REQUEST FOR BID

JESTER'S CREEK EAST OUTFALL REPLACEMENT - PHASE 1

Bid Number 2019-PME-03

February 2019

Bid Opening:	**Tuesday, April 2, 2019 at 2:00 p.m. (local time)** **1600 Battle Creek Road, Morrow, Georgia 30260**
Non-mandatory pre-bid meeting and site visit:	**Wednesday, March 13, 2019 at 2:00 p.m. (local time)** **1600 Battle Creek Road, Morrow, Georgia 30260**

This project will be funded by the State Revolving Loan Fund (SRLF) and will be subject to Georgia Environmental Finance Authority (GEFA) General and Special Requirements, which includes a Disadvantaged Business Enterprise (DBE) goal.

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Attachments

A) Georgia Environmental Finance Authority
Supplemental General Conditions for Federally Assisted
State Revolving Loan Fund Construction Contracts
May 9, 2014.

B) Georgia Environmental Finance Authority
American Iron and Steel
Special Conditions and Information for Federally Assisted
State Revolving Loan Fund Construction Contracts
April 11, 2014.

C) Geotechnical Report:
Report of Subsurface Exploration and Geotechnical Engineering Evaluation, Jester's Creek East Outfall Replacement Phase 1, Jonesboro, Georgia, November 28, 2018.

D) Williams Developers' Handbook.

E) Interim Waiver and Release Upon Payment.

F) Waiver and Release Upon Final Payment.

Construction Plan Attached.

Addenda None issued at this time.

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Division 1 General Information

Section 1: Request for Bids

Clayton County Water Authority
1600 Battle Creek Road
Morrow, Georgia 30260

Name of Project: **Jesters Creek East Outfall Replacement – Phase 1**

The Clayton County Water Authority will open sealed bids from licensed contractors at its offices located at 1600 Battle Creek Road, Morrow, Georgia 30260, on **Tuesday, April 2, 2019 at 2:00 p.m. (local time)** for the Jesters Creek East Outfall Replacement – Phase 1 project. Any bids received after the specified time will not be considered.

A non-mandatory pre-bid meeting followed by a non-mandatory site visit will be held on **Wednesday, March 13, 2019 at 2:00 p.m. (local time)** at our offices, located at 1600 Battle Creek Road, Morrow, GA 30260.

In an effort to promote responsible environmental practices a link to the bid package will be provided via email upon request by calling **770-960-5223**, M-F, 8:00 am - 5:00 pm, or by e-mailing **CCWA_Procurement@ccwa.us**. A hardcopy bid package can also be requested at a cost of $200.00.

Clayton County Water Authority

By: John Chafin, Chairman

END OF SECTION

Division 1 General Information

Section 2: General Overview

2.1 Intent and Purpose

The Clayton County Water Authority (CCWA) intends to contract with an experienced Contractor to complete the Jesters Creek East Outfall Replacement – Phase 1 Project. The purpose of the Project is to install approximately 8,900 linear feet of new 36-inch gravity-flow sanitary sewer replacing an existing 36-inch gravity-flow sanitary sewer. Multiple reconnections of smaller existing sewers will be required to complete the work.

The majority of the new sanitary sewer work will be completed in the same location and alignment as the existing sanitary sewer using standard excavation techniques and trenchless techniques. Note that a section of the sewer is planned for cured-in-place pipe, but that section of sewer may require replacement using standard excavation techniques. Specifications herein and the Construction Drawings describe the details of the work to be completed.

2.2 Georgia Environmental Finance Authority

Funding for this project is through the Georgia Environmental Finance Authority (GEFA). The GEFA Supplemental General Conditions for Federally Assisted State Revolving Loan Fund Construction Contracts, dated May 9, 2014, as well as the GEFA American Iron and Steel Special Conditions and Information dated April 11, 2014, included as part of this Contract Documents as Attachments A and B, shall be adhered to by all parties. Bidders shall refer to Attachments A and B, and to Division 2, Section 3 of this RFB documents for information on the GEFA required bid submittals.

2.3 Bid Evaluation

A contract will be awarded to the lowest responsive responsible bidder whose bid conforms to the Request for Bid specifications and will be the most advantageous to the CCWA. An evaluation will also be performed to ensure bidder complies with the required submittals. Determination of best responsive responsible bidder will be the sole judgment of the CCWA.

To be considered responsive to this bid, bidders are required to bid on all work items listed on the “Bid Form”, and complete and provide all required bid submittals as listed on the “Bid Submittal Requirements”.

Division 1 General Information

Section 2: General Overview

2.4 Addendum

Bidders may ask questions regarding this bid prior to the bid opening. To be considered, all questions must be received in writing via email to ***CCWA_Procurement@ccwa.us*** by **2:00 p.m. (local time)** on **Tuesday, March 19, 2019**. Any and all responses to bidders' questions will be issued in the form of an Addendum via email. All addenda issued shall become part of the Bid Documents.

END OF SECTION

Division 2 Bid Requirements

Section 1: Instructions to Bidders

These instructions are to be followed by every entity bidding to provide the Clayton County Water Authority (CCWA) with goods and/or services. These instructions constitute an integral part of the Bid, and any Bidder agrees that tender of a Bid constitutes acknowledgment and acceptance of its obligation to adhere to these instructions, which are to be incorporated into and considered part of any contract the Bidder ultimately executes with the CCWA.

1. If there is any question whatsoever regarding any portion of the specifications, it shall be the Bidder's responsibility to seek clarification immediately from the CCWA, as early as possible prior to the bid opening. Regarding public works projects, requests for interpretations of specifications must be made in writing to the department proposing out the project not later than five (5) days prior to receipt of bids.

2. Unless it is otherwise stated in the bid documents, it shall be the responsibility of the bidder to inform itself as to all conditions of the work site and to make and take account thereof in calculating and submitting its bid. Documents may be made available by the CCWA during the bidding process; no warranty of accuracy is made in regard to these documents, and it is the responsibility of the bidder to make its own investigations as to the nature of the work and the conditions under which it shall be performed, and to make its own independent assumptions as to these matters. The burden of anticipating unforeseen circumstances, either hidden or latent, and the conditions of the work site and all related circumstances, and the cost of accommodating therefore should unanticipated circumstances be later encountered shall rest upon the bidder.

3. Pre-bid meeting or any other information session will be held at the location as indicated in the solicitation. Unless indicated otherwise, attendance is not mandatory; although vendors are strongly encouraged to attend. However, in the event the meeting is mandatory, then a representative of the vendor must attend the meeting in its entirety to be considered eligible for solicitation award. Late entry to the meeting will not be allowed.

4. In the event that, after the acceptance of a bid by the Board of Directors of the CCWA, any unsuccessful bidder wishes to contest such action, a written "Notice of Contest" must be filed with the General Manager no later than close of business on the 5th business day after the selection of successful bidder by the Board. Failure to timely file such notice shall forever preclude the filing of a contest of the award, or any civil action in the courts of the State of Georgia or of the United States.

Division 2 Bid Requirements

Section 1: Instructions to Bidders

5. Information submitted by the Bidder in the bid process shall be subject to disclosure after bid award in accordance with the Georgia Open Records Act. Proprietary information must be identified and be accompanied by a signed affidavit outlining the redacted information. Entire bids may not be deemed proprietary.

6. Bids must be made on the enclosed Bid Form. Unless otherwise requested, one (1) original and at least two (2) copies of the Bid Form need to be submitted, and these copies must be **typewritten or printed in ink.** All copies of any Bid Forms must be signed in ink by the person or persons authorized to sign the Bid Form. The person signing the Bid Form must initial any changes or corrections.

7. The name of the person, firm, or corporation making the Bid must be printed in ink, along with the Bidder's signature, on all separate sheets of the Bid Form. If a Bid is made by an individual, his name and post office address must be shown. If made by a firm, or partnership, the name and the post office address of each member of the firm or partnership must be shown. If made by a Corporation, the person or persons signing the Bid must show the name of the State under the laws of which the Corporation is chartered and his, or their authority for signing same. The names, titles and addresses of the President, Secretary and the Treasurer and the corporate authority for doing business in this state shall be listed and returned with the Bid Form.

8. All Bids must be hand delivered, delivered by courier service, or mailed via the United States Postal Service. No facsimiles will be accepted. The person, firm, or corporation making the Bid shall submit it in a sealed envelope on or before the date and time specified in the Bid package. The envelope shall be marked "**Sealed Bid**" and carry the Bid title, and date and time of opening as set forth in the Bid package. The envelope shall also bear the name of the party making the Bid and the party's address. Address Bids to *Clayton County Water Authority, 1600 Battle Creek Road, Morrow, Georgia, 30260.* Even if a Bid is not submitted, the Bid Form should be returned signed and with an explanation, otherwise the result will be deletion from the mailing list.

9. If published price books are a part of your Bid, one price book must be included with your Bid Form, and the successful Bidder is required to furnish additional current price books after award of the Bid.

10. Alterations to the documents are strictly prohibited and shall result in automatic disqualification of the Bidder's bid. If there are "exceptions" to the specifications or

comments to any of the solicitation requirements or other language, then the bidder may ask questions regarding those requirements or submit additional documentation as to the variation from the specifications, but may not alter any of the language contained in the solicitation.

11. In the case of goods, the person, firm or corporation making the Bid may Bid all items. All items may be considered separately, at the discretion of the CCWA.

12. Bids for public works whose price exceeds $100,000.00 must be accompanied by a certified check, cashier's check, or acceptable bid bond in an amount not less than five percent (5%) of the amount bid.

13. Bidders for construction contracts where the laws of Georgia or the United States of America require a license in order to perform such construction must list the license number and class on the face of the bid envelope and must enclose copies of any required license with the bid.

14. When public work is let out for bid, no person shall prevent or attempt to prevent competition in such bid. Such bidders must make an oath filed with the officer who makes payments under the contract that they have not prevented or attempted to prevent competition in the bid process. Such oath must be signed by: if a partnership, all partners and any officer or agent or other person who acted on the partnership's behalf during the bid process; if a corporation, all officers, agents, or other persons who acted for the corporation in the bid process.

15. Bids shall not be withdrawn or cancelled by the bidder past the bid opening date and time. The bidder may make modifications/corrections to the bid by submitting a corrected seal bid but only if the change is prior to the bid opening. The corrected document should be clearly marked that it supersedes the bid originally submitted. No modification or corrections will be allowed subsequent to the bid opening.

16. By tendering a bid, a Bidder agrees to leave the bid open for acceptance by the CCWA for sixty (60) days after the date set for the opening thereof.

17. By tendering a bid, the bidder certifies that the bidder has carefully examined these instructions and the terms and specifications applicable to and made a part of the bid. The Bidder further certifies that the prices shown in any schedule of items on which the Bidder is proposing are in accordance with the conditions, terms and specifications of the bid and that they are aware that any exception taken thereto

may disqualify the bid. Bidders are required to inform themselves fully as to the availability of materials and the conditions relating to construction and labor under which any work will be or is now being performed. No error or misjudgment nor any lack of information on local conditions, general laws or regulations on the part of the Bidder shall merit withdrawal of the bid.

18. Copies of all communication pertaining to bids must be sent to the Contracts, Compliance and Risk Management Section.

19. The purpose of this bid is to establish contract prices. Unit price extension and net total must be shown if applicable. Cash discounts should be indicated separately. The CCWA is exempt from federal or state sales taxes; do not include such amounts in the bid. Exemption certificates are furnished upon request.

20. Bidders are hereby notified and agree by submission of a Bid Form that if additional items not listed in the Bid Form become necessary and require unit prices not established by the Bid Form, the unit prices of such items shall be negotiated and shall be directly proportional to the established unit prices of similar items in the Bid Form.

21. All prices on goods shall be for delivery, our destination, f.o.b. freight prepaid Jonesboro, Georgia, and/or Morrow, Georgia, unless otherwise shown. Any deliveries shall be made as needed and requested throughout the contract period.

22. Quantities when shown are estimates only, based on anticipated needs. The CCWA reserves the right to purchase more or less based on actual need at contract price. If a Bidder intends to offer minimum or maximum shipment quantities, such intent and such quantities should be specified on the Bid Form. Otherwise, none will be assumed.

23. The time for completion of the work is stated in the Bid Form. Failure to complete the work within this period shall result in payment to the CCWA of liquidated damages in an amount provided for by contract for each calendar day in excess of the Contract time.

24. The Bidder must employ such methods and means in carrying out the work as will not cause any interruption of or interference with any other Contractor.

25. The successful Bidder must comply with the applicable Risk Management Requirements prior to beginning performance, and during the contract period.

Division 2 Bid Requirements

Section 1: Instructions to Bidders

26. The Contract between the CCWA and the Contractor shall be executed on a form provided by CCWA and will be subject to all requirements of the contract documents (which include but may not be limited to the Contract, these instructions, any Purchase Orders, and the Risk Management Requirements), and shall form a binding contract between the contracting parties.

27. Failure to execute the Contract, any required Surety Performance and Payment Bonds, or to furnish any required satisfactory proof of carriage of required insurance within ten (10) days from the date of notice of award of the Contract shall be just cause for the annulment of the award and for forfeiture of the bid guaranty to the CCWA, not as a penalty, but in liquidation of damages sustained. At the discretion of the CCWA, the award may then be made to the next lowest responsible vendor, or the work may be re-advertised or constructed by the CCWA.

28. Any Contract and Contract Bonds shall be executed in duplicate.

29. Award of this bid shall be by action of the CCWA Board at its regular monthly meeting.

30. The CCWA reserves the right, with or without notice or cause, to accept any bid regardless of the cost thereof; to reject any bid, or any number of bids; to negotiate with any Bidder for a reduction of or alterations in its bid; to reject all bids and to call for additional bids upon the same or different invitations to bid, plans or specifications; to be sole judge, in its discretion, on all questions as to whether or not a bid complies with the invitation to Bid, the plans or the specifications, and as to the solvency and sufficiency of any and all sureties on all bonds.

31. The apparent low bid for goods shall be considered to be the lowest aggregate total price of specified products at their unit prices times the estimated required quantities of these specified products.

32. Bids received from two (2) or more vendors that are identical in price, delivery and meet the requirements of the bid specifications shall be awarded on the following basis:

    a. The bid submitted by a vendor who does not have a documented negative vendor performance record.

    b. The bid submitted by a vendor who is located within Clayton County.

Division 2 Bid Requirements

Section 1: Instructions to Bidders

c. The bid submitted by a vendor who is certified by our Small Local Business Enterprise Program.

d. If the tie bids meet all the above criteria, and it is not in the Authority's best interest (at its sole discretion) to split the award, the bid award is based on the toss of a coin by CCWA staff in a public session. The vendors involved will be invited to attend the coin toss at a stated date and time. One or more witnesses from both CCWA Procurement and the Requesting Department may be present. A simple coin toss (called by the vendor listed first in the alphabet) will break the tie and decide the award.

33. While price is the prime criteria, and the CCWA intends to purchase at the lowest responsible bid available, price shall not be the sole criteria utilized by the CCWA in evaluating the bid package submitted. The following criteria shall also be utilized by the CCWA in determining the lowest responsible bid:

    a. Ability of Bidder to perform in the time frame needed by the CCWA.

    b. Reputation of the Bidder in its industry.

    c. Reasonableness of the bid in relation to anticipated costs.

    d. Ongoing relationships with the CCWA based on above-average prior performance of work with the Authority.

34. By responding to this bid, the Bidder waives any cause of action against the Authority for frustration of bid or under any similar legal theory; furthermore, the Bidder agrees to pay all costs and expenses, including but not limited to attorney fees, incurred by the Authority in defending against any such claim.

35. It is the policy of the Clayton County Water Authority (CCWA) to promote award of sub-agreements for goods and/or services to qualified minority and women-owned businesses. Bidders are encouraged to solicit minority and women-owned businesses whenever they are potential sources.

36. Bidders are encouraged to utilize the services and assistance of the U.S. Small Business Administration (SBA), and the office of the Department of Commerce Minority Business Development Agency (MBDA). These agencies can provide assistance in securing the names of qualified small local, minority and women-owned businesses. The Georgia Department of Transportation (DOT) has established a list of qualified Disadvantaged Business Enterprises (DBE).

Division 2 Bid Requirements

Section 1: Instructions to Bidders

Information is available online under the tab for "Directories", link for "UCP Directory - Excel" at: http://www.dot.ga.gov/PS/Business/DBE.

The successful Bidder will be asked to provide, along with his Request for Payment each month a list of qualified MBE/WBE businesses utilized on this Project.

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT OF 2006

37. Pursuant to the Georgia Security and Immigration Compliance Act of 2006, the successful Contractor understands and agrees that compliance with the requirements of O.C.G.A.13-10-91 and Georgia Department of Labor Rule 300-10-02 are conditions of this bid and contract document. The Contractor further agrees that such compliance shall be attested by the Contractor and any of his Subcontractors by execution of the appropriate Affidavit and Agreement included after the Agreement Form of these documents.

38. The successful Bidder must comply with any and all Georgia Environmental Finance Authority (GEFA) requirements as part of this Request for Bid.

END OF SECTION

Division 2 Bid Requirements

Section 2: Risk Management Requirements

The Contractor will provide minimum insurance coverage and limits as per the following: The Contractor will file with CCWA Certificates of Insurance, certifying the required insurance coverages and stating that each policy has been endorsed to provide thirty (30) day notice to CCWA in the event that coverage is cancelled, non-renewed, or the types of coverage or limits of liability are reduced below those required. All bonds and insurance coverage must be placed with an insurance company approved by CCWA's Management, admitted to do business in the State of Georgia, and rated Secure ("B+" or better) by A.M. Best Company in the latest edition of Property and Casualty Ratings, or rated by Standard & Poors Insurance Ratings, latest edition as Secure ("BBB" or better). Worker's Compensation self-insurance for individual Contractors must be approved by the Worker's Compensation Board, State of Georgia and/or Self-Insurance pools approved by the Insurance Commissioner, State of Georgia.

CONTRACTS FOR UP TO $50,000	CONTRACTS FOR MORE THAN $50,000
Worker's Compensation – Worker's Compensation coverage on a statutory basis for the State of Georgia with an Employer's Liability limit of $100,000 each Accident, Disease $100,000 each employee, $500,000 Disease policy limit.	**Worker's Compensation** – Worker's Compensation coverage on a statutory basis for the State of Georgia with an Employer's Liability limit of $1,000,000. The increased Employer's Liability limit may be provided by an Umbrella or Excess Liability policy.
Automobile Liability – Automobile liability coverage for owned, hired and non-owned vehicles in the amount of $500,000 combined single limit.	**Automobile Liability** - Automobile liability coverage for owned, hired and non-owned vehicles in the amount of $1,000,000 combined single limit.
Commercial General Liability – Coverage to be provided on "occurrence" not "claims made" basis. The coverage is to include Contractual liability, Per Project Limit of Liability, losses caused by Explosion, Collapse and Underground ("xcu") perils, the "Clayton County Water Authority" is to be added as an Additional Insured and Products and Completed Operations coverage is to be maintained for three (3) years following completion of work.	**Commercial General Liability** – Coverage to be provided on "occurrence" not "claims made" basis. The coverage is to include Contractual liability, Per Project Limit of Liability, losses caused by Explosion, Collapse and Underground ("xcu") perils, the "Clayton County Water Authority" is to be added as an Additional Insured and Products and Completed Operations coverage is to be maintained for three (3) years following completion of work.

Division 2 Bid Requirements

Section 2: Risk Management Requirements

RISK MANAGEMENT REQUIREMENTS (Cont'd)

CONTRACTS FOR UP TO $50,000	CONTRACTS FOR MORE THAN $50,000

LIMITS OF LIABILITY:

$1,000,000	Per Occurrence
$1,000,000	Personal and Advertising
$50,000	Fire Damage*
$5,000	Medical Payments*
$1,000,000	General Aggregate
$1,000,000	Products/Completed Operations per Occurrence and Aggregate

**These are automatic minimums*

Owner's Protective Liability – CCWA's Management may, in its discretion, require Owner's Protective Liability in some situations. However, it is not required for this project.

Umbrella and/or Excess Liability – The Umbrella or Excess Liability Policy may be used to combine with underlying policies to obtain the limits required. The Management of the CCWA is requiring a $5,000,000 Umbrella or Excess Liability Limit for this project.

Owner's Protective Liability – CCWA's Management may, in its discretion, require Owner's Protective Liability in some situations. However, it is not required for this project.

END OF SECTION

Division 2 Bid Requirements

Section 3: Bid Submittals

3.1 Bid Submittal Requirements:

The following items are required to be included as part of the bid submittal. Failure to include any of these items may result in the bid being deemed non-responsive.

A. Bid Form.

B. Georgia Bid Bond in the amount of five percent (5%) of the total bid amount.

C. Bidder Qualification Information Form including References.

D. Georgia Security and Immigration Compliance Act of 2006 form.

E. Contractor Affidavit and Agreement form.

F. Subcontractor Affidavit form.

If a Contractor/Subcontractor will not be performing any services under this contract, the Contractor/company submitting the bid MUST also complete, sign, date, and have both Affidavit forms notarized and make proper notation of "N/A" - Not Applicable.

Clayton County Water Authority (CCWA) cannot consider any bid which does not include completed affidavits. It is not the intent of this notice to provide detailed information or legal advice concerning the Georgia Security & Immigration Compliance Act of 2006, as amended on May 11, 2009. All Bidders intending to do business with CCWA are responsible for independently apprising themselves and complying with the requirements of that law and its effect on CCWA procurements and their participation in those procurements.

G. GEFA Forms as follows:

<u>Supplemental General Conditions (see Attachment A)</u>

1. DBE Compliance Form and related documentation.

2. Certification Regarding Equal Employment Opportunity.

3. Certification Regarding Debarment, Suspension, and Other Responsible Matters.

4. EPA Forms 6100-3 and 6100-4 (DBE Subcontractor Participation, Performance, and Utilization Forms, respectively), unless ALL of the work is self-performed by the prime contractor.

H. Copies of any and all license(s) required to perform the work.

I. Any other items as required in this RFB including but not limited to the items contained in the instructions to bidders.

J. Addenda (if any).

END OF SECTION

Division 2 Bid Requirements

Section 4: Bid Form

Bid of _____

(Hereinafter "Bidder"), organized and existing under the laws of the State of _____,

doing business as _____ (insert "a corporation," "a partnership," or "an individual" or such other business entity designation as is applicable).

To the Clayton County Water Authority (hereinafter "CCWA").

In compliance with the Request for Bids, Bidder hereby proposes to perform all Work for **Jesters Creek East Outfall Replacement – Phase 1** in strict accordance with the Contract Documents as enumerated in the Request for Bids, within the time set forth therein, and at the prices stated below.

By submission of this bid, Bidder certifies, and in the case of joint bid each party thereto certifies as to the party's own organization that this bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this bid with any other Bidder or with any competitor. Bidder also certifies compliance with the Instructions to Bidders.

In submitting this bid, Bidder certifies Bidder is qualified to do business in the state of Georgia as required by laws, rules, and regulations or, if allowed by statute, covenants to obtain such qualification prior to contract award.

CONTRACT EXECUTION AND BONDS:

The undersigned Bidder agrees, if this bid is accepted, to enter into an Agreement with CCWA on the form included in the Documents to perform and furnish Work as specified or indicated in the Documents for the Contract Price derived from the bid and within the times indicated herein and in accordance with the other terms and conditions of the Documents.

Bidder accepts the terms and conditions of the Documents.

INSURANCE:

Bidder further agrees that bid amount(s) stated herein includes specific consideration for the specified insurance coverage.

CONTRACT TIME:

Bidder hereby agrees to commence work within fourteen (14) calendar days under this

contract or on a date to be specified in the Notice to Proceed. The total time for the Bidder to complete this project shall not exceed four hundred (400) calendar days. The Bidder and CCWA recognize that time is of the essence in completing this work and that there are delays, expense and difficulties involved in resolving a dispute related to a loss suffered by CCWA if the Work is not completed on time. Accordingly, instead of requiring such proof, CCWA and Bidder agree that as liquidated damages for delay (but not as a penalty), the Bidder shall pay to CCWA, as liquidated damages the amount of $500.00 per calendar day for each and every day or part of a day thereafter that any work as described in the Contract Documents remains incomplete and/or not accepted by CCWA.

PAYMENT TERMS:

Payment terms are net 30 days after approval of completed work and receipt of a detailed payment application.

RETAINAGE:

Bidder accepts the provisions in the Agreement Form as to retainage.

ADDENDA:

Bidder acknowledges receipt of the following Addenda:

_____

SURETY:

The project work will require Performance and Payment Bonds prior to the commencement of the work. Such work shall not commence until approval of such bonds has been given by CCWA.

BID:

By submitting a bid, and by executing this construction contract, the Contractor acknowledges that it understands that the goods and services under this contract are being funded with monies made available by the Clean Water State Revolving Fund or the Drinking Water State Revolving Fund and agrees to comply with any and all such requirements.

The undersigned proposes to complete, in all respects, sound and conformable with this Contract Document the work for the amounts as shown on the following Pay Item Schedule.

Division 2 Bid Requirements

Section 4: Bid Form – Pay Item Schedule

No.	Work Item	Detail	Unit	Estimated Quantity	Unit Price	Extended Total
1	Mobilization	Not to exceed 5%	LS	1		
2	Easement Clearing	N/A	SF	673,730		
3	Silt Fence Installation	N/A	LF	16,501		
4	Silt Fence Removal	N/A	LF	16,501		
5	Construction Access Road Installation	N/A	LF	3,300		
6	Construction Access Road Removal	N/A	LF	3,300		
7	Erosion and Sediment Control Installation	N/A	SF	951,160		
8	Permanent Re-Grassing	N/A	SF	227,573		
9	NPDES Monitoring and Reporting	N/A	LS	1		
10	Permanent Fence Replacement	N/A	LF	1,340		
11	Temporary Fence	Install/Remove	LF	6,369		
12	Asphalt Placement	N/A	SF	57,574		
13	Pavement Striping	N/A	LF	1,700		
14	Pavement Marking	N/A	EA	8		
15	Concrete Placement	N/A	CF	1,472		
16	Concrete Curb Placement	N/A	LF	1,410		
17	Concrete Wall	Footer	CF	120		
18		Wall	CF	180		
19	Tie-In No. 1	N/A	LS	1		

Division 2 Bid Requirements

Section 4: Bid Form – Pay Item Schedule

No.	Work Item	Detail	Unit	Estimated Quantity	Unit Price	Extended Total
20	Tie-In No. 2	N/A	LS	1		
21	Cased Crossing No. 1	Design	LS	1		
22		Cased Crossing	LF	180		
23		Pipe and Grout	LF	180		
24	Cased Crossing No. 2	Design	LS	1		
25		Cased Crossing	LF	140		
26		Pipe and Grout	LF	140		
27	Primary Pipe Installation	0 to 12 Feet	LF	4,175		
28		> 12 Feet to 16 Feet	LF	2,625		
29		> 16 Feet to 20 Feet	LF	1090		
30		> 20 Feet to 24 Feet	LF	145		
31	Secondary Pipe Installation	0 to 12 Feet	LF	341		
32		> 12 Feet to 16 Feet	LF	170		
33		> 16 Feet to 20 Feet	LF	73		
34	Service Re-Connection	Initial 20 Feet 0 to 12 Feet	EA	11		
35		Initial 20 Feet > 12 Feet to 16 Feet	EA	10		
36		Additional Footage 0 to 12 Feet	LF	100		
37		Additional Footage > 12 Feet to 16 Feet	LF	20		

Division 2 Bid Requirements

Section 4: Bid Form – Pay Item Schedule

No.	Work Item	Detail	Unit	Estimated Quantity	Unit Price	Extended Total
38	Vibration Monitoring	Buildings #1, #2, #3, #4	EA	4		
39	Cured-In-Place Pipe	Design	LS	1		
40		Clean and Assess	LF	593		
41		Lining	LF	570		
42	Primary 6-ft Diameter Manhole Installation	Base	EA	33		
43		Riser	VF	367		
44	Primary 4-ft Diameter Manhole Installation	Riser	VF	116		
45	Secondary 4-ft Diameter Manhole Installation	Base	EA	14		
46		Riser	VF	160		
47	Secondary 6-ft Diameter Manhole Installation	Riser	VF	7		
48	Manhole Invert Construction	6-Foot Diameter	EA	34		
49		4-Foot Diameter	EA	14		
50	Unsuitable Soil Excavation	N/A	CF	84,600		
51	Rock Excavation	N/A	CF	90,480		
52	Pipe Collar Installation	N/A	EA	15		
53	Demolition Bulkhead Installation	30-inch and 36-inch Pipe	EA	52		
54		8-inch Pipe	EA	10		
55	Demolition Pipe Grouting	N/A	CF	18,626		
56	Demolition Manhole Abandonment	Riser Removal	VF	38		
57		Gravel Fill Existing Manholes	VF	68		

Division 2 Bid Requirements

Section 4: Bid Form – Pay Item Schedule

No.	Work Item	Detail	Unit	Estimated Quantity	Unit Price	Extended Total
58	Unforeseen Existing Conditions Allowance No.1	N/A	Allow-ance	1	$400,000.00	$400,000.00
59	Unforeseen Existing Conditions Allowance No.2	N/A	Allow-ance	1	$617,000.00	$617,000.00

N/A = Non-applicable; **LS** = Lump Sum; **LF** = Linear Foot; **SF** = Square Foot; **CF** = Cubic Foot; **EA** = Each; **VF** = Vertical Foot.

Submitted by: _____

(COMPANY NAME OF BIDDER)

Division 2 Bid Requirements

Section 4: Bid Form

I have read and understand the requirements of this request for bid and agree to provide the required goods and services in accordance with this bid and all attachments, exhibit(s), and drawings.

Submitted by:

_____

(COMPANY NAME OF BIDDER)

_____

By: (OFFICER NAME)

_____

(SIGNATURE)

_____

(TITLE) (DATE)

_____

(COMPANY ADDRESS)

_____

(CITY, STATE, ZIP CODE)

PHONE NUMBER: _____

FAX NUMBER: _____

EMAIL ADDRESS: _____

WEBSITE: _____

DATE: _____

UTILITY CONTRACTOR'S LICENSE NUMBER: _____

END OF SECTION

Division 2 Bid Requirements

Section 5: Georgia Bid Bond

BOND NO._____

KNOW ALL MEN BY THESE PRESENTS, that_____

_____

herein after called the PRINCIPAL, and _____

_____

a corporation duly organized under the laws of the State of _____

having its principal place of business at _____

_____in the State of _____

and authorized to do business in the State of Georgia as SURETY, are held and firmly bound unto Clayton County Water Authority, as OWNER, hereinafter called the OBLIGEE, in the sum of _____

_____DOLLARS ($_____)

for the payment for which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the Principal is herewith submitting his or its Bid for **Jesters Creek East Outfall Replacement – Phase 1**, and said Bid, by reference thereto, being hereby made a part hereof.

WHEREAS, the PRINCIPAL contemplates submitting or has submitted a Bid to the OBLIGEE for the furnishing of all labor, materials (except those to be specifically furnished by the Owner), equipment, machinery, tools, apparatus, means of transportation for, and the performance of the work covered in the Bid and the documents, entitled: **Jesters Creek East Outfall Replacement – Phase 1**.

Division 2 Bid Requirements

Section 5: Georgia Bid Bond

WHEREAS, it was a condition precedent to the submission of said Bid that a cashier's check, certified check, or Bid Bond in the amount of 5 percent of the Bid Amount be submitted with said Bid as a guarantee that the Bidder would, if awarded the Contract, enter into a written Contract with the Owner for the performance of said Contract, within 10 consecutive calendar days after written notice having been given of the award of the Contract.

NOW THEREFORE, the conditions of this obligation are such that if the PRINCIPAL within 10 consecutive calendar days after written notice of such acceptance, enters into a written Contract with the OBLIGEE and furnishes a Performance Bond and Payment Bond in an amount equal to 100 percent of the contract amount, satisfactory to the Owner, then this obligation shall be void; otherwise the sum herein stated shall be due and payable to the OBLIGEE and the SURETY herein agrees to pay said sum immediately upon demand of the OBLIGEE in good and lawful money of the United States of America, as liquidated damages for failure thereof of said PRINCIPAL.

Signed and sealed this _____ day of _____, 20_____.

PRINCIPAL

By_____

SURETY

By_____
Attorney-In-Fact

END OF SECTION

Division 2 Bid Requirements

Section 6: Bidder Qualification Information

COMPANY NAME OF BIDDER: _____

_____

NUMBER OF YEARS IN BUSINESS _____

BUSINESS ADDRESS OF COMPANY: _____

_____

_____

TELEPHONE NUMBER: _____

FAX NUMBER: _____

POINT OF CONTACT NAME: _____

POINT OF CONTACT EMAIL ADDRESS: _____

COMPANY TAX ID NUMBER: _____

COMPANY WEBSITE: _____

ENTITY TYPE:

- ❑ Individual/Sole Proprietor
- ❑ Employee Owned Company
- ❑ Privately Held Corporation/LLC
- ❑ Partnership
- ❑ Publicly Owned Company
- ❑ Attorney
- ❑ Other (specify):

NAME OF PRINCIPAL OFFICERS: _____

_____

_____

_____

_____

_____

Division 2 Bid Requirements

Section 6: Bidder Qualification Information

REFERENCES

PROVIDE AT LEAST 3 REFERENCES FOR SIMILAR PROJECTS COMPLETED WITHIN THE LAST FIVE (5) YEARS. EACH REFERENCE SHALL INCLUDE THE NAME OF THE AGENCY, THE NAME OF THE PROJECT, DATE OF THE PROJECT, A CURRENT AGENCY CONTACT, A CURRENT CONTACT PHONE NUMBER AND EMAIL ADDRESS.

OWNER: _____
CONTACT NAME: _____
ADDRESS: _____
PHONE NUMBER: _____
PROJECT NAME: _____
PROJECT DATE: _____
EMAIL ADDRESS: _____

OWNER: _____
CONTACT NAME: _____
ADDRESS: _____
PHONE NUMBER: _____
PROJECT NAME: _____
PROJECT DATE: _____
EMAIL ADDRESS: _____

OWNER: _____
CONTACT NAME: _____
ADDRESS: _____
PHONE NUMBER: _____
PROJECT NAME: _____
PROJECT DATE: _____
EMAIL ADDRESS: _____

END OF SECTION

Division 2 Bid Requirements

Section 7: Contractor Affidavit and Agreement

GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT OF 2006

A. Pursuant to the Georgia Security and Immigration Compliance Act of 2006, the Contractor understands and agrees that compliance with the requirements of O.C.G.A. § 13-10-91 and Georgia Department of Labor Rule 300-10-.02 are conditions of this Agreement. The Contractor further agrees that such compliance shall be attested by the Contractor through execution of the contractor affidavit required by Georgia Department of Labor Rule 300-10-1-.07, or a substantially similar contractor affidavit. The Contractor's fully executed affidavit is attached hereto as Exhibit ____ and is incorporated into this Agreement by reference herein.

B. By initialing in the appropriate line below, the Contractor certifies that the following employee-number category as identified in O.C.G.A. § 13-10-91 is applicable to the Contractor:

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

C. The Contractor understands and agrees that, in the event the Contractor employs or contracts with any subcontractor or subcontractors in connection with this Agreement, the Contractor shall:

1. Secure from each such subcontractor an indication of the employee-number category as identified in O.C.G.A. § 13-10-91 that is applicable to the subcontractor;

2. Secure from each such subcontractor an attestation of the subcontractor's compliance with O.C.G.A. § 13-10-91 and Georgia Department of Labor Rule 300-10-1-.02 by causing each such subcontractor to execute the subcontractor affidavit required by Georgia Department of Labor Rule 300-10-1-.08, or a substantially similar subcontractor affidavit. The Contractor further understands and agrees that the Contractor shall require the executed subcontractor affidavit to become a part of the agreement between the Contractor and each such subcontractor. The Contractor agrees to maintain records of each subcontractor attestation required hereunder for inspection by the Clayton County Water Authority at any time."

