inside the casing. Insulators shall be located within 2' of each end of the casing and spaced no more than 10' apart within the casing. After the water main is installed in the casing, a check shall be made to ensure that the carrier pipe is not touching the casing at any point. The ends of the casing pipe shall be sealed with a three course mortared brick wall, one course of which shall be erected inside the casing.

Construction techniques required to provide access for casing shall be such as to ensure the safety of the work. Final dimensions of access pits selected by Contractor shall conform as with minimum dimensions required to permit the installation of the work. The contractor shall be required to properly support all excavations and to prevent all movement of the soil, pavement, utilities or structures outside of the excavation. All pits shall conform to applicable Local Safety Standards, OSHA Standards, trenching and shoring standards. Provide surface drainage during the period of construction to protect the work.

Casing will be installed in accordance with the line and grade shown on contract drawings. The casing shall be installed within one half of a foot (6-inches) of the line and of the elevations shown. The failure to maintain line and grade may require the installation of a new casing and removal and backfilling of the unacceptable casing at the expense of the Contractor or additional fittings and pipe at the expense of the Contractor. The acceptability of the casing installation shall solely be made by the Engineer. The required remedial work shall be solely determined by the Engineer.

The Contractor is totally responsible for the performance of the equipment and methods selected for this phase. Each pipe section shall be jack forward as the excavation progresses in such a way to provide complete and adequate ground support at all times. Lubrication shall be applied to the external surface of the pipe to reduce skin friction. A jacking frame shall be positioned to develop a uniform distribution of ramming forces around the periphery of the pipe. The Contractor is responsible for monitoring ground movements associated with the work and making suitable changes in the construction methods to control ground movements and prevent damage or detrimental movement to the work and adjacent structures and pavements. A lubrication system shall be provided that injects an approved lubricant on the inside and outside of the pipe to lower the friction developed on the sides of the pipe during jacking. The overcut on the pipe shall not exceed 1 inch. The annular space created by the overcut shall be filled with a lubricant that has been proved suitable for the particular soil conditions.

Welds shall be complete around the casing joints and smooth to permit the passage of carrier spacers. The line and grade shall not vary within the overall casing. The installation shall

permit the continuous installation of the carrier pipe with spacers.

The Contractor shall be paid for this work under unit price bid per linear foot of steel casing pipe used and for miscellaneous concrete used.

3.26 BORE PITS

Bore pits for cased bores and uncased bores shall be constructed as to avoid conflicts with the existing utilities and remain in the limits of the construction area. The contractor shall take necessary precautions in order to insure the pit meets the latest requirements under the Cobb County Trench Safety Ordinance and O.S.H.A. requirements imposed on such work.

3.27 REMOVE & DISPOSE OF EXISTING APPURTENANCES

Where called for on the plans, all existing above ground appurtenances shall be removed and disposed of by the contractor after prior approval and refusal from the owner. The area where these appurtenances are removed shall be regraded and grassed to match the existing landscaping.

3.28 REMOVE & DISPOSE OF EXISTING WATER MAIN

Where called for on the plans, existing water main shall be removed and disposed of by the Contractor after prior approval and refusal from the owner. The Contractor will be responsible for proper disposal of the existing water main off site.

3.29 REMOVING AND REPLACING PAVEMENT

3.29.1 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.

3.29.2 REMOVAL

Saw cut all pavements prior to removal. Cut pavement vertically and through the entire depth of pavement so that pavement can be removed without disturbing remaining pavement. Replace disturbed pavement beyond limits necessary for water main water installation at no cost to the Owner.

3.29.3 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. Compact subgrade to 95% Standard Proctor soil density except for top 12". Compact top 12" of subgrade to 100% Standard Proctor soil density.

3.29.4 SUBBASE

Place 12" of graded aggregate and compact to 100% Standard Proctor soil density. Comply with requirements of SECTION 32 12 16 - ASPHALT CONCRETE PAVING

3.29.5 BITUMINOUS PAVEMENT

Bituminous pavement shall be replaced with base and binder pavement as shown on drawings. Provide required depth of pavements as shown included additional depth required during construction.

Resurface roadway within the limits shown. Mill roadway to depth shown and within limits shown. Place surface course to depth shown and within limits shown.

Edges of cut pavement shall be neatly squared off. Then the base and edges shall be primed with a tack coat of AC-15 or equal, applied at the rate of 0.25 gallons per square yard prior to placement of asphalt topping. Extreme care shall be executed to assure that the squared edges of existing pavement will not be broken or disturbed during rolling of 1-1/2" asphalt topping.

Comply with requirements of SECTION 32 12 16 - ASPHALT CONCRETE PAVING

3.29.6 TEMPORARY BITUMINOUS PAVEMENT

At the completion of work daily and for all paved areas subject to traffic, install 12.5 mm Superpave Cold Patch to a depth of 3 inches. Maintain the temporary surface until replacement by permanent bituminous pavement.

Comply with requirements of SECTION 32 12 16 - ASPHALT CONCRETE PAVING

Where the length of temporary pavement exceeds 500 feet, remove temporary pavement and install permanent bituminous pavement.

3.30 REMOVE & REPLACE CONCRETE CURB AND GUTTER

3.30.1 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.

- 3.30.2 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.

Concrete materials, placement and protection shall be in accordance with ACI 318 specifications.

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.

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.

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.

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.

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.

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

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 p.s.i. compressive strength at 28 days of age. Sidewalks shall be replaced to the original width and thickness or a minimum of 4" 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)

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

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

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

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

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. Upon the survey for recording location of the pipe, the pipe shall be cut and capped to a point below grade, backfilled with a locator ball installed as shown on plans.

3.37 RECORD INFORMATION

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 as follows. 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****

SECTION 02400
TUNNELING

PART 1 - GENERAL

1.1 SCOPE OF WORK

The work includes furnishing all material, labor, tools, equipment, skills, and incidentals necessary to install a tunnel and tunnel liner below grade.

1.2 DEFINITIONS

Tunneling is defined as horizontal excavation permanently supported with tunnel liners installed by either a guided operation in which a tunnel boring machine is propelled by grippers that react off tunnel sidewalls, tunnel liner or by hand excavation.

1.3 METHOD OF CONSTRUCTION

Anticipated soil conditions for the tunnel construction vary from soil, weathered rock, to rock. The method of construction will be a hand mined operation in which workers work inside of the previously placed tunnel liner and excavate for and place the new liner one course at a time. The minimum size of tunnel and tunnel liner shall be as shown on contract drawings. The Contractor may propose a larger tunnel and tunnel liner; such proposal is subject to acceptance by the Owner. The Contractor bears all risk in regards to obtaining this acceptance and bears all costs in regards to the larger tunnel and tunnel liner.

All construction will occur within Georgia Department of Transportation (GDOT) right of way. Contractor's means and methods will be subject to GDOT approval and must comply with GDOT Specifications. Rock blasting by the Contractor is subject to GDOT permitting. The Contractor is responsible for obtaining GDOT permits and bears all risk in regards to obtaining this approval.

1.4 ORDER OF WORK

The Engineer will designate the beginning and ending points, and elevations for installation of casing.

1.5 QUALIFICATIONS

1. Contractor:

- a. Shall have sufficient tunneling experience to perform the Work by having performed a minimum of 3 previous tunneling projects of similar size and scope.

- b. Shall have sufficient tunneling experience to perform the Work by having performed a minimum of 1 of the 3 previous tunneling projects in a similar geological rock formation with a similar length of rock tunneling.
- c. .
- 2. Contractor Personnel:
 - a. Project Manager: Minimum of five years recent experience managing projects of similar size and complexity and containing the same elements as required by this project.
 - b. Field Superintendent: Minimum experience of two recent projects working with the same equipment and systems required for this project.
 - c. .
 - d. Safety Representative: Minimum of five years recent experience in tunnel and pipe jacking operations. OSHA certified.
- 3. Contractor's Engineer:
 - a. Shall have provided engineering services on a minimum of 3 previous tunneling projects within Georgia.
- 4. Tunnel Liner manufacturer:
 - a. Manufactured tunnel liner for a minimum of 5 years.
 - b. Provided tunnel liner for a minimum of 3 tunneling projects similar in size and scope.

1.6 SUBMITTALS

Submit the following:

- 1. Qualifications of Contractor.
 - a. Cover sheet with date, company name, address, telephone and fax numbers, email address, and contact person.
 - b. Resumes of managerial, supervisory and operational key personnel:
 - c. Project Experience containing the following information:
 - 1) Date, full name of project, and location.
 - 2) Owner's name, address, telephone and fax numbers, email address, and contact person.
 - 3) Client's name, address, telephone and fax numbers, email address, and contact person.
 - 4) Employees in charge of work at both head office and site.
 - 5) Description of relevant work successfully completed, including ground conditions.
 - 6) Features under which pipe passed, depth below the water table, photos, and published articles if available.
 - 7) Additional information as necessary.
- 2. Contractor's Means and Methods.

Describe procedures and resources that will be employed to carry out work including method and sequence.

 - a. Describe the methods of tunnel construction for the length of the project;

- identifying sections of differing methods.
- b. Describe the method of installing tunnel liner and grouting behind tunnel liner.
- c. Describe the means and methods of maintaining line and grade, and reestablishment of line and grade as required.
- e. Describe the placement of grout filler at bottom of tunnel liners to support carrier pipe on casing spacers.
- f. Describe the installation of carrier pipe, pipe jointing, and testing.

3. Materials.

Submit full details of all materials incorporated into the construction.

4. Settlement Monitoring Plan.

- a. Submit Surveying and Monitoring plan for review before construction. Identify location of settlement monitoring points, reference benchmarks, survey schedules and procedures, and reporting formats.
- b. Submit Building and Structures Assessment Plan for review after construction.
 - 1) Furnish pre-construction and post-construction assessment for building, structures, and pavement located within distance of 200 feet from centerline of proposed tunnel, and jacking and receiving pits.
 - 2) Include photographs or video of existing damage to structures near alignment.

5. Safety Plan.

- a. Provide a Safety Plan complying with all project and jurisdictional requirements and referenced standards. No tunneling shall be permitted without a reviewed Safety Plan.
- b. The safety plan shall include but not be limited to:
 - 1) Review of all safety requirements.
 - 2) Specification of all safety equipment required and maintenance routines for all equipment.
 - 3) Specification of all personal protection equipment.
 - 4) Specification of all personal training requirements for each employee.
 - 5) Specification of safety procedures including evacuation and re-entry procedures.

6. Tunnel Design by Georgia Professional Engineer.

- a. Contractor shall employ the services of a Georgia Professional Engineer experienced in tunneling to design tunnel liner, to design vertical shafts for tunnel entrances, and to review the Contractor's means and methods of construction.
- b. The Georgia Professional Engineer shall:
 - 1) Design the tunnel liner in accordance with GDOT Specification

Section 555 – Tunnel Liner and other appropriate codes. The Contractor shall bare the cost of all material, labor, and other costs.

a) The design shall be performed for two conditions.

- 1) Construction
 - 2) Final structural load with 75 year service life.
- 2) Design for the vertical shafts at the tunnel entrances. Design any thrust blocking required for the tunnel machine. The Contractor shall bare the cost of all vertical shafts necessary for the tunnel entrances including material, labor, and all other costs.
 - 3) Review all grout and concrete designs.
 - 4) Certify the Contractor's means and methods.
 - 5) Provide all calculations signed and sealed.

1.7 PROJECT REQUIREMENTS

1. Perform tunneling so as not to interfere with, interrupt or endanger surface and activity thereon, and minimize subsidence of surface, structures, and utilities above and near tunnel.
2. Repair and restore damaged property from tunnel operation settlement to its original condition before being disturbed at no cost.
3. Cooperate with the Engineer in record surveying.
4. Follow applicable ordinances, codes, statutes, rules, and regulations of State of Georgia, applicable County building codes, affected Railroad Company, and applicable regulations of Federal Government, OSHA 29CFR 1926, and applicable criteria of ANSI A10.16-1995 (R2001), "Safety Requirements for Tunnels, Shafts, and Caissons."

PART 2 - PRODUCTS

2.1 GENERAL

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. The materials stated as follows are minimum requirements; if necessary, the Contractor will provide higher strength materials or alternate materials as determined by the calculations of the Georgia Professional Engineer.

2.2 MATERIALS

A. Tunnel Liner.

In accordance with GDOT Specification Section 555 – Tunnel Liner, and as follows:

Tunnel shall be of the diameter as required and thickness determined by Contractor's Engineer and reviewed by the Engineer. Liners shall be of 2-flange type or 4-flange type. Liner plate design shall be in accordance with the design criteria for joint strength, stiffness, buckling, and deflection as defined in the

AASHTO Standard specifications for Highway Bridges, latest edition. The liner plate design shall be sufficient for two conditions:

- Construction loading.
- Final structural loading with 75 year service life.

Liner plate shall be fabricated from structural quality, hot-dipped galvanized, bituminous coated steel sheets or plates conforming to ASTM Specification A 569. Plates shall have the following mechanical properties before cold forming: tensile strength = 42,000 psi, yield strength = 28,000 psi, elongation, 2 inches @ 30%. Plates shall be a minimum 12 gage in thickness. Plates shall be accurately curved to suit the tunnel cross section and shall be of uniform fabrication to allow plates of similar curvature to be interchanged.

All plates shall be punched for bolting on both longitudinal and circumferential seams and shall be fabricated as to permit complete erection from the inside of the tunnel. The longitudinal seam shall be of the lap type, with an offset equal to gage of metal for the full width of plate to allow the cross section of the plate to be continuous through the seam. Circumferential hole spacing will be a multiple of plate length to allow staggering of the longitudinal seam.

Grout holes shall be two inches (2") in diameter and shall be provided in the top plates at intervals not to exceed ten feet (10') to permit grouting as the assembly of the liner plate proceeds. Additional plates with nipples are to be installed at top quarter points and sides. Openings shall be staggered. All grout holes shall be tapped or welded with coupling. Tapped holes shall be provided with a pipe plug or screwed in place.

Material shall be galvanized, zinc coated in accordance with ASTM Specification A123, except that the zinc shall be applied at the rate of two (2) ounces per square foot total for both sides.

Bolts and nuts shall be of the diameter and length as recommended by the manufacturer and shall be galvanized to conform to ASTM Specification A153. The materials to be used for the construction of the tunnels shall be new and unused and suitable for the purpose intended.