Contractor _____

Authorized Signature: _____

Name: _____

Title: _____

Date: _____

Division 2 Bid Requirements

Section 7: Contractor Affidavit and Agreement

CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm, or corporation which is contracting with the Clayton County Water Authority has registered with, is participating in, uses, and will continue to use for the duration of the contract, the federal work authorization program - EEV/Basic Pilot Program operated by the U. S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA), commonly known as E-Verify, in accordance with the applicability provisions established in O.C.G.A. 13-10-91.

The undersigned further agrees that, in connection with the physical performance of services pursuant to this contract with the Clayton County Water Authority, the contractor will only employ or contract with subcontractor(s), who can present a similar affidavit verifying the subcontractor's compliance with O.C.G.A. 13-10-91. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the Clayton County Water Authority within five days of the subcontractor(s) presenting such affidavit(s) to the contractor.

_____

EEV / Basic Pilot Program* User Identification Number
Enter four to seven-digit numbers

_____

Name of Contractor (Printed)

_____ _____

BY: Authorized Officer or Agent
(Contractor Name)

Date

_____

Title of Authorized Officer or Agent of Contractor

_____

Printed Name of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME ON THIS

THE _____ DAY OF _____ 20_____.

_____ _____

Notary Public

My Commission Expires

Division 2 Bid Requirements

Section 7: Contractor Affidavit and Agreement

SUBCONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ _____ on behalf of the Clayton County Water Authority has registered with, is participating in, uses, and will continue to use for the duration of the contract the federal work authorization program - EEV/Basic Pilot Program operated by the U. S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA), commonly known as E-Verify, in accordance with the applicability provisions and deadlines established in O.C.G.A. 13-10-91.

The undersigned further agrees that, in connection with the physical performance of services pursuant to this contract with _____ _____ on behalf of the Clayton County Water Authority, the subcontractor will only employ or contract with sub-subcontractor(s), who can present a similar affidavit verifying the sub-subcontractor's compliance with O.C.G.A. 13-10-91. The undersigned further agrees that the Subcontractor will maintain records of such compliance and provide a copy of each such verification to the Contractor within five days of the sub-subcontractor(s) presenting such affidavit(s) to the Sub-contractor.

_____

EEV / Basic Pilot Program* User Identification Number
Enter four to seven-digit numbers

_____

Name of Sub-Contractor (Printed)

_____ _____

BY: Authorized Officer or Agent
(Subcontractor Name)

Date

_____

Title of Authorized Officer or Agent of Subcontractor

_____

Printed Name of Authorized Officer or Agent

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

_____ _____

Notary Public

My Commission Expires

END OF SECTION

Division 3 Contract Forms

Section 1: Agreement Form

STATE OF GEORGIA
COUNTY OF CLAYTON

AGREEMENT FOR SINGLE PURCHASE OF GOODS AND SERVICES

This Agreement made and entered into this _____ day of _____, 2019, for **Jesters Creek East Outfall Replacement – Phase 1**, between the **CLAYTON COUNTY WATER AUTHORITY** (hereinafter "CCWA") and _____ (hereinafter "the Contractor"), witnesseth:

WHEREAS, CCWA is contracting with the Contractor for the provision of certain goods and services described below for the term specified herein;

NOW THEREFORE, the parties agree as follows:

1. **DESCRIPTION OF GOODS AND SERVICES:**

   The Contractor shall provide the goods and services to CCWA in such quantities as CCWA requires for **Jesters Creek East Outfall Replacement – Phase 1,** as described in the Request for Bid dated February 2019.

2. **COSTS:**

   CCWA shall pay the Contractor the prices as stipulated in the Bid Form hereto attached as full compensation relative to the Bid dated _____, a copy of which is attached and incorporated into this contract. The Contractor shall be paid for items of work as noted in Division 4, Section 1 "Work Items and Measurement".

   Once the work commences CCWA shall make Progress Payments to the Contractor on a monthly basis. The Contractor shall submit an Application for Payment for the period ending the 15th day of the month. Each Application for Payment must be submitted to CCWA on or before the 20th day of each month in such form and manner, and with such supporting data and content as CCWA may require, including any and all GEFA requirements.

   Per Georgia Code Section 13-10-2, CCWA will withhold a 10% retainage on each and every Application for Payment until such time as the value of the contract (including change orders) exceeds 50%; and as long as completion and progress of the work is acceptable to CCWA. If after reaching the 50% completion of the value of the contract, CCWA's representative has

determined that the work is unsatisfactory or has fallen behind schedule, then retainage will resume at the previous level of 10%. The Contractor may submit a request for release of retainage 30 days after the completion and final acceptance of the Project, and upon receipt of all necessary documentation including, but not limited to, a final affidavit and release of surety.

3. **TIME FOR COMPLETION OF PROJECT:**

Contractor hereby agrees to commence work within fourteen (14) calendar days under this contract or on a date to be specified in the Notice to Proceed. The total time for the Contractor to complete this project shall not exceed four hundred (400) calendar days. The Contractor and CCWA recognize that time is of the essence in completing this work and that there are delays, expense and difficulties involved in resolving a dispute related to a loss suffered by CCWA if the Work is not completed on time. Accordingly, instead of requiring such proof, CCWA and Contractor agree that as liquidated damages for delay (but not as a penalty), the Contractor shall pay to CCWA, as liquidated damages the amount of $500.00 per calendar day for each and every day or part of a day thereafter that any work as described in the Contract Documents remains incomplete and/or not accepted by CCWA.

4. **WARRANTY ON SERVICES RENDERED:**

The Contractor warrants its workmanship to be free from defects for a period of two (2) years from the date of final acceptance. The Contractor further warrants that its workmanship will conform to all specifications and will perform as specified. Upon receipt of written notice of a defect in workmanship, the Contractor shall repair the defect in a timely manner at no expense to CCWA.

5. **WARRANTY ON GOODS PROVIDED:**

The Contractor warrants its goods for a period of two (2) years from the date of final acceptance. Furthermore, the Contractor warrants that goods ordered to specifications will conform thereto and to any drawings, samples, or other description furnished or adopted by CCWA, and will be fit and sufficient for the purpose intended; and that all goods are merchantable, of good material and workmanship, and free from defect. Such warranties, together with the Contractor's service warranties and guarantees, if any, shall survive inspection, test, acceptance of, and payment for the goods and shall run to CCWA, its successors, assigns, customers at any tier, and ultimate user and joint users. Notices of any defects or non-conformity shall be given by CCWA to the

Contractor within fifteen (15) months after acceptance by ultimate user; provided however that in the event the goods are designed by the Contractor, notice must be given within three (3) years after acceptance by ultimate user. The rights and remedies of CCWA concerning latent defects shall exist indefinitely and shall not be affected in any way by any terms and conditions of this Agreement, including this clause. CCWA may, at its option, and in addition to other remedies available at law, either (i) return for credit, (ii) require prompt correction or replacement of the defective or nonconforming goods, or (iii) have the defective items corrected or replaced at the Contractor's expense and deduct the cost thereof from any monies due the Contractor. The return to the Contractor of any defective or nonconforming goods and delivery to CCWA of any corrected or replaced goods shall be at the Contractor's expense. Goods required to be corrected or replaced shall be subject to the provision of this paragraph and the paragraph of this Agreement entitled "inspection" in the same manner and to the same extent as goods originally delivered under this Agreement. In addition to correcting or replacing any defective or nonconforming goods, the Contractor shall also reimburse CCWA for all costs and expenses incurred by CCWA in connection with inspection and discovery of the defects, identifying and correcting the cause of such defects and all other activities reasonably undertaken by CCWA to obtain conforming goods or attempting to obtain from the ultimate user a waiver to permit the defective goods to be used with all or part of the defective conditions.

6. **INSPECTION:**

CCWA shall have the right to inspect the goods supplied hereunder at any time during the manufacture or fabrication thereof at the Contractor’s facilities or elsewhere. Such inspection may include, without limitation, raw materials, components, work in process, and completed products as well as drawings, specifications, and released data. Final inspection and acceptance shall be after delivery to the delivery point designated by CCWA. If any inspection or test is made by CCWA at the Contractor’s facility or elsewhere, the Contractor shall provide reasonable facilities and assistance for the inspection personnel. CCWA may reject all goods supplied hereunder, which are found to be defective. Goods so rejected may be returned to the Contractor at the Contractor’s expense. No inspection, examination or test, regardless of extensiveness or type, and no approval give in connection with any such inspection, examination or test, whether under this Agreement or another

contract for the same or similar goods, shall relieve it, of any obligation to comply fully with all requirements of this Agreement, including the obligation to produce gods that conform to all requirements of the drawings, specifications and any other Contract Documents. At CCWA's request, the Contractor shall repair or replace defective goods at the Contractor's expense. Failure to inspect goods, failure to discover defects in goods or payment for goods shall not constitute acceptance or limit any of CCWA's rights, including without limitation those under the WARRANTY provisions of this Agreement. In the event inspection reveals a defect or defects and schedule urgency requires that the defect or defects be corrected by CCWA to support production, all cost of such correction, including without limitation installation and removal, will be charged to the Contractor; such charges will also include time and material and appropriate indirect and overhead expenses. The Contractor shall maintain in inspection system acceptable to CCWA covering the goods furnished hereunder.

7. **CONTRACTOR'S AFFIDAVITS:**

The Contractor shall issue a "Standard Contractor's Affidavit Interim Waiver and Release Upon Payment" and a "Standard Contractor's Affidavit Unconditional Waiver and Release upon Final Payment" provided by CCWA before receiving any interim or final payment for any services performed.

8. **ASSIGNMENT AND SUBCONTRACTING:**

The Contractor shall not assign this Agreement or any portion of this Agreement, nor shall the Contractor sub contract for goods or completed or substantially completed services purchased hereunder without the prior express written consent of CCWA. No assignment or subcontract by the Contractor, including any assignment or subcontract to which CCWA consents, shall in any way relieve the Contractor from complete and punctual performance of this Agreement, including without limitation all of the Contractor's obligations under the WARRANTY provisions of this Agreement.

9. **CCWA'S ASSISTANCE AND COOPERATION:**

During the Contractor's performance of this Agreement, CCWA may, but has no obligation to, provide assistance to, or cooperate with, the Contractor in activities that facilitate the proper performance and completion of this Agreement by the Contractor. Such assistance and cooperation may include without limitation: (i) providing engineering or other analysis or advice on

correcting problems; (ii) refraining from strict enforcement of time schedule requirements under this Agreement; (iii) permitting use of test materials or documentation not performed or produced under this Agreement. Such assistance or cooperation by CCWA shall not be construed, and the Contractor agrees that it will not claim that any such assistance or cooperation operates, to relieve the Contractor from complete, proper and punctual performance of all the Contractor's obligations under this Agreement.

10. **WORK ON CCWA'S DESIGNATED PREMISES:**

In the event that the Contractor, the Contractor's employees or agents or the Contractor's subcontractors enter CCWA's designated premises for any reason in connection with this Agreement, the Contractor and such other parties shall observe all security requirements and all plant safety, plant protection, and traffic regulations.

The Contractor shall defend, indemnify, and hold CCWA harmless from all claims, actions, demands, loss, and causes of action, arising from injury, including death, to any person, or damage to any property, when such injury or damage results in whole or in part from the acts or omissions of the Contractor, the Contractor's employees or agents or the Contractor's subcontractor, save and except damage caused by the sole negligence of CCWA. The Contractor, and any subcontractors used by the Contractor in connection with this Agreement, shall carry Workmen's Compensation and Employees' Liability Insurance to cover the Contractor's and any subcontractor's legal liability on account of accidents to their employees. The Contractor and any subcontractor shall carry adequate Comprehensive General Liability and adequate Comprehensive Automobile Liability Insurance covering accidents to their employees. The Contractor and any subcontractor shall carry adequate Comprehensive General Liability and adequate Comprehensive Automobile Liability Insurance covering legal liability of the Contractor and any subcontractor on account of accidents arising out of the operations of the Contractor or any subcontractor and resulting in bodily injury, including death, being sustained by any person or persons, or in any damage to property. At CCWA's request, the Contractor shall furnish to CCWA certificates from the Contractor's insurers showing such coverage in effect and agreeing to give CCWA thirty (30) days prior written notice of cancellation of the coverage.

Division 3 Contract Forms

Section 1: Agreement Form

11. **RISK MANAGEMENT REQUIREMENTS:**

The Contractor shall abide by CCWA's applicable Risk Management Requirements, attached to this Agreement as Exhibit A and hereby incorporated into this Agreement.

12. **TERMINATION FOR DEFAULT:**

(a) CCWA may, subject to the provisions of subparagraph (c) below, by written notice of default to the Contractor, terminate the whole or any part of this Agreement in any one of the following circumstances; (i) if the Contractor fails to perform this Agreement within the time specified herein or any extension thereof; or (ii) if the Contractor fails to perform any of the other provisions of this Agreement, or so fails to make progress as to endanger performance of this Agreement in accordance with its terms, and does not cure such failure within a period of ten (10) days or longer period (as CCWA may authorize in writing) after receipt of notice from CCWA specifying such failure.

(b) In the event CCWA terminates this Agreement in whole or in part as provided in subparagraph (a) above, CCWA may procure, upon such terms and in such manner as CCWA may deem appropriate, services, similar to those so terminated, and the Contractor shall be liable to CCWA for any Excess costs for the same, including without limitation all cost and expenses of the type specified in the "WARRANTY" paragraph of this Agreement; provided, that the Contractor shall continue the performance of this Agreement to the extent not terminated hereunder.

(c) Except with regard to defaults of subcontractors, the Contractor shall not be liable for any excess costs if the failure to perform this Agreement arises out of causes beyond the control and without the fault of negligence of the Contractor such causes may include, but are not limited to, acts of God, or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, flood, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor. If the failure to perform is caused by the default of a subcontractor, and if such default arises out of causes beyond the control of both the Contractor and the subcontractor, and without the fault of negligence of either of them, the Contractor shall not be liable for any excess costs for

failure to perform, unless the services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the Contractor to meet the required delivery schedule. The term "subcontractor" shall mean subcontractor at any tier.

(d) If, after notice of termination of this Agreement under the provisions of this paragraph, it is determined for any reason that the Contractor was not in default under the provisions above or that the default was excusable under the provisions of this paragraph, the rights and obligations of the parties shall be the same as if the notice of termination has been issued pursuant to the "Termination for Convenience" paragraph of this Agreement.

(e) The rights and remedies of CCWA provided in this paragraph shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Agreement.

13. **TERMINATION FOR CONVENIENCE:**

CCWA may at any time by written notice terminate all or any part of this Agreement for CCWA's convenience. If this Agreement is terminated, in whole or in part, for CCWA's convenience, the Contractor shall be paid an amount, to be mutually agreed upon, which shall be adequate to cover the actual and reasonable cost paid by the Contractor for the actual goods and labor reasonably used by the Contractor to perform the work under this Agreement to the effective date of termination, plus a reasonable profit thereon; provided that no amount shall be paid to the Contractor for (i) any anticipatory profits related to work under this Agreement not yet performed, or (ii) costs incurred due to the Contractor's failure to terminate work as ordered on the effective date of termination. In no event shall the total amount paid under the provisions of this paragraph exceed the prices set forth in this Agreement for the work terminated.

14. **DISPUTES:**

Pending resolution of any dispute hereunder, the Contractor shall proceed diligently with the performance of work in accordance with CCWA's direction.

15. **NOTICES:**

All notices required or permitted to be given hereunder shall be deemed to be properly given if delivered in writing personally or sent by United States

certified or registered mail addressed to the Contractor or CCWA, as the case may be, with postage thereon fully prepaid. The effective time shall be at the time of mailing.

16. **ATTORNEYS' FEES:**

The Contractor shall pay reasonable attorneys' fees to CCWA should CCWA be required to incur attorneys' fees in enforcing the provisions of this Agreement or in the collection of any monies herein required to be paid by the Contractor to CCWA.

SIGNATURES ON NEXT PAGE

Division 3 Contract Forms

Section 1: Agreement Form

IN WITNESS WHEREOF this _____ day of _____, 2019**,** said parties have hereunto set their seals the day and year above first written.

Executed on behalf of:

CLAYTON COUNTY WATER AUTHORITY

BY: _____

H. BERNARD FRANKS

TITLE: GENERAL MANAGER

[Corporate Seal]

ATTEST: _____

DATE: _____

CONTRACTOR

BY: _____

TITLE:

[Corporate Seal]

ATTEST: _____

Corporate Secretary

DATE: _____

Division 3 Contract Forms

Section 1: Agreement Form

EXHIBIT A

RISK MANAGEMENT REQUIREMENTS

The Contractor will provide minimum insurance coverage and limits as per the following: The Contractor will file with CCWA Certificates of Insurance, certifying the required insurance coverage and stating that each policy has been endorsed to provide thirty (30) day notice to CCWA in the event that coverage is cancelled, non-renewed, or the types of coverage or limits of liability are reduced below those required. All bonds and insurance coverage must be placed with an insurance company approved by CCWA's Management, admitted to do business in the State of Georgia, and rated Secure ("B+" or better) by A.M. Best Company in the latest edition of Property and Casualty Ratings, or rated by Standard & Poors Insurance Ratings, latest edition as Secure ("BBB" or better). Worker's Compensation self-insurance for individual Contractors must be approved by the Worker's Compensation Board, State of Georgia and/or Self-Insurance pools approved by the Insurance Commissioner, State of Georgia.

CONTRACTS FOR UP TO $50,000	CONTRACTS FOR MORE THAN $50,000
Worker's Compensation – Worker's Compensation coverage on a statutory basis for the State of Georgia with an Employer's Liability limit of $100,000 each Accident, Disease $100,000 each employee, $500,000 Disease policy limit.	**Worker's Compensation** – Worker's Compensation coverage on a statutory basis for the State of Georgia with an Employer's Liability limit of $1,000,000. The increased Employer's Liability limit may be provided by an Umbrella or Excess Liability policy.
Automobile Liability – Automobile liability coverage for owned, hired and non-owned vehicles in the amount of $500,000 combined single limit.	**Automobile Liability** - Automobile liability coverage for owned, hired and non-owned vehicles in the amount of $1,000,000 combined single limit.
Commercial General Liability – Coverage to be provided on "occurrence" not "claims made" basis. The coverage is to include Contractual liability, Per Project Limit of Liability, losses caused by Explosion, Collapse and Underground ("xcu") perils, the "Clayton County Water Authority" is to be added as an Additional Insured and Products and Completed Operations coverage is to be maintained for three (3) years following completion of work.	**Commercial General Liability** – Coverage to be provided on "occurrence" not "claims made" basis. The coverage is to include Contractual liability, Per Project Limit of Liability, losses caused by Explosion, Collapse and Underground ("xcu") perils, the "Clayton County Water Authority" is to be added as an Additional Insured and Products and Completed Operations coverage is to be maintained for three (3) years following completion of work.

Division 3 Contract Forms

Section 1: Agreement Form

RISK MANAGEMENT REQUIREMENTS (Cont'd)

CONTRACTS FOR UP TO $50,000	CONTRACTS FOR MORE THAN $50,000

LIMITS OF LIABILITY:

$1,000,000	Per Occurrence
$1,000,000	Personal and Advertising
$50,000	Fire Damage*
$5,000	Medical Payments*
$1,000,000	General Aggregate
$1,000,000	Products/Completed Operations per Occurrence and Aggregate

**These are automatic minimums*

Owner's Protective Liability – CCWA's Management may, in its discretion, require Owner's Protective Liability in some situations. However, it is not required for this project.

Umbrella and/or Excess Liability – The Umbrella or Excess Liability Policy may be used to combine with underlying policies to obtain the limits required. The Management of the CCWA is requiring a $5,000,000 Umbrella or Excess Liability Limit for this project.

Owner's Protective Liability – CCWA's Management may, in its discretion, require Owner's Protective Liability in some situations. However, it is not required for this project.

END OF SECTION

Division 3 Contract Forms

Section 2: Performance Bond

KNOW ALL MEN BY THESE PRESENTS THAT _____ _____ (as CONTRACTOR, hereinafter referred to as the "Principal"), and _____(as SURETY COMPANY), hereinafter referred to as the "CONTRACTOR'S SURETY"), are held and firmly bound unto the Clayton County Water Authority (as OWNER, hereinafter referred to as "CCWA"), for the use and benefit of any "Claimant" as hereinafter defined in the sum of _____ Dollars ($_____) lawful money of the United States of America, for the payment of which the Principal and the Contractor's Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written agreement with CCWA, dated _____, which is incorporated herein by reference in its entirety (hereinafter referred to as the "CONTRACT"), for the construction of a project known as **Jesters Creek East Outfall Replacement – Phase 1**, (hereinafter referred to as "the PROJECT").

NOW THEREFORE, the conditions of this obligation are as follows:

1. That if the Principal shall fully and completely perform each and all of the terms, provisions and requirements of the Contract, including and during the period of any warranties or guarantees required thereunder, and all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made; and if the Principal and the Contractor's Surety shall indemnify and hold harmless CCWA from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, including but not limited to, any damages for delay, which CCWA may incur, sustain or suffer by reason of the failure or default on the part of the Principal in the performance of any and all of the terms, provisions and requirements of the Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto and any warranties or guarantees required thereunder, then this obligation shall be void; otherwise to remain in full force and effect;

Division 3 Contract Forms

Section 2: Performance Bond

2. In the event of a failure of performance of the Contract by the Principal, which shall include, but not be limited to, any breach of default of the Contract;

   a. The Contractor's Surety shall commence performance of its obligations and undertakings under this Bond no later than thirty (30) days after written notice from CCWA to the Contractor's Surety;
   b. The means, method or procedure by which the Contractor's Surety undertakes to perform its obligations under this Bond shall be subject to the advance written approval of CCWA.

The Contractor's Surety hereby waives notice of any and all modifications, omissions, additions, changes and advance payments or deferred payments in or about the Contract, and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, and advance payments or deferred payments. The Parties further expressly agree that any action on this Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.

SIGNATURES ON NEXT PAGE

Division 3 Contract Forms

Section 2: Performance Bond

IN WITNESS WHEREOF, the principal and Contractor's Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers or attorneys-in-fact, this _____ day of_____20___.

(Name of Principal)

_____

By: _____

Name Printed: _____

Title: _____

Corporate Seal

Attested: _____

Date: _____

(Name of Contractor's Surety)

_____

By: _____

Name Printed: _____

Title: _____

Corporate Seal

Attested: _____

Date: _____

(ATTACH SURETY'S POWER OF ATTORNEY)

END OF SECTION

Division 3 Contract Forms

Section 3: Payment Bond

KNOW ALL MEN BY THESE PRESENTS THAT _____ _____ (as CONTRACTOR, hereinafter referred to as the "Principal"), and _____ (as SURETY COMPANY, hereinafter referred to as the "CONTRACTOR'S SURETY"), are held and firmly bound unto the Clayton County Water Authority (as OWNER, hereinafter referred to as "CCWA"), for the use and benefit of any "Claimant" as hereinafter defined in the sum of _____ Dollars ($_____), lawful money of the United States of America, for the payment of which the Principal and the Contractor's Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written agreement with CCWA, dated _____, which is incorporated herein by reference in its entirety (hereinafter referred to as the "CONTRACT"), for the construction of a project known as **Jesters Creek East Outfall Replacement – Phase 1,** (hereinafter referred to as "the PROJECT").

NOW THEREFORE, the condition of this obligation is such, that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor, services and materials used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

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 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 the Contract with the Principal or any subcontractor performing work on the Project.

In the event of any claim made by the Claimant against CCWA, or the filing of a Lien against the property of CCWA affected by the Contract, the Contractor's Surety shall either settle or resolve the Claim and shall remove any such Lien by bond or otherwise as provided in the Contract.

Division 3 Contract Forms

Section 3: Payment Bond

The Parties further expressly agree that any action on this Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.

IN WITNESS WHEREOF, the Principal and Contractor's Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers on this _____ day of_____20___.

(Name of Principal)

_____

By: _____

Name Printed: _____

Title:_____

Corporate Seal

Attested: _____

Date: _____

(Name of Contractor's Surety)

_____

By: _____

Name Printed:_____

Title:_____

Corporate Seal

Attested: _____

Date: _____

(ATTACH SURETY'S POWER OF ATTORNEY)

END OF SECTION

Division 3 Contract Forms

Section 4: Non-Collusion Certificate

STATE OF _____ , COUNTY OF _____

Personally appeared before the undersigned officer duly authorized by law to administer oaths

_____

_____

_____

who, after being first duly sworn, depose and say that they are all the officers, agents, persons or employees who have acted for or represented

_____

_____

_____ , and that said

_____

In proposing or procuring the Contract with the Clayton County Water Authority on the following project: **Jesters Creek East Outfall Replacement – Phase 1**

has not by (himself, themselves) or through any persons, officers, agents or employees prevented or attempted to prevent by any means whatsoever competition in such bidding; or by any means whatsoever prevented or endeavored to prevent anyone from making a proposal therefore or induced or attempted to induce another to withdraw a bid for said work.

ATTEST:

By: _____
Bidder

By: _____
Name

By: _____
Name

Title: _____

Title: _____

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

Notary Public: _____ My Commission expires: _____

END OF SECTION

Division 4 Specifications

Section 1: Work Assignment and Measurement for Payment

1.1 General

A. This section provides an explanation of the work that is to be completed as part of each Work Item and how the Work Item will be measured for payment.

1. Work Item descriptions incorporate work shown on the Construction Details or Construction Drawings/Detailed Site Map and all related work/specifications referenced in Division 4, Section 3.

2. The Work Items correspond to the Work Items listed on the "Pay Item Schedule" of the Bid Form.

B. The Contractor shall provide all labor, equipment, tools, materials (unless indicated otherwise as detailed in Division 4, Section 2) and incidental items to complete the Work Items in accordance with the Contract Documents.

C. The basis for payment will be the bid unit cost amounts included in the "Pay Item Schedule" and the actual quantities of work completed by the Contractor and approved by the CCWA.

D. Nothing in this Section shall be construed as providing for additional payment beyond the Work Items. The Contractor shall be paid only for the quantity of a Work Item that is completed and authorized/approved by CCWA. No payment will be made for the completion of excessive quantities of a Work Item as determined by the CCWA.

E. Materials (Stored Material) that will become part of a finished product may be purchased by the Contractor in advance of the work and stored on the project site. Payment for Stored Materials may be requested by the Contractor during monthly invoicing. A request for payment of a Stored Material must be accompanied with that material's supporting invoice.

F. The CCWA reserves the right to adjust the quantity of a Work Item up or down as necessary to address needs. Work Items and quantities of a Work Item not completed will be removed from the contract.

1.2 Application for Payment

A. An application for payment shall conform in general with The American Institute of Architects (AIA) contract documents and incorporate the Pay Item Schedule of the Bid Form.

B. Provide document(s) to support each monthly application for payment.

Division 4 Specifications

Section 1: Work Assignment and Measurement for Payment

1. Provide two (2) copies of the application for payment with original signatures.

   a) Provide a spreadsheet summary with each application for payment that documents the Work Items and their quantities being requested for payment. Work Items shall be quantified by using survey stations, individual labels, units installed, percent complete, etc. as shown on the Construction Drawings or specifications herein.

2. Provide two (2) copies of the applicable Waiver and Release Upon Payment Affidavit with original signatures.

3. Additional items to be included with each application for payment are as follows.

   a) Updated Construction Schedule.
   b) Construction Photos (10).
   c) Pipe and Manhole Testing Documentation.
   d) NPDES monitoring reports.
   e) Contractor's safety orientation sign-in form.
   f) Contractor's weekly safety meeting sign-in form.

1.3 Work Items and Measurement

Work Item 1. Mobilization: Defined as the Contractor's preparatory operations necessary to initiate the work. Mobilization shall not exceed 5% of the total bid amount. The Work Item will be paid on a "lump sum" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA. Preparatory operations shall include providing the following and will be paid by the indicated percentage when accepted by CCWA.

a) Construction schedule: 5% of mobilization expense.
b) Work Sequence: 5% of mobilization expense.
c) Flow Interruption Plan: 5% of mobilization expense.
d) Material Submittals: 10% of mobilization expense.
e) Preconstruction Video: 5% of mobilization expense.
f) Stake/Flag Construction Limits and Wetlands: 10% of mobilization expense.
g) Deliver to site all equipment necessary to begin construction of the project: 60% of mobilization expense.

Division 4 Specifications

Section 1: Work Assignment and Measurement for Payment

Work Item 2. Easement Clearing: Defined as the Contractor completing clearing and grubbing in the permanent 20-foot easement areas and other areas as necessary within the construction limits and disposal of all debris from the work site in accordance with the Construction Documents. Debris includes but is not limited to trees, brush, household trash, household items, construction trash, tires, metal and any other material. Areas within the construction limits having only mowed grass and asphalt/concrete pavement surfaces shall not be considered for easement clearing. The Work Item will be paid on a per "square foot" unit cost of construction limits cleared in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 3. Silt Fence Installation: Defined as the Contractor completing silt fence installation in accordance with Construction Documents. The Work Item will be paid on a per "linear foot" unit cost of single-row silt fence installed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 4. Silt Fence Removal: Defined as the Contractor completing the removal and disposal of silt fence and stabilizing any subsequent disturbed soil in accordance with the Construction Documents. The Work Item will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 5. Construction Access Road Installation: Defined as the contractor installing and maintaining a construction access road at locations as indicated in Division 4, Section 3.3.3. CCWA will pay for the initial installation of the access road; Contractor will be responsible for the cost of maintaining the road during construction. Any other access or access roads beyond what is referenced will be at the expense of the Contractor. The Work Item will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 6. Construction Access Road Removal: Defined as the Contractor removing the construction access road (Work Item 5). Erosion and Sediment Control Installation will be paid from other Work Item. The work will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Division 4 Specifications

Section 1: Work Assignment and Measurement for Payment

Work Item 7. Erosion and Sediment Control Installation: Defined as the Contractor completing the installation of erosion and sediment control measures, including permanent grassing, throughout the entire width of the construction limits and material staging areas in accordance with the Construction Documents. Construction limits where asphalt and concrete are situated are not eligible for payment. The Work Item will be paid on a per "square foot" unit cost of construction limits completed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 8. Permanent Re-Grassing: Defined as the Contractor completing additional grading and re-grassing stabilization work. This Work Item only applies to areas where additional follow-up pipe/manhole installation work has been completed and the area was previously grassed under Work Item "Erosion and Sediment Control Installation". The Work Item will be paid on a per "square foot" unit cost of area grassed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 9. NPDES Monitoring and Reporting: Defined as the Contractor completing NPDES monitoring and reporting requirements in accordance with the Contract Documents. The Work Item will be paid on a "lump sum" unit cost with the lump sum being equally divided over the duration of the construction time in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 10. Permanent Fence Replacement: Defined as the Contractor completing the removal of existing fencing of any type and disposing and providing and installing new fence, post and accessories in accordance with manufacturer instructions to match the existing fence. New fencing per property parcel will not be installed until all construction work has been completed on the property parcel. The Work Items will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule and applicable Detail as authorized/approved by CCWA.

Work Item 11. Temporary Fence: Defined as the Contractor, prior to commencing construction in the respective area, installing temporary fence as indicated in Division 4, Section 3.3.1. The Work Item will be paid on a per "linear foot" unit cost in accordance with Pay Item Schedule as authorized/approved by

CCWA. Temporary fencing to be installed as part of trench excavation and flow interruption is not included in this Work Item.

Work Item 12. Asphalt Placement: Defined as the Contractor removing existing asphalt of various thicknesses due to construction activity and disposing of offsite in accordance with local regulations and installing new asphalt in accordance with the Contract Documents. The Work Item will be paid on a per "square foot" unit cost of material installed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 13. Pavement Striping: Defined as the Contractor installing painted line(s) of the appropriate size, color and thickness to asphalt and concrete surfaces of parking lots, roads and walking trails. The Work Items will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule and applicable Detail as authorized/approved by CCWA.

Work Item 14. Pavement Markings: Defined as the Contractor installing painted cyclist and walking person symbol(s) of the appropriate size, color and thickness to asphalt and concrete surfaces of walking trails. The Work Item will be paid on a per "each" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 15. Concrete Placement: Defined as the Contractor removing existing concrete of various thicknesses due to construction activity and disposing of and installing new concrete in accordance with the Contract Documents. The Work Item will be paid on a per "cubic foot" unit cost of concrete installed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 16. Concrete Curb Replacement: Defined as the Contractor removing existing concrete curb due to construction activity and disposing of and installing new concrete curb in accordance with the Contract Documents. The Work Items will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule and applicable Detail as authorized/approved by CCWA.

Work Items 17 – 18. Concrete Wall: Defined as the Contractor removing an existing concrete wall (stormwater detention pond) and footing the width of the construction limits or less as needed and disposing of and installing a new

concrete wall and footing in accordance with the Contract Documents. The Work Item for Concrete Wall footer will be paid on a per "cubic foot" installed unit cost in accordance with the Pay Item Schedule and applicable work Detail as authorized/approved by CCWA. The Work Item for Concrete Wall will be paid on a per "cubic foot" installed unit cost in accordance with the Pay Item Schedule and applicable work Detail as authorized/approved by CCWA.

Work Item 19. Tie-In No. 1: Defined as the Contractor completing all necessary work as described in the Contract Documents to install work from station 0+00 to and including station 0+40 as indicated as "Tie-In (1)". Erosion and Sediment Control Installation will be paid from other Work Item. Only when testing on all work has been accepted by CCWA will the Work Item be eligible for payment. The Work Item will be paid on a "lump sum" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Items 20. Tie-In No. 2: Defined as the Contractor completing all necessary work as described in the Contract Documents to install work from station 89+25 to and including station 89+76.59as indicated as "Tie-In (2)". Erosion and Sediment Control Installation will be paid from other Work Item. Only when testing on all work has been accepted by CCWA will the Work Item be eligible for payment. The Work Item will be paid on a "lump sum" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Items 21 and 24. Cased Crossing No. 1 and No. 2 (Design): Defined as the Contractor completing all necessary work as described in the Contract Documents to design Cased Crossing No. 1 and No. 2. The Work Item will be paid on a per "each" unit cost of cased-crossing Designed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Items 22 – 23 and 25 – 26. Cased Crossing No. 1 and No. 2 (Casing and Pipe and Grout): Defined as the Contractor completing all necessary work as described in the Contract Documents to complete Cased Crossings No. 1 and No. 2. Concrete Curb Replacement will be paid from other Work Item. Erosion and Sediment Control Installation will be paid from other Work Item. The Work Item will be paid on a per "linear foot" unit cost of cased-crossing installed and pipe and grout installed in accordance with the Pay Item Schedule and applicable work Detail as authorized/approved by CCWA.

Division 4 Specifications

Section 1: Work Assignment and Measurement for Payment

Work Items 27 – 30. Primary Pipe Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install the Primary Pipe from survey station 0+40 (end of Tie-In No.1) to survey station 89+25 (beginning of Tie-In No. 2). This Work Item does not include pipe installed as part of Work Items Cased Crossing No. 1 and Cased Crossing No. 2. The work will be measured horizontally from center of manhole to center of manhole. The pipe will be measured vertically from pipe invert to finished surface grade. Only pipe installed where testing has been accepted by CCWA will be eligible for payment. The Work Item will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule and applicable depth Detail as authorized/approved by CCWA.

Work Items 31 – 33. Secondary Pipe Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install the Secondary Pipe. The work will be measured horizontally from center of manhole to center of manhole. The pipe will be measured vertically from pipe invert to finished surface grade. Only pipe installed where testing has been accepted by CCWA will be eligible for payment. The Work Item will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule and applicable depth Detail as authorized/approved by CCWA

Work Items 34 – 37. Service Re-Connection: Defined as the Contractor completing all necessary work as described in the Construction Documents to install the existing service connections designated as Service Re-Connect A through T. Where a re-connection is indicated, install up to 20 feet of pipe at the location. Install additional pipe beyond 20 feet as indicated/required to complete the work. The work will be measured horizontally from center of manhole to the end of pipe. The pipe will be measured vertically from pipe invert to finished surface grade. The Work Item detailed as "Initial 20 Feet" will be paid on a per "each" unit cost in accordance with the Pay Item Schedule and applicable depth Detail as authorized/approved by CCWA. The Work Item "Additional Footage" will be paid on a per "linear foot" unit cost in accordance with the Pay Item Schedule and applicable depth Detail as authorized/approved by CCWA.