B. Surface Settlement Markers.

1. Within Bituminous Concrete Paved Areas: "p.k." nails.
2. Within Nonpaved Areas: Wooden hubs.

E. Grout: to fill annular space between tunnel liner and tunnel excavation.

1. Cement: ASTM C150, Type II.
2. Water: Suitable for Concrete per ACI.
3. Sand: ASTM C404, size No. 1.
4. Masonry Lime
5. Admixture: Bentonite

6. Grout Portions:

One Part: Cement
Two Parts: Lime
Four Parts: Sand
2% Admixture
Retardant as required
Water as required

7. Design Mix For Grout: Minimum compressive strength of 100 psi attained within 24 hours.

F. CONCRETE

1. Mix concrete in accordance with ACI 304. Deliver concrete in accordance with ASTM C94.
2. Provide concrete to the following criteria:
 1. Structural Concrete:
 - a. 4500 psi at 28 days.
 - b. Normal weight.
 - c. 3 inch slump +/- 1 inch
 - d. Maximum water-cementitious materials (W/C) ratio, by weight = 0.42.
 - e. Minimum 550 lb. of cement per cu. yd. of concrete.
 3. Cement:
 1. Use Type II cement for concrete construction.
 4. Aggregate Size:
 1. Maximum nominal size of coarse aggregate to be 1/4" except that it is not to be larger than:
 - a. One-fifth narrowest dimension between sides of forms;
 - b. Three-quarters of minimum clear spacing between reinforcing bars.
 5. Use accelerating admixtures in cold weather only when approved by Engineer. Use of admixtures will not relax cold weather placement requirements.
 6. Calcium chloride shall not be used.
 7. Use set retarding admixtures during hot weather only when approved by Engineer.
 8. Add air-entraining agent to normal weight concrete mix for all concrete. Air content shall be 4% to 6%.

G. BRICK

Comply with GDOT requirements.

H. LOW DENSITY CELLULAR CONCRETE

Low Density Cellular Concrete is a mixture of cement, water and preformed foam designed to be pumped into place and finished prior to setting.

MATERIALS:

1. Cement: The portland cement shall comply with ASTM C150. Pozzolans and other cementitious materials are permitted.
2. Water: Use potable water free from deleterious amounts of alkali, acid, and organic materials which would adversely affect the setting time or strength of the cellular concrete.
3. Fly Ash: The fly ash shall comply with ASTM C618; either Type C or Type F may be used.
4. Admixtures: As required to achieve the density and workability necessary for the application.

PROPERTIES:

1. Minimum Cast Density 30 PCF +/- 5 PCF
2. Minimum Compressive Strength @ 24 hours 5 psi
3. Minimum Compressive Strength @ 7 days 20 psi
4. Minimum Compressive Strength @ 28 days 40 psi
5. Compressive Strength Range: 40 psi to 100 psi

PART 3 - EXECUTION

3.1 GENERAL

A. Dewatering: When water is encountered, develop and maintain dewatering system of sufficient capacity to remove water continuously, keeping excavations free of water until backfill operation is in progress.

1. Keep removal of soils particles to minimum.
2. Dewater into sediment trap.
3. Observe to detect settlement or displacement of surface facilities due to dewatering.
4. Should settlement or displacement be detected, notify Engineer immediately and act to maintain safe conditions and prevent damage.

3.2 DAILY ACTIVITY LOG

A. Maintain daily activity log during tunneling operations for casing. Submit to Engineer for record purposes on a daily basis.

1. Start and finish time of tunnel advancement.
2. Total length of tunnel installed.
3. Horizontal and vertical alignment deviation at not greater than 1 foot intervals or period not exceeding 5 minutes, whichever is most frequent.
4. Maximum jacking force exerted during each push including forces required to re-initiate jacking following periods of system shutdown.
5. General description for each discernible ground condition mined.
6. Settlement monitoring readings.

B. Where tunnel boring system utilizes an electronic data logger, set up so the above information is recorded and can be readily identified.

1. Identify known errors with recorded data and explain in daily log submittal.

3.3 PREPARATION

- A. Maintain clean working conditions inside tunneling operation area and remove spoil, debris, equipment, and other material not required for operations.
- B. For construction below railroads, highways and utilities perform installation to prevent interference or disruption with normal operation of these facilities.
- C. During construction, maintain access to private and commercial properties at all times, unless approval from both property owner and Engineer has been obtained.
 - 1. Costs associated with providing alternative access will be at no additional cost.
- D. Provide power generation equipment and other equipment operating on or with fuel or lubrication oils with suitable barriers and safeguards to ensure no loss of oil to drains or waterways or to contaminate ground.

3.4 PIT CONSTRUCTION

- A. Responsible for design, construction, maintenance and removal, including any damage attributed to pit construction.
- B. Tunnel Pits: See Working Drawings.
- D. Approximate Locations of tunnel Pits: See Drawings.
- E. Responsible for necessary utility relocation or supporting of utilities for jacking and receiving pits construction.

3.5 TUNNELING

- A. Tolerances.
 - 1. Install tunnel with liner to within 6 inch of vertical and horizontal alignment shown on Drawings.
 - 2. Limit annular space, between excavated material and outside diameter of tunnel liner, to maximum of 1-inch.
 - 3. Outside diameter of TBM not to exceed outside diameter of tunnel liner by more than 2 inch.
- B. Obstructions during tunneling.
 - 1. Responsible for selection of type of TBM and type of cutting.
 - 2. Remove, clear, or otherwise make it possible for tunnel system and tunnel liner to progress past or through any obstructions encountered at no additional cost.
- C. Tunneling force
 - 1. No force shall be exerted on tunnel liner without written approval of liner manufacturer.

3.6 SPOILS

- A. Remove all spoil material from project site.
- B. Dispose of all materials in accordance with current governmental regulations.

3.7 BULKHEAD

- A. Install 3-course brick bulkhead at tunnel entrances.

3.8 LINER INSTALLATION

- A. Install self-supporting steel liner plates according to manufacturer's recommendation. Leave

no more than 5 feet unlined while tunneling and leave no more than 1 foot unlined at the end of operations.

- B. Pressure grout voids between tunnel liner and excavation every 10 feet at the end of work shift.

3.9 LOW DENSITY CELLULAR CONCRETE

- A. Remove any standing water for tunnel. Stabilize water main prior to placement of cellular concrete.

- B. Add predetermined quantity of preformed foam to a concrete slurry or grout while mixing to produce cellular concrete.

- C. Place cellular grout to fill annular space in tunnels.

Mixing and Conveying:

- (1) Use automated job site batching, mixing, and placing equipment. Mix the materials and convey promptly to the point of placement.

- (2) Place grout tubes through the annular space to convey the grout to the desired location. Grout tubes should be a minimum 4" diameter and may consist of PVC, HDPE or steel.

- (3) Drain pipes or vents should be placed at the lower elevation of the line to allow water to drain out of the annular space. These should be 2" diameter minimum.

- (4) Pump cellular concrete until material is discharged through the vent pipes at the opposite end of the line.

- (5) Proper pressure gauges shall be used to monitor pump pressures and back pressure.

- D. Test concrete density during placement of the initial batches, check the density and adjust the mix as required to obtain the specified density at the point of placement. Test in accordance with ASTM C495 modified.

- E. Sampling each 300 cubic yards of cellular concrete placed or for each ten (10) hours of placing.

3.10 SAFETY

- A. Provide weekly site visits by Safety Representative with report to Engineer and Owner.

- B. Provide weekly training to all employees.

- C. Maintain log of all safety activities.

- D. Report all safety incidents.

SECTION 02601
BLW
WATER MAIN CONSTRUCTION

PART 1 - GENERAL

1.1 SCOPE OF THE WORK

The work includes furnishing all material, labor, tools, equipment, skills, and incidentals necessary to construct water mains of the Marietta Board of Lights and Water's supply system in Cobb County, Georgia.

1.2 ORDER OF WORK

The Contractor will provide a construction plan designating the starting point, or points, for construction and the order in which the work shall be constructed, completed, and placed into operation. The Contractor will submit this plan and the construction schedule as required in Section 01310 prior to the beginning of any construction. The plan will include a disinfection procedure and sequence of disinfection, and sequence for the transfer of services from existing water mains to the new water main. The plan will be submitted to the Engineer and the Owner for review and comment. The Contractor will incorporate the Engineer's and Owner's comments into the construction plan. The plan shall be followed throughout the construction of the water main. It may be modified with the written agreement of the Engineer and the Owner.

1.3 WORK RESTRICTIONS

The Contractor will be restricted in work hours as directed by the Georgia Department of Transportation. It is the Contractor's responsibility to be aware of such restrictions and to plan the work accordingly.

PART 2 - PRODUCTS

2.1 GENERAL

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.

All materials used in the work including equipment shall be new and unused materials of a reputable U.S. Manufacturer conforming to the applicable requirements of the Specifications, and no materials shall be used in the work until they have been approved by the BLW. Any reference to an AWWA, ANSI or other such specification shall mean the latest revision published.

2.2 PIPE FOR WATER MAINS

2.2.1 Pipe - Pipe for water mains shall be ductile iron (D.I.P.) designed and

manufactured in accordance with the latest revision of ANSI/AWWA C151/A21.51. Each pipe shall be subjected to a hydrostatic pressure test of at least 500 p.s.i., at the point of manufacture. Pipe wall thickness shall be sufficient to meet the above conditions, and in accordance with the Standard Pressure Class 350 requirements.

The Standard Pressure Class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the manufactures mark, county 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.

Ductile Iron Pipe shall have an outside asphaltic coating in accordance with the latest revision of ANSI A21.51-81. 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 with the following modifications. Cement-mortar lined pipe shall have smooth dense interior surfaces and shall be free from fractures, excessive interior surface crazing, disbondment and roughness.

Pipe shall be manufactured by American Cast Iron Pipe Company, United States Pipe and Foundry Company or Griffin Pipe.

2.2.2 Pipe Joints - Pipe joints shall be as the type specified on the project plans. Standard "Push-On" type joints shall be in accordance with the latest revision of ANSI/AWWA C111/A21.11 and furnished complete with gaskets. Where "Push-On" type joints are to be restrained in the size range of 4" to 16", they shall be restrained through the use of "Fast-Grip" gaskets as manufactured by the American Cast Iron Pipe Company or "Field Lok" gaskets as manufactured by the United States Pipe and Foundry Company or an approved equal. Other Restrained Joint Pipe shall be subject to the review by the Engineer.

2.2.3 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.

2.2.4 Fittings shall be ductile iron, and be of a standard design for use with the pipe purchased under these specifications. Fittings shall conform to the latest revision of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53. Fittings shall have a standard asphaltic coating on the exterior and shall have a cement-mortar lining on the interior in accordance with ANSI/AWWA C104/A21.4, of latest revision. Fittings shall be of 350 psi pressure class rating.

Fittings and accessories shall be furnished with Mechanical Type Joints in accordance with ANSI/AWWA C111/A21.11, latest revision. Joints shall be restrained with retainer glands as specified another paragraph of this section.

2.2.5 Outlets shall be of the type shown on plans and shall be furnished by the pipe manufacturer.

2.3 POLYETHYLENE ENCASUREMENT

Polyethylene encasement for corrosion protection shall consist of three layers of co-extruded linear low density polyethylene (LLDPE) that are fused into one. The inside surface shall be infused with a anti-microbial biocide and a volatile corrosion inhibitor. The encasement shall meet all requirements of ANSI/AWWA C105/A21.5. Tape for polyethylene tubing shall be as provided by the manufacturer for this specific purpose.

2.4 BUTTERFLY VALVES

All butterfly valves shall be bubble-tight closing at the rated pressure with flow in either direction, and shall be satisfactory for applications involving throttling service and frequent operations or operations after long periods of inactivity. Valves shall meet the full requirements of AWWA C504, latest revision, for 250 psi working pressure and shall be suitable for above ground or direct buried service. Valves shall be rated and tested for absolute zero leakage shut-off. The closed seat shall be tested to 250 psi and the valve body shall be tested to 500 psi. Owner may require certification of test.

All interior ferrous surfaces of valves shall have an epoxy coating meeting the requirements of AWWA C550. Valve bodies shall be equipped with integrally cast mechanical joint ends meeting AWWA C111.

Butterfly valves installed underground shall come equipped with a manual operator. This manual operator shall be of the traveling nut, self-locking type and shall be designed to hold the valve in any intermediate position between fully open and fully closed without creeping or fluttering. Operators shall be equipped with mechanical stop-limiting devices to prevent over travel of the disc in the open and closed positions. Valves shall open when turned counter-clockwise. Operators shall be fully enclosed and designed for direct buried operation.

2.5 GATE VALVES

Valves 16" and smaller shall be gate valves. The valves shall be of non-rising stem design, and have an iron body, bronze mounted, resilient seated, meeting all requirements of AWWA C509. Valves shall be designed for a minimum working pressure of 250 psi and shall have 2" square operating nuts, except in meter vaults where handwheels shall be installed. Valves shall open when turned counter-clockwise. All interior ferrous surfaces of valves shall have an epoxy coating meeting the requirements of AWWA C550.

Valves sized 6" through 12" shall be Mueller Co. A-2360 with mechanical joints or approved equal. Valves sized 14" through 16" shall be Mueller Co. A-2361 with mechanical joints or approved equal. Where flange joints are used, flanges must meet the requirements of AWWA C115, latest revision.

2.6 VALVE BOXES

Valve boxes shall be provided for all buried valves. Valve boxes for valves shall be approved standard cast iron, adjustable-shaft boxes having a minimum shaft diameter of 5-1/4 inches. The casting shall be coated with two coats of coal tar pitch varnish. The

lids of all boxes shall bear the word "Water" or the letter "W". Boxes shall be equal to Vulcan Pattern VVB-4. Valve boxes shall be flush with the final grade after grading and / or paving.

2.7 VALVE MARKER

One concrete valve marker shall be furnished and set at each line valve. 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.

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 FIRE HYDRANT

All fire hydrants shall comply in all respects with BLW Standards and shall be designed and manufactured to comply with the latest revision of AWWA C502. The hydrants shall be designed for 250 pounds working pressure, of simple design, easy to operate, effectively and positively drained and protected from damage by freezing, and convenient for repairing and replacing parts.

Hydrants shall be equipped with one 4-1/2" pumper nozzle and two 2-1/2" diameter hose connections, which shall have threads meeting the latest requirements of the State Fire Insurance Commission. Hydrants shall have a safety flange on the barrel and a safety coupling on the valve stem, to prevent damage to barrel and stem in case of traffic accident. Fire hydrants shall be M&H Valve and Fitting Co., Traffic Model Style 129, or Mueller Super Centurion Model A421.

The connection at the base of the hydrant shall be mechanical joint with ductile iron retainer gland for 6" ductile iron pipe. The valve opening shall meet the requirements of the AWWA Specifications for a 5-1/4" hydrant. The valve, valve seat and inner working parts shall be easily accessible. The height from the surface of the ground to the bottom of the pumper nozzle shall be no less than 18". Each hydrant shall be neatly painted with a silver reflecting paint.

Each hydrant shall be tested to 250 psi. The first test shall be made with the valve closed. The second test shall be made with the main valve open but all nozzles closed. While the test is being carried on, the hydrant shall be subjected to a hammer test. Any hydrant showing defects by leakage, sweating, or otherwise shall be rejected. The barrel and all parts shall withstand these tests. These tests shall be made in the field after the hydrants are installed.

Leads from the main line to the fire hydrant shall use 6" ductile iron pipe and shall have a 6" gate valve between the main line and fire hydrant. The valve shall be connected to the main line by using a locked hydrant tee. Whenever possible, the hydrant shall be connected to the valve by using a locked hydrant adapter.

2.9 AIR AND VACUUM RELEASE VALVES

The 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 valve rated working pressure. The intake orifice shall be equal to the nominal size of the valve. Large orifice sealing shall be affected by the flat face or the control float seating against a nitrile rubber o-ring housed in a dovetail groove circumferentially surrounding the orifice. Discharge of the pressurized air shall be controlled by the seating and unseating of a small orifice nozzle on a natural rubber seal affixed into a control float. 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 NPT.

The valve shall be Vent-O-Mat series RBX or approved equal. Gate valves between water main and air release valve shall be bronze, solid wedge with screw connection equal to Jenkins Company Figure 370. Meter box shall be equal to the DFW Style D-1200 or approved equal.

2.10 RETAINER GLANDS

Retainer glands for mechanical joints shall utilize standard gaskets and bolts conforming to AWWA C111 and shall be EBAA Mega-Lug or approved equal.

2.11 STEEL CASING

Casing pipe shall be steel pipe conforming to ASTM Designation A-139, Grade B, electric fusion welded steel pipe. The pipe shall have minimum yield strength of 35,000 psi. The exterior and interior of the pipe shall have a coal tar varnish coating. Wall thickness shall be as shown on plans with a minimum wall thickness of 0.250".

2.12 CASING SPACERS

Casing spacers shall be Model CCS stainless steel as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, Illinois, or approved equal. All insulators shall have a stainless steel shell. Insulators shall be located within 2' of each end of the casing and spaced no more than 10' apart within the casing. The positioning of the casing insulators shall be centered. Spacers shall be sized as recommended by the manufacturer.

2.13 SUBGRADE STABILIZER

Subgrade stabilizer shall consist of crushed stone meeting size and gradation requirements for Georgia D.O.T. #57 designation.

2.14 CONCRETE

Concrete for blocking, replacing curb and gutter, replacing sidewalks and miscellaneous concrete shall have a minimum compressive strength of 3000 pounds at 28 days.

2.15 CONCRETE AND GROUT

A mix design, showing amounts of each ingredient for each type mix, shall be submitted for approval.

2.16 SAND FOR BACKFILL

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 the Engineers.

2.17 BRICK

All brick shall be best grade. All hard burned common, acceptable to the Engineers and giving a ringing sound when struck and presenting a regular and smooth face, shall be used. When submerged in water for 24 hours, they will not absorb more than 10% of their weight in water.

Bricks shall be culled when delivered on the site and all imperfect brick are to 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.

2.18 BITUMINOUS PAVEMENT REPLACED

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 Type "F" surface course.

2.19 TAPPING SLEEVE AND TAPPING VALVES

Tapping sleeves shall be rated for 250 psi and shall be a Mueller H-615, PowerSeal 3490MJ or approved equal.

Tapping valves shall be Mueller, mechanical joint, 250 psi, T-2360, or approved equal.

2.20 PIPE CONNECTION COUPLINGS

Pipe connections between new pipe and existing pipe shall be made with compression couplings for pipe sizes 2" and below. Compression couplings shall have lock down screws such as provided by the Ford C45-77 or the Ford C44-77. For pipe sizes above 2", M.J. 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. The remaining clearance must be a maximum of 1/4".

2.21 COPPER TUBING FOR SERVICES

House water service pipe shall be copper service pipe, type K, soft temper, seamless copper tubing, conforming to ASTM B-88. Flare joints shall be used for ¾" and 1" services. Compression joints shall be used on 2" services, including stainless steel clamp screws. Couplings shall be Ford C44-77 or approved equal.

2.22 CURB STOPS AND WYES

All metal parts of curb stops shall be made of bronze. The cock shall be operated with a combined cap and tee and shall open when turned counter-clockwise. All curb stops shall have locking device. Curb stops smaller than 2" shall have a flare by female iron pipe connection. These curb stops shall be Ford Model B21-444W or approved equal.

Curb stops 2" in size shall have a compression joint inlet with flange outlet, and the compression end shall also have a stainless steel clamp screw. These curb stops shall be Ford Model BF43-777W or approved equal.

Where approved for use, wyes shall be Ford model Y22-247 or approved equal.

2.23 CORPORATION COCKS

Corporation cocks smaller than 2" in size shall have an AWWA tapered thread inlet and flare outlet connection. All metal parts of the cock assembly shall be made of bronze. The cock shall be operated with a tee head and shall open when turned counter-clockwise. The cock shall be a Ford model FB600 or approved equal. Services 1" and smaller in diameter shall be direct tapped.

2.24 METER BOXES

Meter boxes for services shall be made of polypropylene materials. The box shall be approximately 19" long, 13" wide and 12" deep. The lid shall be made of the same material as the box, and shall have an AMR locator pad attached to the bottom of the lid to accept AMR transponders. The lid shall seat securely and evenly inside the meter box and shall not overlap the top edge of the box. Meter Boxes shall be DFW Plastics Series A 1200.SBAMR or approved equal.

2.25 SERVICE SADDLES

Service saddles shall be equal to Smith-Blair 313 double strap clamps suitable for use with ductile iron or PVC pipe. Direct taps are required for all ¾ inch and 1 inch service connections. Service saddles are required for taps larger than 1" in diameter.

2.26 METERS

Water meters shall be furnished and installed by the BLW. All meters must be capable of reading accurately at low flows. All meters shall read in gallons. All meters shall come equipped with a touch-read or radio-read compatible with the BLW's meter reading equipment. The bypass shall be located inside the vault.

2.27 PRESSURE REDUCING VALVE

Pressure reducing valves shall be Watts Regulator 25 AUB or approved equal.

2.28 BACKFLOW PREVENTERS

In accordance with the BLW's Cross Connection Control Program, water service customers may be required to have a backflow prevention device selected on the basis of the customer's risk categorization as determined by the BLW. The backflow preventers listed below meet the current BLW requirements; other manufacturer's devices that meet the requirements listed in parentheses are acceptable if approved by the BLW.

1" - 2" Lines

Low Risk - Ford Model HHS31-323 or approved equal. (ASSE 1024)

Medium Risk - Hersey Model FDC or approved equal. (ASSE 1015, AWWA C510, USC)

High Risk - Hersey Model FRP II or approved equal. (ASSE 1013, AWWA C511, USC)

2 1/2" - 10" Lines

Low Risk -Wilkins Model 950 or approved equal. (ASSE 1015, AWWA C510, USC)

Medium Risk -Wilkins Model 950 or approved equal. (ASSE 1015, AWWA C510, USC)

High Risk -Wilkins Model 975 or approved equal. (ASSE 1013, AWWA C511, USC)

The initials of specification-issuing agencies shall be understood to mean the organization listed below:

ASSE: American Society of Sanitary Engineering

AWWA: American Water Works Association

USC: University of Southern California Foundation of Cross Connection Control and Hydraulic Research

2.29 GENERAL REQUIREMENTS FOR LEAD

Any pipe, solder or flux used in the installation or repair of the water lines must be lead-free. Pipes and fittings must not contain more than 8.0% lead and solders and flux must not contain more than 0.2% lead.

2.30 GEOGRID SOIL REINFORCEMENT

Geogrid soil reinforcement is an artificial grid formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement. It shall be Tensar Biaxial Geogird BX1200 or approved equal.

2.31 STRUCTURAL CONCRETE

Concrete shall meet the following requirements:

	Concrete
Cement content -Minimum number of sacks (94 lb.) per cubic yard	6
Maximum water to cement ratio (gal. Water per sack cement)	5.1
Entrained air	3% - 6%
Minimum Superplasticizer content per 100 lbs. of cement	45 oz.
Minimum 7 day compressive strength	2,400 psi
Minimum 28 day compressive strength	4,000 psi

2.32 FORM WORK

Forms shall result in a final structure, which conforms to the shape, lines, and dimensions of the members as required by the plans and specifications, and shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shape. Forms and their supports shall be designed so that previously placed structure will not be damaged.

Form ties shall be so designed that when the forms are removed no metal shall be within 1-1/2 inches of the finished surface. Form ties shall have an approved type waterstop that is an integral part of the tie and made of the same material as the tie. Gang form ties shall be filled from one end with a compressible plug a minimum of 1 1/2 inches from the edge of wall shall have a bentonite plug in the center of the wall and all voids filled with non-shrink grout. Removal of forms and shores - no construction loads exceeding the dead load plus live load shall be supported on any unshored portion of the structure under construction. No construction loads shall be supported on, nor any shoring removed from, any part of the structure under construction except when that portion of the structure in combination with the remaining forming and shoring system has sufficient strength to support safely its weight and the loads placed thereon. This strength may be demonstrated by job-cured test specimens and by a structural analysis considering the proposed loads in relation to these test strengths and the strength of the forming and shoring system. Such analysis and test data shall be furnished by the contractor to the Engineer when so required. In no case shall forms for walls or columns be removed in less than 36 hours. Formwork supporting weight of concrete, such as beams and slabs shall remain until the concrete has attained a minimum of the 28-day design strength.

The design and engineering of the formwork, as well as its construction, shall be the responsibility of the Contractor. Except as specifically called for otherwise herein, all formwork shall meet the "ACI Standard Recommended Practice for Concrete Form work (ACI 347-68)".

Chamfer: Unless shown otherwise, form chamfers with 3/4" x 3/4" strips, accurately formed to produce uniformly straight lines and tight edge joints on exposed concrete. Extend terminal edges to required limit and miter chamfer strips at changes in direction. All exposed corners shall be chamfered.

2.33 REINFORCING STEEL

Reinforcing steel shall comply with ASTM A615-90.

2.34 TRAFFIC STRIPE

Materials used in placing traffic stripes shall be thermoplastic and shall comply with Georgia DOT Specification 653, latest revision.

2.35 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 unvegetative 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's produced by LANDLOK, Permanent Turf Reinforcement Mat's produced by Vmax³, or approved equivalent material and manufacturer.

2.36 SELECT BORROW

Material which excavated from borrow areas or pits outside the Project and hauled and utilized within the Project shall be Class IIB3 or better in accordance GDOT Standard Specifications. Prior to any utilization of any such material, the material source and characteristics shall be submitted to the Engineer for approval.

2.37 FLOWABLE FILL

Controlled low strength flowable fill 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, fly ash, fine aggregate, air-entraining admixtures, and water proportioned to provide low strength, self-leveling backfill material.

2.38 LOCATOR BALLS

Locator balls shall be manufactured by 3M. The model number shall be 1423-XR/iD, corresponding to the 3M EMS iD Ball Marker product.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

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.

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

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 pipeline, 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

The Contractor shall remove only such trees on or along the work as necessary, and shall carefully protect all other trees adjacent to the work. 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

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

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., are 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 LOCATION AND PROTECTION OF EXISTING UNDERGROUND UTILITIES

It is the responsibility of the Contractor to locate the underground utilities and to protect same. Utility lines or services damaged by the Contractor shall be repaired by the

Contractor at his own expense.

3.7 INTERRUPTION OF WATER SUPPLY DURING CONSTRUCTION

A minimum of 24 hours advance notice shall be given to any occupied building served by a water line which is required to be shut off. Occupants shall be informed of the date, time of cutoff and the duration of stoppage. Failure to do so will make the Contractor liable for any damages reported to the BLW's Office. For outages affecting several customers, 24 hours notice shall be prepared and given to the affected customers and must be coordinated with the BLW.

3.8 CLEAN UP

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.

If at any time during the course of the work, the clean up, 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 clean up, grassing and/or pavement replacement is caught up to the work in progress.

3.9 TRENCH EXCAVATION

Trenches shall have a minimum width of twelve (12) inches plus the diameter of the outside of the bell of the water main. The trench shall be of a depth such that the top of the water main is a minimum of 48" below grade, 48" below the edge of pavement, or 36" below the drainage ditch paralleling the road, whichever is deepest. Maximum trench width at the top of the pipe shall not be more than the outside diameter of the bell plus two feet. In cases where water lines cross sanitary sewers, there shall be a minimum of 18 inches vertical separation between the water and sewer mains. At crossings, one full length of water pipe must be located so that both joints are as far from the sanitary sewer as possible. In cases where water mains parallel sewer mains there shall be a minimum of ten (10) feet horizontal separation maintained between the mains. These distances are measured edge to edge.

Pipe trenches shall be straight and true to grade and in the location shown on the plans. Trenches shall be dug so that the pipe can be laid to the alignment and depth required, and the trench shall be of such width and shall be braced and drained so that the workmen may work therein safely and efficiently. No chocking under the pipe will be permitted. All joints shall be as specified herein. Excavation must be made under the bell of each pipe so that the entire length of the pipe will lie uniformly on the bottom of the trench and the pipe weight shall not rest on the bells. Trenches shall be free of water during the work.

All changes in grade shall be made gradually. At points of interference with storm sewers and cross drains on D.O.T. right-of-way, the pipe will be run under the conflicting utility. Where the water main crosses beneath a storm sewer, there shall be a minimum of 12" clearance between the main and the storm sewer. 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.