Work Item 38. Vibration Monitoring: Defined as the Contractor completing vibration monitoring and reporting for requested buildings as described in the Contract Documents. The Work Item will be paid on a per "each" unit cost (one

per each building) in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 39. Cured-In-Place Pipe (Design): Defined as the Contractor completing all necessary work as described in the Contract Documents to design the cured-in-place pipe. The Work Item will be paid on a per "each" unit cost of in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Items 40 – 41. Cured-In-Place Pipe (Clean and Assess, and Lining): Defined as the Contractor completing all necessary work as described in the Contract Documents to clean, assess and install a cured-in-place pipe. The Work Item "Clean and Assess" will be paid on a per "linear foot" unit cost of in accordance with the Pay Item Schedule as authorized/approved by CCWA. The Work Item "Lining" will be paid on a per "linear foot" unit cost of in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Items 42 – 47. Primary and Secondary Manhole Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install manholes from survey station 0+40 (end of Tie-In No. 1) to survey station 89+25 (beginning of Tie-In No. 2). The base and riser diameter of a manhole will be determined by measuring the inside diameter. The riser above the base will be measured vertically from the top of the constructed manhole invert to the top of reducer slab or to the top of the cone section if a reducer slab is not installed. The riser above the reducer slab will be measured for diameter and vertically from the top of the reducer slab to the top of the cone section. Only manholes installed where testing has been accepted by CCWA will be eligible for payment. The Work Items for manhole base sections will be paid on a per "each" unit cost in accordance with the Pay Item Schedule and applicable Detail as authorized/approved by CCWA. The Work Items for manhole riser height will be paid on a per "vertical foot" unit cost in accordance with the Pay Item Schedule and applicable Detail as authorized/approved by CCWA.

Work Items 48 – 49. Manhole Invert Construction: Defined as the Contractor completing manhole invert construction as described in the Contract Documents. The size of invert construction will be determined by measuring the inside diameter of the manhole base. The Work Items will be paid on a per "each" unit cost in accordance with the Pay Item Schedule and applicable Detail as authorized/approved by CCWA.

Division 4 Specifications

Section 1: Work Assignment and Measurement for Payment

Work Item 50. Unsuitable Soil Excavation: Defined as the Contractor completing the excavation and disposal off site of unsuitable soil and replacing excavated volume with suitable soil or stone in accordance with the Contractor Documents. The quantity of work completed will be determined by measuring the vertical and horizontal distance of removed material from the planned excavation. The Work Item will be paid on a per "in-place cubic foot" unit cost of material removed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 51. Rock Excavation: Defined as the Contractor completing the removal and disposal off site of rock and replacing excavated volume with stone in accordance with the Contract Documents. The quantity of work completed will be determined by measuring the vertical and horizontal distance of removed material from the planned excavation. The Work Item will be paid on a per "in-place cubic foot" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 52. Pipe Collar Installation: Defined as the Contractor completing the installation of pipe collars in accordance with the Contract Documents. The Work Item will be paid on a per "each" unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Items 53 – 54. Demolition Bulkhead Installation: Defined as the Contractor completing demolition bulkhead work in accordance with the Contract Documents. Bulkheads will be installed on 30" and 36" nominal size pipe and 8" pipe with increased cross-sectional area due to deterioration. The Work Items will be paid on a per "each" unit cost in accordance with the Pay Item Schedule and applicable Detail as authorized/approved by CCWA.

Work Item 55. Demolition Pipe Grouting: Defined as the Contractor completing demolition pipe grouting work in accordance with the Contract Documents. The Work Item will be paid on a per "cubic foot" unit cost of grout installed in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Items 56 – 57. Demolition Manhole Abandonment: Defined as the Contractor completing manhole abandonment work in accordance with the Contract Documents. The height of riser removed will be measured from top of

remaining riser section to the top of the cone section whether the cone is at surface grade or above grade. Gravel fill will be measured from existing invert to where gravel fill stops. The Work Items will be paid on a per "vertical foot" unit cost in accordance with the section titled "Pay Item Schedule" of the "Bid Form" and applicable detail as authorized/approved by CCWA.

Work Item 58. Unforeseen Existing Conditions Allowance No. 1: This Work Item will only be used when CCWA requests additional services in writing from the Contractor as may be required to complete the Project. This Work Item will only be used when unexpected conditions arise as determined by the CCWA. Payment shall be for all labor, equipment, materials and incidental costs which are necessary to complete the work.

Work Item 59. Unforeseen Existing Conditions Allowance No. 2: This Work Item will only be used to complete open cut excavation work to replace the existing 36-inch pipe between Proposed Manhole 14 and Proposed Manhole 15 should the existing 36-inch pipe not be suitable to receive cured-in-place pipe as planned by CCWA. The Contractor shall complete work in accordance with existing Work Items and Pay Item Schedule and said work will be paid from this Allowance No. 2.

END OF SECTION

Division 4 Specifications

Section 2: Material Requirements

2.1 General

A. This section describes in general the materials that are to be provided for the work.

B. The material conformance reference forms a part of the specifications and shall be of the latest editions.

C. All materials provided shall be new and domestically manufactured unless approved otherwise.

1. All iron and steel materials shall comply with GEFA American Iron and Steel Special Conditions and Information guidance document.

D. An indication is provided in each below section of whether the material is to be provided by the Contractor or provided by CCWA.

E. Where a material is required and not specifically described below, the material shall be provided by the Contractor and shall conform to this Section "2.1 General".

F. The Contractor shall submit, for CCWA approval to use, product information on all materials required to be provided by the Contractor unless noted otherwise.

1. For each material supplied, provide the following minimum information.
   a) Shop drawings and manufacturer's data showing compliance with Contract Documents.
   b) Identify any deviation from Contract Documents.
   c) Resubmission of a submittal shall clearly identify the correction or change made.
   d) Handling and storage instructions, as applicable.
   e) Installation instructions, as applicable.
   f) Manufacturer's Warranty, as applicable.

2. Materials provided by the Contractor not approved by the CCWA shall be subject to rejection without further justification.

2.2 Fiberglass Reinforced Polymer Mortar Pipe

A. Material provided by CCWA.

B. Material conformance reference.

Division 4 Specifications

Section 2: Material Requirements

1. ASTM D3262: Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe
2. ASTM D4161: Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals
3. ASTM D2412: Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
4. ASTM D3681: Standard Test Method for Chemical Resistance of “Fiberglass” (Glass–Fiber–Reinforced Thermosetting-Resin) Pipe in a Deflected Condition
5. ASTM D638: Standard Test Method for Tensile Properties of Plastics
6. ASTM D4161: Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe Joints Using Flexible Elastomeric Seals
7. ASTM F477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

C. Pipe Description.

1. Pipe shall be push on pipe, minimum pressure class 25, stiffness class 46 unless indicated otherwise.
2. Outside pipe diameters shall be per manufacturer’s literature.
   a) Outside diameter shall be a consistent tolerance throughout the entire barrel length.
   b) All pipe shall be “Adjustment” grade and quality.
3. Pipe ends shall be square to the pipe axis with a maximum tolerance of 1/8-inch.
4. The following information shall be stamped or painted on each pipe.
   a) Manufacturer’s identifying mark.
   b) Pipe diameter.
   c) Pressure class.
   d) Stiffness class.
5. Nominal length per joint of pipe is 20 feet. Actual laying length shall be nominal +1, -4 inches.
6. Joint lubricant as provided by manufacturer.

Division 4 Specifications

Section 2: Material Requirements

D. Coupling and Gasket description.

1. Pipe joint unless otherwise specified shall be field connected with fiberglass sleeve coupling.
2. Gaskets shall be plain rubber suitable for sanitary sewer service. Gasket shall be full-face elastomeric or O-ring style with centered pipe stop.
3. Each piece of pipe shall be fitted with a coupling by the manufacturer prior to shipping.

Acceptable Manufacturers

- Hobas Pipe, USA
- Flowtite.

2.3 Polyvinyl Chloride Pipe and Fitting

A. Material provided by CCWA.

B. Material conformance reference.

1. ASTM D3034: Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
2. ASTM F679: Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings
3. AWWA C900: Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution
4. AWWA C905: Polyethylene (PE) Pressure Pipe and Fittings, 4 In. (100 mm) Through 63 In. (1,600 mm), for Water Distribution and Transmission
5. ASTM D1784: Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
6. ASTM D3139: Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
7. ASTM D3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
8. ASTM D2412: Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading

9. ASTM F477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

C. Pipe and fitting description.

1. Pipe for gravity flow applications shall be standard dimension ratio/pipe stiffness SDR 26 / PS115 push-on joint type.
2. Pipe for pressure flow applications shall be C900/C905 dimension ratio DR 18 push-on joint type.
3. The following information shall be stamped on each pipe.
   a) Class identifier.
   b) ASTM designation.
   c) Manufacturer's identifying mark.
4. Nominal length per joint of pipe is 14 feet or 20 feet.
5. Pipe shall be green in color for sanitary sewer service.
6. Joint lubricant as provided by the pipe manufacturer.

D. Gasket and restrained joint description.

1. Gaskets shall be plain rubber suitable for sanitary sewer service.
2. Gaskets used to restrain joint may be modified with stainless steel teeth.
3. Pipe bell used to restrain joint may be fabricated with internal lock ring (removable).

Acceptable Manufacturers

- As Approved.

2.4 Cured-in-Place Pipe

A. Material provided by Contractor.

B. Material conformance reference.

1. ASTM F1216: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
2. ASTM D790: Standard Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.

3. ASTM D2122 - 98(2004): Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings.
4. ASTM D5813: Standard Specification for Cured-in Place Thermosetting Resin Sewer Pipe.

C. Fabric Tube description.

1. The fabric tube shall consist of one or more layers of absorbent non-woven felt fabric, felt/fiberglass or fiberglass.
2. The fabric tube shall be capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures and have sufficient strength to bridge missing pipe segments, and stretch to fit irregular pipe sections.
3. The wet-out fabric tube shall have a uniform thickness and excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.
4. The fabric tube shall be manufactured to a size and length that when installed will tightly fit the internal circumference of the original pipe. Allowance shall be made for circumferential stretching during installation.
5. The tube shall be properly sized to the diameter of the existing pipe and the length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends.
6. The outside and/or inside layer of the fabric tube shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wet-out) procedure.
7. No material shall be included in the fabric tube that may cause de-lamination in the cured cured-in-place pipe (CIPP). No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between the felt fabric and the activated resin containing a colorant.
8. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The hue of the color shall be dark enough to distinguish a contrast between the fully resin

saturated felt fabric and dry or resin lean areas.

9. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM D5813.
10. The outside of the fabric tube shall be marked a minimum of every 10 feet with the name of the manufacturer or CIPP system, manufacturing lot and production footage.
11. The minimum length of the fabric tube shall be that deemed necessary by the installer to effectively span the distance from the starting manhole to the terminating manhole or access point, plus that amount required to run-in and run-out for the installation process.
12. The nominal fabric tube wall thickness shall be constructed, as a minimum, to the nearest 0.5 mm increment, rounded up from the design thickness for that section of installed CIPP. Wall thickness transitions, in 0.5 mm increments or greater as appropriate, may be fabricated into the fabric tube between installation entrance and exit access points.
13. The quantity of resin used in the impregnation shall be sufficient to fill all of the felt voids for the nominal felt thickness.

D. Resin description.

1. The resin shall be a corrosion resistant polyester or vinyl ester resin and catalyst system that when properly cured within the tube composite meets the physical properties herein, and those, which are to be utilized in the design of the CIPP for this project.
2. The resin shall produce CIPP which will comply with or exceed the structural and chemical resistance requirements of this specification.

E. Structural requirement description.

1. The CIPP shall exhibit a consistent quality which meets or exceeds the minimum properties specified herein.
2. The CIPP design shall assume no bonding to the original pipe wall.
3. The design shall set the long term (50 year extrapolated) Creep Retention Factor at 50% of the initial design flexural.
4. The CIPP shall, at a minimum, meet or exceed the structural properties, as listed below.

MINIMUM STRUCTURAL PROPERTIES

Property	Test Method	Cured Composite Per ASTM F1216
Flexural Modulus of Elasticity (Short Term)	ASTM D-790	250,000 psi
Flexural Strength (Short Term)	ASTM D-790	4,500 psi

5. The required structural CIPP wall thickness shall be based, as a minimum, on the physical properties of the cured composite and per the design of the manufacturer and in accordance with the Design Equations contained in the appendix of the ASTM standards, and the following design parameters:

Design Safety Factor	2.0
Creep Retention Factor	50%
Ovality	2% or as measured by field inspection
Constrained Soil Modulus	Per AASHTO LRFD Section 12 and AWWA Manual M45
Groundwater Depth	As specified or indicated on the Plans
Soil Depth (above the crown)	As specified or indicated on the Plans
Live Load	Highway, railroad or airport as applicable
Soil Load (assumed)	120 lb/cu. Ft.
Minimum service life	50 years

Acceptable Manufacturers

- As Approved.

2.5 Miscellaneous Pipe

A. Material provided by CCWA

B. Miscellaneous type stormwater pipe/fittings of various sizes (concrete, HDPE, corrugated metal) and process pipe/fittings of various sizes (schedule 40 PVC).

Acceptable Manufacturers

- As Approved

Division 4 Specifications

Section 2: Material Requirements

2.6 Transition Coupling (Rigid)

A. Material provided by CCWA.

B. Material conformance reference.

1. ASTM A513: Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
2. ASTM A635: Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability
3. ASME SA36: Rigid follower requirement
4. AWWA C111/ANSI A21.11: American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm through 1,219 mm), for Water

C. Coupling description.

1. Middle ring, bolts and nuts shall be carbon steel, fusion bonded epoxy coating for buried service.
2. Followers shall be ductile iron.
3. Gaskets shall be Buna (S blend).

Acceptable Manufacturers

- Dresser.
- Smith Blair.
- As Approved.

2.7 Transition Coupling (Flexible Rubber)

A. Material provided by CCWA.

B. Material conformance reference.

1. ASTM D5926: Standard Specification for Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems.
2. ASTM C1173: Standard Specification for Flexible Transition Couplings for Underground Piping Systems.

C. Coupling description

1. Manufactured of elastomeric polyvinyl chloride.
2. Tightening bands shall be Series 316 stainless steel, torque setting 60 inch-pounds.
3. Maximum test pressure is 4.3 psi.

Acceptable Manufacturers

- Fernco.
- As Approved.

2.8 Transition Coupling (Flexible Woven Mastic)

A. Material provided by CCWA.

B. Material conformance reference.

1. ASTM C877: Standard Specification for External Sealing Bands for Concrete Pipe, Manholes and Precast Box Sections.
2. ASTM D3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

C. Coupling description

1. Coupler is a reinforced rubberized mastic with a woven polypropylene component.
   a) Polypropylene shall have tensile strength: 4,000 psi minimum.
   b) Polypropylene shall have a tear resistance: 1,500 psi minimum.
2. Coupler is sealed to pipe via mastic using mechanical compression strap.

Acceptable Manufacturers

- Mar Mac.
- As Approved.

2.9 Hydrophilic End Seal

A. Material provided by Contractor.

B. Material conformance reference.

1. ASTM D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
2. ASTM D297: Standard Test Methods for Rubber Products – Chemical Analysis

C. End Seal description.

1. Designed for use with CIPP and manhole terminations.
2. Seal material is hydrophilic neoprene.
3. Seal is molded seamlessly and fitted with a spring-loaded retaining band.

Acceptable Manufacturers

- LMK Technologies.
- As Approved.

2.10 Manhole

A. Material provided by Contractor.

B. Material conformance reference.

1. ASTM C478: Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
2. AASHTO M199: Standard specification for precast reinforced concrete sections.
3. ASTM A615: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
4. ASTM D4101: Standard Specification for Polypropylene Injection and Extrusion Materials.
5. Fed. Spec. SS-S-00210: Preformed sealing material requirement.
6. ASTM C990: Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
7. ASTM C923: Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

8. ASTM C1478: Standard Specification for Storm Drain Resilient Connectors between Reinforced Concrete Storm Sewer Structures, Pipes, and Laterals.
9. ASTM F2510: Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures and Corrugated High-Density Polyethylene Drainage Pipes.
10. ASTM C1244: Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.
11. ASTM A48: Standard Specification for Gray Iron Castings.
12. AASHTO M306-10: Standard Specification for Drainage, Sewer, Utility, and Related Castings.
13. ASTM D4833: Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.
14. ASTM D6693: Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes.
15. ASTM D1004: Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.

C. Manhole Description.

1. Manholes shall be cylindrical and constructed of steel reinforced pre-cast concrete.
2. Minimum compressive 28-day strength of concrete in all sections shall be 4,000 psi.
3. Manholes shall have a minimum inside diameter of four (4) feet or as indicated on the Construction Drawings.
4. Pre-cast sections shall consist of a base section (base slab monolithically poured with vertical wall), riser section, reducer section (as applicable) and eccentric cone top or flat slab top section. The sections shall form a continuous uniform assembly.
5. Joints shall be tongue and groove.
6. Each section shall have not more than two (2) holes for purposes of handling.

7. Ring and cover shall be integrally cast in the top cone section unless indicated otherwise.

D. Step Description.

1. Manhole sections of four (4) foot diameter only shall be fitted with polypropylene plastic-coated steel steps unless indicated otherwise.
2. Steps shall be integrally cast into manhole sections.
3. Steps shall be twelve (12) inches wide and spaced at 1'-0" on center.

E. Joint Sealant Description.

1. Joints between each section shall be sealed water tight with a preformed semi-solid butyl plastic.
2. Gasket shall be provided in such size so that when installed, “squeeze out” of the gasket material, can be observed internally and externally along the entire joint when the joint is completed.

F. Boot Connector Description.

1. Connector for sealing pipe to precast concrete structure opening shall be flexible natural or synthetic rubber suitable for sanitary sewer service.
2. A sleeve/boot connector when used shall be fitted with series 300 stainless steel internal expansion sleeve components and series 300 stainless steel external compression take-up clamps, all constructed utilizing no welds.
3. A gasket connector when used shall be integrally cast into the concrete section by the manhole manufacturer.

G. Cast Iron Frame and Cover Description

1. Manhole frame shall provide a nominal opening of twenty-four (24) inches in diameter and be either traffic rated or non-traffic rated.
2. Frame, cover, grate shall meet load specifications of AASHTO H-20 and H-25.
3. Manhole cover shall have the word “WATER” or “SEWER” or “STORM”, according to the service, cast on top in letters two (2) inches high.
4. Manhole cover required to be bolt-down shall be secured with not less than four (4) stainless steel bolts as provided by the manufacturer.

5. Grate and cover shall be nominal twenty-four (24) inches by thirty-six (36) inches and be either traffic rated or non-traffic rated.

H. Composite Frame and Cover Description.

1. Composite material shall be comprised of a polymer containing 45 to 70% fiber reinforcement with a thermoset resin matrix.
2. All components of the ring and cover shall be resistant to the effects of hydrogen sulfide gas.
3. Manhole frame shall provide a nominal opening of twenty-four (24) inches in diameter and be either traffic rated or non-traffic rated.
4. Ring and cover shall meet load specifications of AASHTO H-20 and H-25.
5. Ring and cover shall have an integrated gasket system, lockable with a cam-type assembly and have a combined weight not to exceed 100 pounds.
6. Cover shall have the word “SEWER” cast on top in letters 2 inches in size.
7. Provide a lock wrench with each cover as provided by the ring and cover manufacturer.

I. High Density Polyethylene (HDPE) Liner Description.

1. Where called for lining on manhole structures shall be provided on all vertical riser walls, cone sections and underside of reducer slabs.
2. Liner shall have a mechanical bond to the concrete structure.
3. Liner shall return through each opening created for pipe penetration.
4. Liner color shall be yellow in color.
5. Liner shall have a minimum thickness of 2 mm and resist a back pressure of 29 psi.
6. Section joints shall be sealed water-tight with suitable strips of liner material, extrusion welded by a representative of the liner manufacturer or section joints shall be sealed water-tight by providing a liner that returns over the section joint and by providing a joint sealant that contacts the entire lined surface of the return and is suitable to resist degradation by hydrogen sulfide.

Acceptable Manufacturers

- Manhole – As Approved.

Division 4 Specifications

Section 2: Material Requirements

- Ring, Frame, Cover – As Approved.
- HDPE Liner – Agru America (HDPE AGRU Sure Grip).

2.11 Manhole Invert Sealing Compound

A. Material provided by Contractor.

B. Description.

1. Liquid compound that penetrates concrete and mortar providing a seal against the effects of hydrogen sulfide and sulfuric acid.

Acceptable Manufacturers

- Navion, Inc. – RadonSeal
- Crystal Lok.
- As Approved.

2.12 Utility Marking Tape

A. Material provided by Contractor.

B. Material conformance reference.

1. ASTM D2103: Standard Specification for Polyethylene Film and Sheeting.
2. ASTM D882: Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

C. Description.

1. Tape shall have a minimum overall thickness of 5 mils and a width as follows.
   a) 2-inch width for pipes up to 12 inches in diameter.
   b) 3-inch width for pipes greater than 12 to 24 inches in diameter.
   c) 6-inch width for pipes greater than 24 inches in diameter.
2. Tape shall have a 0.35 mil solid aluminum foil core with a reverse print laminate to the aluminum foil.
3. Tape shall have a tensile strength of 35 pounds per inch.
4. Tape shall be color-coded in accordance with the American Public Works Association as follows.
   a) “Blue” for potable water and associated lines.
   b) “Green” for sanitary sewer and associated lines.

Division 4 Specifications

Section 2: Material Requirements

Acceptable Manufacturers

- As Approved.

2.13 Concrete and Reinforcement

A. Material provided by Contractor.

B. Material conformance reference.

1. ACI 318: Building Code Requirements for Structural Concrete.
2. ASTM C150: Standard Specification for Portland Cement.
3. ASTM C33: Standard Specification for Concrete Aggregates.
4. ASTM A615: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
5. ASTM A185: Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

C. Concrete Mix Description.

1. Design mix shall be in accordance with ACI 318, latest revision.
2. Provide readily available commercial mix.
3. 28-Day Strength: 3,000 psi, unless otherwise noted.
4. Type: Normal Weight.
5. Slump Range: 3 inch to 5 inch.
6. Weight: 135 pcf to 160 pcf.
7. Air Content: 5% to 7%.
8. Water-Cement Ratio: 0.45 Maximum.

D. Concrete Materials Description.

1. Portland cement: Type I, natural color. Use only one brand of cement throughout project.
2. Fine Aggregates: Meeting ASTM C33.
3. Coarse Aggregates: Meeting ASTM C33, No. 57 Stone.

4. Water: Clean, potable and free from deleterious amounts of alkalis, acids and organic matter.

E. Steel Reinforcement Description.

1. Reinforcement Bar: No. 4 size, Grade 60.
   a) Provide “L” shape bar at footing/wall; 12-inch x 48-inch “L”.
2. Welded Wire: 4x4 – W2.1xW2.1wire mesh.
3. Tie Wire: 16-1/2 or 16-gauge black soft annealed wire.
4. Bar supports, chairs and spacers shall comply with the CRSI “Recommended Practice for Placing Reinforcing Bars”.

Acceptable Manufacturer

- As Approved.

2.14 Concrete Reinforcement Epoxy Anchoring

A. Material provided by Contractor.

B. Material conformance reference.

1. ASTM C881: Standard Specification for Epoxy Resin-Base Bonding Systems for Concrete.
2. ASTM D695: Standard Test Method for Compressive Properties of Rigid Plastics.
3. ASTM E488: Standard Test Methods for Strength of Anchors in Concrete Elements.

C. Description.

1. Material is a two-component, high modulus epoxy.
2. Compressive yield strength at seven days is 12,000 psi minimum.
3. Compressive modulus at seven days is 240,000 psi minimum.
4. Pullout strength at 24 hours is 28,000 psi minimum.

Acceptable Manufacturer

- As Approved.

Division 4 Specifications

Section 2: Material Requirements

2.15 Brick and Mortar

A. Material provided by Contractor.

B. Material conformance reference.

1. ASTM C32: Standard Specification for Sewer and Manhole Brick.
2. ASTM C270: Standard Specification for Mortar for Unit Masonry.
3. ASTM C144: Standard Specification for Aggregate for Masonry Mortar.

C. Description.

1. Brick shall be either solid or cored, medium hard or better, Grade SS and SM, plain textured surface for sewer service.
2. Mortar shall be comprised of one (1) part Portland cement to two (2) parts clean sand. Mortar shall be Type S.
3. Sand shall conform to ASTM C-144.
4. Water shall be clean, potable and free from deleterious amounts of alkalis, acids and organic matter.

Acceptable Manufacturers

- As Approved.

2.16 Grout

A. Material provided by Contractor.

B. Description.

1. Minimum 200 psi, cement/sand high-flow mixture, commercial readily available.

Acceptable Manufacturers

- As Approved.

2.17 Pipe Collar (Anti Seep)

A. Material provided by Contractor.

B. Description.

1. Bentonite-clay coated aggregate.

Acceptable Manufacturers
- Aqua-Blok.
- As Approved.

2.18 Construction Stone

A. Material provided by Contractor.

B. Material conformance reference.
   1. ASTM D2321: Material requirements for flexible pipe
   2. ASTM D2487: Material designation
   3. ASTM C33: Fine and course aggregate requirements

C. Description.
   1. Stone size shall be as indicated on Details or Construction Drawings.
   2. Stone shall be Class I embedment or backfill material consisting of manufactured aggregates (crushed stone).
   3. Stone shall be clean, tough, uniform quality, durable fragments of crushed rock, free from flat, elongated, soft or disintegrated pieces, or other objectionable matter occurring either free or as coating on stone.

Acceptable Manufacturers
- As Approved.

2.19 Asphalt

A. Material provided by Contractor.

B. Material conformance reference.
   1. Georgia Department of Transportation “Asphalt Pavement Selection Guidelines, November 2006”.

C. Description.
   1. Aggregate shall be Group II.
   2. Asphalt cement shall be grade PG64-22, PG67-22 or PG76-22.

3. Hot mix asphalt type shall be Mix Type 9.5, Type I or Type II.

Acceptable Manufacturers
- As Approved.

2.20 Pavement Striping Paint

A. Material provided by Contractor.

B. Description.

1. Water-based paint intended for use for pavement application.
2. Paint shall be fast dry, dry to the touch in 5 minutes, ready for traffic in 15 minutes.
3. Color as required to match existing striping.

Acceptable Manufacturers
- As Approved.

2.21 Geo Grid

A. Material provided by Contractor.

B. Material conformance reference.

1. ASTM D6637: Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method.
2. ASTM D7737: Standard Test Method for Individual geogrid Junction Strength.

C. Description.

1. Properties shall be as follows:
   a) Rib Pitch: Longitudinal 1.60 inch, Diagonal 1.60 inch.
   b) Mid-Rib Depth: Diagonal 0.05-inch, Transverse 0.05 inch.
   c) Mid-Rib Width: Diagonal 0.04-inch, Transverse 0.04 inch.
   d) Rib Shape: Rectangular.
   e) Aperture Shape: Triangular.
   f) Junction Efficiency: 93%.
   g) Radial Stiffness: 225.

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Section 2: Material Requirements

Acceptable Manufacturers

- Tensar – TriAx Geogrid.

2.22 Erosion and Sedimentation Control Materials

A. Material provided by Contractor.

B. Description.

1. Materials shall be in accordance with the Manual for Erosion and Sediment Control in Georgia, 2016 Edition.

Acceptable Manufacturers

- As Approved.

END OF SECTION

Division 4 Specifications

Section 3: Construction Standards

3.1 General Requirements

Where a contradiction exists between language written herein in the specifications and an item shown or note indicated on the Construction Drawings, the written specifications herein shall govern.

3.1.1 Project Submittals

A. The Contractor shall schedule and submit required information for CCWA review as to cause no delay in the work and/or Time for Completion of Project.

B. Submittal review by CCWA will not commence until a Notice to Proceed date is determined.

C. Upon receipt of a submittal, CCWA shall complete its review and return CCWA comments to Contractor within 10 business days.

D. Submittals shall be sequentially numbered. Resubmission of a submittal shall have the original submittal number with sequential alphabetic suffix.

E. Each submittal or resubmittal shall be provided with the following minimum information:

1. Project title.
2. Contractor name.
3. Submittal number.
4. Date of submittal.
5. Reference of the specific contract section.

F. Submittals may be provided via email. Where hard copy submittals are provided, three (3) copies of final approved material data will be required; one (1) copy of approved product material will be returned to the Contractor.

3.1.2 GEFA Documents

A. The following GEFA documents/forms shall be provided by the Contractor during performance of the contract.

1. Changes to Approved Subcontractors Form, page GEFA-14.

2. Certification by Proposed Subcontractor Regarding Equal Employment Opportunity, page GRFA-9.
3. Certification by Proposed Subcontractor Regarding Debarment, Suspension, and Other Responsible Matters, page GEFA-10.
4. Certified payrolls for the Contractor and all subcontractors on a weekly basis. Use Department of Labor form WH-347 or similar form.
5. Other GEFA documents / submittals may be required.

3.1.3 Request for Information and Field Order

A. Contractor's questions/clarifications shall be submitted in writing in the form of a Request for Information (RFI). Each RFI shall be provided with the following minimum information.
   1. Project title.
   2. Contractor name.
   3. RFI number; each RFI shall be sequentially numbered.
   4. Date of RFI.
   5. Reference the Contract Specification section.

B. Minor variations in the work may occur that do not change the value of the contract or the completion date of the contract as agreed to by the Contractor and CCWA. Such variations shall be documented by CCWA in the form of a Field Order. Upon agreement, a Field Order shall be signed by the Contractor. Each Field Order shall be provided to the Contractor with the following information.
   1. Project title.
   2. Contractor name.
   3. Field Order Number; each Filed Order shall be sequentially numbered.
   4. Date of Field Order.
   5. Explanation of the change; reference Contract Specification section where applicable.

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3.1.4 CCWA Requested Revisions

A. The CCWA may at any time request additions, deletions or revisions to the Project. Requests for additions, deletions or revisions where the value of the contract changes shall be made in written form via a Change Order signed by the Contractor and the CCWA Engineer.

B. Should the Change Order request be a work item that is listed and priced on the Bid Form, a cost for the item shall be established using the listed unit price and a quantity mutually agreed upon by the Contractor and CCWA prior to performing the work.

C. Should the Change Order request be an item not listed on the Bid Form, a cost for the item and a quantity shall be negotiated and mutually agreed upon by the Contractor and CCWA prior to performing the work.

D. Work described by the Change Order shall be completed under the terms of the original Contract, except that any claim for the extension of the time caused thereby shall be approved by the CCWA Engineer at the time of signing such a change order.

E. Work performed by the Contractor that is not required by the Contract Document, Construction Plan or as requested by a Change Order shall not entitle the Contractor to an increase in contract price or an extension of contract time.

3.1.5 Construction Schedule

A. Contractor shall prepare and submit for CCWA approval a comprehensive construction schedule.

1. The schedule shall begin with the date of Notice to Proceed and conclude with the date of Final Completion.

2. The schedule shall use days as a unit of measure.

B. Show complete sequence of construction and identify work of separate stages and other logically grouped activities and clearly identify critical paths of activities. Include as a minimum:

1. Submittals for early product procurement.

2. Mobilization and other preliminary activities.
3. Site clearing.
4. Access Road Installation.
5. Tie-In (1).
6. Tie-In (2).
7. Pipe and manhole installation work.
8. Cased Crossing No. 1.
9. Cased Crossing No. 2.
10. CIPP installation work.
11. Pipe and manhole demolition work.
12. Project cleanup and demobilization.

C. The construction schedule shall be updated and submitted to the CCWA on a monthly basis and include the following as a minimum:
   1. Progress of work to within five (5) working days prior to submission.
   2. Approved changes in work scope and activities modified since original submission.
   3. Delays in submittals, resubmittals, deliveries or work.
   4. Other identifiable changes.
   5. Revised projections of progress and completion.

3.1.6 Differing Subsurface or Physical Conditions

A. If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:
   1. Is of such a nature as to require a change in the Contract Documents; or
   2. Differs materially from that shown or indicated in the Contract Documents; or
   3. 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, notify CCWA 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 by CCWA. In the case of emergency, the Contractor must notify CCWA immediately, not to exceed 12 hours, of becoming aware of the condition.

B. After receipt of required written notice, the CCWA and Contractor shall promptly review the pertinent condition, determine the necessity of obtaining additional exploration or tests with respect thereto, and determine a mutually accepted course of action.

C. 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 cost of, or time required for, performance of the Work; subject, however, to that the condition meets above Section 3.1.3, Part A

3.1.7 Weather Delays

A. When no pipe installation work and/or no manhole installation work can be performed on a particular day due to measurable precipitation, freezing temperatures or frozen ground surface conditions, then the contract is subject to a time extension of one (1) day only. The Contractor cannot charge for overhead, labor, equipment or incidental expenses due to a weather delay.

B. When any pipe installation work and/or manhole installation work is performed on a particular day and measurable precipitation, freezing temperatures or frozen ground surface conditions do occur, then the Contract shall not be subject to a time extension.

C. Weather recording devices shall be situated on the Project site.

D. Contractor shall deliver a written contract time extension request to CCWA for a weather delay within 24 hours of measuring the weather event. A contract time extension shall not be granted should a written request not be received by CCWA as indicated.

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Section 3: Construction Standards

3.1.8 Project Meetings

A. A preconstruction meeting and construction progress meetings shall be conducted by CCWA and attended by the Contractor.
   1. The dates, times and place of meetings shall be mutually agreed upon by both parties.
   2. CCWA will document the meetings and distribute meeting minutes.

B. A preconstruction meeting will be conducted during the period of mobilization and discuss at a minimum the following:
   1. Submittals.
   2. GEFA submittal requirements.
   3. Initial construction schedule.
   4. Site safety and construction facilities.
   5. Material handling and storage.
   6. Work sequence.

C. A construction progress meeting will be conducted every two weeks and discuss at a minimum the following:
   1. Review work progress to date.
   2. Construction schedule updates.
   3. Changes in the work.
   4. Work sequence.

   Should the need not exist for meetings every two weeks, then the progress meetings will be held on a monthly basis.

3.1.9 Land Disturbance Permits

A. CCWA submitted a Preconstruction Notification (PCN) and supporting documentation to the United States Army Corps of Engineers for this project. This project will be constructed in accordance Nation Wide Permit conditions.

B. CCWA shall obtain necessary Land Disturbance Activity (LDA) permits from the local issuing authority and pay associated fees.

Contractor shall have a copy of the LDA permit and construction plan (as applicable) stamped approved by the local issuing authority on the job site whenever work is being performed.

C. CCWA shall obtain the National Pollutant Discharge Elimination System (NPDES) permit from the Georgia Environmental Protection Division (EPD) and pay associated fees. Contractor shall provide a signature as the operator when CWWA submits the Notice of Intent.

3.1.10 Work Times

A. Work on the Project site area shall be allowed seven (7) days a week from 7 a.m. to 7 p.m. with the exceptions listed in Item "B" below. Other times may be allowed by CCWA permission only.

B. No work shall be allowed on the following days/dates:
   1. July 4, 2019
   2. September 2, 2019
   3. November 28-29, 2019
   4. December 24-25, 2019
   5. January 1, 2020
   6. May 25, 2020
   7. July 4, 2020

3.1.11 Site Safety and Precaution

A. Contractor shall prepare and submit to CCWA the Contractor's Safety Plan for the project. The Safety Plan shall include copies of the orientation sign-in form and weekly safety meeting forms. The Safety Plan and all construction shall comply with the Department of Labor, Occupational Safety and Health Administration (OSHA), 29 Code of Federal Regulations Part 1926, latest revision. This Safety Plan shall detail safety methods and procedures to assure the safety of employees, subcontractors and other visitors to the construction site.