In laying pipe across water courses, railroad crossings, or depressions of any kind, the minimum depth here specified shall be maintained at the bottom of the depression. Railroad crossings shall be installed according to American Railway Engineering Association requirements.

No excavation shall be made under highways, streets, alleys or private property until satisfactory arrangements have been made with the State, City, County or owners of the property to be crossed. All excavated material shall be placed so as to not interfere with public travel on the streets and highways along which the lines are laid. Not more than 100 feet of trench shall be opened on any line in advance of pipe laying.

Wherever streets, roads, or driveways are cut, they shall be immediately backfilled and compacted after the pipe is laid and shall be maintained in first-class condition as passable at all times until repaved. Backfilling, compaction, dressing and clean-up shall be kept as close to the line laying crew as is practical, and negligence in this feature of the work will not be tolerated.

In excavation and backfilling and laying pipe, care must be taken not to remove or injure any water, sewer, gas or other pipes, conduits or other structures. When an obstruction is encountered, the Contractor shall notify the Owners of the obstruction to adjust same or make necessary changes in grade and/or alignment to avoid such obstruction. Any house connection, drains or other structures damaged by the Contractor shall be repaired or replaced immediately.

All excavation shall be placed on one side of the trench. Excavation materials shall be so placed as not to endanger the work and so that free access may be had at all times to all parts of the trench and to all fire hydrants or water valve boxes, etc. All shade trees, shrubs, etc., shall be protected. 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.

The Contractor shall furnish, install and maintain such sheathing, bracing, etc., as may be required to support the sides of the excavation and to prevent any movement that might injure the pipe, or cause sloughing of the street or trench, or otherwise injure or delay the work or interfere with adjoining structures.

3.10 LAYING PIPE

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.

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. 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.

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.

3.11 BACKFILLING

After the pipe has been laid, backfilling shall be done in two (2) distinct operations. In general, all backfill beneath, around and to a depth of twelve (12") inches above the top of the pipe shall be placed by hand in four (4") inch layers for the full width of the trench and thoroughly compacted by hand with vibratory equipment. The remainder of the backfill shall be placed in 6" layers and compacted to the top of the trench, either by pneumatic hand tamps, hydro-tamps, or other approved methods. Care shall be taken so that the pipe is not laterally displaced during backfilling operations. The backfill lifts shall be placed by an approved method in accordance with that hereinafter specified. Backfill materials shall be the excavated materials without bricks, stone, foreign matter or corrosive materials, where not otherwise specified on the plans.

Backfill under permanent concrete or bituminous pavement and as elsewhere specified or indicated on the plans shall be approved bank run sand or gravel or crushed stone free from large stones and containing not more than ten percent (10%) by weight of loam or clay. This backfill shall be compacted to one hundred percent (100%) as determined by the Standard Proctor test for the top two (2) feet of trench and ninety five percent (95%) by the Standard Proctor test from pipe bedding to two (2) feet below trench top. Mechanical vibrating equipment shall be used to achieve the required compaction. Pavement shall be replaced immediately after the backfilling is completed.

Backfill in unpaved areas shall be compacted with mechanical vibrating equipment to ninety-five percent (95%) as determined by the Standard Proctor Test. Backfill material from pipe bedding to ground surface by shall be excavated earth free from large stones and other debris.

Contractor shall fully restore and replace all pavement, surface structures, etc., removed or disturbed as part of the work to a condition equal to that before the work began.

Where sheeting is used in connection with the work, it is in no case to be withdrawn before the trench is sufficiently filled to prevent damage to banks, road surfaces, adjacent pipes, adjacent structures or adjacent property, public or private.

Rock in trenches shall be excavated over the horizontal limits of excavation and to depths as follows:

<u>Size of Pipeline Inches</u>	<u>Depth of Excavation Below Bottom of Pipe, Inches</u>
6	6
8 to 18	8
18 to 30	10
Over 30	12

After the pipe has been laid and all joints have been made, the trench shall be backfilled as described on the detail sheet of the construction plans for the various laying conditions. Under no circumstances shall bottom of pipe rest against rock or unyielding material. Minimum bedding of 4" carefully compacted backfill shall separate bottom of pipe from rock or unyielding material.

3.12 POLYETHYLENE ENCASUREMENT

Where polyethylene encasement is shown on plans, it shall be installed in accordance with AWWA C105, Section 4.3 "Method A" as follows:

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 1ft. overlap on each adjacent pipe section, and bunching it accordion fashion lengthwise until it clears the pipe ends.

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.

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.

Repair any rips, punctures, or other damage to the polyethylene with 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.

Cover bends, reducers, offsets, and other pipe-shaped appurtenances with polyethylene in the same manner as the pipe.

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.

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.

3.13 ROCK EXCAVATION

All material shall be considered as trench rock, which cannot be excavated with a backhoe having a bucket curling force rated at not less than 33,010 pounds (Caterpillar Model 225B or equivalent).

The Contractor shall notify the Engineer when rock is encountered. Measurement of rock will normally be made from rock profile on the trench wall after excavation. Rock in trenches shall be excavated over the horizontal limits of excavation and to depths as follows:

Size of Pipeline Inches	Depth of Excavation Below Bottom of Pipe, Inches
6	6
8 to 18	8
18 to 30	10
Over 30	12

Rock will be removed to the specified depth below normal bottom and this area below the pipe will be backfilled with select material.

All material shall be considered as casing rock, which cannot be excavated by normal boring operations including the use of a rocking head and requires blasting. Measurement of rock volume requiring blasting will normally be made based upon area of casing times actual length of casing installed in rock. Contractor shall notify engineer when casing rock is encountered.

Rock excavation by blasting shall be at least 75 feet in advance of pipe laying.

Before blasting, the Contractor shall cover the excavation with heavy timbers and mats in such manner as to protect the adjacent property Owners from damage. The Contractor will be held responsible for all damage done.

3.14 THRUST RESTRAINT

3.14.1 GENERAL

At changes in direction of the main and at other points shown on the plans 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.

3.14.2 RESTRAINED JOINTS

Where restrained joint are called for on the construction plans, they shall be of the type specified and shown on drawings, and assembly shall be in accordance

with manufacturer recommendations.

3.14.3 CONCRETE BLOCKING

The Engineer shall be notified by the Contractor before blocking is placed. Blocking will be of the dimensions called for on the construction plans and will be placed against a vertical surface of undisturbed soil that has been cleared of all loose material.

3.14.4 REINFORCED CONCRETE COLLARS

Reinforced concrete collars shall be cast in place as shown on detailed plans and as specified in ACI 318-83.

3.15 LEAKAGE TEST

3.15.1 PRESSURIZATION

After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure of 1.5 times the working pressure at the point of testing. Each valved section of pipe shall be slowly filled with water, and the specified test pressure, based on the elevation of the lowest point of the line or section under test 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.

3.15.2 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 points, 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.

3.15.3 LEAKAGE DEFINED

Leakage shall be defined as the quantity of water that must be supplied into the newly laid 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.

3.15.4 ALLOWABLE LEAKAGE

No pipe installation will be accepted if the leakage is greater than 15 gallons per day per inch diameter per mile of pipeline. This rate is shown in the following

table:

ALLOWABLE LEAKAGE PER 1,000 FEET OF PIPELINE
(Based on 15gpd/in/mile)

Pipe Diameter (inches)	Allowed Leakage Per Day (Gallons)	Allowed Leakage Per Hour (Gallons)
6	17.0	0.71
8	22.7	0.95
10	28.4	1.18
12	34.1	1.42
14	39.8	1.66
16	45.5	1.89
20	56.8	2.37
24	68.2	2.84
30	85.2	3.55
36	102.3	4.26
42	119.3	4.97
48	136.4	5.68
54	153.4	6.39
60	170.5	7.10

3.15.5 TEST RESTRICTIONS

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.

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 is desired.

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.

3.16 DISINFECTION

After leakage testing, and all necessary repairs have been made, the lines shall be flushed clean and then disinfected in strict accordance with AWWA Standard For Disinfecting Water Mains, C651-92, subject to the following special conditions:

3.16.1 The method of disinfection shall be either the Continuous-Feed Method or the Slug Method. The Tablet Method is not acceptable.

- 3.16.2 The form of chlorine may be either: (1) a 1 percent solution made from either sodium hypochlorite or calcium hypochlorite and pumped and metered into the pipeline; or (2) liquid chlorine fed from a pressurized cylinder through a gas-flow chlorinator and metered into the pipeline. With either form, 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.
- 3.16.3 The Contractor shall provide a written record of free chlorine residual in the pipeline at the beginning of the chlorination period and at the end of the chlorination period. If the free chlorine residual is below the minimum value required by the appropriate test method, the pipeline shall be rechlorinated.
- 3.16.4 All flushing, disinfection, sampling and dechlorination work must be witnessed by an authorized representative of the Owner.
- 3.16.5 Unless otherwise approved by the Owner, Contractor shall dechlorinate the highly chlorinated water being flushed from the pipeline.
- 3.16.6 The Owner shall be responsible for bacteriological sampling and testing water from the disinfected pipeline.
- 3.16.7 Before any flushing or disinfection work is begun, the Contractor shall outline his planned procedures for these tasks in writing, and obtain approval of the Owner prior to the commencing with the work.
- 3.16.8 If bacteriological testing shows the presence of coliform bacteria, then the Engineer may require additional testing to be performed until two consecutive samples are negative or require additional flushing and disinfection of the water main as required to obtain the two consecutive negative bacteriological samples.

3.17 DECHLORINATION

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 neutralizing chemical shall be applied to the water to be wasted to neutralize thoroughly the chlorine residual remaining in the water.

The chlorine residual of water being disposed may be neutralized by treating the water with one of the chemicals listed in the table below:

Residual Chlorine Concentration mg/L	Chemical Required			
	Sulfur Dioxide (SO ₂) lb (kg)	Sodium Bisulfite (NaHSO ₃) lb (kg)	Sodium Sulfite (Na ₂ SO ₃) lb (kg)	Sodium Thiosulfate (Na ₂ S ₂ O ₃ ·5H ₂ O) lb (kg)

1	0.8	(.36)	1.2	(.54)	1.4	(.64)	1.2	(.54)
2	1.7	(.77)	2.5	(1.13)	2.9	(1.32)	2.4	(1.09)
10	8.3	(3.76)	12.5	(5.67)	14.6	(6.62)	12.0	(5.44)
50	41.7	(18.91)	62.6	(28.39)	73.0	(33.11)	60.0	(27.22)

Amounts of chemicals required to neutralize various residual chlorine concentrations in 100,000 gal (378.5 m3) of water.

3.18 CONNECTION TO EXISTING WATER MAINS

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, size, 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.

Where existing pipe is to be abandoned, the Contractor shall plug the opening by pouring concrete in and around the opening as needed to completely seal the opening.

3.19 SETTING VALVES

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.

3.20 MARKING LOCATION OF VALVES

Each main line water valve shall be marked by cutting a letter "V" in the curb. The "V" shall be turned to point toward the valve. The letter height shall be 6".

Concrete valve markers shall be set for main line water valves with 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.

3.21 AIR AND VACUUM ASSEMBLIES

Air and vacuum relief valve assemblies shall be constructed strictly in accordance with the details shown on the plans.

3.22 INSTALLATION OF SOLID SLEEVES

Spacer rings must be used with all solid sleeves and no exceptions will be allowed. The

maximum clearance allowed will be ¼".

3.23 FLANGED OUTLETS

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 either a mechanical tapping machine or by use of a cutting torch.

3.24 RETAINER GLANDS

When installing the retainer gland, clean the inside of the pipe bell and lubricate both the 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 on 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. Tighten the twist-off bolts per manufacturer's recommendation. Should removal of this application be necessary, this should be done in accordance with manufacturer's recommendation.

3.25 SPECIALS AND FITTINGS

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.

3.26 SETTING FIRE HYDRANTS

Fire hydrants shall be placed at the locations shown on the plans. Gate valves for fire hydrants shall be connected directly to the main by means of a "Locked Hydrant Tee". All other connections between the main and the fire hydrant shall be mechanical joint. Fittings shall be restrained by a "Locked Hydrant Adapter" whenever the fire hydrant is located close enough to the main to allow its use. Not less than four cubic feet of No.5 or No.57 stone shall be placed around the base of the hydrants, as shown in the Standard Detail 401.02. Before placing the hydrants, care shall be taken to see that all foreign material is removed from within the body. The stuffing boxes shall be tightened and the hydrant valve opened and closed to see that all parts are in first class working condition. All hydrant openings shall be kept capped, except when hydrant is being worked on.

When a fire hydrant has been constructed but is not yet in service, the Contractor shall provide and attach to the fire hydrant, flags or collars indicating that the fire hydrant is not in service. Said flags or collars shall remain on the fire hydrant until it is put into service. Whenever an existing fire hydrant is taken out of service, whether temporarily or permanently, it shall be equipped with a flag or collar indicating that it is not in service. The Contractor shall provide and install flags or collars as required and shall notify the

Fire Department whenever the operating status of any fire hydrant changes.

FIRE HYDRANTS SHALL NOT BE OPERATED WITH ANY TOOL EXCEPT A SPECIFICALLY DESIGNED FIRE HYDRANT WRENCH. If the Contractor observes any other contractor or person operating a fire hydrant with an unapproved fire hydrant wrench, he shall report that fact to the BLW immediately. It is the Contractors responsibility to insure that all new facilities are maintained in new condition until final completion of the project and acceptance by the BLW. Fire hydrants with damaged operating nuts shall not be accepted.

3.27 HIGHWAY AND RAILROAD CROSSINGS

Where the lines cross railroads and/or highways under the jurisdiction of the State Highway Department, or railroad, the Owner will obtain written permission from the controlling authority before any work can be done within the right-of-way. After the Owner notifies the Contractor that the permit or permits have been obtained, the Contractor shall coordinate his activities and construction procedure with the proper authority of the Railroad or the Highway Department and shall conform with the requirements thereof. The Contractor will be required to furnish a release from the said controlling authority before final acceptance of the work. The Contractor will be responsible for all damage and injuries to persons and property inflicted or caused by said work.