The Contractor shall also develop a Safety Orientation for all employees, subcontractors and other visitors to the construction site.

1. Orientation training shall address all components identified in the safety program.
2. Orientation training shall be completed prior to allowing employees and subcontractors to start on-site work.
3. All employees, subcontractors and other site visitors shall sign a form created by the Contractor showing they received the orientation training, Copies of the signed forms shall be provided to CCWA once a month with the pay application.

B. The Contractor shall be responsible for preparing and implementing a Confined Space Entry Plan in accordance with OSHA's Permit Required Confined Space standard, contained in 29 Code of Federal Regulations (CFR) 1910.146. The CCWA reserves that right to have this document submitted at any time.

C. The Contractor shall hold an onsite safety meeting once a week with all employees and subcontractors.

1. The Contractor shall provide a form showing the safety topic covered, date, time and signatures of attendees. Copies of the safety meeting forms shall be submitted to CCWA once a month with the pay application.

D. The Contractor shall provide all staff with photo identification and use vehicles with permanent company logos/markings/identification that are prominently displayed and clearly visible at all times.

E. The Contractor shall provide an experienced supervisor in charge of field operations and subcontractors. The field supervisor shall be responsible for the safety of all site workers and site conditions, as well as ensuring that all work is conducted in conformance with these Specifications and to the level of quality specified. The field supervisor shall be responsible for reporting any safety or regulatory issue of concern immediately to CCWA. The Contractor's superintendent or foreman shall be on-site at all times when any work is being performed, including any work being performed by their subcontractors.

F. The Contractor shall be responsible for site security. Contractor shall remove as necessary fences and gates and/or other controls to

facilitate work. Removed fences shall be reinstalled no later than at the end of that day the fence was removed.

G. The Contractor shall use special care in work methods and take all necessary precautions against improper use of equipment to avoid damaging pipe and/or structures or CCWA, public and private property. If, in CCWA's opinion, the Contractor's work has caused damage, the Contractor shall repair the damage timely and to the complete satisfaction of CCWA at no additional cost. In the event that funds are expended by CCWA related to these activities the Contractor shall reimburse CCWA for any and all such costs.

H. The CCWA shall not be responsible or compensate the Contractor for the damage to and/or loss of Contractor's equipment as result of the work.

I. Note that the Project site area is situated within a 100-year flood zone. The project site area floods on low frequency storm events. Take precautions to protect work, equipment and materials. The CCWA shall not be responsible or compensate the Contractor for the damage to and/or loss of Contractor's equipment as result of flooding.

3.1.12 Traffic Control

A. CCWA operates as an agency within Clayton County and in coordination with other agencies including Clayton County and incorporated cities. The CCWA shall be responsible for coordinating the work in accordance with the requirements of local, state and federal authorities and jurisdictions as required; this includes fire, police, school, traffic and other public safety authorities.

B. When required the Contractor shall provide and maintain traffic control. Prior to a lane closure or road closure, the Contractor shall prepare and provide the CCW a copy of the traffic control plan for local/state approval. Traffic safety devices including cones, signs, flashing lights and other necessary safety equipment must be used to comply with local jurisdiction requirements and standard industry practices.

C. A minimum of two Department of Transportation (D.O.T.) certified Flaggers will be required when directing traffic and/or closing any lane or road.

3.1.13 Construction Facilities and House Keeping

A. The Contractor may utilize areas within the "construction limits" designation as shown on the Construction Drawings for Project use.

B. The Contractor may move Contractor's field office and other containers on to Project site areas designated as staging areas.

C. The Contractor or any other worker may not establish quarters for the purpose of overnight stay or temporary residency on the Project site or other CCWA property.

D. The Contractor and/or any other worker(s) must park vehicles only in the "construction limits" or "Staging Area" designations as shown on the Construction Drawings. The parking of any vehicle or equipment on public roads, parking lots or private property is not allowed.

E. The Contractor shall employ the "best practicable means" to minimize and mitigate noise as well as disturbance resulting from operations. Mitigation measures shall include the utilization of sound suppression devices on all equipment and machinery, particularly in residential areas and in the near vicinity of hospitals and schools and especially at night.

F. The Contractor shall remove and dispose of papers, plastics, tin cans and general garbage from the site on a daily basis. Keep the Project site clean.

1. Where in these specifications the term "disposal of" is used, the contractor shall dispose of the material/debris off of the project site in accordance with local and state regulations.

H. The burning of materials is not permitted on the Project site or other CCWA property.

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3.1.14 Temporary Utilities

A. CCWA shall provide the Contractor a meter/backflow device to collect potable water from a nearby fire hydrant at no cost to the Contractor.

1. The Contractor shall be responsible for and return the meter/backflow device to CCWA in the same condition as received. Should the Contractor damage or lose the meter/backflow device, then the Contractor shall be responsible for compensating CCWA for the damages.
2. The Contractor shall be responsible for moving water to Project site area.

B. The Contractor shall provide and maintain sanitary sewer facilities for Contractor's employees, subcontractors and all other on-site employees. Service, clean and maintain facilities and enclosures.

C. Contractor shall provide any necessary electrical power.

3.1.15 Construction Videos and Photographs

A. The Contractor shall complete the following videos and provide to CCWA is such file format as required.

1. A preconstruction video prior to any disturbance of all Project site areas documenting preconstruction conditions. The video shall begin at survey station 0+00.
2. A post construction video upon completion of all work activities of all Project site areas documenting completed conditions. The video shall begin at survey station 0+00.

B. The Contractor shall complete a minimum of 10 photos each month that sufficiently documents work progress and provide to CCWA is such file format as required.

3.1.16 Material Handling and Storage

A. Prior to accepting (unloading) any material on the Project site, the Contractor shall complete a thorough inspection of the material for contract compliance and damages.

1. Once an unloading process has started, the Contractor is responsible for storage and protection of the material until Final Acceptance by CCWA.
2. Any material found to be out of compliance with contract conditions or damaged shall be immediately reported to CCWA and its manufacturer for further inspection.
3. Should CCWA agree to accept a material that is out of compliance with contract conditions or damaged, then the Contractor shall not be responsible for the material.

B. The Contractor shall furnish equipment and facilities for loading, unloading and material distribution.

1. The Contractor shall handle the material in accordance with the manufacturer's instructions.
2. Contractor shall be responsible for moving material from storage areas to areas where work is being performed. Along Project route, pipe shall not be strung farther than that can be laid in that day; drainage ditches shall not be obstructed. Any pipe strung and not laid at the end of the day shall be returned to a storage area.
3. Any pipe, piping component or material dropped, dumped or damaged by the Contractor during handling procedures shall be subject to rejection by the CCWA without further justification and replaced at the expense of the Contractor.

C. CCWA intends for all material to be delivered to the Project site area.

1. If necessary, some material may be delivered to the CCWA Warehouse Building "B" located at 7340 Southlake Parkway in Morrow, Clayton County.
2. Material delivered to the Warehouse Building "B" location will require Contractor pickup.

D. Materials may be stored at Staging Areas #1, #2, #3 and #4 along the Project route as shown on Construction Drawings S-1, S-2 and S-3.

1. Piping components shall be stored above ground level and adequately supported on wood blocking or other approved support material.
2. Any material in the possession of the Contractor that is stolen or damaged by impact, vibration, abrasion, discoloration or other damage shall be repaired in accordance to manufacturer instructions or replaced at the discretion of the CCWA at the expense of the Contractor.

3.1.17 Construction / As-Built Surveying

A. The Contractor shall stake/flag in advance of the Contractor's work the Construction Limits and wetlands as shown on the Construction Drawings.

B. CCWA will provide a survey coordinate file for Contractor use.

C. The Contractor shall complete all other surveying/staking needs required to complete the work. Contractor shall immediately notify the CCWA of any error or concern the Contractor may have with regards to the survey work.

D. CCWA may perform periodic checks of the Contractor's survey work to verify accuracy. The Contractor shall facilitate CCWA's work.

E. The Contractor shall complete a surveyed as-built of the manholes installed for the project and provide data electronically in such manner as required by CCWA.
   1. Provide the center location and elevation of the manhole, invert elevation of all incoming and outgoing pipes in the manhole, before the reducer slab is installed.
   2. Provide the elevation on the top of the reducer slab.
   3. Provide the elevation on the top of the ring and cover.

3.1.18 Material Testing Services

A. CCWA shall contract with a material testing laboratory and provide soil compaction and concrete strength material testing services.
   1. Testing shall be performed at intervals selected by CCWA.

2. The Contractor shall cooperate and facilitate material testing services' work.

B. Testing and reporting shall be performed in accordance with applicable ASTM standards.
   1. Testing services shall promptly notify CCWA of irregularities or deficiencies in the work.
   2. Testing services shall provide CCWA and the Contractor copies of field reports and test results.

C. The testing of pipe and manhole components is described in later sections and is not included as part of CCWA's provided material testing services.

3.1.19 Manufacturer Services

A. The pipe manufacturer shall furnish the services of a factory representative to provide handling, installation and inspection training in accordance with the following schedule.
   1. Be available for two (2) eight-hour days during the start of pipe delivery and installation.
   2. Be available for two (2) eight-hour days during the construction process to provide technical assistance.

B. The manhole manufacturer shall furnish the services of a factory representative to provide handling, installation and inspection training in accordance with the following schedule.
   1. Be available for three (3) eight-hour days during the start of manhole delivery and installation.
   2. Be available for every HDPE joint-cap sealing procedure.
   3. Be available for three (3) eight-hour days during the construction process to provide technical assistance.

3.2 Work Sequence

A. The following four (4) work sequences are general in nature and are intended to guide the Contractor in performing the work.

B. The Contractor shall propose a work sequence(s) to perform the work and submit to CCWA for approval.

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Sequence No. 1 Survey Stations (0+00 – 30+00)

A. Provide flow by-pass from the following lines and into existing 60” Outfall at existing Manhole 1 next to station 0+00 by Tara Bridge Apartments.
   1. 36” Outfall from existing Manhole 8
   2. 8” line behind building 1
   3. Service (A)
   4. Service (B)
   5. Service (C)
   6. Service (D)
   7. Service (E)
   8. Service (F)

B. Install Proposed Doghouse Manhole on the existing 8-inch line south of Proposed Service Reconnect (H).

C. Provide flow by-pass for (Service H) from newly installed Doghouse Manhole into existing on the 12” main south of Proposed Manhole 14.

D. Complete Tie-In No. 1.

E. Install proposed 36” pipe and proposed Manholes from Tie-In No. 1 to Proposed Manhole 12.

F. Install cased crossing (1), install proposed Manhole (13) and install proposed pipe from Proposed Manhole 12 to Proposed Manhole 13.

G. Install 1 joint of 8” pipe out of proposed Manhole (13) for reconnecting Service (G).

H. Install Proposed Secondary Manholes (A, B, C) and reconnect Services (A, B, C, D, E, F) when practicable.

I. Test all pipe and manholes installed up to proposed Manhole (13).

J. By-pass on the following services can be disconnected (A, B, C, D)
   - Note: Continue to run original bypass on the 36” and service H while setting up by-pass for Sequence No. 2.

K. Complete proposed demolition.

Sequence No. 2 Survey Stations (27+00 – 41+00)

A. Provide flow by-pass from existing 36” Outfall in the street at Southlake Drive existing Manhole 11 to existing Manhole (9).

B. Provide flow by-pass from the following lines and into existing Manhole (9).
   a. Service (I)
   b. Service (J)
   c. Service (K)

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C. Install proposed 36” pipe and Proposed Manholes from Proposed Manhole (13) to one joint of 36” pipe out of Proposed Manhole (14).

D. Install Cased Crossing 2.

E. Install proposed 36” pipe, install proposed Manhole (15-16) and lay 1 joint out of proposed Manhole (15) back towards proposed Manhole 14.

F. Install CIPP from Proposed Manhole (14) Proposed Manhole (15).

G. Install Proposed Secondary Manholes (D, F and associated tangents) and reconnect services (H, I, J) when practicable.

H. Test all pipe and manholes up to proposed Manhole (16).

I. By-pass on the following Services (H, I, J) can be disconnected.

- Note: Continue to operate flow by-pass from existing manhole 8 and existing manhole 11 while setting up flow by-pass for Sequence No. 3.

J. Complete proposed demolition.

Sequence No. 3 Survey Stations (27+00 – 61+50)

A. Provide flow by-pass for existing 36” outfall from Existing Manhole (17) to installed Proposed Manhole (16).

B. Provide flow by-pass for the following Services.

1. Service (L)
2. Service (M)
3. Service (N)

C. Install Proposed 36” pipe and Proposed Manholes from Proposed Manhole (16) to Proposed Manhole (20).

D. Test all pipes and manholes up to installed proposed Manhole (20).

E. Installed Proposed secondary Manholes (E, F, G, H) and reconnect services (G, K, L, M, N, O).

F. Test installed secondary Manholes and associated Tangents.

G. Discontinue remaining by-pass from Sequence No. 1.

H. Discontinue remaining by-pass from Sequence No. 2.

I. By-pass on the following services can be disconnected (G, K, L, M, N, O).

- Note: Continue to operate flow by-pass on the 36” at Existing Manhole 20 while setting up by-pass for Sequence No. 4.

J. Complete proposed demolition.

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Sequence No. 4 Survey Stations (43+61 – 90+10)

A. Install Proposed Doghouse Manhole on the tangent between Battle Creek Road and Tie In 2
B. Provide flow by-pass for existing 36” outfall from the installed Proposed Doghouse Manhole to installed Proposed Manhole (17).
C. Provide flow by-pass for following Services (P, Q, R, S, T, U).
D. Discontinue by-pass pumping from Sequence No. 3.
E. Install 36” pipe and Proposed Manholes from Proposed Manhole (20) to Proposed Manhole 34.
F. Install Tie-In No. 2.
G. Install Proposed Secondary Manholes (I, J, K, L, M).
H. Reconnect Services (P, Q, R, S, T, U) when practicable.
I. Test all pipe and manholes up to Proposed Manhole (35).
J. Discontinue flow by-pass.
K. Complete proposed demolition.
L. Complete restoration and demobilization.

3.3 Site Work

3.3.1 General

A. Display permits and contact respective agencies as required by applicable permit conditions.

B. Locate existing utilities in accordance with state and local regulations.

C. Prior to commencing any on-site work, establish perimeter erosion control measures and construction exits as indicated on the Construction Drawings.

D. Prior to commencing any other job site activity, installed erosion control measures shall be inspected and approved by CCTD.

E. Providing and maintain a safe work site. Utilize safety cones, barricades, caution lights, caution tape, safety fencing, etc. as necessary to protect the workers and the public at all times.

F. Install temporary galvanized mesh fence up to a minimum height of 6 feet, corner post, line posts, top rail, bottom tension wire, accessories and fasteners and subsequently remove all fencing materials from

work site and disposing any remaining soil and/ or other construction related materials/debris. Any holes remaining from post removal shall be filled with dry sand. Fence shall be installed in such manner as to prevent property owners' pets from passing through/under fence. Temporary fence shall remain in-place until construction is completed in the respective area. Locations for Temporary Fencing are as follows:

1. Starting at the south west corner of the construction limits west of station 0+00 and extending along the south side of the construction limits behind the buildings to station 7+53.
2. Both sides of the construction limits starting at station 25+00 and extending to the edge of the construction limits at Tara Boulevard and parallel to Tara Boulevard.
3. At the east side of Tara Boulevard, parallel to Tara Boulevard. East of Tara Boulevard (north side) to the corner of the building. East of Tara Boulevard (south side) to station 31+00.
4. Both sides of the construction limits starting at station 39+00 to Main Street and parallel to Main Street.
5. At the east side of Main Street, parallel to Main Street. East of Main Street (north side) to station 41+00. East of Main Street (south side) to station 42+00. Maintain access to adjacent business.
6. Around the four sides of Staging Areas #1, #2 and #3. Need to install gates at each staging area for access.
7. At Staging Area #4, parallel to Tara Road. South side of the construction limits from Tara Road, west to station 76+00. North side of the construction limits from Tara Road, west to station 79+00. Need to install a gate at staging area for access.

3.3.2 Clearing and Grubbing

A. Stake/flag the Construction Limits in advance of the work. Contractor shall not remove stakes or clear those flagged trees/brush.

B. Area within the permanent easement, road right-of-way or 20-foot width centered over the pipe shall be cleared of all trees, stumps,

buried logs, brush, grass, household items, construction trash, tires, metal and any other unsatisfactory debris unless indicated otherwise. Contractor should assume that all work will require clearing.

C. Areas outside the permanent easement but within the construction limits may be cleared at the Contractor's discretion.

D. Trees to remain in or near work area shall be protected from clearing activities. Should trees left remaining in the construction limits at the discretion of the Contractor subsequently die during the warranty period, then the Contractor shall be responsible for their removal and disposal and any related restoration work.

E. All damaged trees over three (3) inches in diameter shall be repaired by an experienced nursery expert.

F. Tap roots and other projections exceeding 1-inch in diameter shall be grubbed out to a depth of at least 18 inches.

G. All holes remaining after grubbing activities shall be filled with suitable material and properly compacted in layers to density required for in-place backfill.

H. All materials cleared and grubbed shall be disposed of off-site in accordance with applicable local, state and federal regulations.

I. Burning of any material or debris shall not be permitted.

J. Prior to and upon completion of clearing and grubbing activities, install erosion control measures as identified on the construction drawings.

3.3.3 Access Road Construction

A. Construct access road at Contractor's discretion (size and material determined by Contractor) from station 4+00 to station 13+00, station 45+00 to station 61+50 and station 71+50 to station 79+00 to be used to transport material for construction.

B. Contractor is to maintain access road during construction at their expense.

C. Upon completion of construction, stone for access road is to be removed and hauled to a CCWA facility; facility location to be determined at that time.

D. Area of access road will be graded to within four (4) inches of existing finish grade and topped with four (4) inches of clean top soil, graded to match existing adjacent grades.

E. Area to be seeded and mulched once top soil is installed.

3.3.4 Topsoil Stockpiling

A. Remove topsoil to full depth encountered in areas to be graded and stockpile soil.

B. Soil shall be placed such that the integrity of an excavation or proposed excavation is not jeopardized.

C. Stockpile shall be shaped to drain and install appropriate erosion control measures.

3.3.5 Existing Utilities

Remove and subsequently replace at same grade and elevation existing utility pipes and associated components.

3.3.6 Removing Pavement

A. All asphalt pavement, including the walking trail, within the Construction Limits and where trenching is to be completed shall be removed and replaced unless indicated otherwise on the Construction Drawings. Work shall be coordinated and in compliance with the appropriate road and highway agencies.

B. Driveways shall be removed to their full width from the edge of road pavement to the back of right-of-way or construction lane whichever is greatest distance from edge of road pavement, unless indicated otherwise.

C. Sidewalks shall be removed to their full width from the edge of curb, road pavement or construction/control joint to the nearest adjacent construction/control joint.

D. Curbs shall be removed for the entire length from control joint to control joint.

E. Pavement shall be marked squarely and neatly to size as indicated on Construction Drawings.

F. Pavement shall be scored and broke along the marked lines using a rotary saw and jackhammer. Pavement shall not be machine pulled for initial brake.

G. Adjacent pavement damaged during construction shall be removed as described above and replaced in accordance with the Construction Drawings at the expense of the Contractor.

H. Upon removal, asphalt and concrete shall be loaded and disposed of off-site the same day of removal.

3.3.7 Removing Concrete Wall

A. Remove concrete wall/footing to lengths as necessary to complete the work.

B. Saw cut walls plumb and footings neatly through their entire width.

C. Upon removal, concrete shall be loaded and disposed of off-site the same day of removal.

3.3.8 Grading

A. Finish grade areas to lines and elevations indicated as existing grades on drawings or to surrounding surface grades.

B. Graded areas shall be within 0.10 foot of required subgrade elevation and shall not permit the ponding of water.

C. In areas to receive grassing, redistribute stockpiled topsoil over graded areas to a minimum depth of four (4) inches. Provide additional topsoil to achieve required depth.

D. Where finish grade meets or abuts curbs, walks or pavement, uphill grades shall be slightly higher than curb or pavement to permit drainage.

E. In yard, right-of-way and mowed areas, remove rocks and dirt clods ¾-inch in size and larger.

F. Excess soil, rock and debris shall be removed from the project site and disposed of.

3.3.9 Erosion Control and NPDES Monitoring

A. Stabilize Project site areas in accordance with the erosion control plans and details and/or the "Manual for Erosion and Sediment Control in Georgia", latest edition.

B. The construction site is upstream and within 1 mile of an impaired stream segment. The following erosion control measures and monitoring shall be completed.

1. Use flocculants or coagulants and/or mulch to stabilize areas left disturbed for more than seven (7) calendar days.

2. Use mulch filter berms, in addition to silt fence, on the site perimeter from Station 0+00 to Station 69+00. Mulch filter berms are not to be placed in waterways or areas of concentrated flow.

3. Certified personnel shall conduct inspections at least once every seven (7) calendar days and within 24 hours of the end of the storm that is 0.5 inches rainfall or greater.

4. Conduct turbidity sampling after every rain event of 0.5 inch or greater within any 24-hour period.

C. Complete NPDES monitoring in accordance with erosion control NPDES notes.

1. Submit results of monitoring to CCWA on a monthly basis.

3.3.10 Clean-Up

A. Upon completion of each day's work, broom sweep/pressure wash as necessary any dirt/mud/debris from side walk, curb and pavement surfaces and dispose.

B. Upon site being stabilized with vegetation, all erosion control measures and any remaining debris (i.e. silt fence, stakes, hay bales) shall be removed from site areas.

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3.4 Flow Interruption

A. A flow interruption plan shall be submitted for CCWA review and approval.

B. No excavation activities shall commence until a flow interruption plan is approved by CCWA.

C. Flow interruption may be completed using plugging and/or bypass pumping methods. Use upstream manholes for bypass pumping. Newly installed 36” sanitary sewer segments (manhole to manhole) may receive flow as soon as all testing is completed and accepted.

D. The following list provides average flows that are to be considered when planning flow interruption.

1. 36” Outfall at Station 3+75 at Existing MH 3: 9,100 gpm
2. 36” Outfall at Station 27+56.38 at Existing MH 8: 9,100 gpm
3. 36” Outfall at Station 55+92.37 at Existing MH 16: 8,400 gpm
4. 36” Outfall upstream of Station 89+60.20: 8,400 gpm
5. 8” Service Connection (Tie-In No. 1): 100 gpm
6. 6” Service Connection (A): 100 gpm
7. 8” Service Connection (B): 300 gpm
8. 8” Service Connection (C): 300 gpm
9. 8” Service Connection (D): 100 gpm
10. 8” Service Connection (E): 100 gpm
11. 6” Service Connection (Existing MH 8): minimal
12. 8” Service Connection (F): 300 gpm
13. 8” Service Connection (G): 100 gpm
14. 12” Service Connection (H): 1,000 gpm
15. 8” Service Connection (I): 100 gpm
16. 4” Service Connection (J): minimal
17. 8” Service Connection (K): 100 gpm
18. 8” Service Connection (L): 300 gpm
19. 6” Service Connection (M): minimal
20. 8” Service Connection (N): 500 gpm
21. 8” Service Connection (O): 300 gpm
22. 8” Service Connection (P): 300 gpm
23. 8” Service Connection (Q): 100 gpm
24. 8” Service Connection (R): 100 gpm
25. 8” Service Connection (S): 100 gpm

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26. 8” Service Connection (T): 100 gpm

E. The flow interruption plan shall indicate the following as a minimum:

1. Flow interruption method; flow bypass or plugging.
2. Map that shows manholes/structures affected; this includes plugging/suction points, flow discharge points, space required for pump(s) set up and route for discharge piping.
3. Indicate pump(s) and piping size; pumping capacity shall be capable of handling peak flows. Provide a single pump system curve that represents all pumps at a single pumping location; the pump system curve shall show the system can meet or exceed the anticipated peak flow.
4. Emergency response plan to be followed in the event of a failure of the system.

F. Furnish, install and maintain redundant pumps, automated emergency call services, appurtenances, bypass piping and fuel required to maintain existing flows and services. All pumps used shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps may be electric, or diesel powered. All pumps used must be capable of running dry. Bypass pumping systems will be equipped to be operated continuously 24 hours per day. Each pump shall have its own suction piping; two or more pumps cannot be manifolded together sharing a single suction line. No more than two (2) pump discharge hoses shall be used for the bypass/diversion. If the flow exceeds the capacity of 2 hoses, then rigid piping shall be used. The rigid piping shall consist of HDPE or steel pipes with suitably pressure rated couplings to withstand twice the maximum system pressure or 50 psi, whichever is greater. Under no circumstances will aluminum irrigation type piping or glued PVC pipe be allowed.

G. Pumped sewage shall be in an enclosed hose or pipe that is adequately protected from traffic. Install traffic rated hose/ramp assemblies where discharge crosses paved surfaces and entrances to businesses/residential properties.

H. All pump/engine assemblies shall be fully enclosed and equipped with sound suppression systems.

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I. All bypass pump suction point locations and discharge point locations shall be covered/sealed to prevent odor.

J. All bypass pumps shall be installed with the bottom of the skids out of or above the 100-year flood elevation. Piping crossing swamps and creeks shall be installed above the 100-year flood elevation and secured to a ridged structure. All other piping within the 100-year flood elevation shall be secured to prevent pipe movement during rain events and flooding.

K. Install temporary fence (8-feet in height) around bypass pumps, suction point locations and discharge point locations to provide precautionary measures for the protection of persons or property.

L. A bypass pumping “drill” shall be performed by the Contractor to demonstrate system readiness if requested by CCWA. The drill shall demonstrate the incorporation of all standby equipment to handle flows when the main pump set is switched off. Provisions to accommodate any of the CCWA’s review comments following the drill shall be adhered to in full at no additional cost.

M. The Contractor shall take all necessary steps to eliminate the overflow of sewerage. In the event of an overflow of sewerage, the Contractor shall be responsible for cleanup of the area and all other pertinent activities as required by the Georgia Environmental Protection Division (GAEPD). All costs of these restoration/cleanup activities shall be the responsibility of the Contractor. In the event that funds are expended by the CCWA related to these activities the Contractor shall reimburse the CCWA for any and all such costs including but not limited to the costs expended by the CCWA for fines levied by the GAEPD.

N. The Contractor shall be responsible for damage to public or private property due to flow interruption. All costs of restoration/cleanup activities shall be the responsibility of the Contractor. In the event that funds are expended by the CCWA related to these activities the Contractor shall reimburse the CCWA for any and all such.

O. The Contractor will indemnify and hold harmless the CCWA for any fines or third-party claims for personal or property damage arising from flow interruption that is the responsibility of the Contractor. Should fines subsequently be imposed as a result of any flow interruption for which the

Contractor is fully or partially responsible, the Contractor shall pay all such fines and all of the legal, engineering, and administrative costs in defending such fines and claims associated with flow interruption.

3.5 Dewatering

A. Contractor shall provide an excavation dewatering plan for CCWA review and approval.

B. Refer to "Geotechnical Investigation Report, Clayton County Water Authority, Jesters Creek East Outfall Replacement Phase 1, Jonesboro, Clayton County, Georgia, dated November 16, 2018.

C. Provide dewatering systems as necessary to maintain excavations dry at all times during construction.

D. Water withdrawn from excavations or dewatering systems shall be filtered using containerized sedimentation systems, filter bags and/or filter tubes.

E. Install appropriate erosion control measures as may be necessary.

F. Sediment collected within the systems shall be disposed of offsite.

3.6 Vibration Monitoring

A. Contractor shall prepare a vibration monitoring plan for CCWA review.

B. Monitor Buildings #1, #2, #3 and #4 as shown on the Construction Drawings for vibration damage during construction in accordance with industry standards.

C. Monitoring shall take place during excavation work, pipe installation, manhole installation, backfilling, compaction and grading at each location.

D. Complete a pre-construction survey of the existing structures to establish a baseline of existing damage prior to the start of any construction. Complete the following as a minimum.

1. Complete a thorough walkthrough as part of the assessment.
2. Complete documentation (notes, photographs, videos) of existing distress, and measurements of pre-existing cracks in foundations and walls outside and inside of structures.

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E. Complete a post-construction survey of the existing structures to document any changes to the structures upon completion of the construction.

1. Prepare a report that summarizes all data collected during the pre-construction assessment, data collected during construction and data collected as part of the post construction survey. The report should provide a concluding summary of conditions found after construction and potential causes. Provide a copy of the report to CCWA.

3.7 Excavation

3.7.1 Shoring

A. Contractor shall refer to "Geotechnical Investigation Report, Clayton County Water Authority, Jesters Creek East Outfall Replacement Phase 1, Jonesboro, Clayton County, Georgia, dated November 16, 2018.

B. The Contractor shall assume the responsibility for design and construction of excavation shoring and bracing capable of supporting excavations and construction loads.

1. Where depths require, provide shore design and details stamped and sealed by a Professional Engineer Licensed in the State of Georgia for CCWA review.

C. Use trench boxes where ever possible to prevent the weakening of surrounding soils.

D. Use trench boxes when digging next and near power/utility poles.

3.7.2 Pit and Trench

A. Contractor shall refer to "Geotechnical Investigation Report, Clayton County Water Authority, Jesters Creek East Outfall Replacement Phase 1, Jonesboro, Clayton County, Georgia, dated November 16, 2018.

B. Excavation shall include those measures necessary to establish trench widths and grades as indicated on the Construction Drawings.

1. Excavation shall include removal and disposal off-site of all pipe and manhole materials encountered in the proposed locations of new pipe and manholes.
2. Excavation should be completed to natural undisturbed soil. Where unsuitable material is encountered, over excavate through unsuitable material and backfill to required grade with Surge Stone or No. 57 stone. The CCWA Inspector shall determine depth of over excavation.

C. Excavated soil shall be placed in a location such that the integrity of the excavation is not jeopardized.

D. The excavation shall provide space for inspection of utilities and appurtenances.

E. Maintain excavations dry at all times using pumps, well points or other dewatering means.

F. When laying pipe, limit trenching to not greater than 100 feet ahead of completely backfilled work.

G. Open excavations shall be made safe at all times. Excavations shall be covered in accordance with applicable regulations and/or barricaded and roped-off with identifying tape during work progress.

H. Install temporary fence (8-feet in height) around any open excavation at the end of each work day to provide precautionary measures for the protection of persons or property.

3.7.3 Rock

A. Rock is defined as removing and disposing of solid material being greater than one (1) cubic yard in size which by actual demonstration cannot, in the opinion of the CCWA Engineer, be reasonably excavated with the excavator being used to install the pipe and manholes for the project that is in good condition and equipped with manufacturer's standard boom and rock points or similar approved equipment; and which must be systematically drilled and blasted or broken by power-operated hammer, hydraulic rock breaker or expansive compounds.

B. Excavation shall include those measures necessary to establish grades indicated on drawings for utilities and appurtenances. Rock

shall be excavated to a minimum depth of six (6) inches below grades indicated on drawings.

C. The Contractor shall be responsible for determining methods required for removal of rock or hard materials (i.e. systematically drilled and blasted or broken by power-operated hammer, hydraulic rock breaker or expansive compounds).

D. A licensed explosive contractor shall perform blasting operations.

E. Blasting operations shall be conducted in accordance with all local, state and federal regulations. The Contractor is responsible for repairs and/or replacement of damaged property(s) resulting from the work.

F. Excavated rock shall not be used as backfill in excavations. Contractor shall replace volume of excavated rock with suitable soil.

G. Excavated rock shall be removed from the project site and disposed of.

3.8 Pipe Work

3.8.1 Bedding

A. Pipe bed shall be established to elevations and grade as shown on the Construction Drawings or to match a requested condition.

B. Pipe bed material and depth shall be as indicated on the Construction Detail / Construction Drawings. Stone shall be shovel sliced/consolidated using any means from beneath the pipe up to one-third (1/2) the pipe diameter prior to placing subsequent backfill. The entire length of barrel shall be fully supported with stone.

C. Stone shall be used to backfill pipe to a height of six (6) inches above the top of the pipe.

D. When installing pipe in areas of excavated rock, pipe shall be placed on a bed of stone, minimum six (6) inches in depth.

E. Soil determined to be unsuitable by the CCWA Inspector shall be removed to a determined depth and replaced with stone to desired grade.

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3.8.2 Pipe Installation

A. Comply with manufacturer's installation instructions.

B. Contractor shall submit for manufacturer approval, a material/assembly that will protect pipe's end where force is applied for jointing purposes. Contractor will provide CCWA a copy of the manufacturer's approval.

C. Install pipe of material type and size as shown on the Construction Details or Construction Drawings.

D. Prior to placement, the interior of pipes and fittings shall be cleaned free of dirt and debris.

E. Pipe, fittings and accessories shall not be laid or jointed in water.

F. Pipe, fittings and accessories shall be handled and lowered into their respective positions using choker straps.

G. A slight hole shall be dug where pipes are to be jointed to relieve pipe bell of any load. Pipe barrel shall be supported for its entire length.

H. Install compression type full-face gasket coupling or solid sleeve style coupling on pipe to ensure proper joint sealing. The pipe mating ends and coupling shall be thoroughly cleaned and soaped before jointing. The mating ends shall be aligned in accordance with the manufacturer's tolerance and carefully shoved together using a steady force.

I. Prior to joining consecutive pipe, backfill previously jointed pipe with sufficient material to prevent movement.

J. Backfill pipe trench to the required grade in accordance with backfill and compaction requirements.

K. Pipe Identification: Install pipe detection tape over buried piping during backfill operations. Detection tape shall be installed centered, approximately 24 inches above the pipe.

L. New pipe and existing pipe shall be cut to lengths as required in accordance with manufacturer instructions using a rotary-type saw. Prepare cut ends in accordance with manufacturer instructions.

M. When installing a pipe into a manhole or box structure, pipe end shall not extend greater than 12-inches beyond the inside face of the structure as measured at the 3 or 9 o'clock position.

N. Install pipe collars of size and at locations as shown on the Construction Drawings.

O. Install Protective Casing around pipe of size and length at locations as shown on the Construction Drawings.

P. Place a plug in the open end of uncompleted laid piping at the end of each day.

Q. Pipe shall not be placed in service until all testing has been accepted by CCWA.

R. Pipe not laid to the requested grade/alignment shall be removed and subsequently laid to the requested grade/alignment and the expense of the contractor.

3.8.3 Pipe Testing

A. Testing shall be performed when backfill to finished grade and compaction are complete and dewatering has been discontinued for a minimum 24-hour period at the location of the test.

1. All pipe installed shall be tested as indicated below.
2. Contractor shall document all testing in such manner as necessary to show completion of the work.
3. A CCWA Inspector must be present and witness any type of testing for acceptance.
4. Any pipe not passing required testing shall be replaced or repaired at the Contractor's expense.

B. Air Pressure Testing: Sanitary sewer gravity-flow pipe installed between new manholes shall be subjected to a low air pressure test at each joint. Pipe shall be free of dirt and debris prior to testing. The internal air pressure of the pipe shall be raised to approximately four (4) psi. The test shall begin when the stabilized pressure is at a minimum of 3.5 psi. Test and pipe shall be considered acceptable

when an air pressure equivalent to the stabilized pressure is maintained for a period of five (5) minutes.

C. Deformation Testing: All pipe shall be tested for deformation. Pipe shall be free of dirt and debris. Any measured location may not show deformation of more than three (3) % of the pipe's manufactured published inside diameter.

1. The diameter of 36" pipe shall be determined by using a standard measuring device throughout the entire length of the pipe segments.

2. The diameter of other pipe shall be determined by using a mandrel measuring device being pulled throughout the entire length of the pipe segments.

D. Televising Testing: All pipe shall be televised to ensure integrity and document installed condition. Pipe shall be free of dirt and debris prior to televising. A video recording in general compliance with ASTM and National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) standards shall be completed through the pipe from manhole to manhole to show completed work. A video recording and report of each segment laid shall be provided to CCWA.