3.28 PLACING OF STEEL CASING PIPE

Steel Casing pipe shall be installed by the "Jack and Bore" procedure or the "Open-Cut" method. Steel casing pipe shall be installed at the specific locations called for on the plan sheets and the installation method shall be by the "Jack and Bore" procedure unless specifically stated to be installed by the "Open-Cut" method.

The "Jack and Bore" installation procedure shall be by the dry-bore method. The hole is to be mechanically bored and cased through the soil by a cutting head on a continuous auger mounted inside the casing pipe. The installation of the casing and boring of the hole shall be done simultaneously by jacking. Lengths of pipe are to be continuously welded the full circumference of the pipe diameter to the preceding section installed. Excavation material will be removed and placed at the top of the working pit. Backfill materials and methods of backfilling and tamping shall be as required under BACKFILLING. Bores, 250' and less in length, shall be installed by means of mechanical steering with water level guiding device. The casing shall be installed to within 3" +/- of the horizontal and vertical alignment shown on the Contract Drawings. Bores, greater than 250' in length, shall be installed by means of a laser-guided borehead with hydraulic steering. The bores shall be installed to within 3" +/- of the horizontal and vertical alignment shown on the Contract Drawings.

The "Open-Cut" method consists simply of excavating the trench along the pipeline route and placing the steel casing in the trench. Special care shall be taken not to damage any existing utilities as the sections of casing are maneuvered into the open trench. Lengths of pipe are to be continuously welded the full circumference of the pipe diameter to the adjacent sections. Backfill materials and methods of backfilling and tamping shall be as required under BACKFILLING.

Casing insulators shall be used while installing the water main inside the casing. Insulators shall be located within 2' of each end of the casing and spaced no more than 10' apart within the casing. After the water main is installed in the casing, a check shall be made to ensure that the carrier pipe is not touching the casing at any point. The ends of the casing pipe shall be sealed with a three course mortared brick wall, one course of which shall be erected inside the casing.

All bores shown shall be installed at the locations shown. The Contractor is required to examine the soil exploration information provided as an appendix to these Contract Documents. Prior to installation of the steel casing pipe, the contractor shall dig exploratory test holes to determine any soil condition different than shown on Contract Drawings or indicated by the soil exploration information. Payment for this work and all exploration work shall be included in price bid per linear foot of steel casing pipe.

In the event of a changed soil condition, the Engineer shall be notified.

3.29 BORE PITS

Bore pits for cased bores and uncased bores shall be constructed as to avoid conflicts with the existing utilities and remain in the limits of the construction area. The contractor shall take necessary precautions in order to insure the pit meets the latest requirements under the Cobb County Trench Safety Ordinance and O.S.H.A. requirements imposed on such work.

3.30 REMOVE & DISPOSE OF EXISTING APPURTENANCES

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 to match the existing landscaping.

3.31 REMOVING AND REPLACING PAVEMENT

3.31.1 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.

3.31.2 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.

3.31.3 BITUMINOUS PAVEMENT

Bituminous pavement shall be replaced with concrete base as shown on drawings and 2" of asphaltic concrete topping. Edges of cut pavement saw cut

and shall be neatly squared off. Then the base and edges shall be primed with a tack coat of AC15 or equal, applied at the rate of 0.25 gallons per square yard prior to placement of asphalt topping. Extreme care shall be executed to assure that the squared edges of existing pavement will not be broken or disturbed during rolling of 2" asphalt topping.

3.31.4 MILLING AND PAVEMENT OVERLAY

The existing pavement shall be milled to a depth of 2" and a pavement overlay, 2" thick shall be placed. The Pavement Overlay shall be Type E asphalt as approved by the Georgia Department of Transportation.

3.32 REMOVE & REPLACE CONCRETE CURB AND GUTTER

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.

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.

Concrete materials, placement and protection shall be in accordance with ACI 318 specifications.

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.

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.

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.

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.

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.

In cases where new replaced curb is joined to old curb, the old curb shall be squared off to provide a straight construction joint.

3.33 REMOVE & REPLACE CONCRETE SIDEWALK

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 p.s.i. compressive strength at 28 days of age. Sidewalks shall be replaced to the original width and thickness or a minimum of 4" thick. The sidewalks shall have a broom finish. All instructions in Placing of Concrete in these specifications shall be adhered to.

3.34 REMOVE & REPLACE CULVERTS (ALL SIZES & TYPES)

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.

3.35 REPLACING GRAVEL DRIVEWAYS

Gravel driveways will be replaced at locations shown on the plans. Gravel shall be GAB stone and shall be placed 6" deep

3.36 REPAIR OF SEPTIC TANK DRAIN FIELDS

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.

3.37 PAINTING TRAFFIC STRIPE

The painting of traffic stripes shall comply with the requirements of Georgia DOT Specification Section 652, latest revision.

3.38 INSTALLING EROSION CONTROL MATS

Erosion control mats for slopes and waterways shall be installed in accordance with detailed instructions on the Contract Drawings and manufacturer's instructions.

3.39 GRASSING

All areas outside structures and along pipelines where the earth is disturbed shall be grassed. After the soil has been properly prepared, the seed shall be planted. After the seeds have been planted, the moisture content of the soil shall be maintained at the optimum amount to insure germination of the seed and growth of the grass.

Immediately after the initial watering of seeded areas, the contractor shall apply a mat of hay or rye, wheat or oat straw over the area at a uniform rate of not less than 1-1/2 ton of mat to the acre. The minimum depth of the straw shall be 2 inches and the maximum depth 3 inches. After placing mat or hay or straw, emulsified asphalt shall be sprayed over the mat at a uniform rate of 0.15 gallon per square yard. After the grass has shown a satisfactory growth (approximately 30 days after planting), nitrate of soda shall be applied at a uniform rate of 100 pounds per acre, followed by sufficient water to dissolve the fertilizer.

The Contractor shall do all maintenance work necessary to keep all planted areas in satisfactory condition until the work is finally accepted. This shall include mowing, repairing washes that occur, reseeding, and water as required to produce a healthy and growing stand of grass. Mowing will be required to remove tall and obnoxious weeds before they go to seed.

It is the intent of these specifications to produce a stand of grass that is alive and growing, without any bare spots larger than one square foot. The Contractor shall repeat all work, including plowing, fertilizing, watering, and seeding as necessary to produce a satisfactory stand.

****END OF SECTION****

SECTION 15241
CORROSION CONTROL - DUCTILE IRON PIPING

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Scope of WORK: This SPECIFICATION pertains to the implementation of a corrosion mitigation system for the new ductile iron water mains. The proposed system shall include, but not be limited to, test stations, galvanic anodes, corrosion monitoring probes, testing and all associated cable hardware required to complete the installation, as well as site cleanup and surface restoration. These measures are to be implemented to enhance the coatings and wraps addressed elsewhere in the SPECIFICATIONS.

1.02 APPLICABLE PUBLICATIONS:

The publications listed below form a part of this SPECIFICATION to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

ANSI B1.1	1974 Unified Screw Threads
ANSI B2.1	1968 Pipe Threads (Except Dryseal)
ANSI B16.5	1977 Steel Pipe Flanges, Flanged Valves and Fittings Including Ratings for Class 150, 300, 400, 600, 900, 1500 and 2500
ANSI B18.2.1	1972 Square and Hex Bolts and Screws, Including Askew Heads Bolts, Hex Cap Screws, and Lag Screws
ANSI B18.2.2	Square and Hex Nuts
ANSI C2	1977 National Electrical Safety Code

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A194	1978 Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
ASTM A307	1976 Carbon Steel Externally and Internally Threaded Standard Fasteners
ASTM C94	1978 Ready-Mixed Concrete

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA ICS3	1983 (Rev. 1985) Industrial Systems
NEMA MR20	1958 (Rev. 1976) Cathodic Protection Units

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	1978 National Electrical Code
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UNDERWRITER'S LABORATORIES, INC. (UL)

UL 6	1976 Rigid Metallic Conduit
UL 44	1977 (Rev. 1978) Rubber-Insulated Wires and Cables
UL 83	1975 (Rev. 1977) Thermoplastic-Insulated Wires
UL 467	1972 (Rev. 1978) Bonding and Grounding Equipment
UL 486	1976 (Rev. 1977) Wire Connectors and Soldering Lugs for Use with Copper Conductors
UL 510	1976 Insulating Tape

1.03 GENERAL:

This SPECIFICATION shall include all construction labor, equipment, supervision and engineering to ensure the bonding and corrosion protection components are installed properly and in accordance with these SPECIFICATIONS and associated layout DRAWINGS. The CONTRACTOR shall be completely responsible for workmanship and the satisfactory performance of the components furnished.

The CONTRACTOR may propose modifications upon review of the project SPECIFICATIONS and site verifications. These changes shall be limited to

component installation locations and will only be considered if documented that they will result in benefits to the OWNER. Any proposed modification must be fully described and submitted by the CONTRACTOR and approved by the ENGINEER. Modifications or additional materials shall be at no additional cost to the OWNER. Any modifications shall incorporate all requirements of this SPECIFICATION.

- A. Verification of Site Conditions: The CONTRACTOR shall coordinate and properly relate this WORK to the site and to the WORK of all trades. The general locations of the pipeline is shown on the DRAWINGS. However, the CONTRACTOR shall visit the premises and thoroughly familiarize himself with all details of the WORK and working conditions, verify existing conditions in the field, determine the exact locations of existing lines and structures, and advise the ENGINEER of any discrepancy that may prevent or hinder the specified WORK from being completed. The CONTRACTOR shall be solely responsible for locating and marking underground structures so as to avoid their damage during construction.
- B. System Arrangement: The DRAWINGS indicate the locations of the corrosion protection system components to be installed.
- C. Material Storage: The CONTRACTOR shall be solely responsible for securing stored on-site materials.

1.04 SUBMITTALS:

Submit the following information for approval:

- A. Bill of Materials: Prepare a bill of materials indicating quantities, detailed descriptions and SUPPLIER.
- B. Catalog Cuts:
 - 1. Test Leads
 - 2. Test Stations
 - 3. Exothermic Welds
 - 4. Backfill Shields
 - 6. Flange Isolation Kits

PART 2 - PRODUCTS

2.01 CAST ANODES: (not used)

2.02 TEST LEAD WIRE:

No. 10 AWG stranded copper with RHW-USE or HMWPE insulation, black in color for connection to new pipeline.

2.03 CALIBRATED SHUNTS: (not used)

2.04 BOND CABLE:

No. 4 AWG stranded copper with HMWPE insulation, black in color, 18 inches in length. Two (2) bond cables per pipe joint whether mechanical or slip. No bare copper straps are allowed.

2.05 INSULATED FLANGE SETS:

Sets shall include full-face gaskets, double insulated sleeves and washers, and steel washers. The gaskets shall be suitable for exposure to potable water under a maximum operating pressure of 150 psi. Gasket materials shall comply with the requirements set forth in SPECIFICATION Section 15245.

If no specific material SPECIFICATIONS are provided in Section 15245, the kits shall consist of: Gasket material shall be one (1) piece G10 phenolic resin with a square shouldered nitrile seal. Sleeves and washers shall be manufactured of G-10 pyrox.

2.06 TEST STATIONS:

- A. Pad mount: Cast Iron head, minimum five (5) terminal, "Cathodic Protection - Test" cast in cover, 4" diameter, min. CP Test Series, or equal.
- B. Test Station Label: Provide a 1 inch wide by 2 inch long 316 stainless steel tag. This tag shall have the test station number and associated structure stamped into the metal. Attach tag to terminal board inside test station.
- C. Exterior Label: Self adhesive label, blue in color printed "Caution Buried Water Pipeline, Cobb County-Marietta Water Authority (770) 514-5300".

2.07 PIPELINE CABLE CONNECTION:

Exothermic weld type suitable for attaching copper wire to large pipelines. For cast iron or ductile iron use special XF-19 type weld charges, or as recommended by manufacturer.

2.08 EXOTHERMIC WELD COATING:

Non-metallic, elastomer filled shield.

2.09 CORROSION PROBE: (not used)

2.10 CONCRETE:

3,000 psi concrete conforming to ASTM C94 cast in place, for test station footings.

PART 3 - INSTALLATION

3.01 PIPELINE ANODES: (not used)

3.02 TEST LEAD CONNECTION:

- A. Coating materials shall be removed from the pipe surface over an area just sufficient to make the connection. The steel surface shall be cleaned to white metal with a ceramic grinding wheel, rasp, or coarse file prior to welding the conductor. Use of resin impregnated wheels or discs will not be permitted. The conductor shall be welded to the pipeline by the exothermic process with only sufficient insulation removed from the conductor to allow placement in the welding mold. After the weld has cooled, all slag shall be removed, and the weld shall be tested with a sharp hammer blow to assure a proper metallurgical bond. All defective welds shall be removed and replaced. All exposed surfaces of copper and steel shall be covered with a bitumastic filled shield encapsulating the connection.
- B. Trench cables to a depth of 24 inches. Carefully lay structure wire in bottom of trench, ensuring the cable does not rest on sharp edges and is free of kinks. Connect the lead wires to the test station terminals and backfill.

3.03 TEST STATIONS:

- A. Install test stations directly over the pipe and provide a concrete footing as shown on the DRAWINGS. Terminate test leads and calibrated shunts as indicated. Install test station labels.
- B. Extreme care must be taken to avoid damaging lead wires.

3.04 INSULATING FLANGES:

- A. Install insulating flange sets at the indicated locations. Ensure all dielectric components are in place before bolting flange together. Use a synchronized tightening pattern to ensure even compression of the gasket.
- B. All flanges are to be tested to ensure they are isolated before burial. Testing should be performed using a isolation tester under the supervision of a corrosion professional.

PART 4 - TESTS

All field tests shall be witnessed by the ENGINEER or his representative. Advise the ENGINEER at least 5 days prior to conducting final test.

4.01 BONDING:

The evaluation of the pipe bonds shall be conducted by the CONTRACTOR on all sections of bonded ductile iron and carbon steel pipeline. The tests are not required for welded joints. The tests shall be conducted using a portable rectifier, 600 feet of #8 AWG/RHW-USE current carrying lead, 600 feet of #22 AWG/PVC test wire, a voltmeter, and the test leads provided within the test stations. The tests shall be conducted between consecutive test stations to evaluate the pipe bonds.