3.9 Manhole Work

3.9.1 New Manhole Installation

A. Install manholes of required sizes and at locations and elevations as shown on Construction Drawings. Manholes shall be set atop stone as indicated on the Construction Drawings.

B. The bed shall be prepared so that the manhole is set level.

C. Manhole sections shall be handled with lifting straps or hooked cables using a minimum of two (2) of the manufactured manhole lifting holes.

D. Manhole sections shall be positioned such that influent and effluent piping enter the center of their respective opening not pinching the rubber boot seal. Pipe shall not rest on invert of opening.

E. Manhole sections shall be stacked level and plumb at all times.

F. Prior to joining consecutive sections, tongue-and-grooved ends shall be cleaned free of dirt and debris.

G. Tongue-and-grooved ends shall be fitted with preformed gasket sealing compound. Sealing compound shall be installed in such manner that when consecutive sections are stacked, sealing compound can be visually observed "squeezing out" from all sections of the joint.

H. Manhole lifting holes shall be plugged with rubber stoppers or sealed using non-shrink grout throughout the entire depth of hole.

I. Seal annulus between pipe and core opening using rubber boot in accordance with the manufacturer's instructions.

J. Upon completion of visual testing activities, install HDPE cap over manhole joint locations.

K. Manholes may not be placed in service until all testing has been accepted by CCWA.

L. Manholes not set to the requested grade/alignment shall be removed and subsequently set to the requested grade/alignment and the expense of the contractor.

3.9.2 Invert Construction

A. Clean new and existing manhole base free of dirt and debris before constructing invert.

B. Construct "U-shape" style smooth invert from brick and mortar or cast-in-place concrete to size and elevation as shown on the Construction Drawings and as necessary to direct flow.

C. Special care shall be taken such that the finished invert does not touch any pipe material.

D. Apply sealing compound to invert material in accordance with the manufacturer's instructions.

E. Invert construction shall have sufficient time to cure as not to be affected by in-service conditions.

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3.9.3 Manhole Testing

A. Testing shall be performed when backfill to finished grade and compaction are complete and dewatering has been discontinued for a minimum 24-hour period at the location of the test.

1. Every newly installed manhole shall be tested.
2. Contractor shall document all testing in such manner as necessary to show completion of the work.
3. A CCWA Inspector must be present and witness any type of testing for acceptance.
4. Any manhole not passing required testing shall be replaced or repaired at the Contractor's expense.

B. Visual Water Infiltration Testing: Manhole testing shall be performed by visually observing for water infiltration at all manhole sections, at all pipe / rubber boot seal connections, at all manhole / rubber boot seal connections. Test shall be considered acceptable when no water infiltration is observed at any described observation points.

C HDPE Liner Testing: Holiday test HDPE caps at joints using applicable voltage spark test. Test shall be considered acceptable when spark test reveals no holidays. Other testing procedure may be considered.

3.10 Backfill and Compaction

3.10.1 Backfill

A. Excavations shall be backfilled using suitable material in accordance with the Construction Drawings or applicable Details.

B. Place no backfill until any poured concrete has sufficient compressive strength.

C. Place backfill against below grade walls (i.e. manhole sections) in uniform level lifts to prevent wedging action.

D. When backfilling areas to be paved, the final 6 inches is to be filled with graded aggregate base. Prior to paving, remove required aggregate and dispose.

E. Backfill shall not be placed on surfaces that are saturated, frozen or containing frost or ice.

F. Place backfill in excavations as follows.

1. Backfill in loose lifts not exceeding 6 inches when compacting using manual tamping devices (jumping jack).

2. Backfill in loose lifts not exceeding 12 inches when compacting using vibrating/ramming devices (sheep-foot vibratory roller).

G. Any settlement shall be filled and compacted to conform with adjacent surfaces.

3.10.2 Compaction

A. Backfill shall be compacted using manual tamping devices or vibrating/ramming devices.

B. Use manual tamping devices to compact soil as follows, otherwise use vibratory devices.

1. When area is inaccessible to vibrating devices and within 2 feet of below grade walls (includes manholes).

2. From bottom of pipe trench to twelve (12) inches above the top of pipe.

C. Compaction requirements are as follows.

1. Backfill in road right-of-way shall be compacted the entire depth to a minimum of 95% of the maximum dry density as determined by a Standard Proctor Analysis.

2. Backfill not described above shall be compacted for the entire depth to a minimum of 90% of the maximum dry density as determined by a Standard Proctor Analysis.

3. Soil installed and not meeting the compaction requirements shall be removed and re-installed and compacted or replaced with other approved material and compacted at the expense of the contractor.

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3.10.3 Compaction Testing

A. Samples from the proposed construction area shall be analyzed for maximum dry density in accordance with ASTM 698 – Method C or applicable GDOT standard.

B. The extent of testing required shall be dependent upon soil conditions, Contractor's methods of construction and regulatory requirements.

C. Minimum compaction testing shall be as follows.

1. Backfill in excavations shall be tested at 2-foot lift intervals per 1,000 square feet of fill or as deemed necessary by the CCWA Inspector.

2. Backfill in trench excavations shall be tested at 2-foot intervals per 400 linear feet of fill or as deemed necessary by the CCWA Inspector.

D. Samples from the proposed construction area shall be analyzed for maximum dry density in accordance with ASTM 698 – Method C or applicable GDOT standard.

3.11 Cased-Crossings No. 1 and No. 2

3.11.1 Design

A. Contractor shall design a suitable means to complete each trenchless cased-crossing at Tara Boulevard (Cased-Crossing No. 1) and at Main Street (Cased-Crossing No. 2).

1. The Construction Drawings show only general details of the cased-crossings that must be incorporated in the Contractor's design.

2. Contractor shall provide a cased-crossing material, sized to meet anticipated conditions. The material selection and size shall be signed and sealed by a Professional Engineer licensed in the State of Georgia.

3. Contractor shall complete the design in conformance with pipe manufacturer's instructions and show that the chosen method

will meet the grade and elevations shown on the Construction Drawings.

4. Pipe manufacturer shall approve pipe installation technique.

B. The following items as a minimum shall be submitted to CCWA for review as part of the design.

1. Crossing Technique: Provide trenchless technique construction details. Details shall include the installation of the 36" sanitary sewer pipe.

2. Casing Material: Provide manufacturer, specifications, jointing method and end seal method.

3. Grouting Procedure: Provide details for annular space grouting, grout strength and grouting pressure.

4. Excavation and Shoring: Provide an excavation shoring plan.

5. Dewatering: Provide dewatering system details (withdrawal points and location, pump size and redundancy, sediment removal system and disposal points).

6. Ground Movement/Settlement Monitoring: Provide detailed plan for monitoring ground movement across U.S. Highway 19/41 and Main Street.

3.11.2 Installation

A. Monitor ground movement as follows:

1. Prior to construction, establish ground monitoring points on the pavement surface at 10-foot intervals along the centerline of the alignment and at 10-foot offsets each side of centerline interval using survey methods and produce a scaled layout drawing referenced to a benchmark.

2. Collect surface elevation readings immediately prior to construction, once per week during construction and once one week after all construction is complete from the monitoring points to the nearest one-hundredth of a foot (0.01) and maintain a log of measurements documenting location point, date, time and elevation.

3. Work shall be immediately stopped when readings indicate any surface movement.
4. Contractor shall propose immediate action to remedy the problem for review and approval by the CCWA.
5. Any surface repair is the Contractor's sole responsibility including cost.
6. Provide a table of all monitoring recorded data.

B. Install cased-crossing.

1. Provide construction log of crossing operations/details and total footage of casing material installed.
2. Grout fill annular space between the outside of the casing material and ground/other material surfaces at the end of each work day or sooner as mat be required
3. Provide temporary bulkhead at the end of each work shift to prevent the movement of material into the cased-crossing.
4. Provide through-casing video of crossing in such format as may be required.

C. Install sanitary sewer pipe to meet grades and elevations shown on the Construction Drawings.

1. The pipe shall be protected from excessive abrasion.
2. The pipe shall be blocked within the casing-crossing to a fixed line and grade and to aid in control of deformation during grouting.

D. Install grout between casing and pipe annular space using a cement-based grout.

1. Install grout tubes of various lengths to adequately grout the annular space. Grout tubes shall be steel pipe and a minimum of 1 ½ inches diameter.
2. Install bulkheads of suitable materials on each end of the crossing.

3. Install grout in such manner that air within the annular space is allowed to vent.

3.11.3 Testing

A. The cased crossings (casing/pipe/plates) shall be televised in accordance with Section 3.7.3 “Pipe Testing” prior to installing the sanitary sewer pipe.

B. The sanitary sewer pipe shall be tested in accordance with Section 3.7.3 “Pipe Testing”.

3.12 Cured-In-Place Pipe Work

3.12.1 Assessment Decision

A. Cure-in-Place Pipe (CIPP) is intended to be installed into the existing 36-inch gravity-flow sanitary sewer tangent from Proposed Manhole 14 to Proposed Manhole 15.

1. An assessment of the entire sewer tangent has not been completed.
2. Upon completion of cleaning and CCTV work by the Contractor, the Contractor will provide CCWA with a PACP score, list of PACP codes found and a copy of the CCTV video for the sewer tangent.
3. The Contractor shall notify CCWA if the sewer tangent does not have the integrity to be cleaned for CCTV.
4. The Contractor shall provide CCWA a written recommendation indicating whether the sewer tangent can receive CIPP. If a recommendation is made to install CIPP, CCWA will make a final determination to proceed with the CIPP work.

B. If the existing 36-inch gravity-flow sewer from Proposed Manhole 14 to Proposed Manhole 15 is not suitable for CIPP, then the existing pipe will be replaced via open cut methods.

1. The open cut will be paid in accordance with the Primary Pipe Installation depth class Pay Item Schedule.

2. The open cut work from station 34+30 to station 35+70, under the natural gas right-of-way, will be paid in accordance with the Primary Pipe Installation Work Item and applicable depth class and in accordance with the Pay Item Schedule plus a "4x" markup. The markup is being provided to account for natural gas right-of-way work.

3. Other Work Items will be used to pay for work completed for the crossing.

3.12.2 Design

A. Contractor shall prepare a design suitable to complete the CIPP installation from Proposed Manhole 14 to Proposed Manhole 15.

1. The design shall be stamped and signed by an engineer registered in the State of Georgia. The engineer shall have prior design experience with CIPP.

2. The existing host pipe's condition shall be assumed to be fully deteriorated.

B. A preliner recommended by the CIPP manufacturer is required. The following items as a minimum shall be submitted to CCWA for review as part of the design.

1. Manufacturer's Quality Control Plan. Provide a detailed description of materials, manufacturing and field procedures, sampling and testing schedules and documentation that are used to maintain product quality.

2. Design calculations and reference standards documenting the required liner thickness and governing design criteria and basis.

   a) The design shall provide thickness tolerances.

3. Curing schedule for CIPP cure method.

4. List of possible defects and a description of the procedures used to remove and/or remedy defects.

5. Name and contact information for the Independent Testing Laboratory that will be used.

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3.12.3 Installation

A. Clean existing sewer tangent (host pipe) and remove all internal debris from the pipe line that will interfere with the installation and the final product of the CIPP.

1. Perform CCTV work while performing cleaning activities.
2. Contractor should assume that heavy cleaning techniques will be utilized.
3. Any loose debris that would produce visible lumps, bumps or protrusions into the CIPP shall be removed.
4. Any debris resulting from the cleaning shall not enter any newly installed pipe.
5. Perform post-cleaning video in accordance with current NASSCO and PACP guidelines. CCWA will view all video work with the Contractor as the work is being performed.

B. Install the preliner and the wet-out tube into the host pipe and cure per the manufacturer's specifications.

1. The wet-out tube shall be positioned in the host pipe using the method specified by the manufacturer. The tube shall be inverted through an existing structure and fully extend to the next designated structure.
2. A seal, consisting of a resin mixture or hydrophilic seal compatible with the installed CIPP shall be installed at host pipe's ends in accordance with the CIPP System manufacturer's recommendations.
3. Prior to installation, remote temperature gauges or sensors as recommended by the CIPP manufacturer shall be placed inside the host pipe to monitor the temperatures during the cure cycle. Liner and/or host pipe interface temperature shall be monitored and logged during curing of the liner.
4. Curing shall be accomplished by utilizing hot water or steam in accordance with the manufacturer's recommended cure schedule. The curing source and in and output temperatures shall be monitored and logged during the cure cycles. The manufacturer's recommended cure schedule shall be followed.

5. The Contractor shall cool the CIPP in accordance with the approved CIPP manufacturer's recommendations.
6. Temperatures and curing data shall be monitored and recorded throughout the installation process.
7. The Contractor shall manage the curing/cool down process so that no water/liquid/steam/resin/work debris shall be released downstream. Water released downstream shall not exceed a temperature of 90 degrees Fahrenheit.
8. The finished CIPP shall be positioned such that no air gap exists between the CIPP and the host pipe.
9. At structures, cut the CIPP neat and no more than 1-inch away from the end of the host pipe.
10. Remove wrinkles, fins, ridges that exceed 1/2-inch in height as measured from adjacent smooth surfaces.

3.12.4 Testing and Acceptance

A. The physical properties and thickness verification of the installed CIPP shall be verified through field sampling and laboratory testing. All samples for testing shall be prepared and delivered to the laboratory by the Contractor. All materials testing shall be performed by an independent third-party laboratory selected by the CIPP manufacturer. All tests shall be in accordance with applicable ASTM test methods.

B. The Contractor shall take samples from test plates or the actual installed CIPP liner. Samples for thickness verification may be cut from a section of cured CIPP that has been inverted through a like diameter pipe which has been held in place by suitable means. All curing, cutting and identification of samples will be witnessed by CCWA.

1. The laboratory results shall identify the test sample location as referenced to the nearest manhole.

C. The CIPP shall be televised and air pressure tested in accordance with Section 3.7.3 "Pipe Testing".

D. The CIPP shall be accepted if all testing meets the minimum requirements.

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3.13 Demolition

3.13.1 Bulkhead

A. Install bulkheads at locations shown on the Construction Drawings or at requested locations.

B. Plug with grout abandoned services and any pipe at Service Re-Connects as may be required as shown on the Construction Drawings.

C. Cut existing pipe in such manner that provides for installation.

D. Remove and dispose debris and provide suitable work area.

E. Construct bulkhead across entire pipe opening using brick and mortar, minimum eight (8) inches in depth.

3.13.2 Remove

A. Remove pipe, manholes and structures completely from the ground at locations shown on the Construction Drawings or at requested locations.

B. Cut existing pipe, manholes and structures in such manner that provides for removal.

C. Remove debris and dispose off-site in accordance with local/state regulations.

D. Place suitable soil and compact in accordance with backfill and compaction requirements.

3.13.3 Grout Fill

A. Grout fill pipe at locations shown on the Construction Drawings or at requested locations.

B. Drill holes through soil, asphalt or concrete down to and into the existing pipe at such intervals to ensure complete grout fill of pipe.

C. Install steel pipes into drilled holes, extending into pipe to be filled.

D. Pump high flow grout into steel pipe until grout is observed coming from adjacent steel pipe.

E. Due to the results of the initial grouting, additional drill holes may need to be installed between the first injection points to allow for additional grouting to fill the void.

F. Upon completion of grouting, remove steel pipe or cut steel pipe a minimum of six (6) inches below surface grade. Finish at grade with a minimum six (6) depth of concrete.

3.13.4 Gravel Fill

A. Gravel fill manholes at locations shown on the Construction Drawings or at requested locations.

B. Remove manhole cone and sections to a minimum of three (3) feet below finished surface grade.

C. Place No. 57 stone into manhole from invert to top of remaining section.

D. Place suitable soil and compact soil from top of remaining section to finish surface grade in accordance with backfill and compaction requirements.

3.14 Asphalt Work

A. Compact existing base and/or add and compact necessary aggregate base/concrete material in accordance with the Construction Drawings.

B. Cut edges of existing asphalt neat and square.

C. Apply prime / tack coat as necessary to facilitate asphalt placement.

D. Install asphalt using mechanical spreader machine and compact to thicknesses as shown on the Construction Drawings or to thickness to match existing asphalt.

3.15 Concrete Work

3.15.1 Concrete Placement

A. This section is used for describing slab-on-grade and wall construction.

B. Place concrete to thicknesses as shown on the Construction Drawings or to thickness to match existing concrete.

Division 4 Specifications

Section 3: Construction Standards

1. Install wall(s) at location shown on the Construction Drawings.
2. Install new footer to match the existing width and thickness of the existing footer.
3. Install new wall to match the height and thickness of the existing wall.

C. Clean forms of dirt and debris prior to each use.

D. Install steel reinforcement and/or wire, support on chairs and secure to prevent movement.

1. Reinforcement for footings and walls shall be installed as follows.

a) Reinforcement shall be doweled into the existing concrete with epoxy. Follow epoxy manufacturers' recommendation when doweling and installing reinforcement

b) Footer shall have a single layer of reinforcement spaced at 6 inches on center with "L" bars installed to match wall reinforcement.

c) Wall shall have two layers (each face of wall) of reinforcement spaced at 12 inches on center, each way.

d) Reinforcement shall have 2 inches of clearance between the bar and soil or bar and form.

E. Concrete shall not be placed on loose, saturated or frozen soil.

1. Concrete shall be placed when ambient temperature is at a minimum 40 degrees Fahrenheit and rising.
2. Maintain ambient temperature around concrete above 40 degrees Fahrenheit for a period of 24 hours after placement.

F. Place concrete using suitable means and consolidate concrete with vibrator of suitable vibrations per minute.

G. Screed slabs / curbs by use of straight edge or screed board.

H. Saw control joints into slabs / walks as soon as concrete can be traveled by foot without leaving impressions.

1. Control joints shall be installed at interval spacing of 1-1/2 times slab width or at a maximum spacing of 10 feet, whichever is closer.
2. Saw joint depth shall be ¼ of the slab depth.

I. Concrete walks shall be finished with a slight broom finish perpendicular to the travel path.

J. Begin curing after placement and finishing of concrete as soon as free water has disappeared from concrete surface.

1. Curing methods shall be by the continuous application of water for 72 hours or by applying a liquid membrane forming curing-sealing compound to the fresh concrete surface.

K. Removal of formwork shall take place no sooner than 24 hours after placement of concrete.

3.15.2 Concrete Testing

A. Concrete from each truck shall be subjected to a slump test in accordance with ASTM C172 and C143.

1. Concrete arriving on the Project site and not exhibiting the required slump may be rejected at the discretion of the CCWA inspector.

B. Concrete shall be laboratory tested for compressive strength at the discretion of the CCWA Inspector.

C. Samples shall be collected in accordance with ASTM C172 and ASTM C31.

D. Samples shall be tested for compressive strength in accordance with ASTM C39.

E. Concrete placed not meeting the required compressive strength shall be subject to rejection and removal at the discretion of the CCWA inspector.

Division 4 Specifications

Section 3: Construction Standards

3.16 Pavement Striping

A. Install pavement striping and symbols having neat, clean edges and sizes to match existing striping and symbols or as detailed in the Construction Drawings.

B. Provide a sufficient thickness of paint such that pavement color/surfaces are be visible through the paint.

3.17 Acceptance

A. A CCWA Inspector shall inspect all components of work for compliance with the Contract. The Contractor shall, at all times, permit and facilitate inspection of work by the CCWA. The presence of a CCWA Inspector or other CCWA staff on the site of work shall not be construed to, in any manner, relieve the Contractor of their responsibility for strict compliance with the Contract. The CCWA Inspector shall inform the Contractor when work is deficient from the Contract. Deficiencies shall be addressed in a timely manner as determined by the CCWA Inspector.

B. Final Acceptance of the work by the CCWA shall be when the Contractor has met all terms and conditions as set forth by the Contract. The date of Final Acceptance shall be no later than the date the CCWA approves the Contractor's final request for payment. Where applicable, Final Acceptance shall be written, signed and dated by the CCWA.

END OF SECTION

ATTACHMENT A

GEORGIA ENVIRONMENTAL FINANCE AUTHORITY

SUPPLEMENTAL GENERAL CONDITIONS

for

FEDERALLY ASSISTED
STATE REVOLVING LOAN FUND
CONSTRUCTION CONTRACTS

May 9, 2014

The following standard language must be incorporated into construction contract documents and in all solicitations for offers and bids for all construction contracts or subcontracts in excess of $10,000 to be funded in whole or in part by the Federally-assisted State Revolving Fund in the State of Georgia.

These Supplemental General Conditions shall not relieve the participants in this project of responsibility to meet any requirements of other portions of this construction contract or of other agencies, whether these other requirements are more or less stringent. The requirements in these Supplemental General Conditions must be satisfied in order for work to be funded with the State Revolving Fund.

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INSTRUCTIONS & GENERAL REQUIREMENTS

It is the policy of the State Revolving Loan Fund (SRF) to promote a fair share of subcontract, materials, equipment and service awards to small, minority, and women-owned businesses for equipment, supplies, construction, and services. Compliance with these contract provisions is required in order for project costs to be eligible for SRF funding. The fair share objective is a goal, not a quota. Failure on the part of the apparent successful bidder to submit required information to the loan recipient (Owner) may be considered by the Owner in evaluating whether the bidder is responsive to bid requirements.

THE PRIME CONTRACTOR MUST SUBMIT THE FOLLOWING ITEMS TO THE OWNER:

A. Before beginning the work of any contract:

1) DBE Compliance Form and related documentation. The Owner must submit this information to the Georgia Environmental Finance Authority (GEFA) to demonstrate compliance with Disadvantaged Business Enterprise (DBE) requirements. GEFA concurrence is recommended prior to award of the construction contract and is required prior to commencement of any SRF-funded construction. (Pages GEFA-4&5)
2) Certification Regarding Equal Employment Opportunity. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor form should be submitted with the DBE Compliance Form, and the subcontractor forms should be submitted as the subcontracts are executed. (Page GEFA-9)
3) Certification Regarding Debarment, Suspension, & Other Responsible Matters. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor form should be submitted with the DBE Compliance Form and the subcontractor forms should be submitted as the subcontracts are executed. (Page GEFA-10)
4) *EPA Form 6100-2 DBE Subcontractor Participation Form. This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from the Prime Contractor, how much the DBE subcontractor was paid, and any concerns the DBE subcontractor might have. The Prime Contractor must provide this form to each DBE subcontractor. The DBE subcontractor can, as an option, complete and submit this form to the GEFA DBE Coordinator, who will also forward the form to the EPA DBE Coordinator. (Page GEFA-11)
5) *EPA Form 6100-3 DBE Subcontractor Performance Form. This form captures the description of work to be performed by an intended DBE subcontractor and the price of the work. This form is to be provided by the Prime Contractor to each DBE subcontractor and submitted with the DBE Compliance Form. (Page GEFA-12)
6) *EPA Form 6100-4 DBE Subcontractor Utilization Form. This form captures intended or anticipated use of an identified DBE subcontractor by the Prime Contractor and the estimated dollar amount of the work. This form is to be completed by the Prime Contractor and submitted with the DBE Compliance Form. (Page GEFA-13)

* 6100 FORMS ARE NOT REQUIRED WHEN ALL OF THE WORK IS SELF-PERFORMED BY THE PRIME CONTRACTOR.

B. During the performance of the contract:

7) Changes to Subcontractors Form. If any changes, substitutions, or additions are proposed to the subcontractors included in previous GEFA concurrences, the Owner must submit this information to GEFA for prior concurrence in order for the affected subcontract work to be eligible for SRF funding. (Page GEFA-14)
8) DBE Annual Report. The Owner must submit this information to GEFA no later than October 20th of any year that the construction contract is active. (Page GEFA-15)
9) Certified Payrolls. These should be submitted to the Owner weekly for the Prime Contractor and all subcontractors. The Owner must maintain payroll records and make these available for inspection. Use Department of Labor form WH-347 or a similar form that contains all of the information on the Department of Labor.

THE OWNER MUST SUBMIT INFORMATION FOR GEFA REVIEW AND CONCURRENCE TO:

Georgia Environmental Finance Authority
Attention: DBE Compliance Coordinator
233 Peachtree Street, N.E.
Harris Tower, Suite 900
Atlanta, Georgia 30303
(404)584-1000; (404)584-1069 (fax)
dbe_compliance@gefa.ga.gov

DBE COMPLIANCE FORM

ALL INFORMATION OUTLINED ON THIS FORM IS REQUIRED FOR DBE COMPLIANCE REVIEW. THE PROPOSED PRIME CONTRACTOR AND OWNER SHOULD ENSURE THAT THIS INFORMATION IS COMPLETE PRIOR TO SUBMITTAL.

Loan Recipient _____ SRF Loan Number _____

PRIME CONTRACTOR'S AND OWNER'S CERTIFICATIONS:

I certify that the information submitted on and with this form is true and accurate and that this firm has met and will continue to meet the conditions of this construction contract regarding DBE solicitation and utilization. I further certify that criteria used in selecting subcontractors and suppliers were applied equally to all potential participants and that EPA Forms 6100-2 and 6100-3 were distributed to all DBE subcontractors.

_____ Date_____
(Prime Contractor signature)

_____
(Printed name and title)

I certify that I have reviewed the information submitted on and with this form and that it meets the requirements of the Owner's State Revolving Fund loan contract.

_____ Date_____
(Signature of Owner or Owner's representative)

_____
(Printed name and title)

CONTACT INFORMATION

Owner contact _____

Owner phone number & email _____

Consulting Engineer contact _____

Consulting Engineer phone number & email _____

Proposed Prime Contractor _____

Prime Contractor contact _____

Prime Contractor phone number & email _____

Proposed total contract amount $ _____

Proposed total MBE participation $ _____Percentage _____ Goal: 4.0 percent

Proposed total WBE participation $ _____Percentage _____ Goal: 4.0 percent

CONTINUED ON NEXT PAGE

Please submit the following with the DBE Compliance Form:

1) List of all committed and uncommitted subcontractors by trade, including company name, address, telephone number, contact person, dollar amount of subcontract, and DBE/MBE/WBE status.

2) Indicate in writing if no solicitations were made because the Prime Contractor intends to use only its own forces to accomplish the work.

3) Proof of certification by EPA, SBA, DOT (or by state, local, Tribal, or private entities whose certification criteria match EPA criteria) for each subcontractor listed as a DBE, MBE, or WBE.

4) Documentation of solicitation efforts for prospective DBE firms, such as fax confirmation sheets, copies of solicitation letters and e-mails, printout of online solicitations, printouts of online search results and copies and affidavits of publication in newspapers or other publications. (see also, "Six Good Faith Efforts", page GEFA-7).

    a. The Prime Contractor shall use the necessary resources to identify and directly solicit no less than 3 certified MBE firms and 3 certified WBE firms to bid in each expected subcontract trade or area. If a diligent and documented search of the recommended directories does not identify 3 potential certified MBE firms and 3 potential certified WBE firms, then the Prime Contractor shall post an advertisement in the Owner's local legal organ, the Owner's official website, a regional newspaper in a larger community in the proximity, the Prime Contractor's website, or some other appropriate resource.
    b. The Prime Contractor is encouraged to follow-up each written, fax, or e-mail solicitation with at least 1 logged phone call.
    c. Whenever possible, post solicitations for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

5) Written justification for not selecting a certified DBE subcontractor that submitted a low bid for any subcontract area.

6) Certification By Proposed Prime Contractor or Subcontractor Regarding Equal Employment Opportunity (GEFA-9)

7) Certification By Proposed Prime or Subcontractor Regarding Debarment, Suspension, and Other Responsible Matters. (GEFA-10)

8) *EPA Form 6100-3 DBE Subcontractor Performance Form for all DBE subcontracts. (GEFA-12)

9) *EPA Form 6100-4 DBE Subcontractor Utilization Form for all DBE subcontracts. (GEFA-13)

*6100 forms are not required when all of the work is self-performed by the prime contractor.

END OF DBE COMPLIANCE FORM

DBE COMPLIANCE CHECKLIST

THE PRIME CONTRACTOR MUST SUBMIT THE FOLLOWING ITEMS TO THE OWNER BEFORE THE WORK BEGINS:

Loan Recipient _____ SRF Loan Number _____

Include in Package Submittal

PRIME CONTRACTOR ONLY	TOTAL CONTRACT AMOUNT

ALL SUBCONTRACTORS, INCLUDING DBE FIRMS	TRADE	AMOUNT

ALL SUBCONTRACTORS, INCLUDING DBE FIRMS	TRADE	AMOUNT

DBE SUBCONTRACTORS ONLY	TRADE	AMOUNT

DBE SUBCONTRACTORS ONLY	TRADE	AMOUNT

PRIME CONTRACTOR ONLY *(Not applicable if self-performing all work, with no subcontracting)*

1. DBE Compliance Form. The Owner must sign and submit this information to the Georgia Environmental Finance Authority (GEFA) to demonstrate compliance with DBE requirements. GEFA concurrence is recommended prior to award of the construction contract and is required prior to commencement of any SRF-funded construction. (Pages GEFA-4&5)

2. Certification Regarding Equal Employment Opportunity. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor's form should be submitted with the DBE Compliance Form and the subcontractors' forms should be submitted as the subcontracts are executed. (Page GEFA-9)

3. Certification Regarding Debarment, Suspension, & Other Responsible Matters. This form is required for the Prime Contractor and for all subcontractors. The Prime Contractor's form should be submitted with the DBE Compliance Form and the subcontractors' forms should be submitted as the subcontracts are executed. (Page GEFA-10)

4. EPA Form 6100-2 DBE Subcontractor Participation Form. This form gives a DBE subcontractor the opportunity to describe the work the DBE subcontractor received from Prime Contractor, how much the DBE subcontractor was paid, and any other concerns the DBE subcontractor might have. The Prime Contractor must provide this form to each DBE subcontractor. The DBE subcontractor can, as an option, submit this form to the GEFA DBE Coordinator, who will forward the form to the EPA DBE Coordinator. (Page GEFA-11)

5. EPA Form 6100-3 DBE Subcontractor Performance Form. This form captures an intended DBE subcontractor's description of work to be performed for the Prime Contractor and the price of the work. This form is to be provided by the Prime Contractor to each DBE subcontractor and submitted with the DBE Compliance Form. (Page GEFA-12)

6. EPA Form 6100-4 DBE Subcontractor Utilization Form. This form captures the Prime Contractor's intended use of an identified DBE subcontractor and the estimated dollar amount of the work. This form is to be completed by the Prime Contractor and submitted with the DBE Compliance Form (Page GEFA-13)

Uncommitted Trades

Documentation of Good Faith Efforts

Newspaper ads		Internet Websites	Fax Confirmation	Copies of Solicitation Emails/letters	Copies of phone logs
PROOF OF CERTIFICATION FOR EACH SUBCONTRACTOR LISTED AS A DBE, MBE, OR WBE					

SIX GOOD FAITH EFFORTS

These good faith efforts are required methods to ensure that DBEs have the opportunity to compete for procurements funded by EPA financial assistance dollars. Such good faith efforts are described as follows:

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities. This will include placing DBEs on solicitation lists and soliciting them whenever there are potential sources.

2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.

4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.

5. Use the resources, services, and assistance of the Department of Transportation (DOT), Small Business Administration (SBA), and the Minority Business Development Agency of the Department of Commerce (MBDA).

6. If the Prime Contractor awards subcontracts, it must take the steps described in items (1) through (5) listed above.

Please note that DBEs, MBEs, and WBEs must be certified by EPA, SBA, or DOT (or by state, local, Tribal, or private entities whose certification criteria match EPA's). DBEs must be certified in order to be counted toward the Prime Contractor's MBE/WBE goals. "Self-certified" DBE subcontractors will not be counted toward the Prime Contractor's MBE/WBE goals. Depending upon the certifying agency, a DBE may be classified as a DBE, a Minority Business Enterprise (MBE), or a Women's Business Enterprise (WBE).

The Prime Contractor must employ and document the Six Good Faith Efforts for all subcontracts, even if the Prime Contractor has achieved the fair share objectives.

The documentation of solicitations for the Six Good Faith Efforts must be detailed in order to allow for satisfactory review. Such documentation might include fax confirmation sheets, copies of solicitation letters/emails, printouts of the online solicitations, printouts of online search results and affidavits of publication in newspapers or other publiccations. The Prime Contractor is encouraged to follow up each written, fax, or e-mail solicitation with at least 1 logged phone call.

The Prime Contractor should attempt to identify and solicit DBEs in the geographic proximity of the project before soliciting those located farther away.

If a DBE subcontractor fails to complete work under the subcontract for any reason, the Prime Contractor must notify the Owner in writing prior to any termination and must employ the Six Good Faith Efforts described above if using a replacement subcontractor. Any proposed changes from the approved DBE subcontractor list must be reported to the Owner and to GEFA on the *Changes to Approved Subcontractors Form* (GEFA-14) prior to initiation of the action. EPA Forms Nos. 6100-3 and 6100-4 must also be submitted to GEFA for new DBE subcontracts.

RESOURCES FOR IDENTIFYING DBE SUBCONTRACTORS

RESOURCES FOR IDENTIFYING DBE SUBCONTRACTOR'S FOR DIRECT SOLICITATION:

Georgia Department of Transportation (GDOT)
Disadvantaged Business Enterprise Program
(404) 631-1972
http://tomcat2.dot.state.ga.us/ContractsAdministration/uploads/rptDBE_Directory_CA_New.pdf

City of Atlanta, Georgia
Office of Contract Compliance
(404) 330-6010
http://pro.prismcompliance.com/

DeKalb County, Georgia
Office of Purchasing and Contracting
(404) 371-4730
http://www.co.dekalb.ga.us/purchasing/pdf/supplierList.pdf

Fulton County, Georgia
Purchasing and Contract Compliance
(404) 612-5800
http://www.fultoncountyga.gov/plugins/content/external_links/frameset.php?url=http%3A%2F%2Fwww.occfultoncountyga.com%2FDirectory%2FMFBEDirectoryExternal.aspx

Metropolitan Atlanta Rapid Transit Authority (MARTA)
Disadvantaged Business Enterprise Program
(404) 848-4656
http://www.itsmarta.com/vendor-opportunities.aspx

United States Environmental Protection Agency
http://www.epa.gov/osbp/dbe_team.htm
Teree Henderson
National DBE Program Coordinator
(202) 566-2222
henderson.teree@epa.gov

Georgia Environmental Finance Authority
DBE Compliance Coordinator
(404) 584-1000
www.gefa.ga.gov
dbe_compliance@gefa.ga.gov

NOTES:

(1) The Prime Contractor shall use the necessary resources to identify and directly solicit no less than 3 certified MBE firms and 3 WBE firms to bid in each expected subcontract area or trade.

(2) If a diligent and documented search of the recommended directories does not identify 3 potential certified MBE firms and 3 potential certified WBE firms, then the Prime Contractor shall post an advertisement in the Owner's local legal organ, the Owner's official website, a regional newspaper in a larger community in the proximity, the Prime Contractor's website, or some other appropriate resource. Whenever possible, post solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.

(3) Expenditures to a DBE that acts merely as a broker or passive conduit of funds, without performing, managing, or supervising the work of its subcontract in a manner consistent with normal business practices may not be counted.

(4) The Prime Contractor should attempt to identify and first solicit DBEs in the geographic proximity of the project before soliciting those located farther away.

(5) Contact the GEFA DBE Compliance Coordinator at (404) 584-1000 or dbe_compliance@gefa.ga.gov for further assistance or resources.

CERTIFICATION BY PROPOSED PRIME CONTRACTOR OR SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Proposed Prime Contractor
Proposed Subcontractor

This certification is required pursuant to Executive Order 11246, Part II, Section 203 (b), (30 F.R. 12319-25). Any bidder or prospective prime contractor, or any of the proposed subcontractors, shall state as an initial part of the bid or negotiations of the contract whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and, if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicated that the prime or subcontractor has not filed a compliance report due under applicable instruction, such contractor shall be required to submit a compliance report.

(1) Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause.
YES _____ NO _____

(2) Compliance Reports were required to be filed in connection with such contract or subcontract.
YES _____ NO _____ (If YES, state what reports were filed and with what agency.)

(3) Bidder has filed all compliance reports due under applicable instructions, including SF-100 (EEO-1 Report).
YES _____ NO _____ (If NO, please explain in detail.)

The information above is true and complete to the best of my knowledge and belief. (A willfully false statement is punishable by law – U.S. Code, Title 18, Section 1001.)

_____
PRINTED NAME & TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR OR SUBCONTRACTOR

_____ _____
SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE

CERTIFICATION BY PROPOSED PRIME CONTRACTOR OR SUBCONTRACTOR REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBLE MATTERS

Proposed Prime Contractor
Proposed Subcontractor

Under Executive Order 12549 individuals or organizations debarred from participation in Federal Assistance Programs may not receive an assistance award under federal program or sub-agreement there under for $25,000 or more. Accordingly each recipient of a State loan or a contract (engineering or construction) awarded under a loan must complete the following certification (see 40 CFR 32.510).

The prospective participant certifies to the best of its knowledge and belief that it and its principals;

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and

(d) Have not within a three year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause of default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. (A willfully false statement is punishable by law – U.S. Code, Title 18, Section 1001.)

_____

PRINTED NAME & TITLE OF AUTHORIZED REPRESENTATIVE OF CONTRACTOR OR SUBCONTRACTOR

_____ _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE

_____ I am unable to certify to the above statements. My explanation is as follows:

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name	Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services , Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: ___ DOT ___SBA ___ Other: _____	Meets/ exceeds EPA certification standards? ___YES ___NO ___Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package.
Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity:		

I have identified potential DBE certified subcontractors	___ YES	___ NO
If yes, please complete the table below. If no, please explain:		

Subcontractor Name/ Company Name	**Company Address/ Phone/ Email**	**Est. Dollar Amt**	**Currently DBE Certified?**

Continue on back if needed

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

CHANGES TO APPROVED SUBCONTRACTORS FORM

Loan Recipient _____ SRF Loan Number _____

CERTIFICATIONS:
I certify that the information submitted on and with this form is true and accurate and that this firm has met and will continue to meet the conditions of this construction contract regarding DBE solicitation and utilization. I further certify that criteria used in selecting subcontractors and suppliers were applied equally to all potential participants.

_____ Date_____
(Prime Contractor signature)

_____
(Printed name and title)

I certify that I have reviewed the information submitted on and with this form and that it meets the requirements of the Owner's State Revolving Fund loan contract.

_____ Date_____
(Signature of Owner or Owner's representative)

_____
(Printed name and title)

GENERAL INFORMATION:

1) If an approved subcontractor is terminated or replaced, please identify this company and briefly state reason.

Subcontractor Name::	Trade
Reason Terminated or Replaced	

2) For new or additional subcontractors, list name, trade, address, telephone number, contact person, dollar amount of subcontract, and DBE status.

New Subcontractor Name and Contact Person	Trade
Address	Telephone Number
Dollar Amount	DBE Status

1) Attach proof of certification by EPA, SBA, DOT (or by state, local, Tribal, or private entities whose certification criteria match EPA's) for each subcontractor listed as a DBE, MBE, or WBE.

2) Attach documentation of Six Good Faith Efforts solicitation effort for all new subcontracts.

3) Provide justification for not selecting any certified DBE subcontractor that submitted a low bid for any subcontract area.

4) For each subcontractor, attach certifications regarding Equal Employment Opportunity (GEFA-9) and certifications regarding Debarment, Suspension, and Other responsible Matters (GEFA-10)

DBE ANNUAL REPORT
FORM (5700-52A)

This form must be completed by recipients of federal financial assistance for procurement of supplies, equipment, construction or services. SRF loan recipients are required to submit this report to GEFA by the 20th of October for the previous period of October 1 through September 30. Please submit a "negative" report even if $0 is the amount paid to MBE/WBE subcontractors during the reporting period.

<table>
<tr><td colspan="4">ANNUAL REPORT FORM (5700-52A)</td></tr>
<tr><td colspan="2">1. PRIME CONTRACTOR</td><td colspan="2">2. REPORTING PERIOD (Complete date using current year.)
Period Ending (September 30, _____)</td></tr>
<tr><td colspan="2">3. SUBMIT TO:
Georgia Environmental Finance Authority
Attention: DBE Compliance Coordinator
233 Peachtree Street, N.E.
Harris Tower, Suite 900
Atlanta, Georgia 30303
dbe_compliance@gefa.ga.gov</td><td colspan="2">4. LOAN RECIPIENT (Name, Address and Telephone)</td></tr>
<tr><td>5. LOAN RECIPIENT (OWNER)
REPORTING CONTACT</td><td>PHONE:</td><td>6. TYPE OF FEDERAL FINANCIAL ASSISTANCE PROGRAM (Check one)
CWSRF _____ DWSRF_____</td><td>7. SRF LOAN NUMBER</td></tr>
<tr><td colspan="2">8. CONTRACTOR NAME & TOTAL CONSTRUCTION CONTRACT AMOUNT</td><td colspan="2">9. ACTUAL DOLLAR AMOUNT PAIDTO MBE/WBE SUBCONTRACTORS THIS PERIOD
$ MBE_____ $ WBE_____ NEGATIVE REPORT ($0) ___</td></tr>
<tr><td colspan="2">10. RECIPIENT'S MBE/WBE GOALS
MBE 4.0 % WBE 4.0 %</td><td colspan="2">11. TOTAL DOLLARS SPENT THIS PERIOD
MBE $_____
WBE $_____
NON MBE/WBE $_____
TOTAL $ _____</td></tr>
<tr><td colspan="2">12. NAME & TITLE OF AUTHORIZED REPRESENTATIVE OF LOAN RECIPIENT (OWNER).</td><td>13. SIGNATURE OF AUTHORIZED REPRESENTATIVE OF LOAN RECIPIENT.</td><td>14. DATE</td></tr>
<tr><td colspan="4">MBE/WBE PAYMENTS MADE DURING PERIOD</td></tr>
<tr><td colspan="2">NAME & ADDRESS of DBE (SUB)CONTRACTOR (indicate if MBE or WBE firm)</td><td colspan="2">TOTAL DOLLAR AMOUNT PAID & DATE PAID
$_____ DATE_____</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2"></td><td colspan="2"></td></tr>
</table>

SPECIAL PROVISIONS

(a) The Prime Contractor is required to pay its subcontractors in accordance with the Georgia Prompt Payment Act (OCGA 13-11).

(b) The Prime Contractor is required to insert the entirety of the Davis Bacon contract requirements into all subcontracts

(c) Sewer line and water line crossing of all roads and streets shall be done in accordance with the Georgia Department of Transportation (D.O.T.) Policies and Procedures and must comply with the Ga. D.O.T. Standard Specifications, Construction of Roads and Bridges, 1993 Edition.

(c) Construction shall be carried out so as to prevent bypassing of wastewater flow and to prevent interruption of drinking water treatment during construction. EPD must receive written notification prior to any reduction in the level of treatment and must approve all temporary modifications to the treatment process prior to the activity.

(d) Erosion and Sedimentation Control shall be accomplished in accordance with the Georgia Erosion and Sedimentation Control Act of 1975 as currently amended and NPDES General Permits (Storm Water from Construction Sites). See also www.gaepd.org and www.gaswcc.georgia.gov for information regarding permits.

(e) Use of Chemicals: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in conformance with State and local regulations as appropriate.

(f) It is the duty of the Prime Contractor, the Owner and the Engineer to ensure the construction of the project, including the letting of contracts in connection therewith, shall comply with all applicable laws and regulations and requirements of the United States of America or any agency thereof, the state of Georgia or any agency thereof, territorial, or any local government laws or political subdivision and ordnances to the extent that such requirements do not conflict with Federal laws and this subchapter.

(g) EPD, EPA, and GEFA shall have access to the site and the project work at all times.

BONDS

Bonding requirements for Contracts of $100,000 or less are contained in the General Conditions. Bond requirements of contracts in excess of $100,000 are:

1. Bid guarantee equivalent to five percent of the bid price. The bid guarantee shall consist of a firm commitment such as a certified check or bid bond submitted with the bid.

2. Performance bond equal to 100 percent of the contract price and;

3. Payment bond equal to 100 percent of the contract price. Bonds must be obtained from companies holding Certificates of Authority as acceptable sureties, issued by the U.S. Treasury.

SPECIAL NOTICE TO BIDDERS

By the submission of this bid, each bidder acknowledges that he understands and agrees to be bound by the equal opportunity requirements of EPA regulations (40 CFR Part 8, particularly Section 8.4 (b)), which shall be applicable throughout the performance of work under any contract awarded pursuant to this solicitation. Each bidder agrees that if awarded a contract, it will similarly bind contractually each subcontractor. In implementation of the foregoing policies, each bidder further understands and agrees that if awarded a contract, it must engage in affirmative action directed at promoting and ensuring equal employment opportunity in the workforce used under the contract (and that it must require contractually the same effort of all subcontractors whose subcontracts exceed $10,000.00). The bidder understands and agrees that “affirmative action” as used herein shall constitute a good faith effort to achieve and maintain minority employment in each trade in the on-site workforce used on the project.

EQUAL EMPLOYMENT OPPORTUNITY NOTICE

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL OPPORTUNITY
(EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the Equal Opportunity Clause which is included in the nondiscrimination Provision and Labor Standards, EPA Form 5720-4 and the Standard Federal Equal Employment Opportunity (EEO) Construction Contract Specifications set forth herein.

2. The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	4.0 percent
Goals for female participation for each trade	4.0 percent

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minority and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation to the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical area where the contract is to be performed giving the state, county and city, if any).

EEO Construction Contract Specifications (Executive Order 11246)

EEO Specifications:

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

   b. "Director" means Director, Office of Federal Contract Compliance Program, United States Department of Labor, or any person to whom the Director delegates authority;

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form, 941.

   d. "Minority" includes:

      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7(a) through (p) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

   a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

   b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations□ responses.

   c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever actions the Contractor may have taken.

   d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

   e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trained programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7(b) above.

   f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations 7(a) through (p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7(a) through (p) of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes

a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Davis-Bacon and Related Acts

Labor Standards Provisions for Federally Assisted Contracts

Contract Provision for Contracts in Excess of $2,000.

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, http://www.dol.gov/whd/govcontracts/dbra.htm (E-tools)

(ii)(A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly

payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/whd/forms or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the

meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job

(5) Compliance Verification:

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractors' use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must provide a report of compliance to the Georgia Environmental Finance Authority detailing compliance efforts and results. This report will be submitted with or prior to the loan recipient's first request for funding of construction costs, prior to final disbursement of funds from the loan, and as requested by the GEFA during the project.

(f) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB coordinator and to the appropriate DOL Wage and Hour District Office listed at http://www.dol.gov/whd/america2.htm.

INSERT WAGE RATE DETERMINATION HERE

Wage Rates (for *Heavy Construction*) are state/county specific can be found at:

http://www.dol.gov/whd/govcontracts/dbra.htm

Sample Payroll Form (WH-347) is found at:

http://www.dol.gov/whd/forms/wh347.pdf

Labor Standards Interview Form (SF-1445) is found at:

http://www.gsa.gov/portal/forms/download/115910

Davis-Bacon (WH-1321) poster is found at:

http://www.dol.gov/whd/regs/compliance/posters/fedprojc.pdf
(*English*)

http://www.dol.gov/whd/regs/compliance/posters/davispan.pdf
(*Spanish*)

Fair Labor Standards Act Minimum Wage poster is found at:

http://www.dol.gov/whd/regs/compliance/posters/minwagebwp.pdf
(*English*)

http://www.dol.gov/whd/regs/compliance/posters/minwagespbwP.pdf
(*Spanish*)

"EEO Is the Law" poster is found at:

http://www.eeoc.gov/employers/upload/eeoc_self_print_poster.pdf
(*English*)

http://www.eeoc.gov/employers/upload/eeoc_self_print_poster_spanish.pdf
(*Spanish*)

"EEO Is the Law" poster supplement is found at:

http://www.eeoc.gov/employers/upload/eeoc_gina_supplement.pdf
(*English*)

http://www.eeoc.gov/employers/upload/eeoc_gina_supplement_spanish.pdf
(*Spanish*)

OSHA poster is found at:

http://www.osha.gov/Publications/osha3165low-res.pdf
(*English*)

http://www.osha.gov/Publications/osha3167.pdf
(*Spanish*)

CERTIFIED PAYROLL REVIEW CHECKLIST

(This is a *recommended Certified Payroll Review Checklist for the Owner's use*.)

CONTRACT ID City of CW/DWSRF#00 - 000	PRIME CONTRACTOR/SUBCONTRACTOR X Construction
GENERAL WAGE DECISION AND DATE (Insert number & date)	PAYROLL PERIOD ENDING

INSTRUCTIONS: This checklist is to be used in conjunction with projects requiring Davis-Bacon Wage Rates and compliance reviews. All certified payrolls are to be date stamped upon receipt from the prime contractor.

Payroll Information Checklist:

_____ Prime Contractor's or subcontractor's name and address
_____ Contract ID numbers (GEFA SRF No.)
_____ Week ending.
_____ Project location.

_____ Employee ID or Last 4 digits of Social Security Number
- _____ Social Security Number removed
- _____ Employee's work classification
- _____ Identification of OJTs, apprentices and program levels (%) on payrolls.
- _____ Verify that OJT and Apprentice Program documentation is in project files.

_____ Daily and weekly employee hours worked in each job classification.
- _____ Daily and weekly employee overtime (or premium) hours worked
- _____ Total weekly hours worked on all jobs (prevailing and non-prevailing wage).
- _____ Base rate shown for each employee, overtime (or premium) rate shown when worked.
- _____ Verify correct wage rates are being paid.
- _____ Verify overtime is being paid correctly (over 40 hrs/wk, and Time and a half)
- _____ Week's gross wages
- _____ Week's itemized deductions.
- _____ Week's net wages paid

_____ Compliance statement attached.
- _____ Method of fringe benefit payment described by checking either box (4)(a) or (4)(b).
- _____ Fringe benefit package information in file and updated as needed (if 4(a) is checked)
- _____ Exceptions explanation for fringe benefit (4)(c).
- _____ Signature.

Compliance Review Checklist (for field reviews):

_____ Verify work classifications reported are consistent with the work performed.
_____ Compare payrolls with wage rate interviews when conducted.
_____ Compare number of employees and hours worked with project documentation.

REVIEWED BY:	DATE

ATTACHMENT B

GEORGIA ENVIRONMENTAL FINANCE AUTHORITY

AMERICAN IRON AND STEEL
SPECIAL CONDITIONS AND INFORMATION

For

FEDERALLY ASSISTED
STATE REVOLVING LOAN FUND
CONSTRUCTION CONTRACTS

April 11, 2014

The following standard language must be incorporated into construction contract documents and in all solicitations for offers and bids for all construction contracts or subcontracts to be funded, in whole or in part, through the Federally-assisted State Revolving Fund in the State of Georgia for projects subject to the American Iron and Steel requirements.

These Special Conditions shall not relieve the participants in this project of responsibility to meet any requirements of other portions of this construction contract or of other agencies, whether these other requirements are more or less stringent. The requirements in these Special Conditions must be satisfied in order for work to be funded with the State Revolving Fund.

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GENERAL REQUIREMENTS

These Special Conditions are based on guidance provided by the United States Environmental Protection Agency (EPA). Public Law 113-76, the Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement that requires State Revolving Loan Fund (SRF) assistance recipients to use iron and steel products that are produced in the United States for projects in this project. A copy of Section 436 of the Act is found in Appendix 3.

The products and materials subject to these requirements will be defined in Appendix 1 of these special conditions.

The Owner must maintain documentation of compliance with the AIS requirements. The documentation that the Owner maintains will be subject to review and audit by representatives of the state of Georgia, the EPA, the EPA Office of the Inspector General, and other federal authorities.

The Prime Contractor must provide certifications of compliance for all products subject to AIS requirements to the Owner prior to requesting payments for those products. The Owner or the Engineer may require certifications of compliance with submittals and shop drawings for these products as part of the submittal review process.

All manufacturing processes for a covered iron or steel product, as further defined in Appendix 1, must take place in the United States. If a covered product is taken out of the US for any part of the manufacturing process, it becomes foreign source material.

The EPA recommends the use of a step certification process to document the locations of the manufacturing processes involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer, processor, etc.) of the iron and steel products certifies that its step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification should include the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached in Appendix 2 is a sample step certification.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes for the product and for its iron and steel components occurred in the United States. The EPA states that additional documentation may be needed if the certification lacks important information and recommends step certification as the best practice. A sample final manufacturer certification is attached in Appendix 2.

The Prime Contractor may document that incidental and generally low cost components, as defined in Appendix 1, are compliant with AIS requirements under the De Minimis Waiver issued by the EPA. For these items, the Contractor must provide the Owner with documentation of costs for these items, including invoices, and a report of types and categories of materials to which the waiver is applied, the total cost of incidental components covered by the waiver for each category, and the calculations by which the total cost of materials incorporated into the project was determined. A sample De Minimis report is attached is Appendix 2.

Contractor, supplier, and manufacturer records are subject to review and audit by the EPA, its Inspector General, and other federal authorities.

Failure to comply with these requirements may delay, limit, or prevent the disbursement of SRF funds to the Owner. Violations of AIS requirements will require correction by the Contractor as determined by the Owner and Engineer, including replacement of deficient products with compliant products and compensation for costs and other damages that may result. Violations may also subject the Owner, the Contractor, and suppliers to other enforcement actions within the discretion of the EPA and other federal authorities.

The Act permits EPA to issue waivers for a case or category of cases in which EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent. The Contractor should notify the Owner and Engineer immediately if it finds that a waiver may be required.

By submitting a bid for this project and by executing this construction contract, the Contractor acknowledges to and for the benefit of the Owner and the state of Georgia that it understands that the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund or the Drinking Water State Revolving Fund and that Federal law authorizing these Funds contains provisions commonly known as "American Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and the state of Georgia that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the state of Georgia. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or the state of Georgia to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner or the state of Georgia resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the state of Georgia or any damages owed to the state of Georgia by the Owner). The Owner and the Contractor agree that the state of Georgia, as a lender to the Owner for the funding of its project, is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the state of Georgia.

Appendix 1 – Definitions

For purposes of the Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the project:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete (defined in more detail below); and
Construction materials (defined in more detail below).

Product primarily of Iron or steel: The product must be made of greater than 50% iron or steel, measured by cost. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required, except as required for reinforced precast concrete. If a product is composed of more than 50% iron or steel, but is not listed in Section 436 (a) (2) of the Act, it is not required to be produced in the US. Alternatively, the iron or steel in such a product can be sourced from outside the US.

Steel: An alloy that includes at least 50 percent iron and between 0.02 and 2 percent carbon and may include other elements. Other alloys of iron are not required to be produced in the US.

Produced in the United States: Production in the US of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

Municipal Castings: Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings include access hatches, ballast screen, benches, bollards, cast bases, cast iron hinged hatches, cast iron riser rings, catch basin inlets, cleanout/monument boxes, construction covers and frames, curb and corner guards, curb openings, detectable warning plates, downspout shoes, drainage grates, frames & curb inlets, inlets, junction boxes, lampposts, manhole covers, rings & frames, risers, meter boxes, steel hinged hatches, steel riser rings, trash receptacles, tree grates, tree guards, trench grates, and valve boxes.

Structural Steel: Structural steel is rolled flanged shapes, having at least one dimension of their cross-section 3 inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

Reinforced Precast Concrete: While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing rebar must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin. If the reinforced concrete is cast at the construction site, the reinforcing rebar is considered to be a construction material and must be produced in the US.

Construction Materials subject to AIS: Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: welding rods, wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, gates, and screens.

Construction Materials not subject to AIS: Mechanical and/or electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples, including their appurtenances necessary for their intended use and operation, are NOT considered construction materials: pumps, motors, gear reducers, drives, variable frequency drives (VFDs), mixers, blowers/aeration equipment, compressors, meters, electric/pneumatic/manual accessories used to operate valves (such as valve actuators), gates, motorized screens (such as traveling screens), sensors, controls, switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, dewatering equipment, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, and analytical instrumentation.

Items temporarily used during construction, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel. For example, trench boxes or scaffolding are not considered construction materials subject to AIS requirements.

Incidental Components compliant with AIS under the De Minimis Waiver: This waiver permits the use of de minimis incidental components that may otherwise be prohibited under AIS. These de minimis items may cumulatively comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into the project. The cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into the project.

These items are miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are permanently incorporated into the project. For many of these incidental components, the country of manufacture and the availability of alternatives are not always readily or reasonably identifiable prior to procurement in the normal course of business. For other incidental components, the country of manufacture may be known, but the miscellaneous character in conjunction with the low cost, individually and in total, as typically procured in bulk, mark them as properly incidental. Examples of incidental components include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube.

Examples of items that are not incidental and are not covered by the De Minimis Waiver include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures.

Items covered as compliant under this waiver must be documented in a report to the Owner to demonstrate that they are both incidental and that they fall within the cost allowances of this waiver. The costs of these items must be documented by invoices. The report must include a listing of types and categories of materials to which the waiver is applied, the total cost of incidental components covered by the Waiver for each category, and the calculations by which the total cost of materials incorporated into the project was determined.

Appendix 2 – Sample Certifications
Step Certification

The following information is provided as a sample letter of step certification for American Iron and Steel compliance. Documentation must be provided on company letterhead. This is to be provided by each handler (supplier, fabricator, manufacturer, processor, etc.). Each time a step in the manufacturing process takes place, the handler delivers its work along with a certification of its origin.

Date

Company Name
Company Address
City, State Zip

Subject: American Iron and Steel Step Certification for Project (Insert project name and SRF number)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

List of items, products and/or materials:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Appendix 2 – Sample Certifications
Final manufacturer certification

The following information is provided as a sample letter of the final manufacturer to certify American Iron and Steel compliance for the entire manufacturing process. Documentation must be provided on company letterhead.

Date

Company Name
Company Address
City, State Zip

Subject: American Iron and Steel Certification for Project (Insert project name and SRF number)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement of P.L. 113-76 and as mandated in EPA's State Revolving Fund Programs.

List of items, products and/or materials:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Appendix 2 – Sample Certifications
Contractor De Minimis Report

Owner: (Owner Name)
SRF Project No: (SRF Number)
Project Description: (Contract title or brief description)
Date: (Date of report)
Submitted by (name & title): (Contractor representative)
Company Name

LIST OF MATERIALS OR CATEGORIES OF MATERIALS PERMANENTLY INCORPORATED INTO THE PROJECT	**COST**	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Category or Item	$1,000.00	
Total Permanent Materials	**$10,000.00**	
1 % of total material cost	**$100.00**	**Maximum cost for individual item waived**
5 % of total material cost	**$500.00**	**Maximum cumulative cost for category waived**

LIST OF MATERIALS OR CATEGORIES OF MATERIALS COVERED BY DE MINIMIS WAIVER	**COST**	**COMPLIANT (Yes/No)**
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Category or Item	$100.00	Yes
Total De Minimis Items	**$500.00**	Yes

INVOICES ATTACHED FOR DE MINIMIS ITEMS.

Appendix 3 – P.L. 113-76, Consolidated Appropriations Act, 2014

The Act states:

Sec. 436 (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

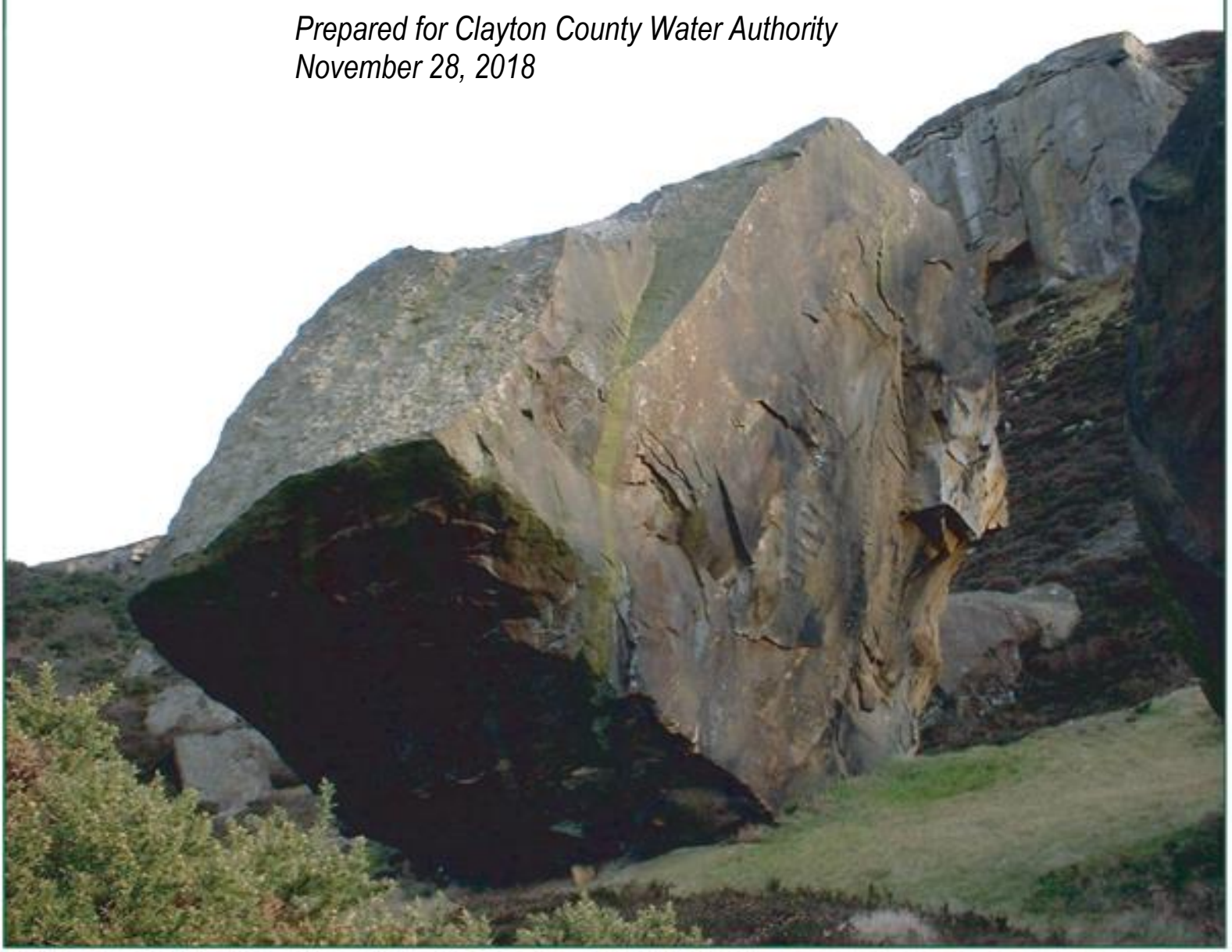
ATTACHMENT C

GEO HYDRO ENGINEERS

Report of Subsurface Exploration and Geotechnical Engineering Evaluation

Jesters Creek East Outfall Replacement Phase 1
Jonesboro, Georgia
Geo-Hydro Project Number 181060.20

Prepared for Clayton County Water Authority
November 28, 2018



Mr. Clifford Beroset, P.E.
Clayton County Water Authority
1600 Battle Creek Road
Morrow, Ga. 30260

November 28, 2018

Report of Subsurface Exploration
and Geotechnical Engineering Evaluation
Jesters Creek East Outfall Replacement Phase 1
Jonesboro, Georgia
Geo-Hydro Project Number 181060.20

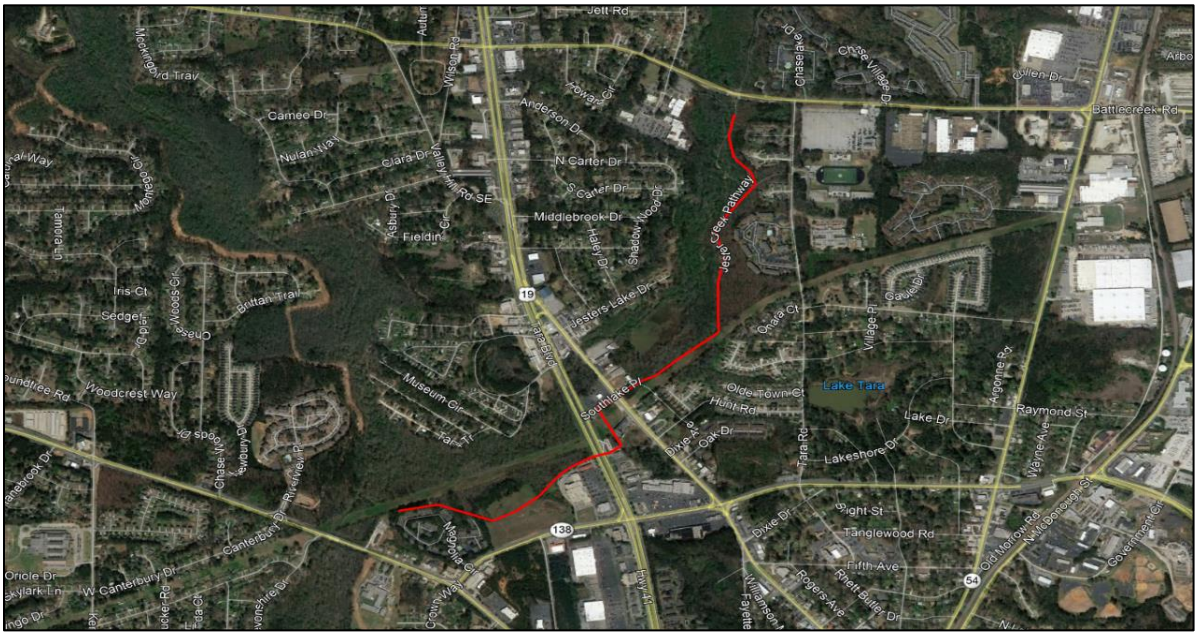
Dear Mr. Beroset:

Geo-Hydro Engineers, Inc. has completed the authorized subsurface exploration for the above referenced project. The scope of services for this project was outlined in Purchase Order 158765 dated October 16, 2018.

PROJECT INFORMATION

We understand that the Clayton County Water Authority is planning the a new 36-inch diameter sanitary sewer line throughout the city as indicated on Exhibit 1 in the Appendix. The project involves the installation of approximately 8,900 lineal feet of new sewer line shown in the annotated image below.

The majority of the alignment will be constructed parallel to, or directly where the existing sewer main is located. There are two areas where jack-and-bore will be used to allow for roadway crossings. Most of the alignment is open and grassed with two locations where the alignment is wooded. The proposed alignment was cleared at the time of our exploration. Topography along the alignment is typical for the Jonesboro area and is gently rolling.



EXPLORATORY PROCEDURES

The subsurface exploration consisted of 28 machine-drilled soil test borings and three horizontal directional drill borings performed at the approximate locations shown on Figures 2, 3, and 4 in the Appendix. The borings were located and staked in the field by Clayton County Water Authority. The borings were performed as close as possible to the staked locations. To avoid difficult site conditions, existing underground utilities, and traffic safety concerns some of the borings were offset slightly. Elevations shown on the test boring records were interpolated from the topographic site plan provided to us and have been rounded to the nearest foot. In general, the locations of the borings should be considered approximate.

Standard penetration testing, as provided for in ASTM Dl586, was performed at select intervals in the machine-drilled borings. Soil samples obtained from the drilling operation were examined and classified in general accordance with ASTM D2488 (Visual-Manual Procedure for Description of Soils). Soil classifications include the use of the Unified Soil Classification System described in ASTM D2487 (Classification of Soils for Engineering Purposes). The soil classifications also include our evaluation of the geologic origin of the soils. Evaluations of geologic origin are based on our experience and may be subject to some degree of interpretation.

A total of three horizontal directional bores were performed in two locations along the alignment. This drilling method, normally used to install underground utilities, can also be used to determine the probable success of jack-and-bore type drilling. The first location was bored under Tara Blvd north of GA-138. Two bores were performed at this location, one at the crown and one at the invert of the proposed sewer line. The second location, south of the intersection of Main Street and Southlake Place, consisted of one bore at the centerline of the proposed sewer line.

REGIONAL GEOLOGY

The project site is located in the Southern Piedmont Geologic Province of Georgia. Soils in this area have been formed by the in-place weathering of the underlying crystalline rock, which accounts for their classification as “residual” soils. Residual soils near the ground surface that have experienced advanced weathering frequently consist of red brown clayey silt (ML) or silty clay (CL). The thickness of this surficial clayey zone may range up to roughly 6 feet. For various reasons, such as erosion or local variation of mineralization, the upper clayey zone is not always present.

With increased depth, the soil becomes less weathered, coarser grained, and the structural character of the underlying parent rock becomes more evident. These residual soils are typically classified as sandy micaceous silt (ML) or silty micaceous sand (SM). With a further increase in depth, the soils eventually become quite hard and take on an increasing resemblance to the underlying parent rock. When these materials have a standard penetration resistance of l00 blows per foot or greater, they are referred to as partially weathered rock. The transition from soil to partially weathered rock is usually a gradual one, and may occur at a wide range of depths. Lenses or layers of partially weathered rock are not unusual in the soil profile.

Partially weathered rock represents the zone of transition between the soil and the indurated metamorphic rocks from which the soils are derived. The subsurface profile is, in fact, a history of the weathering process that the crystalline rock has undergone. The degree of weathering is most advanced at the ground surface, where fine-grained soil may be present. Conversely, the weathering process is in its early stages immediately above the surface of relatively sound rock, where partially weathered rock may be found.

The thickness of the zone of partially weathered rock and the depth to the rock surface have both been found to vary considerably over relatively short distances. The depth to the rock surface may frequently range from the ground surface to 80 feet or more. The thickness of partially weathered rock, which overlies the rock surface, may vary from only a few inches to as much as 40 feet or more.

Stream valleys may contain alluvial (water-deposited) soils, depending on ground surface topography, stream flow characteristics, and other factors. By nature, alluvial soils can be highly variable depending upon the energy regime at the time of deposition. Coarse materials such as sand or gravel are deposited in higher energy environments, while fine grained materials such as silt and clay are deposited in low energy environments. Alluvial soils may also contain abundant organic materials, and are frequently in a loose, saturated condition. In many cases, fine-grained alluvial soils will be highly compressible and have relatively low shear strength.

SLUG TESTING

Slug testing was performed to measure the groundwater inflow rate in temporary monitoring wells installed in borings SB-2, SB-7, SB-16, and SB-24. The testing was performed in general accordance with the Hvorslev method.

The temporary piezometer installed in boring SB-2 had five feet of screen between depths of approximately 3 and 8 feet and was backfilled with sand. Above the sand pack, the annular space was backfilled with bentonite to isolate the test section from surface runoff.

The temporary piezometers installed in borings SB-7, SB-16, and SB-24 had 10 feet of screen, and the annular space was backfilled with sand to a depth within about 6 inches of the ground surface. A bentonite cap was also installed at the ground surface to prevent surface runoff from entering the borehole.

The slug tests conducted in the borings were performed by adding a slug capable of producing a measurable change in head. The following table presents horizontal hydraulic conductivity and approximate flow rate values calculated based on the slug testing.

Boring	Screened Depth Interval	Falling Head Test	Flow Rate (Gallons per Minute)
SB-2	3-8 feet	6.3 feet/day	11
SB-7	6-16 feet	1.1 feet/day	4
SB-16	2-12 feet	2.1 feet/day	7
SB-24	6-16 feet	2.9 feet/day	10

TEST BORING SUMMARY

All borings except SB-12, SB-13, SB-16, SB-17, SB-23, and SB-28 initially encountered surface materials consisting of topsoil, gravel, or asphalt. Borings SB-1 through SB-7, SB-9, SB-11, SB-14, SB-15, SB-18, SB-20 through SB-22, and SB-24 through SB-27 encountered approximately 1 to 8 inches of topsoil. Borings SB-8, SB-10, and SB-19 encountered pavement materials consisting of asphalt and crushed stone ranging in total thickness from about 7 to 9 inches. The thickness of surface materials at the site should be expected to vary, and measurements necessary for detailed quantity estimation were not performed for this report.