Using the #8 AWG Cable, connect the portable test rectifier in circuit with the pipe. Attach the #8 AWG cable to one of the lead wires within each test station. Then connect the test wire to the free test station lead wires with a voltmeter in circuit.

Once the test leads are connected, energize the rectifier and adjust the current output to 25 amperes. Measure and record the voltage drop between test stations with the current applied. Calculate the pipeline resistance by dividing the voltage drop by the current applied. The maximum allowable resistance between test stations is computed as follows:

$$R = (1.5)[(r) (L) (OD^2-ID^2) + (NJ)(0.00026)]$$

where:

- R = the maximum allowable resistance for test section.
- r = electrical resistance of iron or steel.
- L = total length of pipe tested.
- OD = outside diameter of pipe.
- ID = inside diameter of pipe.
- NJ = number of bonded joints in test section.

Any sections of pipe exhibiting a resistance higher than this level are assumed to

have a high resistance or missing bond cable. Locate and repair the damaged or missing bond.

The results of each resistance test shall be recorded and submitted for review by the ENGINEER. Record the test station numbers and stationing for each test. Incorporate the resistance test data in the final report on the corrosion monitoring system.

4.02 CORROSION MONITORING SYSTEM: (not used)

4.03 MANUFACTURER'S DATA:

The CONTRACTOR shall furnish seven copies of the SUPPLIER'S data for all related equipment. The data shall include descriptions of the equipment, wiring diagrams where applicable, operating and maintenance instructions, AS-BUILT DRAWINGS giving test station locations and spare parts data including source of supply.

****END OF SECTION****

SECTION 15250
CORROSION WRAP COATING

PART 1 GENERAL

1.01 SCOPE

This Section specifies the CORROSION WRAP COATING to be applied to Ductile Iron pipe, Ductile Iron fittings, and valves.

1.02 FUNCTION

The corrosion wrap coating and associated products shall completely seal the Ductile Iron pipe, fittings, and valves from external corrosion influences. The material shall be an inert visco-elastic material suitable for field application.

1.03 GENERAL

- A. Store and handle all materials in accordance with manufacturer's instructions.
- B. Applied material in accordance with manufacturer's instruction.
- C. Provide manufacturer's training to all workers who apply the Corrosion Wrap Coating and associated products to Ductile Iron Pipe and associated appurtenances.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Corrosion Wrap Coating: STOPAQ B.V. owned by Berry CPG.

2.02 PRODUCTS

- A. Polyken Single Wrap
 - 1. Base Material: Polyken VE Wrap Primer is a cold-applied, non-cross-linked, non-crystalline, monolithic viscous polymer based coating with cold flow, self-healing, visco-elastic properties. The material is fully resistant to water and has a very low gas- and water permeability.
 - 2. Mechanical Protection Coating: Polykin HSP shall be bonded to the base material and provide mechanical protection from damage to the coating.
- B. STOPAQ CZH: This paste is a moldable product for corrosion protection of below and aboveground (insulation) flanges and accessories.
- C. STOPAQ OUTERWRAP PV: This a mechanical protection layer to provide physical protection over paste.

PART 3 EXECUTION

3.01 INSTALLATION OF CORROSION PROTECTION

- A. Surface Preparation Standards: Clean surfaces to SSPC.SP2/3 standard. Remove all rust scale, mill scale, loose paint, dirt, and rust.

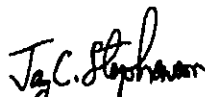
- B. Pipe Coating Installation: Apply in accordance the manufacturer's instruction with a minimum of 10% overlap.
- C. Pipe Joints: Protect all pipe joints with inertia filler so that joints are protected during of corrosion protection.
- D. Appurtenances: Apply paste and outerwrap for all valves, joints, and appurtenances that cannot adequately protected by corrosion wrap.

END OF SECTION

C-O-P-Y

Do not return to
Easement Files

Deed Book 13538 Pg 4399
Filed and Recorded May-20-2002 12:14pm
2002-009926
Real Estate Transfer Tax \$0.00



Jay C. Stephenson
Clerk of Superior Court Cobb Cty. Ga.

Return To: Gary F. Eubanks
Smith, Eubanks, Smith & Tumlin, P.C.
P.O. Box 1186
Marietta, GA 30061

5/18

EASEMENT INSTRUMENT

STATE OF GEORGIA
COUNTY OF COBB

This grant of easement made this 8th day of January, 2001, from MARIETTA LEXUS AUTO REALTY, INC. (hereinafter collectively called "Grantor"), as Party or Parties of the First Part whether one or more, to COBB COUNTY-MARIETTA WATER AUTHORITY, a political subdivision of the State of Georgia and the MARIETTA BOARD OF LIGHTS AND WATERWORKS, as Parties of the Second Part (hereinafter collectively called "Grantee").

WITNESSETH, that Grantor 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, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell and convey unto Grantee easements and right-of-way over, through, across and under the property of Grantor more particularly described as follows:

Parcel 55

A permanent easement approximately 405 feet in length along a strip of land in Land Lot 641 of the 17th District, 2nd Section, Cobb County, Georgia more particularly described on Easement Drawing No. 55 for Project No. 97-437, prepared by Welker & Associates, Inc., dated February, 2001, revised 7/26/01, attached hereto as Exhibit A and made a part hereof.

Said permanent easement is at all points adjacent to and northeasterly of the northeastern right-of-way boundary of U. S. Highway 41, commences at Station 186 + 59.22 extends in a southeasterly direction and ends at the northwestern right-of-way boundary of Franklin Drive a/k/a Franklin Road at Station 190 + 71.89. Said permanent easement has a uniform width 6 feet.

A temporary construction easement approximately 426 feet in length along a strip of land in Land Lot 641 of the 17th District, 2nd Section, Cobb County, Georgia more particularly described on Easement Drawing No. 55 for Project No. 97-437, prepared by Welker & Associates, Inc., dated February, 2001, revised 7/26/01, attached hereto as Exhibit A and made a part hereof. Said temporary construction easement is generally adjacent to and northeasterly of the permanent easement described immediately above, commences at Station 186 + 43.57, extends in a southeasterly direction and ends at the northwestern right-of-way boundary of Franklin Road a/k/a Franklin Drive at Station 190 + 69.21. Said temporary construction easement has a uniform width of 15 feet.

Parcel 56

A permanent easement approximately 84 feet in length along a strip of land in Land Lot 641 of the 17th District, 2nd Section, Cobb County, Georgia more particularly described on



Easement Drawing No. 56 for Project No. 97-437, prepared by Welker & Associates, Inc., dated February, 2001, revised 7/26/01, attached hereto as Exhibit A and made a part hereof. Said permanent easement is at all points adjacent to and northeasterly of the northeastern right-of-way boundary of U. S. Highway 41, commences at the southeastern right-of-way boundary of Franklin Drive a/k/a Franklin Road at Station 191 + 14.30, extends in a southeasterly direction and ends at the southeastern property line of the property now or formerly owned by Marietta Lexus Auto Realty, Inc., at Station 197 + 97.99. Between Station 191 + 14.30 and Station 191 + 26.62 said permanent easement tapers between a width of 0 feet and a width of 28 feet, having a width of 28 feet at Station 191 + 26.62. Between Station 191 + 26.62 and its end point at Station 191 + 97.99 said permanent easement has a uniform width of 28 feet.

A temporary construction easement approximately 90 feet in length along a strip of land in Land Lot 641 of the 17th District, 2nd Section, Cobb County, Georgia more particularly described on Easement Drawing No. 56 for Project No. 97-437, prepared by Welker & Associates, Inc., dated February, 2001, revised 7/26/01, attached hereto as Exhibit A and made a part hereof. Said temporary construction easement is at all points adjacent to and northeasterly of the permanent easement described immediately above, commences at the southeastern right-of-way boundary of Franklin Drive a/k/a Franklin Road at Station 191 + 07.66, extends in a southeasterly direction and ends at the southeastern property line of the property now or formerly owned by Marietta Lexus Auto Realty, Inc., at Station 191 + 97.99. Between Station 191 + 07.66 and Station 191 + 14.30 said temporary construction easement tapers between a width of 0 feet and a width of 15 feet, having a width of 15 feet at Station 191 + 14.30. Between Station 191 + 14.30 and its end point at Station 191 + 97.99 said temporary construction easement has a uniform width of 15 feet.

together with the right of unimpaired access between said easements and U. S. Highway 41.

Said temporary construction easement shall automatically terminate upon the completion of the construction of the initial 36" water transmission line and the initial 16" water distribution line to be installed by Grantee along said permanent easement. Said construction shall be deemed to be completed one year from the date of Grantee's acceptance of said lines from their contractor. Said permanent easement shall be perpetual.

The easements 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 above 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 either Grantee may see fit, with all the rights, members and appurtenances to said easements and right-of-way in any wise appertaining to or belonging. Either Grantee shall also have the right to maintain said permanent easement strip clear of trees, undergrowth and brush in the event that Grantor or Grantor's assigns fail to do so.

Grantor covenant 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 right-of-way strip unless authorized in writing by each Grantee. Grantor agrees to leave each 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, its heirs, successors and assigns. After a water line has been installed, Grantee shall not be liable for damages caused on the right-of-way by keeping said permanent right-of-way clear of trees, undergrowth, brush, buildings, structures, engineering work and obstructions in the exercise of its rights granted herein.

After any construction by either Grantee, such 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 which are permitted by Grantee pursuant to the preceding paragraph, excepting trees and other deep rooted vegetation; except for a flushpipe having a diameter of 8" or less at any low point, any markers and any ground level 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

INITIALS


of construction thereof, be buried to such depth as will not interfere with Grantor's subsequent use of said property for normal parking lot or landscaping purposes.

This Easement Instrument is expressly contingent upon the following: (1) as to Parcel 55 that non-emergency construction or maintenance activities of Grantee may only obstruct one half of driveway at a time, and each Grantee will make its best effort to obstruct Grantor's main entrances only on Sundays or at times other than the previously established regularly scheduled hours of operation of Grantor's business located adjacent to said Parcel 55; and (2) as to Parcel 56 that each Grantee shall make its best effort not to block Grantor's Franklin Drive entrance while performing any work upon the above described parcel during the previously established regularly scheduled hours of operation of Grantor's business located adjacent to said Parcel 56.

Delay of Grantee in the use or exercise of any right or easement hereby granted, or in laying or installing the first water line or additional lines in or along said right-of-way, shall not result in the 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 whole or in part. The terms, covenants and provisions of this 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, easements, estate and privileges over, in, through and to the above-described land unto the said Grantee, their successors and assigns forever. Grantor does hereby covenant with Grantee that Grantor is lawfully seized and possessed of the real estate above described, that Grantor has a good and lawful right to convey it, or any part thereof, that it is free from all encumbrances except the following security instruments from Marietta Lexus Auto Realty, Inc. to Comerica Bank dated 11/5/99: (a) Deed to Secure Debt recorded at Deed Book 13062, page 6, Cobb County, Georgia Records, securing an original principal obligation of \$10,500,000.00; (b) Assignment of Lessors interest in Leases recorded at Deed Book 13062, page 32, Cobb County, Georgia Records; (c) UCC-2 recorded at Deed Book 13062, page 40, Cobb County, Georgia Records; and that Grantor will forever warrant and defend the title thereto against the lawful claims of all persons whomsoever unto said Grantee, their successors and assigns.

IN WITNESS WHEREOF, Grantor has hereunto set its hand and affixed its, seal the day and year first above written.

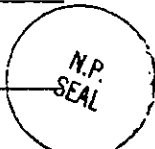
Signed, sealed and delivered
in the presence of:

Marietta Lexus Auto Realty, Inc.

Sheila J. Moonshower
Witness

By: *[Signature]*
its President

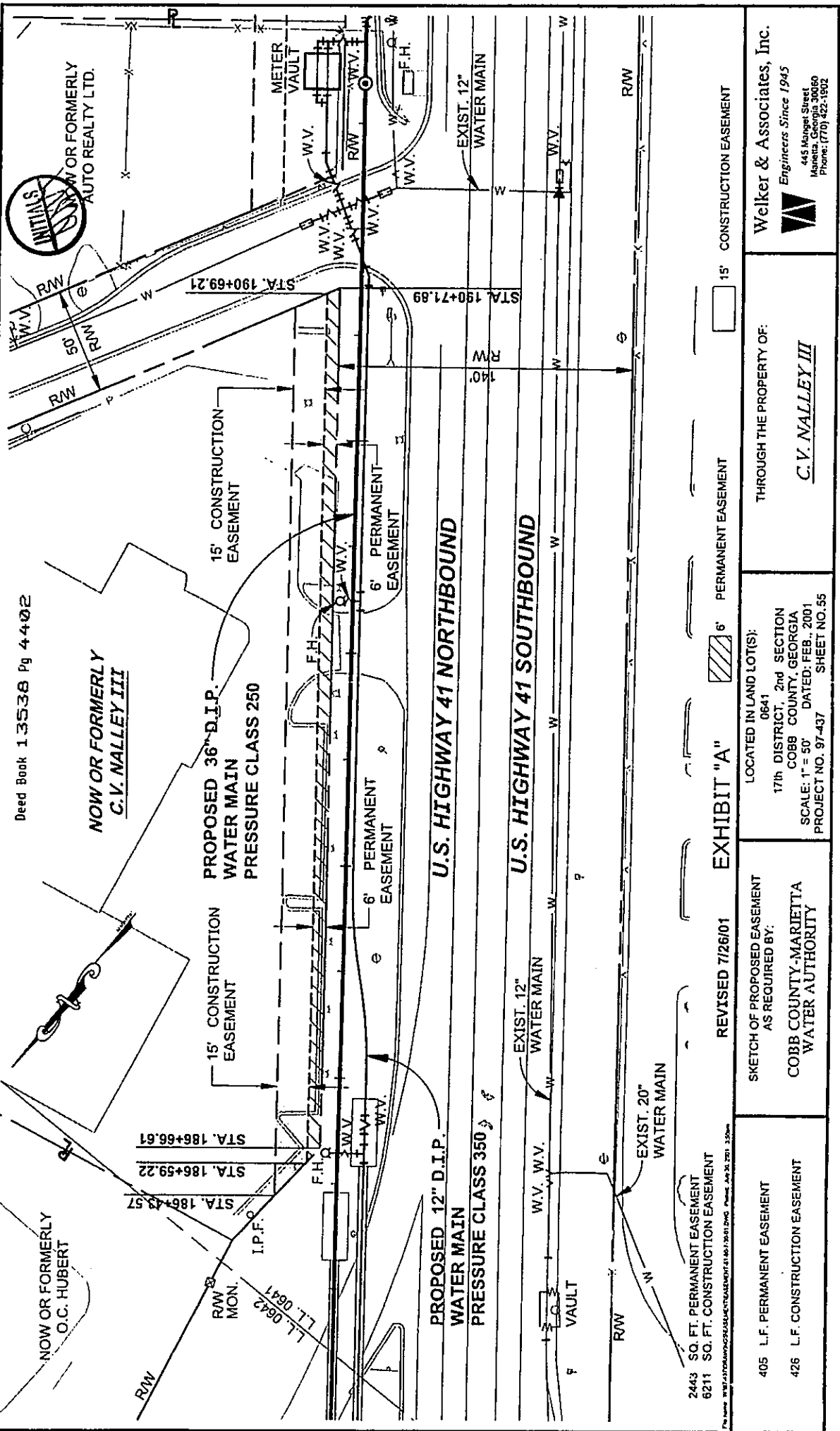
[Signature]
Notary Public



Attest: *[Signature]*
its Asst. Sec.