Starting at the ground surface or below surface materials, 11 borings encountered fill materials extending to depths ranging from about 3 to 12 feet. The fill was classified as silty clay, clayey sand, sandy clay, and silty sand. Standard penetration resistance values recorded in the fill ranged from 2 to 16 blows per foot. Due to commercial development along parts of the alignment, we expect that fill materials are largely related to localized commercial construction. The quality of fill materials should be expected to vary along the alignment.

Beneath the fill or starting at the ground surface, alluvial (water-deposited) soils were encountered in 6 of the 28 test borings extending to depths ranging from the grounds surface to 18 feet. Two borings were terminated at a depth of 12 feet without penetrating the alluvial soils. The alluvial soils were typically classified as clayey sand and silty sand. Standard penetration resistances recorded in the alluvium ranged from 0 (weight-of-hammer) to 11 blows per foot, but were typically 4 blows per foot or less.

Residual soils, where encountered in the borings, were typical of the Piedmont Region. The residuum was typically classified as clayey sand, sandy clay, silty clay, and silty sand with varying amounts of mica. Standard penetration resistance values recorded in the residuum ranged from 0 to 56 blows per foot.

Four of the borings (SB-1, SB-22, SB-27, and SB-28) encountered partially weathered rock beginning at depths ranging from about 6 to 12 feet. Partially weathered rock is locally defined as residual material having a standard penetration resistance of 100 blows per foot or greater.

Conditions causing auger refusal were encountered in borings SB-10, SB-21, and SB-28 at depths ranging from 5 to 9 feet. Auger refusal is the condition that prevents further advancement of the boring using conventional soil drilling techniques. The remaining borings were extended to their planned termination depths without encountering auger refusal.

At the time of drilling or twenty-four hours after the completion of drilling, groundwater was encountered in all borings except SB-10 and SB-28 at depths ranging from 0 to 18 feet and approximate elevations ranging from 804 to 825 feet. It is important to note that groundwater levels will fluctuate depending on seasonal variations of precipitation and other factors, and may occur at higher elevations in the future.

For more detailed descriptions of subsurface conditions, please refer to the test boring records included in the Appendix.

Summary of Subsurface Conditions

Boring	GSE	Water Line Invert		PWR		Auger Refusal		Ground Water		Boring Termination	
		Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.	Depth	Elev.
SB-1	824	20	804	6	818	NE	---	15	809	BT 21.5 ft.	802.5
SB-2	810	6	804	NE	---	NE	---	6	804	BT 9.5 ft.	800.5
SB-3	816	9	807	NE	---	NE	---	12	804	BT 14.5 ft.	801.5
SB-4	820	13	807	NE	---	NE	---	3	817	BT 18.5 ft.	801.5
SB-5	823	15	808	NE	---	NE	---	2	821	BT 18.5 ft.	804.5
SB-6	824	16	808	NE	---	NE	---	9	815	BT 15 ft.	809
SB-7	822	14	808	NE	---	NE	---	10	812	BT 17.5 ft.	804.5
SB-8	827	18	809	NE	---	NE	---	16	811	BT 22.5 ft.	804.5
SB-9	828	19	809	NE	---	NE	---	7	821	BT 20 ft.	808
SB-10	829	20	809	NE	---	5	824	NE	---	AR 5 ft.	824
SB-10A	829	20	809	NE	---	5	824	NE	---	AR 5 ft.	824
SB-11	823	14	809	NE	---	NE	---	9	814	BT 15 ft.	808
SB-12	830	21	809	NE	---	NE	---	13	817	BT 25 ft.	805
SB-13	831	21	810	NE	---	NE	---	18	813	BT 25 ft.	806
SB-14	823	13	810	NE	---	NE	---	7	816	BT 20 ft.	803
SB-15	821	11	810	NE	---	NE	---	3	818	BT 15 ft.	806
SB-16	820	10	810	NE	---	NE	---	0	820	BT 13.5 ft.	806.5
SB-17	818	8	810	NE	---	NE	---	0	818	BT 12.5 ft.	805.5
SB-18	818	8	810	NE	---	NE	---	4	814	BT 14.5 ft.	803.5
SB-19	823	12	811	NE	---	NE	---	1	822	BT 20 ft.	803
SB-20	824	13	811	NE	---	NE	---	1	823	BT 24.5 ft.	799.5
SB-21	827	15	812	NE	---	6	821	2	825	AR 6 ft.	821
SB-21A	827	15	812	NE	---	5	822	NE	---	AR 5 ft.	822
SB-22	827	15	812	12	815	NE	---	9	818	BT 18.7 ft.	808.5
SB-23	822	9	813	NE	---	NE	---	1	821	BT 13.5 ft.	808.5
SB-24	827	14	813	NE	---	NE	---	8	819	BT 17.5 ft.	809.5
SB-25	826	12	814	NE	---	NE	---	6	820	BT 15 ft.	811
SB-26	824	10	814	NE	---	NE	---	7	817	BT 13.5 ft.	810.5
SB-27	823	9	814	10	813	NE	---	3	820	BT 13.5 ft.	809.5
SB-28	829	15	814	6	823	9	820	NE	---	AR 9 ft.	820

All Depths and Elevations in this Summary Table are Approximate
Bold Font indicates that partially weathered rock or auger refusal were encountered at or above the planned invert elevation.
Bold Font indicates that at the time of drilling, groundwater was encountered above or near planned invert elevation.
Ground Water Depths are at Time of Drilling or 24 hr.
GSE: Ground Surface Elevation
PWR: Partially Weathered Rock
NE: Not Encountered
AR: Auger Refusal
BT: Boring Terminated

EVALUATIONS AND RECOMMENDATIONS

The following evaluations are based on the information available on the proposed sanitary sewer alignment, the data obtained from the exploratory borings, and our experience with soils and subsurface conditions similar to those encountered at the explored locations. Because the test borings represent a statistically small sampling of subsurface conditions, it is possible that conditions between the test borings may be substantially different from those indicated by the borings.

Excavation Characteristics

Partially weathered rock was encountered at elevations of about 3 to 14 feet above the planned invert elevation at 3 of the 28 soil test borings concentrated in three sections of the proposed alignment: stations 0+00 to 1+00, 71+00 to 72+00, and 83+00 to 89+00. Based on the soil test boring data, difficult excavation conditions potentially requiring as much as 15 vertical feet of ripping and/or blasting will be a concern for the installation of the sanitary sewer along the alignment in these areas. Partially weathered rock can typically be removed with appropriate excavation equipment such as a large track-mounted backhoe. However, larger boulders, rock lenses, and hard seams within partially weathered rock can hinder excavation.

Conditions causing auger refusal were encountered in boring SB-9, SB-10, SB-21, and SB-28 at elevations higher than planned invert elevation at 4 of the 28 soil test borings. Based on the results of the soil test borings and our observations on site, we expect boulders and rock lenses to be present along the alignment. Boulders and rock lenses requiring blasting to achieve excavation may be encountered above the invert elevation between the soil test borings. A budget contingency should be included for rock excavation.

For construction bidding and field verification purposes it is common to provide a verifiable definition of rock in the project specifications. The following is a typical definition of trench rock:

- Trench Rock: Material occupying an original volume of at least one-half cubic yard which cannot be excavated with a hydraulic excavator having a minimum flywheel power rating of 123 kW (165 hp); such as a Caterpillar 322C L, John Deere 230C LC, or a Komatsu PC220LC-7; equipped with a short tip radius bucket not wider than 42 inches.

It is important to note that the geology of the Piedmont is characterized by variable subsurface conditions. Due to the widely-spaced nature of the borings, it is likely that subsurface conditions intermediate of the borings will be different. Weathered rock, mass rock, boulders, and rock seams may all be encountered at different locations along the alignment.

Blasting

In most cases rock excavation is performed by blasting. Standard blasting procedures include drilling through the materials to be blasted to introduce the explosives and covering up the area to be blasted to prevent flying debris. The area to be blasted is typically covered with several feet of soil or a blast mat.

Alternatively, the existing soil overburden can be left in place, which in most cases will eliminate the need for a soil cover or a blast mat.

Blasting generates ground vibrations that can be detrimental to adjacent structures. Research by the United States Bureau of Mines and other organizations provides limits for safeguarding adjacent structures during blasting operations. A peak particle velocity of 2 inches per second is generally recognized as a conservative limit, and is the maximum peak particle velocity allowed by the Georgia Blasting Standards Act of 1978.

State and local laws require that precondition surveys of neighboring properties be performed prior to conducting blasting activities. Typical requirements are to conduct a precondition survey of structures and facilities within a 1,000-foot radius of the blast site. Vibration monitoring is also required in all four compass directions at the nearest structure not owned by the developer/owner. Some municipalities have variations of these requirements, and the local requirements should be reviewed prior to beginning blasting activities.

Casing Installation

Horizontal directional drilling performed at the two proposed locations suggest that subsurface conditions should be generally favorable for jack-and-bore casing installation under Tara Boulevard and Main Street.

- Tara Blvd Crossing: The depth to groundwater in borings SB-7 and SB-8 at the time of drilling and at 24 hours were 10 feet and 16 feet, respectively. These depths correspond to elevations 812 and 811 and are about 2 and 1 feet above the top of the planned casing. Both borings, invert and crown, at this location were easily bored by the horizontal drilling machine.

- Main Street Crossing: The depth to groundwater in borings SB-12 and SB-13 at the time of drilling and at 24 hours were 13 feet and 18 feet, respectively. These depths correspond to the approximate top of casing (813) to about 4 feet above the top of the planned casing (817). The horizontal boring performed in the center of the proposed pipe experienced more stiff soils but was completed to its full length.

The contractor installing the casing should use equipment and techniques that prevent uncontrolled removal of soil during pipe jacking. Means and methods are typically not specified in the design documents. However, we would expect that a compressed air or slurry shield will be required to prevent uncontrolled loss of soil during pipe jacking.

Ground Movement

With proper selection of pipe jacking equipment, ground movement (heave or subsidence) can be maintained within tolerable limits. Typically, ground movement is maintained at less than 1 inch. Ground movement tolerances must be established beforehand, and ground movement should be monitored during casing installation. It will be critical to maintain a properly supported excavation face to prevent sudden collapse that may result in ground movement (subsidence).

Earth Slopes

Temporary construction slopes should be designed in strict compliance with OSHA regulations. The exploratory borings indicate that most soils along the alignment are Type C as defined in 29 CFR 1926 Subpart P. In general, we recommend that temporary construction slopes be no steeper than 1.5H:1V for excavation depths of 20 feet or less. Temporary construction slopes should be closely observed on a daily basis by the contractor's "competent person" for signs of mass movement: tension cracks near the crest, bulging at the toe of the slope, etc. The responsibility for excavation safety and stability of temporary slopes should lie solely with the contractor.

We recommend that extreme caution be observed in trench excavations. Several cases of loss of life due to trench collapses in Georgia point out the lack of attention given to excavation safety on some projects. We recommend that applicable local and federal regulations regarding temporary slopes, and shoring and bracing of trench excavations be closely followed.

If at a given location a sloped excavation is not feasible, temporary excavation bracing will be required. We expect that trench boxes will be the primary method to maintain trench stability wherever the excavation cannot be sloped safely. The most appropriate type of excavation bracing will be dictated by subsurface conditions at the specific excavation. Typically, the contractor will design and implement temporary excavation bracing as part of means and methods.

Construction Dewatering

Based on the groundwater levels in the borings, groundwater will be encountered along the entirety of the proposed alignment. Dewatering should be performed to maintain the groundwater level approximately 2 to 3 feet below the lowest prevailing excavation depth. In most cases we expect that direct pumping from the excavation will provide satisfactory temporary construction dewatering. However, the actual dewatering approach will be dictated by conditions at the time of excavation. Sand layers or other more permeable soil layers may significantly increase the amount of water inflow into open excavations.

The volume and rate of temporary dewatering actually required during construction is related not only to the prevailing weather conditions, but also the contractor's sequencing of construction activities. Construction specifications should include performance guidelines for temporary dewatering. Performance guidelines allow the contractor to select the actual means and methods of construction dewatering. The following sample specification[1] could be used as a guide for development of actual specifications.

Control of groundwater shall be accomplished in a manner that will preserve the strength of the surrounding soils, will not cause instability of the excavation slopes, and will not result in damage to existing structures. Where necessary to these purposes, the water level shall be lowered in advance of excavation, utilizing trenches, sumps, wells, well points, or similar methods. The water level, as measured

[1] The sample specification was adapted from Construction Dewatering - A Guide to Theory and Practice, John Wiley and Sons, and is not intended for direct use as a construction specification without modifications to reflect specific project conditions.

in piezometers, shall be maintained a minimum of 3 feet below the prevailing excavation level. Open pumping from sumps and ditches, if it results in boils, loss of soil fines, softening of the ground, or instability of slopes, will not be permitted. Wells and well points shall be installed with suitable screens and filters so that continuous pumping of soil fines does not occur. The discharge shall be arranged to facilitate collection of samples by the Engineer.

We recommend that pipe bedding be used where groundwater is encountered. This will provide a level, stable base for pipe installation. We recommend #57 or #89 crushed stone meeting Georgia DOT specifications as pipe bedding. Based on the results of the soil test borings, we recommend assuming that the entire alignment will require pipe bedding to facilitate installation.

Structural Fill Placement

We anticipate that the overburden soils (fill, alluvium, and residuum) can be reused as structural fill to backfill the pipe trench. Materials selected for use as structural fill should be free of organic matter, waste construction debris, and other deleterious materials. In general, the material should not contain rocks having diameters over 4 inches. It is our opinion that the following soils represented by their USCS group symbols will typically be suitable for use as structural fill and are commonly found in abundance in the Piedmont region: (CL), (SM), and (ML). The following soil types are typically suitable but are not abundant in the Piedmont region: (SW), (SP), (SC), (SP-SM), and (SP-SC). The following soil types are considered unsuitable: (MH), (CH), (OL), (OH), and (Pt).

Laboratory Proctor compaction tests should be performed on representative samples of proposed fill materials to provide data necessary to determine acceptability and for quality control. The moisture content of suitable borrow soils should generally be no more than 4 percentage points above or below their optimum moisture contents at the time of compaction. Tighter moisture limits may be necessary with certain soils.

We expect that most of the soils excavated during installation of the sewer line will have moisture contents too high to allow proper compaction. Most or all of the alluvial soils will be too wet for immediate reuse and residual soils excavated from elevations approaching and extending below the groundwater level will have moisture contents that will be too high as well. As most of the sewer alignment will be cross country and will not impact utility crossings, roadways, driveways, or rights-of-way, the compaction criteria could be adjusted to allow the reuse of soils with higher moisture contents than otherwise would be allowed for structural fill or backfill applications.

Air-drying soils can be performed in the warmer, drier periods of the year but drying soil is typically only practical on larger grading sites. One technique to reduce the moisture content of soils to a workable level will be to use a chemical agent such as lime to dry the soils, but areas to spread soils will be necessary. One or more staging areas near the project alignment could be used to dry wet soils. The contractor should be prepared to dry soils on this project or locate a source of suitable backfill materials. We can provide further guidance concerning the use of lime once a contractor is selected and a plan for addressing wet backfill soils is developed. Budget planning should consider the need to dry or replace wet soils.

Suitable fill material should be placed in thin lifts. Lift thickness depends on type of compaction equipment; but in general lifts of 6 inches loose measurement are recommended. The soil should be compacted by appropriate equipment such as tampers or "Rammax" compactors until sufficient cover is provided to allow the use of small rollers or larger compaction equipment.

Some of the alluvial soils encountered in boring B-2 contained organic material such as rotten wood. Similar materials may be present in alluvial soils elsewhere along the alignment that were not encountered in the test borings. These materials will have to be wasted regardless of moisture content.

Pipe Support

Based on the results of the test borings and our observations, it is likely that conditions varying from loose alluvium to partially weathered rock or rock will be exposed at bearing elevation for the water main. In order to limit potential differential settlement and stress concentrations at the interface of dissimilar bearing materials, soft soils should be removed and pipe bedding consisting of crushed stone should be placed as necessary. Bedding will be needed in conjunction with dewatering as discussed above.

Section 5 of the *Standard Specifications for Water Distribution Systems and Sanitary Sewer Systems, 3rd Edition* (Clayton County Water Authority) outlines the requirements for bedding materials and trench foundation stabilization. However, subsurface conditions will vary, and we recommend that a qualified geotechnical engineer be present during preparation of bearing surfaces for the pipeline. This will allow adjustments as necessary to comply with the *Standard Specifications* requirements.

Special Considerations

Because construction dewatering will most likely be implemented in this project a basic ground deformation monitoring program should involve the installation of settlement hubs or benchmarks located in the properties and areas outside the limits of pit construction. An initial baseline should be established and periodic measurements should be performed to determine whether ground subsidence is occurring. If subsidence occurs, the monitoring program will provide information to determine the magnitude and rate of subsidence. That information would facilitate decision making related to modifications to the construction sequence, remedial measures, or even temporary suspension of construction if necessary.

The project surveyor should be able to install settlement hubs or establish protected benchmarks around the site, on adjacent structures, and perform the necessary measurements. Vertical deformation is of greater interest, but horizontal displacement is also possible and should be recorded, particularly at monitoring hubs or benchmarks along the topographically higher areas.

* * * * *

We appreciate the opportunity to serve as your geotechnical consultant for this project and are prepared to provide any additional services you may require. If you have any questions concerning this report or any of our services, please call us.

Sincerely,

GEO-HYDRO ENGINEERS, INC.

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Michael C. Woody, P.E.
CMT Manager
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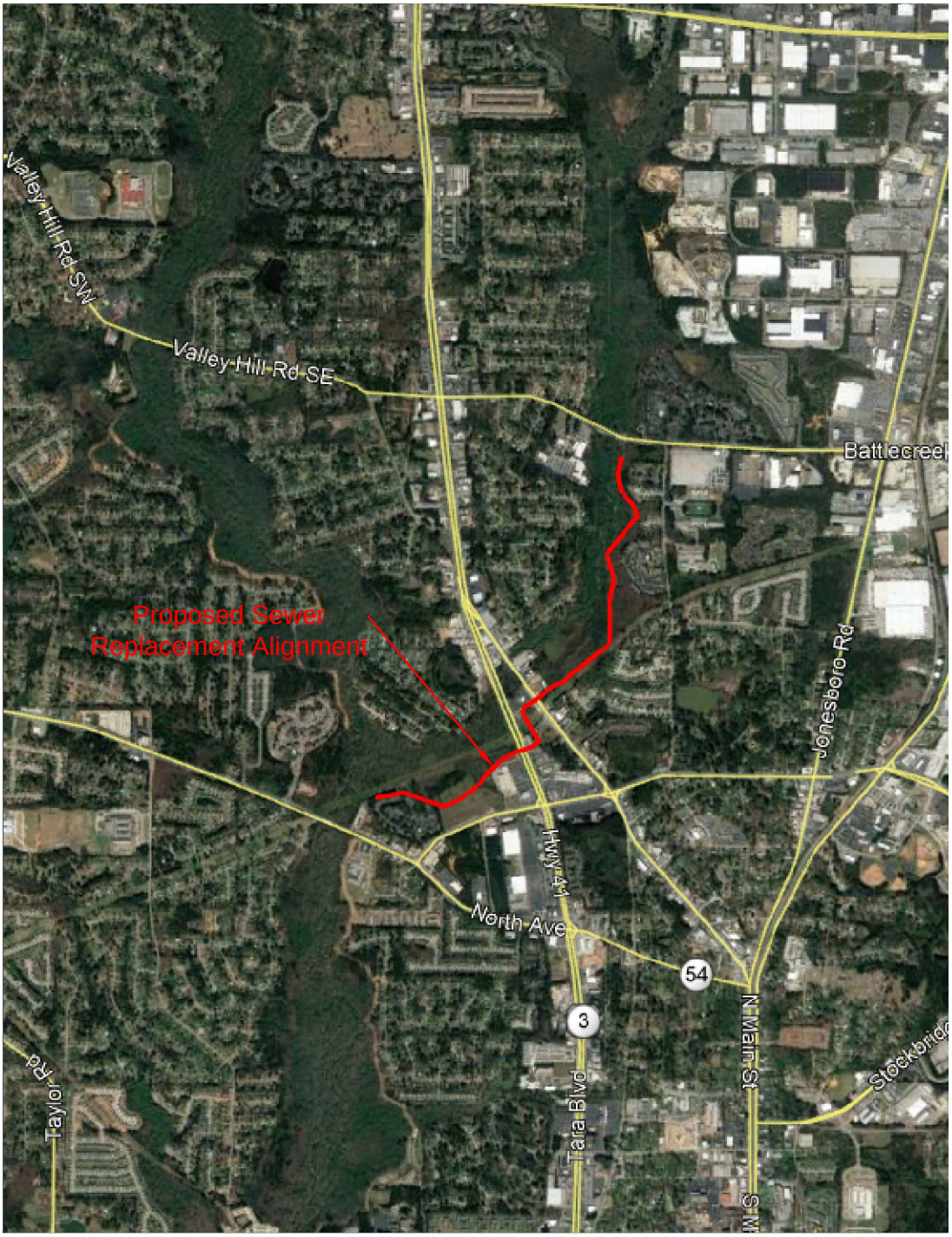
JTR/MCW/181060.20 Jesters Creek East Outfall Replacement Phase 1

APPENDIX

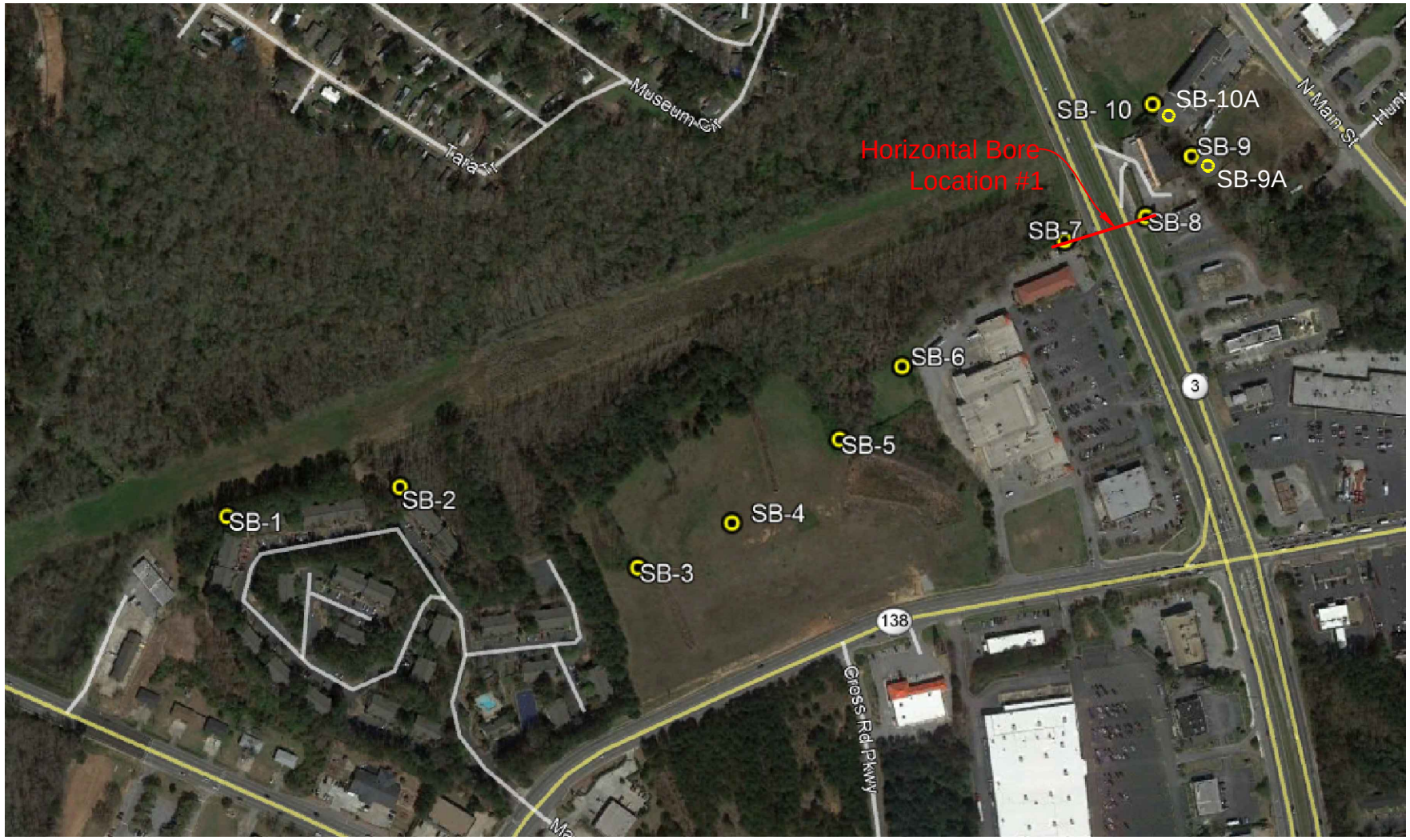


0 0.25 0.5 1 1.5

Approximate Scale, Miles

Figure 1: Site Location Plan

Jesters Creek East Outfall Replacement Phase 1
Jonesboro, Georgia
Geo-Hydro Project Number 181060.20



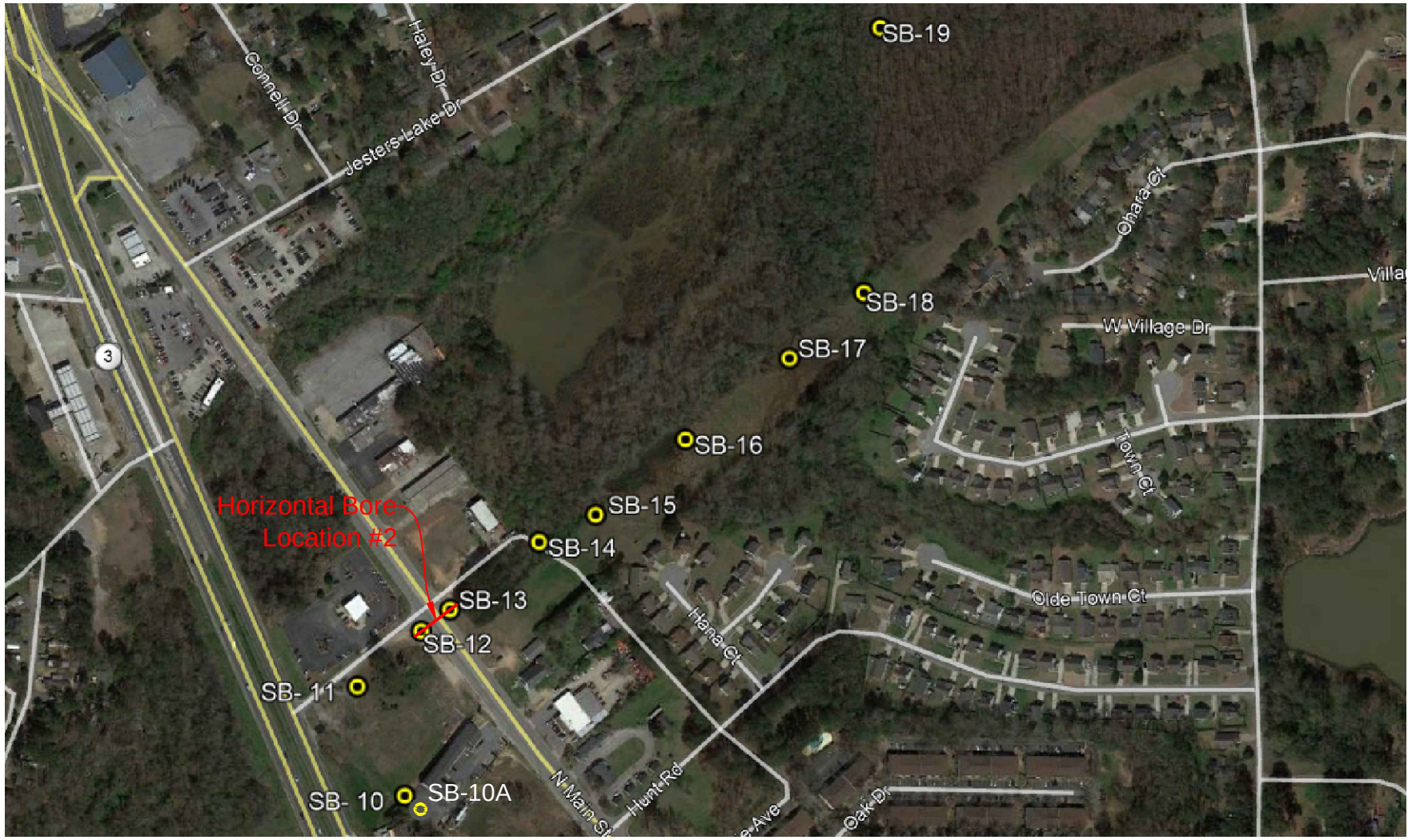
0 200 400 800 1200

Approximate Scale: 1"=400'

LEGEND: Soil Test Boring

Figure 2: Boring Location Plan

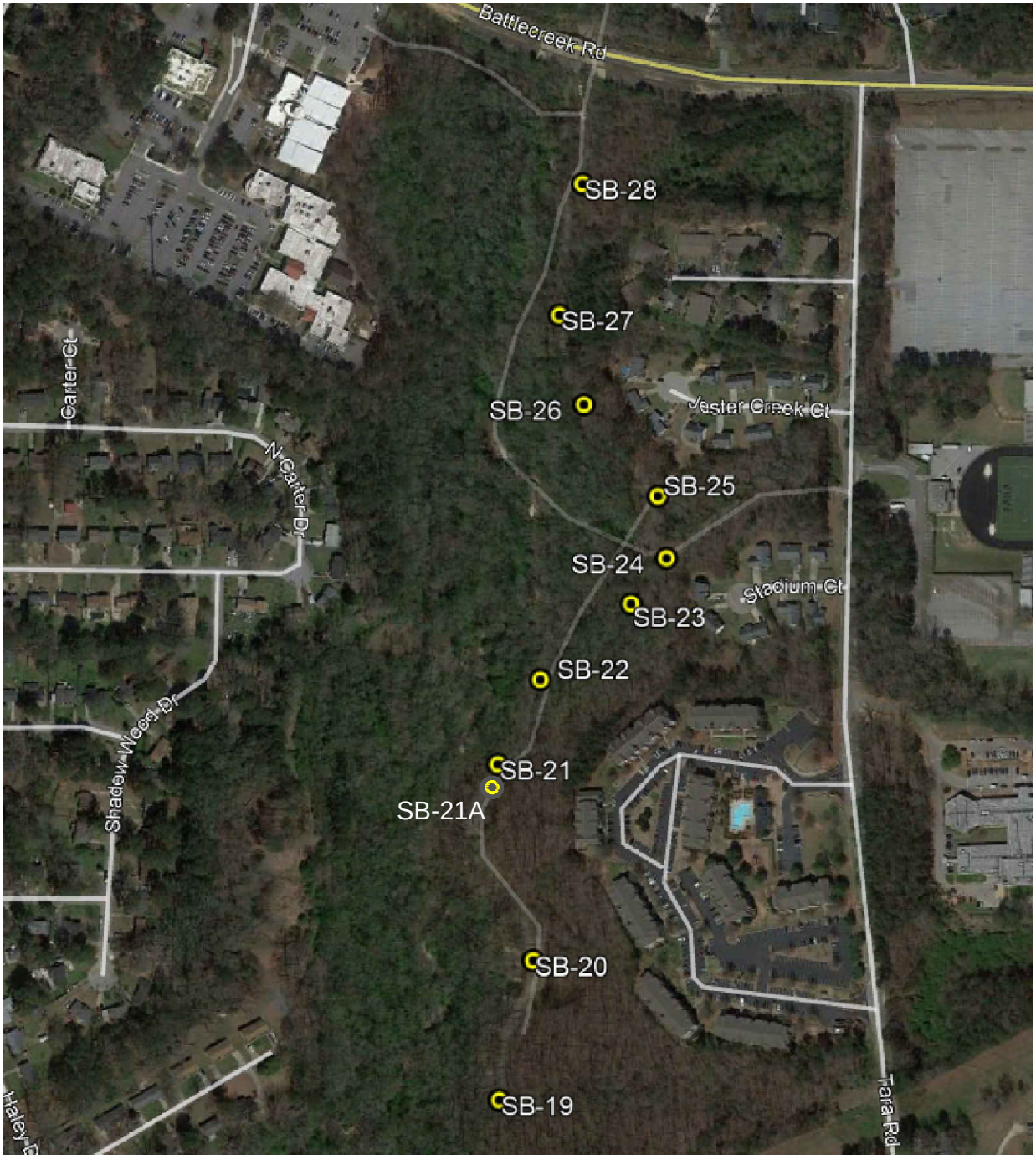
Jesters Creek East Outfall Replacement Phase 1
Jonesboro, Georgia
Geo-Hydro Project Number 181060.20



0 200 400 800 1200

Approximate Scale: 1"=400'

LEGEND: Soil Test Boring	Figure 3: Boring Location Plan	Jesters Creek East Outfall Replacement Phase 1 Jonesboro, Georgia Geo-Hydro Project Number 181060.20



LEGEND: Soil Test Boring

0 200 400 800 1200

Approximate Scale: 1"=400'

Figure 4: Boring Location Plan

Jesters Creek East Outfall Replacement Phase 1
Jonesboro, Georgia
Geo-Hydro Project Number 181060.20

SB-1

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/23/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **15 feet**	G.S. Elev: **824**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Topsoil (Approximately 3 inches)	
				Very loose brown micaceous clayey fine sand (SC) (FILL)	4
820	5			Dense red-orange clayey fine sand (SC) (RESIDUUM)	31
				Partially weathered rock - No sample recovered at 7.5 feet	50/0"
815	10			Loose tan to brown slightly micaceous silty fine sand (SM)	7
810	15	▽			5
805	20				7
					9
				Boring Terminated at 21.5 feet	
800	25				
795	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-2

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/23/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **7 feet**	G.S. Elev: **810**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **6 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Topsoil (Approximately 7 inches)	
				Loose to firm brown to tan-brown clayey fine to coarse sand (SC) (RESIDUUM)	10
805	5	▼			6
		▽			11
					13
800	10			Boring Terminated at 9.5 feet	
795	15				
790	20				
785	25				
780	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-3

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **12 feet**	G.S. Elev: **816**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
815				Topsoil (Approximately 2 inches)		
				Loose to firm tan and brown clayey fine sand (SC) (RESIDUUM)	6	
	5				10	
810					11	
	10	▽			9	
805				Firm gray silty clay (CL)	6	
	15			Boring Terminated at 14.5 feet		
800						
	20					
795						
	25					
790						
	30					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-4

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **16 feet**	G.S. Elev: **820**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **3 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Topsoil (Approximately 4 inches)	
		▼		Loose red clayey fine sand (SC) (RESIDUUM)	10
				Loose to firm gray and orange to gray slightly micaceous silty fine sand (SM)	
815	5				9
					7
810	10				11
805	15	▽			9
					7
				Boring Terminated at 18.5 feet	
800	20				
795	25				
790	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-5

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **8 feet**	G.S. Elev: **823**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **2 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
820	0	▼		Topsoil (Approximately 1 inch)	
				Loose brown slightly micaceous silty fine sand (SM) (FILL)	7
	5			Loose black and brown clayey fine sand (SC) with wood fragments (FILL)	7
				Loose brown clayey fine to coarse sand (SC) (FILL)	6
815		▽		Very loose to loose gray to brown silty fine sand (SM) (RESIDUUM)	0
	10				
810					
	15				3
					10
805				Boring Terminated at 18.5 feet	
	20				
800					
	25				
795					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-6