My Commission Expires: Notary Public, Cobb County, Georgia
My Commission Expires July 18, 2007

Deed Book 1.3538 Pg 4402



2443 SQ. FT. PERMANENT EASEMENT
 6211 SQ. FT. CONSTRUCTION EASEMENT

15' CONSTRUCTION EASEMENT

PERMANENT EASEMENT

6'

EXHIBIT "A"

REVISED 7/26/01

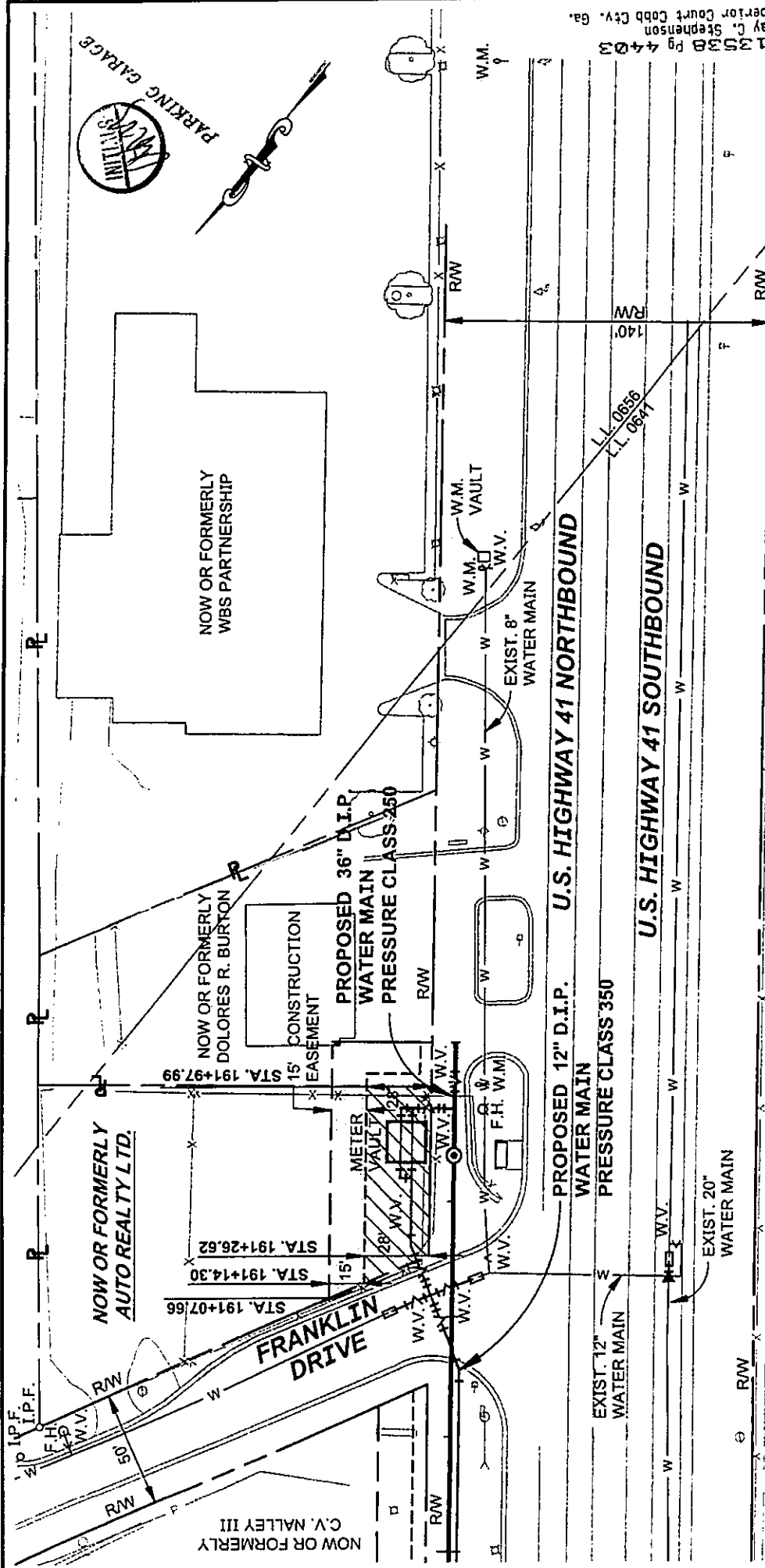
SKETCH OF PROPOSED EASEMENT AS REQUIRED BY:
 COBB COUNTY-MARIETTA WATER AUTHORITY

405 L.F. PERMANENT EASEMENT
 426 L.F. CONSTRUCTION EASEMENT

LOCATED IN LAND LOT(S):
 0641
 17th DISTRICT, 2nd SECTION
 COBB COUNTY, GEORGIA
 SCALE: 1" = 50' DATED: FEB., 2001
 PROJECT NO. 97-437 SHEET NO.55

THROUGH THE PROPERTY OF:
C.V. NALLEY III

Welker & Associates, Inc.
 Engineers Since 1945
 445 Market Street
 Marietta, GA 30060
 Phone: (770) 422-1902



<p>2157 SQ. FT. PERMANENT EASEMENT 1305 SQ. FT. CONSTRUCTION EASEMENT</p>	<p>REVISED 7/26/01</p>	<p>EXHIBIT "A"</p>	<p>28' PERMANENT EASEMENT</p>	<p>15' CONSTRUCTION EASEMENT</p>
<p>84 L.F. PERMANENT EASEMENT 90 L.F. CONSTRUCTION EASEMENT</p>	<p>SKETCH OF PROPOSED EASEMENT AS REQUIRED BY: COBB COUNTY-MARIETTA WATER AUTHORITY</p>	<p>LOCATED IN LAND LOT(S): 0641 17th DISTRICT, 2nd SECTION COBB COUNTY, GEORGIA SCALE: 1" = 50' DATED: FEB., 2001 PROJECT NO. 97-437 SHEET NO. 56</p>	<p>THROUGH THE PROPERTY OF: AUTO REALTY LTD.</p>	<p>Welker & Associates Engineers Since 1945 445 Market Street Marietta, Georgia 30060 Phone: (770) 422-1902</p>

Deed Book 1306B Pg 443
Jay C. Stephenson
Clerk of Superior Court Cobb Cty., Ga.

LEGAL DESCRIPTION
PROMENADE ASSOCIATES, LTD
TEMPORARY CONSTRUCTION EASEMENT

All that tract or parcel of land and being in land lot 849 of the 17th district, 2nd section of Cobb County, in the City of Marietta, Georgia and being more particularly described as follows:

Commence at a 1/2" rebar found at the corner common to land lots 807, 808, 848, and 849;

THENCE run along the westerly Land Lot Line of Land Lot 849, North 01 degrees 04 minutes 45 seconds East for a distance of 1189.04 feet to the intersection of said Land Lot Line and the southwesterly right-of-way line of U.S. Highway 41 (having a 150 foot right-of-way);

THENCE run along said southwesterly right-of-way line, South 37 degrees 28 minutes 57 seconds East for a distance of 1068.16 feet to the intersection of said southwesterly right-of-way line and the common line between that parcel now or formerly owned by Promenade Associates, LTD and that parcel now or formerly owned by Realty Income Corporation, said point being the POINT OF BEGINNING;

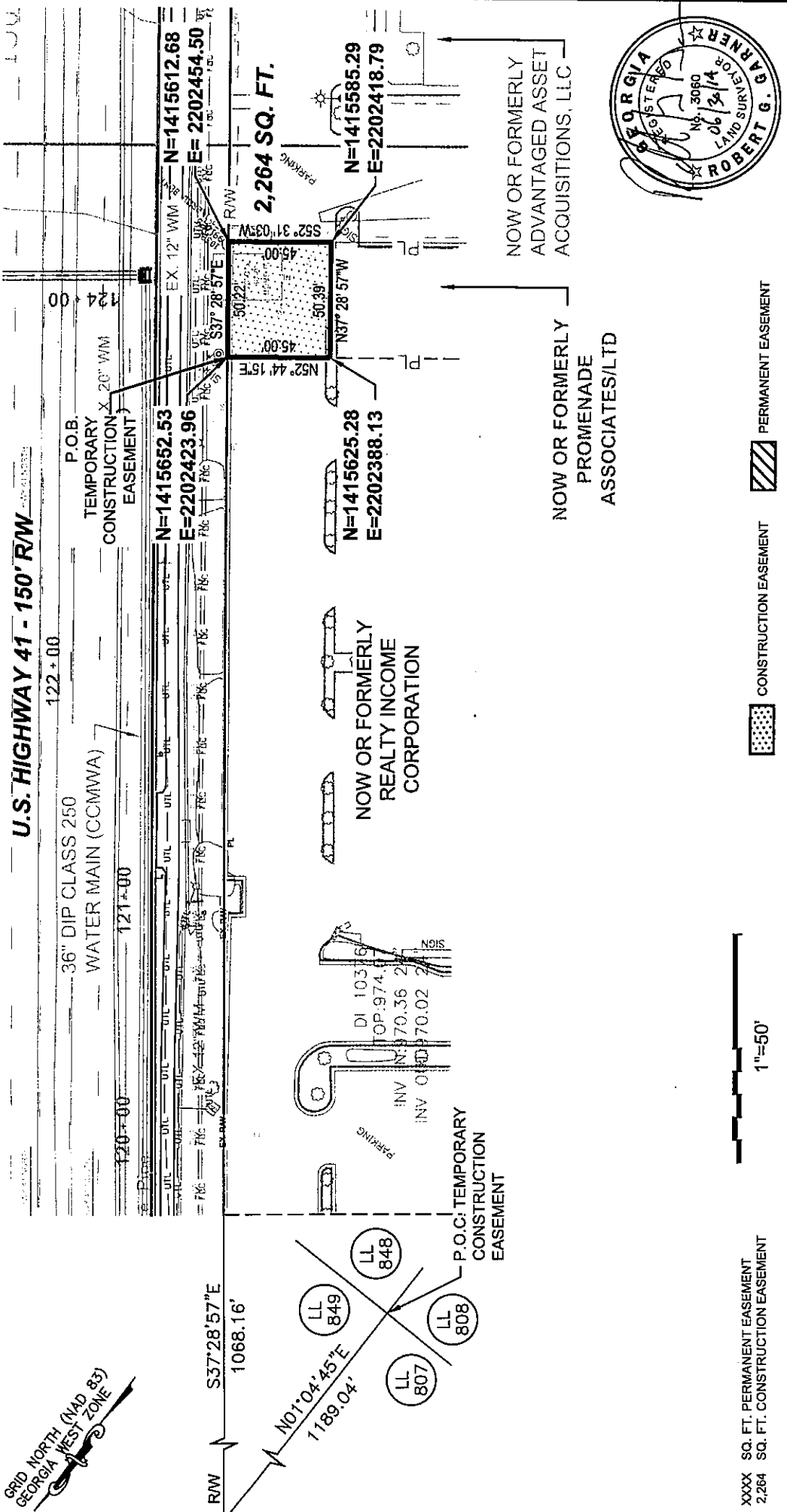
THENCE continue along said southwesterly right-of-way line, South 37 degrees 28 minutes 57 seconds East for a distance of 50.22 feet to the intersection of said southwesterly right-of-way line and the common line between that parcel now or formerly owned by Promenade Associates, LTD and that parcel now or formerly owned by Advantaged Asset Acquisitions, LLC;

THENCE leaving said southwesterly right-of-way line, run along said common line, South 52 degrees 31 minutes 03 seconds West for a distance of 45.00 feet to a point;

THENCE leaving said common line, run North 37 degrees 28 minutes 57 seconds West for a distance of 50.39 feet to a point;

THENCE run North 52 degrees 44 minutes 15 seconds East for a distance of 45.00 feet to the POINT OF BEGINNING.

Said tract or parcel of land contains 2,264 square feet more or less.



XXXX SQ. FT. PERMANENT EASEMENT
2,264 SQ. FT. CONSTRUCTION EASEMENT

XXXX L.F. PERMANENT EASEMENT
XXXX L.F. CONSTRUCTION EASEMENT

SKETCH OF PROPOSED EASEMENT
AS REQUIRED BY:
**COBB COUNTY
MARIETTA WATER AUTHORITY**

LOCATED IN LAND LOT(S)
849
17TH DISTRICT, 2ND SECTION
COBB COUNTY, GEORGIA
SCALE: 1" = 50' DATED: 06/30/14
PROJECT NO. 100052548 SHEET NO. 1 OF 1

THROUGH THE PROPERTY OF:
PROMENADE ASSOCIATES, LTD.

ATKINS
1600 RiverEdge Pkwy, Suite 600
Atlanta, GA 30328
P: 770-933-0280 F: 770-933-8558

LEGAL DESCRIPTION
ADVANTAGED ASSET ACQUISITIONS, LLC
TEMPORARY ACCESS EASEMENT

All that tract or parcel of land and being in land lot 849 of the 17th district, 2nd section of Cobb County, in the City of Marietta, Georgia and being more particularly described as follows:

Commence at a 1/2" rebar found at the corner common to land lots 807, 808, 848, and 849;

THENCE run along the westerly Land Lot Line of Land Lot 849, North 01 degrees 04 minutes 45 seconds East for a distance of 1189.04 feet to the intersection of said Land Lot Line and the southwesterly right-of-way line of U.S. Highway 41 (having a 150 foot right-of-way);

THENCE run along said southwesterly right-of-way line, South 37 degrees 28 minutes 57 seconds East for a distance of 1280.38 feet to the intersection of said southwesterly right-of-way line and the common line between that parcel now or formerly owned by Promenade Associates, LTD and that parcel now or formerly owned by Advantaged Asset Acquisitions, LLC, said point being the POINT OF BEGINNING;

THENCE continue along said southwesterly right-of-way line, South 37 degrees 28 minutes 57 seconds East for a distance of 13.00 feet to the intersection of said southwesterly right-of-way line and the common line between that parcel now or formerly owned by Shashin Shah and that parcel now or formerly owned by Advantaged Asset Acquisitions, LLC;

THENCE leaving said southwesterly right-of-way line, run along said common line, South 52 degrees 31 minutes 03 seconds West for a distance of 45.00 feet to a point;

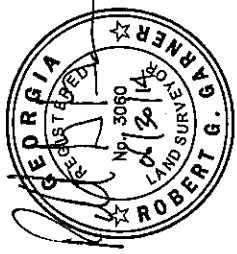
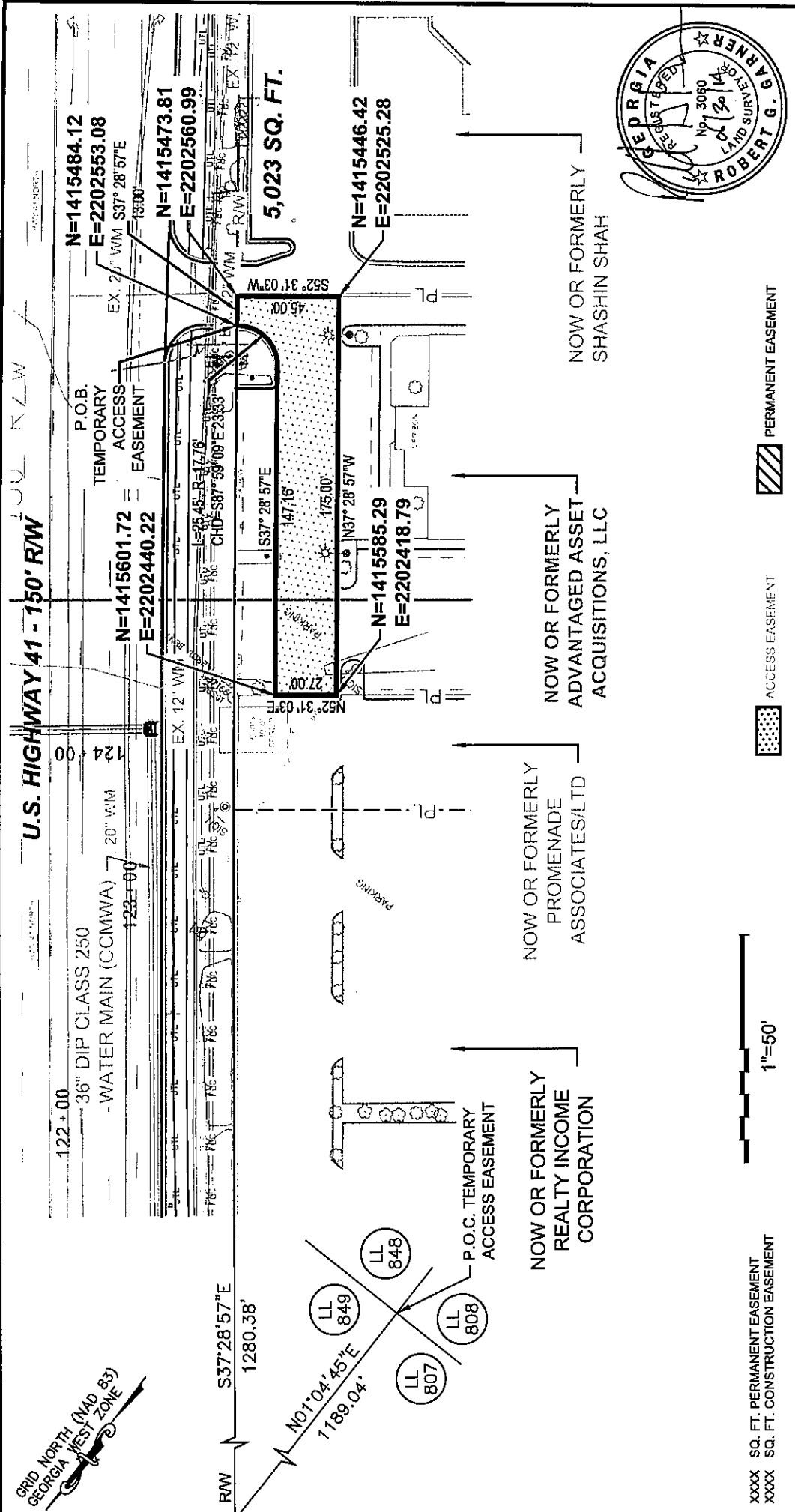
THENCE leaving said common line, run North 37 degrees 28 minutes 57 seconds West for a distance of 175.00 feet to a point on the common line between that parcel now or formerly owned by Promenade Associates, LTD and that parcel now or formerly owned by Advantaged Asset Acquisitions, LLC,

THENCE run along said common line, North 52 degrees 31 minutes 03 seconds East for a distance of 27.00 feet to a point;

THENCE leaving said common line, run South 37 degrees 28 minutes 57 seconds East for a distance of 147.16 feet to a point;

THENCE run along a curve to the left having a radius of 17.76 feet and a length of 25.45 feet, being subtended by a chord bearing South 87 degrees 59 minutes 09 seconds for a distance of 23.33 feet to the POINT OF BEGINNING.

Said tract or parcel of land contains 5,023 square feet more or less.



XXXX SQ. FT. PERMANENT EASEMENT
 XXXX SQ. FT. CONSTRUCTION EASEMENT

1"=50'

ACCESS EASEMENT

PERMANENT EASEMENT

NOW OR FORMERLY
 REALTY INCOME
 CORPORATION

NOW OR FORMERLY
 PROMENADE
 ASSOCIATES/LTD

NOW OR FORMERLY
 ADVANTAGED ASSET
 ACQUISITIONS, LLC

NOW OR FORMERLY
 SHASHIN SHAH

XXXX L.F. PERMANENT EASEMENT
 XXXX L.F. CONSTRUCTION EASEMENT

SKETCH OF PROPOSED EASEMENT
 AS REQUIRED BY:
 COBB COUNTY
 MARIETTA WATER AUTHORITY

LOCATED IN LAND LOT(S)
 849
 17TH DISTRICT, 2ND SECTION
 COBB COUNTY, GEORGIA
 SCALE: 1" = 50' DATED: 06/30/14
 PROJECT NO. 100032548 SHEET NO. 1 OF 1

THROUGH THE PROPERTY OF:
 ADVANTAGED ASSET
 ACQUISITIONS, LLC

ATKINS
 1600 RiverEdge Pkwy, Suite 600
 Atlanta, GA 30328
 P. 770-933-0280 F. 770-933-8558

LEGAL DESCRIPTION
SHASHIN SHAH
TEMPORARY ACCESS EASEMENT

All that tract or parcel of land and being in land lot 849 of the 17th district, 2nd section of Cobb County, in the City of Marietta, Georgia and being more particularly described as follows:

Commence at a 1/2" rebar found at the corner common to land lots 807, 808, 848, and 849;

THENCE run along the westerly Land Lot Line of Land Lot 849, North 01 degrees 04 minutes 45 seconds East for a distance of 1189.04 feet to the intersection of said Land Lot Line and the southwesterly right-of-way line of U.S. Highway 41 (having a 150 foot right-of-way);

THENCE run along said southwesterly right-of-way line, South 37 degrees 28 minutes 57 seconds East for a distance of 1293.38 feet to the intersection of said southwesterly right-of-way line and the common line between that parcel now or formerly owned by Shashin Shah and that parcel now or formerly owned by Advantage Asset Acquisitions, LLC, said point being the POINT OF BEGINNING;

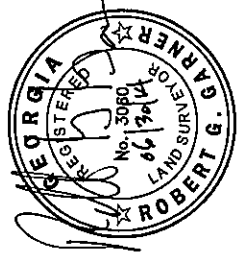
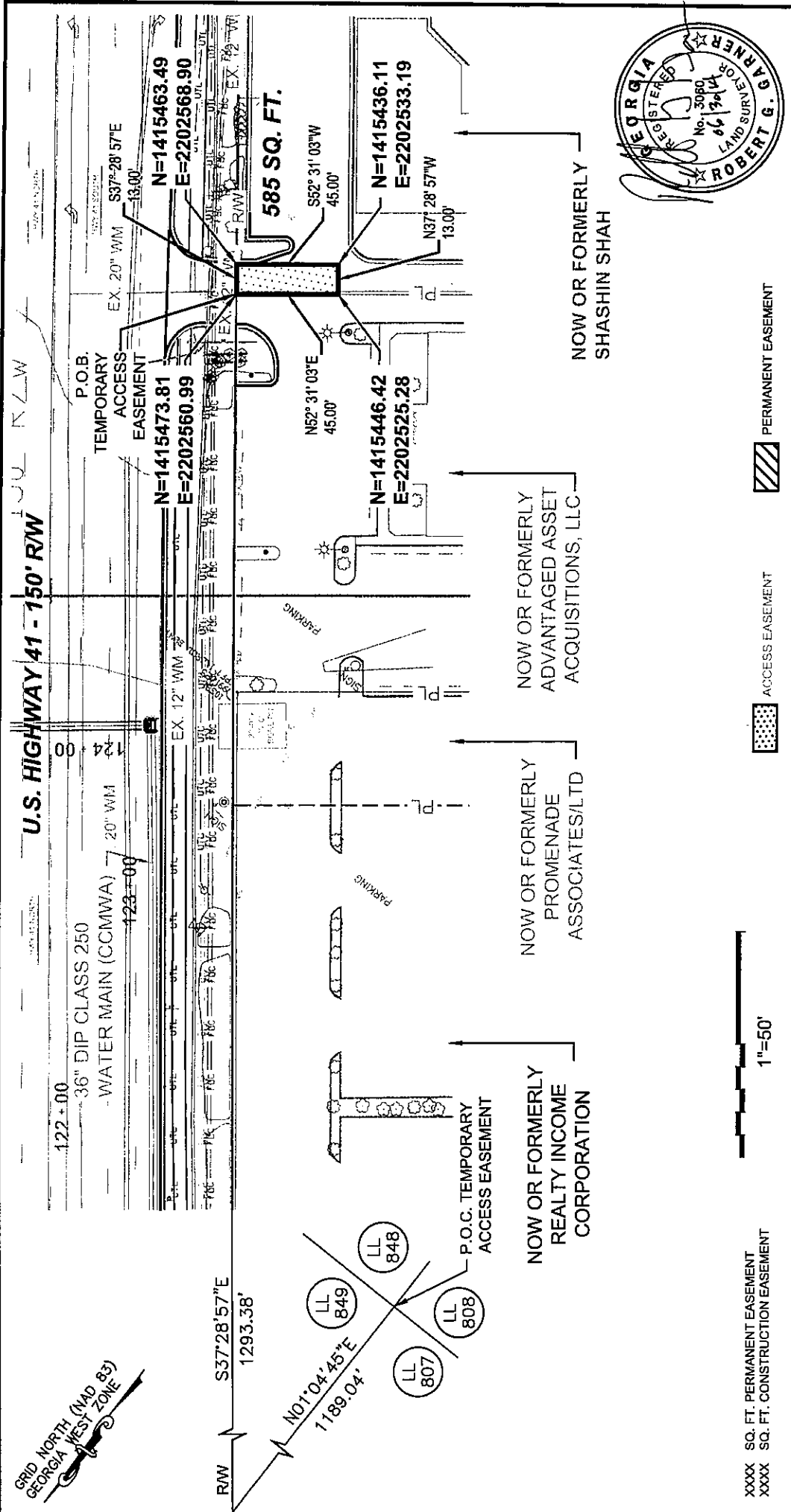
THENCE continue along said southwesterly right-of-way line, South 37 degrees 28 minutes 57 seconds East for a distance of 13.00 feet to a point;

THENCE leaving said southwesterly right-of-way line, run South 52 degrees 31 minutes 03 seconds West for a distance of 45.00 feet to a point;

THENCE run North 37 degrees 28 minutes 57 seconds West for a distance of 13.00 feet to a point on the common line between that parcel now or formerly owned by Shashin Shah and that parcel now or formerly owned by Advantage Asset Acquisitions, LLC,

THENCE run along said common line, North 52 degrees 31 minutes 03 seconds East for a distance of 45.00 feet to the POINT OF BEGINNING.

Said tract or parcel of land contains 585 square feet more or less.



NOW OR FORMERLY
SHASHIN SHAH

NOW OR FORMERLY
ADVANTAGED ASSET
ACQUISITIONS, LLC

NOW OR FORMERLY
PROMENADE
ASSOCIATES/LTD

NOW OR FORMERLY
REALTY INCOME
CORPORATION

XXXX SQ. FT. PERMANENT EASEMENT
XXXX SQ. FT. CONSTRUCTION EASEMENT

1"=50'



ACCESS EASEMENT



PERMANENT EASEMENT

<p>XXXX L.F. PERMANENT EASEMENT XXXX L.F. CONSTRUCTION EASEMENT</p>	<p>SKETCH OF PROPOSED EASEMENT AS REQUIRED BY: COBB COUNTY MARIETTA WATER AUTHORITY</p>	<p>LOCATED IN LAND LOT(S) 849 17TH DISTRICT, 2ND SECTION COBB COUNTY, GEORGIA SCALE: 1" = 50' DATED: 06/30/14 PROJECT NO. 100032548 SHEET NO. 1 OF 1</p>	<p>THROUGH THE PROPERTY OF: SHASHIN SHAH</p>	<p>ATKINS 1600 RiverEdge Plkwy, Suite 600 Atlanta, GA 30328 P: 770-933-0280 F: 770-933-8568</p>
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