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **9 feet**	G.S. Elev: **824**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **9 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot) 0 10 20 30 40 50 60 70 80 90 100
				Topsoil (Approximately 3 inches)		
				Very loose to loose brown slightly micaceous silty fine sand (SM) (FILL)	4	●
820	5				10	●
				Very loose t loose red-brown slightly micaceous silty fine sand (SM) (RESIDUUM)	5	●
815		▼				
	10				4	●
810					7	●
	15			Boring Terminated at 15 feet		
805	20					
800	25					
795	30					

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-7

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **10 feet**	G.S. Elev: **822**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **10 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
820	0			Topsoil (Approximately 3 inches)	
				Very loose red micaceous silty fine sand (SM) (FILL)	4
				Very loose to loose brown clayey fine sand (SC) (FILL)	
	5				6
815					3
	10	▼			3
810				Very loose tan and orange micaceous silty fine sand (SM) (RESIDUUM)	
	15				3
805					4
				Boring Terminated at 17.5 feet	
	20				
800					
	25				
795					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-8

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **16 feet**	G.S. Elev: **827**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
827	0			Asphalt (Approximately 3 inches)	
				Gravel (Approximately 4 inches)	
825				Loose to firm brown highly micaceous silty fine sand (SM) (FILL)	6
				No sample recovered at 5 feet	
	5				11
820					15
				Very firm brown slightly micaceous clayey fine sand (SC) (RESIDUUM)	
	10				13
815				Very loose to loose gray to tan clayey fine sand (SC)	
				No sample recovered at 15 feet	
	15	▽			7
810					
	20				2
					7
805				Boring Terminated at 22.5 feet	
	25				
800					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-9

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/30/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **16 feet**	G.S. Elev: **828**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **7 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Topsoil (Approximately 3 inches)	
				Firm brown silty fine sand (SM) (FILL)	16
825					
				Very loose brown clayey fine sand (SC) (FILL)	
	5				3
		▼		Soft brown silty clay (CL) (FILL)	
					2
820					
	10				2
				Very loose black clayey fine sand (SC) with organics (ALLUVIUM)	
815					
	15	▽			4
810				Loose white and tan micaceous silty fine to medium sand (SM) (RESIDUUM)	7
	20			Boring Terminated at 20 feet	
805					
	25				
800					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-9A

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/30/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **828**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot) 0 10 20 30 40 50 60 70 80 90 100
				Topsoil (Approximately 3 inches)		
				Firm brown silty fine sand (SM) (FILL)	16	●
825				Auger Refusal at 3 feet		
	5					
820						
	10					
815						
	15					
810						
	20					
805						
	25					
800						
	30					

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-10

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/30/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **NE**	G.S. Elev: **829**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **NE**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
829	0			Asphalt (Approximately 2 inches)		
				Gravel (Approximately 6 inches)		
				Firm to soft brown slightly micaceous fine sandy clay (CL) (FILL)	6	●
825	5				4	●
				Auger Refusal at 5 feet		
820	10					
815	15					
810	20					
805	25					
800	30					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-10A

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/30/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **829**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By:

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot) 0 10 20 30 40 50 60 70 80 90 100
				Asphalt (Approximately 2 inches)		
				Gravel (Approximately 6 inches)		
				Firm to soft brown slightly micaceous fine sandy clay (CL) (FILL)	6	●
825	5				4	●
				Auger Refusal at 5 feet		
820	10					
815	15					
810	20					
805	25					
800	30					

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-11

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **9 feet**	G.S. Elev: **823**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
820	0			Topsoil (Approximately 3 inches)	
				Loose brown and red to tan clayey fine sand (SC) (RESIDUUM)	10
	5				7
815		▽			8
				Very loose orange brown to brown and black micaceous silty fine to medium sand (SM)	
	10				4
810					
	15			Boring Terminated at 15 feet	5
805					
	20				
800					
	25				
795					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-12

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/30/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **17 feet**	G.S. Elev: **830**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **13 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
				Firm tan silty clay (CL) (RESIDUUM)	7	
825	5			Loose to firm tan and orange to brown silty fine sand (SM)	12	
					13	
820	10	▼			6	
815	15	▽			5	
810	20				7	
					7	
805	25			Boring Terminated at 25 feet		
800	30					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-13

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/29/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **18 feet**	G.S. Elev: **831**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **19 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
830	0			Loose to firm red clayey fine sand (SC) (RESIDUUM)	16
	5				8
825				Firm to very firm orange-brown silty fine sand (SM)	16
	10				27
820				Very loose to loose orange and brown micaceous silty fine sand (SM)	
	15				3
815		▽			
		▼			
	20				4
810					
	25			Boring Terminated at 25 feet	10
805					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-14

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/23/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **8 feet**	G.S. Elev: **823**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **7 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	Description	N
820	0	Topsoil (Approximately 4 inches)	
		Loose red-brown clayey fine sand (SC) (RESIDUUM)	9
	5	Soft to firm red-brown to orange-brown fine sandy clay (CL)	3
815			7
	10		7
810		Very loose red-0brown to brown micaceous silty fine sand (SM)	
	15		3
805			
	20	Boring Terminated at 20 feet	4
800			
	25		
795			
	30		

GWT: ▼ 7 feet; ▽ 8 feet

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-15

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/23/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **4 feet**	G.S. Elev: **821**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **3 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
820	0	▼		Topsoil (Approximately 3 inches)	
				Very loose to loose brown to orange and brown clayey fine sand (SC) (RESIDUUM)	0
		▽		No sample recovered at 7.5 feet	
815	5				5
					5
				Very loose gray and red highly micaceous silty fine sand (SM)	
810	10				4
	15			Boring Terminated at 15 feet	4
805					
	20				
800					
	25				
795					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-16

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/23/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **3 feet**	G.S. Elev: **820**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **0 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
				Very loose brown slightly micaceous clayey fine sand (SC) (ALLUVIUM)		
		▽		Wood Encountered at 10 feet	0	
815	5			No sample recovered at 12 feet	2	
					0	
810	10				4	
					2	
				Boring Terminated at 13.5 feet		
805	15					
800	20					
795	25					
790	30					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-17

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/24/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **0 feet**	G.S. Elev: **818**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **0 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
815	0	▼		Very loose brown clayey fine sand (SC) (ALLUVIUM)	0	
	5				1	
810					2	
	10			Very loose gra silty fine sand (SM) (RESIDUUM) No sample recovered at 12.5 feet	4 4	
805				Boring Terminated at 12.5 feet		
	15					
800						
	20					
795						
	25					
790						
	30					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-18

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/24/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **4 feet**	G.S. Elev: **818**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
				Topsoil (Approximately 8 inches)		
815		▽		Very loose to loose brown to gray clayey fine sand (SC) (RESIDUUM)	4	●
	5			No sample recovered at 7.5 feet	2	●
810					5	●
	10				4	●
805				Firm brown and white micaceous silty fine sand (SM)	13	●
	15			Boring Terminated at 14.5 feet		
800						
	20					
795						
	25					
790						
	30					

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-19

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **7 feet**	G.S. Elev: **823**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **1 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
	0	▼		Asphalt (Approximately 3 inches)	
				Gravel (Approximately 6 inches)	
820				Very loose brown clayey fine sand (SC) (FILL)	3
	5				3
		▽			3
815				Very loose black clayey fine sand (SC) with organics (ALLUVIUM)	
	10				0
810				Loose to firm brown to white silty fine to coarse sand (SM) (RESIDUUM)	
	15				5
805					
	20			Boring Terminated at 20 feet	15
800					
	25				
795					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-20

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/24/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **13 feet**	G.S. Elev: **824**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **1 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Topsoil (Approximately 4 inches)	
				Loose brown slightly micaceous clayey fine sand (SC) (FILL)	5
820	5				8
					9
815				Firm red silty clay (CL) (RESIDUUM)	
	10				5
				Firm brown and white silty fine to coarse sand (SM)	
810					
	15				20
805				Very firm gray highly micaceous silty fine sand (SM)	
	20				28
				Very dense gray micaceous silty fine sand (SM)	56
800					
	25			Boring Terminated at 24.5 feet	
795					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-21

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **NE**	G.S. Elev: **827**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **2 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
827	0			Topsoil (Approximately 6 inches)	
825	2	▼		Brown silty fine sand (SM) with wood fragments (FILL) *	34
	5			Very loose brown and red silty fine sand (SM) with wood fragments (FILL)	4
820	7			Auger Refusal at 6 feet	
815	12				
810	17				
805	22				
800	27				
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks: * Standard penetration test resistances not representative due to wood in the fill

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-21A

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **Not Encountered**	G.S. Elev: **827**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **N/A : Boring Backfilled**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
				Topsoil (Approximately 6 inches)		
825				Brown silty fine sand (SM) with wood fragments (FILL) *	34	
				Very loose brown and red silty fine sand (SM) with wood fragments (FILL)		
	5			Auger Refusal at 5 feet	4	
820						
	10					
815						
	15					
810						
	20					
805						
	25					
800						
	30					

Standard Penetration Test (Blows/Foot): 0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-22

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/24/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **13 feet**	G.S. Elev: **827**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **9 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
825	0			Topsoil (Approximately 3 inches)		
				Loose to firm brown to black slightly micaceous silty fine sand (SM) (FILL)	14	
	5				8	
820					9	
		▼		Soft brown silty clay (CL) (FILL)		
	10				2	
815		▽		Partially weathered rock sampled as brown to white micaceous silty fine to coarse sand (SM) (RESIDUUM)		
	15				50/1"	
810					50/2"	
				Boring Terminated at 18.5 feet		
	20					
805						
	25					
800						
	30					

Standard Penetration Test (Blows/Foot): 0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-23

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **2 feet**	G.S. Elev: **822**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **1 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
820	0	▼ ▽		Very loose to loose gray and brown clayey fine sand (SC) (ALLUVIUM)	1
	5				2
815					0
	10				6
810				Firm gray silty fine to coarse sand (SM) (ALLUVIUM)	11
				Boring Terminated at 13.5 feet	
805	15				
	20				
800					
	25				
795					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-24

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **7 feet**	G.S. Elev: **827**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **8 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Topsoil (Approximately 5 inches)	
825				Very loose brown to gray micaceous clayey fine sand (SC) (ALLUVIUM)	
				No sample recovered at 7.5 feet	4
	5				2
820		▽			
		▼			1
	10				1
815					
	15			Firm brown silty fine to coarse sand (SM) (RESIDUUM)	2
					19
810				Boring Terminated at 17.5 feet	
	20				
805					
	25				
800					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-25

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **13 feet**	G.S. Elev: **826**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **6 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
825	0			Topsoil (Approximately 3 inches)	
				Very loose to loose brown to gray clayey fine to medium sand (SC) (RESIDUUM)	4
	5	▼			5
820					0
	10				5
815		▽		Firm white micaceous silty fine to coarse sand (SM)	19
	15			Boring Terminated at 15 feet	
810					
	20				
805					
	25				
800					
	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-26

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **11 feet**	G.S. Elev: **824**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **7 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
				Topsoil (Approximately 6 inches)	
820	5	▼		Very loose to loose brown and tan to gray clayey fine sand (SC) (RESIDUUM)	9 4 4
815	10	▽		Firm white micaceous silty fine to medium sand (SM)	5 15
810	15			Boring Terminated at 13.5 feet	
805	20				
800	25				
795	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-27

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **10 feet**	G.S. Elev: **823**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **3 feet**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N	Standard Penetration Test (Blows/Foot)
				Topsoil (Approximately 7 inches)		
820	5	▼		Very loose to loose tan and brown clayey fine sand (SC) (RESIDUUM)	8 7 4	
815	10	▽		Partially weathered rock sampled as brown silty fine to coarse sand (SM)	2 50/1"	
810				Boring Terminated at 13.5 feet		
805	15					
800	20					
795	25					
	30					

Standard Penetration Test (Blows/Foot): 0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

SB-28

Test Boring Record

GEO HYDRO ENGINEERS

Project: **Jesters Creek East Outfall Replacement Phase I**		Project No: **181060.20**
Location: **Jonesboro, Georgia**		Date: **10/25/18**
Method: **HSA- ASTM D1586**	GWT at Drilling: **NE**	G.S. Elev: **829**
Driller: **SDC (AutoHammer)**	GWT at 24 hrs: **NE**	Logged By: **JTR**

Elev. (Ft)	Depth (Ft)	GWT	Symbol	Description	N
825	5			Very firm to dense light brown slightly micaceous silty fine sand (SM) (RESIDUUM)	26 34
820	10			Partially weathered rock sampled as brown to white micaceous silty fine to coarse sand (SM)	50/3"
				Auger Refusal at 9 feet	50/1"
815	15				
810	20				
805	25				
800	30				

Standard Penetration Test (Blows/Foot)

0 10 20 30 40 50 60 70 80 90 100

Remarks:

TEST BORING RECORD LOGS.GPJ GEO HYDRO.GDT 11/28/18

Symbols and Nomenclature

Symbols

▌	Thin-walled tube (TWT) sample recovered
▯	Thin-walled tube (TWT) sample not recovered
●	Standard penetration resistance (ASTM D1586)
50/2”	Number of blows (50) to drive the split-spoon a number of inches (2)
65%	Percentage of rock core recovered
RQD	Rock quality designation - % of recovered core sample which is 4 or more inches long
GW	Groundwater
	Water level at least 24 hours after drilling
	Water level one hour or less after drilling
ALLUV	Alluvium
TOP	Topsoil
PM	Pavement Materials
CONC	Concrete
FILL	Fill Material
RES	Residual Soil
PWR	Partially Weathered Rock
SPT	Standard Penetration Testing

Penetration Resistance Results	Number of Blows, N	Approximate Relative Density
Sands	0-4	very loose
	5-10	loose
	11-20	firm
	21-30	very firm
	31-50	dense
	Over 50	very dense

	Number of Blows, N	Approximate Consistency
Silts and	0-1	very soft
Clays	2-4	soft
	5-8	firm
	9-15	stiff
	16-30	very stiff
	31-50	hard
	Over 50	very hard

Drilling Procedures

Soil sampling and standard penetration testing performed in accordance with ASTM D 1586. The standard penetration resistance is the number of blows of a 140-pound hammer falling 30 inches to drive a 2-inch O.D., 1.4-inch I.D. split-spoon sampler one foot. Rock coring is performed in accordance with ASTM D 2113. Thin-walled tube sampling is performed in accordance with ASTM D 1587.

GEO HYDRO ENGINEERS

ATTACHMENT D

WILLIAMS

Developers' Handbook

SUPPORTING SAFETY INITIATIVES

WILLIAMS

Transcontinental Gas Pipe Line Company, LLC Division Offices

Atlanta Division
1600 Executive Drive South
Duluth, GA 30096
678-284-4600

Charlottesville Division
345 Greenbrier Drive
Charlottesville, VA 22901
434-973-4384

Cardinal Pipeline Company
Apex, NC
919-367-9351

Cypress Division
4233 West Richey Road
Houston, TX 77066
281-895-5300

Palmetto Division
1905 Intermodal Circle, Suite 310
Palmetto, FL 34221
941-723-7100

Princeton Division
99 Farber Road
Princeton, NJ 08540
609-936-2400

Northwest Pipeline GP District Offices

Battle Ground District
8907 NE 219th Street
Battle Ground, WA 98604
360-687-3156

Boise District
1301 South Locust Grove Road
Meridian, ID 83642
208-884-4300

Eugene District
89861 Game Farm Road
Eugene, OR 97408
541-342-4434

Kemmerer District
1021 Fossil Butte Road
Kemmerer, WY 83101
307-828 4020

Moab District
23 Miles South of Moab, Utah
P. O. Box 337
LaSal, UT 84530
435-686-2214

Pasco District office
606 S. Oregon Avenue
Pasco, WA 99301
509-544-9216

Plymouth District
42612 E. Christy Road
Plymouth, WA 99346
509-783-2421

Pocatello District
5821 Industry Way
Pocatello, ID 83202
208-238-4100

Redmond District
22909 NE Redmond-Fall City Road
Redmond, WA 98053
425-868-1010

Spokane District
1022 E. Hawthorne Road
Spokane, WA 99218
509-466-6650

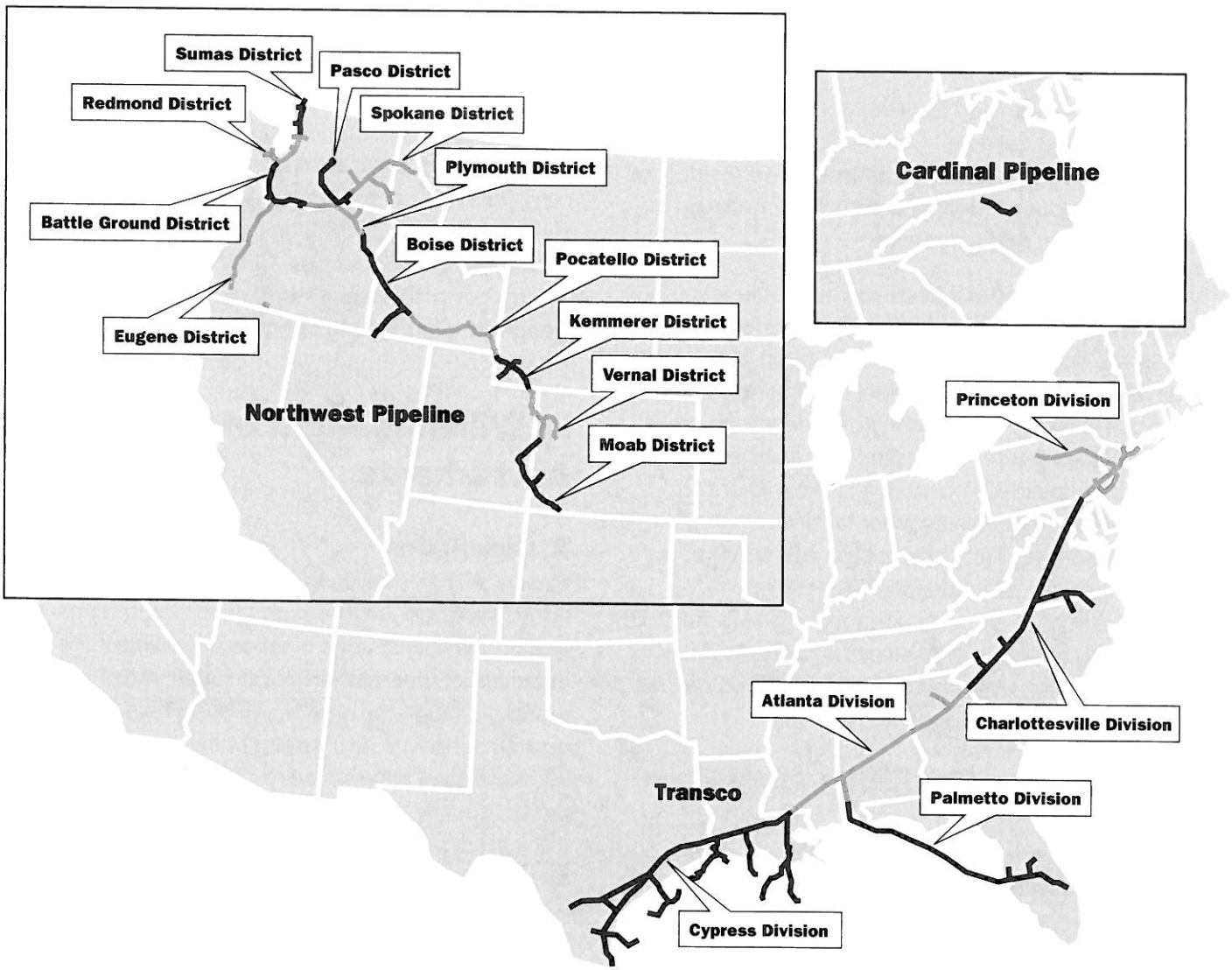
Sumas District
4738 Jones Road
Sumas, WA 98295
360-988-2261

Vernal District
599 South 500 East
Vernal, UT 84078
435-781-3200

I. Introduction

This handbook outlines the requirements for construction or maintenance activities to be followed when planning land use development on or near Williams rights of way. The handbook is intended for use by city and county/parish planners, engineers, developers, land surveyors, and anyone involved in the initial stages of land development. If Williams is included in the initial planning stages, project delays can be avoided and safe development practices in the vicinity of pipelines can be attained.

The handbook is designed to make you aware of the most common standards and procedures Williams typically requires to protect its facilities in areas of changing land use. Each proposed development or activity, however, requires a case specific evaluation by a qualified Williams representative. It should be understood that the Williams review of the proposed activity may require more stringent protective measures than outlined in this handbook. Please become familiar with the contents of this handbook. If you have further questions or need assistance, please contact your local Williams office listed on the opposite page.



II. Safety and Reliability

Safety

Williams is committed to ensuring the safe operation of its natural gas pipeline systems. According to the federal Department of Transportation, the transmission of natural gas through interstate pipelines is the safest means of transportation in the United States. The industry enjoys an excellent safety and reliability record. Williams has a thorough damage prevention policy to prevent pipeline failures. Damage by outside forces from a third party is the leading cause of pipeline failures, which can lead to serious injury or death.

It is critical that excavators follow appropriate guidelines to protect their safety and the integrity of the pipeline system.

Reliability

Williams is committed to reliable delivery of gas transportation services. Communities, factories, hospitals, power plants, businesses, and residences depend on our product and services for energy to generate heat and electricity.

Williams must and will use every available resource to ensure the safety and reliability of its facilities. Williams does not encourage or support any development or encroachment that interferes with the operation or maintenance of its pipelines. In those cases where development or encroachment cannot be avoided, we seek your help to ensure the safety and reliability of our facilities through proper planning and coordination with a Williams representative. As a responsible developer, contractor, or other party engaged in any ground disturbing activity near Williams pipeline facilities, we urge you to read and understand the guidelines presented in this publication.

III. Pipeline Facilities Overview

Williams' transmission operation includes high-pressure steel pipelines ranging in diameter from 2" to 48", storage facilities, compressor stations, meter stations, cathodic protection equipment, valve settings, and other facilities. In accordance with federal regulations, Williams identifies the location of its pipeline facilities by installing permanent pipeline markers, like the ones shown on the following page, near road, rail, fences and where necessary to reduce the possibility of damage or interference by the actions of other persons on the pipeline right of way. Pipeline markers may also be strategically placed in extensive areas of open ground to identify the location of the pipeline.

The maintenance of pipeline markers and an open, clear right of way at all times is critical to public safety. Construction or development near transmission pipelines increases the probability of excavation damage. It is the responsibility of Williams, individual landowners, and contractors to ensure that all temporary and permanent pipeline markers installed by Williams are protected and maintained at all times, especially during construction. Removing or defacing a pipeline marker is a federal criminal offense. You can find information about other pipelines operating in your community by accessing the National Pipeline Mapping System (NPMS) on the Internet at www.npms.phmsa.dot.gov. NPMS provides emergency officials access to pipeline maps, along with product and operator contact information.

IV. Williams Right of Way Agreements

A. Description

Most of Williams' existing pipeline easements and rights were acquired through recorded agreements granting Williams, or its pipeline companies, the right to construct, operate, maintain, repair, modify, alter, protect, change the size of, remove, replace and access a pipeline or pipelines within its easement. The easement and rights are conveyed with the land in successive purchases and generally allow the current landowner the right to use and enjoy the surface of the easement, as long as that use does not interfere or conflict with Williams' existing rights.

B. Width

When the original pipeline routes were selected, agricultural, forested or rural environments were deliberately chosen whenever possible. In most cases, the original right of way agreement did not specify a defined right of way width or location on the lands covered by the agreement, and therefore included large sections of land. Where defined, Williams' rights of way vary in width from 10' to 200', depending on the number and diameter of the pipeline(s), terrain, and terms of the right of way agreement.

C. Amendments or Modifications

As the rural environment is altered and land developments are proposed, Williams, at the request of the landowner, may elect to amend or modify the right of way agreement to reflect the changing land use. Williams can work with developers to incorporate the right of way into the project design, including consent to use the right of way as a "greenway" or open space area, so long as that use does not interfere with Williams' ability to construct, operate and maintain its facilities.

V. Legislation

A. Federal

Williams is regulated by the Department of Transportation, Pipeline & Hazardous Material Safety Administration (PHMSA). The pipeline safety regulations are administered through Title 49, Code of Federal Regulations, Part 192.

Part 192 prescribes minimum standards for the safe operation of pipelines. The more dense the population, the more stringent the standards for pipeline design, maximum allowable operating pressure, frequency and type of patrols, and leak surveys. In addition, Williams supports the Pipeline and Hazardous Materials Safety Administration's Common Ground Alliance Best Practices.

B. State

All of the states in which Williams operates have damage prevention laws for the protection of pipelines and other underground utilities. Most states require excavators to notify their local one-call system of their excavation plans. Williams participates in all one-call systems, which coordinate notice of excavation to participating industries.

Some jurisdictions provide for triple damages resulting from a failure to notify under the one-call system.

C. City & County/Parish

Local governments often play a major role in regulating land use by means of comprehensive planning and zoning. Some counties/parishes currently offer developer incentives to encourage easement use for parks and open space purposes. In most cases, Williams supports this initiative for the joint use of the easement area.

Some counties/parishes require an additional buildingsetback from the pipeline easement. Please check local codes before submitting lot layout plans.

VI. Encroachments

It is Williams' philosophy to minimize encroachment and excavation activity within the limits of our pipeline right of way. Encroaching parties will design projects such that proposed improvements remain outside the pipeline right of way. Improvements that will encroach into the right of way will be designed and constructed such that the safe operation and maintenance of the pipeline(s) is not diminished. Many of Williams' right of way agreements prohibit encroachments. Williams will enforce provisions in its right of way agreements where it believes the continued safe operation and maintenance of the pipeline facilities could be threatened.

Where Williams determines that an activity can be undertaken without jeopardy to the pipeline system, Williams will require the execution of an encroachment agreement, issue a Williams Encroachment/Foreign Line Crossing Permit, or issue a letter of no objection, depending upon the type and scope of activity proposed.

The encroachment agreement will contain all pertinent terms and conditions to be followed by the encroaching party for the planned activity and may also provide for cost reimbursement to Williams. Typically, Williams will seek reimbursement for projects that require significant design review, engineering investigation, field inspections, legal consultation or facility modification.

The Encroachment/Foreign Line Crossing Permit will typically contain pertinent conditions to be followed by the encroaching party for the activity planned and is generally reviewed and issued to the encroaching party on-site. A sample Encroachment/Foreign Line Crossing Permit is included in the back of this handbook.

Encroachment Agreement

An encroachment agreement is specific to the project and is required when:

- Construction/maintenance activities cross under or over the natural gas pipeline.
- Construction/maintenance activities extend into the right of way.

Examples of such construction/maintenance activities may include, but are not limited to:

- Street and road crossings
- Ornamental fencing
- Blasting or use of explosives in the vicinity of Williams facilities
- Heavy equipment crossings
- Large diameter utility crossings

Other activities subject to an encroachment agreement are determined on a case-by-case basis.

In addition, third party construction/maintenance activities that necessitate Williams facility modifications (such as, but not limited to, pipeline casing extensions, pipeline relocations or replacements, and pipeline cathodic protection facility modifications) are addressed in the encroachment agreement. Reimbursement provisions may also be referenced in the encroachment agreement.

A Williams representative generally initiates the encroachment agreement. The agreement must be executed before work begins on the right of way.

In the event work commences absent such an agreement, Williams may take steps to prevent further activity.

Reimbursement Agreement

When is a reimbursement agreement required?

A reimbursement agreement is typically required for construction/maintenance activities proposed on the right of way, which require extensive preliminary engineering and/or field inspection services by Williams personnel.

In addition, Williams will seek a reimbursement agreement for any third-party construction/ maintenance activities that require modification to Williams facilities.

Who initiates the reimbursement agreement?

The agreement is typically initiated by a representative of Williams and must be executed before any work, preliminary engineering, or field inspection services are performed by Williams.

Encroachment/Foreign Line Crossing Permit

When is a "Williams Encroachment/Foreign Line Crossing Permit" required?

A Williams Encroachment/Foreign Line Crossing Permit may be required when:

- Construction/maintenance activities cross under or over the natural gas pipeline
- Construction/maintenance activities extend into the right of way

Examples of such construction/maintenance activities may include:

- Residential water lines
- Residential television cable
- Small diameter drainage or sewer lines
- Residential electrical lines
- Fences (livestock or typical residential)
- Residential sprinkler systems, etc.

Who initiates the "Williams Encroachment/Foreign Line Crossing Permit"?

The agreement is initiated by a local representative of Williams and must be executed before work begins on the right of way.

VII. Notification and Construction Safety Requirements

A. Notification

In order to prevent unnecessary delays, Williams encourages close communication with our representatives beginning in the preliminary survey and design phase as well as throughout your entire project. We will be happy to attend pre-construction meetings and provide a safety/informational presentation to any interested parties, including contractors, local government maintenance crews, and developers. Please refer to the inside front cover for your specific regional Williams office contact number.

All of the states in which Williams operates have "one-call" laws, which require the excavators to provide 48 to 72 hours notice, depending on local requirements, before any excavating commences. One easy phone call to 811 starts the process to get your underground utility lines marked for free. Your local one-call system will notify all participating utilities in the area of your planned excavation activities and is a simple, yet very effective, means of reducing buried utility damage.

A Williams representative must be onsite, following 48 to 72 hours prior notice, for all surface and subsurface activities within the pipeline right of way. Any crossings made without a Williams representative on site will be excavated at the excavator's expense to provide Williams an opportunity to inspect all affected pipeline facilities.

Protect yourself, utility companies, and the public. Call before you dig.

Federal regulations (OSHA 29CFR Ch. XVII-1926.651) also require excavators to notify

underground utilities prior to the start of actual excavation. Your state regulations may be more specific, but in any case, failure to notify underground utility operators of excavation activities could lead to a citation.

Williams often operates its pipelines at high pressures. To ensure the safety and reliability of our facilities and the public, we require a Williams representative to be on site while you work around our facilities. Please contact your local Williams office before work commences on, or in close proximity to a Williams right of way. A Williams representative will be on site to inspect the work and monitor the site until construction is completed.

B. Safety Requirements

Excavations must be barricaded to protect pedestrians and vehicles. Proper access into the trench must be provided. Excavations must be properly sloped or shored, as required to comply with state and Federal OSHA requirements.

Stockpiling brush, trash, or other debris on the right of way is prohibited, as it may conceal pipeline markers and hinder pipeline inspections or routine maintenance. Contact your local Williams district office concerning burning restrictions.

VIII. Plan Design and Review Requirements

A. Ideal Subdivision Layout

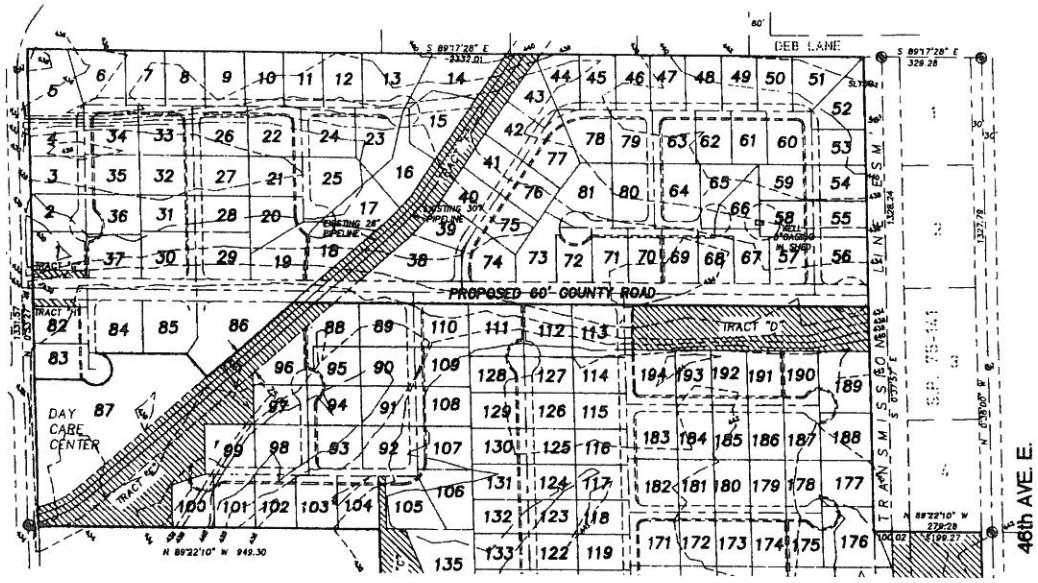
In an ideal subdivision layout:

- The entire right of way width is reserved as open space.
- The right of way is clear and easily marked.
- Crews can undertake emergency repairs quickly.
- The right of way crosses as few landowners as possible to minimize accidental "dig-ins".
- Routine maintenance and inspections are not hindered.
- Lot lines, parallel to the pipeline(s) within the right of way are strongly discouraged and accordingly fences will not be allowed within the right of way, parallel to the pipelines.

When the proposed development plans call for

the dedication of a street/road right of way to the city, county/parish, or state, it is important to note that Williams' existing easement is superior to this action and its rights are not diminished. The agency involved may require you to obtain an amended easement.

Drawing of pipeline easement in subdivision



B. Subdivision Plans

- Williams requires a minimum of 30 business days to review preliminary plans for impacts to the easement and to insure that all proposed improvements are designed in accordance with Williams Requirements for Landowner and Third Party Construction (Section IX).
- An open space trail, free of fences, trees and other deep-rooted plants, is the ideal right of way use. This reduces the public exposure by minimizing the opportunity for accidental "dig-ins." When this is not possible, lot division on either boundary of the right of way is preferable to splitting the right of way between lots. No lot lines, parallel to the pipelines are allowed within the right of way and accordingly fences will not be allowed within the right of way, parallel to the pipelines. Construction, maintenance and routine inspections can be disruptive to the landowner when the easement is split between lots.
- An encroachment agreement (formal recorded agreement) is usually executed between Williams and the developer/landowner to address the terms and conditions associated with the new land use.
- Williams representatives will work with your surveyor(s) and will stake the location of its pipeline facilities. This information should then be included in the plan and profile drawings submitted to Williams.

C. Street and Road Crossing Plans

- Williams requires a minimum of 30 business days to review proposed road-crossing plans. Additional review time will be necessary for proposed divided highways, interstate highways and other road construction projects which require pipeline modifications.
- Provide a scope of work, description, and plan and profile drawings with your plans. Profiles are required to show depth of cover over each Williams pipeline (existing and finished grade) and the clearance between each Williams pipeline and any proposed utilities.
- Please include a location map showing the project site area, including sufficient geographical references such as legal property lines, roads, and appropriate deed information to the properties impacted.
- When new rights of way are acquired or dedicated, the costs for pipeline modifications will generally be borne by the developer, state, county/parish, or city highway department.
- Williams must be given the opportunity to make a pipeline inspection prior to the start of road construction.

IX. Williams Requirements for Landowner and Third Party Construction

See Attachment A on the following page.

Aerial view of ideal easement in developed area

Williams Requirements for Landowner & Third Party Construction

The following Williams specifications are minimum requirements to be followed when planning land use development on or near Williams Right-of-Way. Each proposed development or activity requires a site specific evaluation by a qualified Williams representative. It should be understood that the Williams review of the proposed activity may require more stringent protective measures than outlined below.

PIPELINE FACILITIES AND LEGISLATION

Williams owns and operates the Transcontinental Gas Pipe Line Company, LLC and Northwest Pipeline GP high-pressure natural gas pipeline systems. Williams pipeline facilities include compressor stations, meter stations, storage facilities, cathodic protection equipment, valve settings and other facilities located within the limits of its rights-of-way, leased, and fee properties.

Williams is regulated by the Department of Transportation, Pipeline & Hazardous Material Safety Administration (PHMSA). The pipeline safety regulations are set forth in Title 49, Code of Federal Regulations, Part 192 "Transportation of Natural and Other Gas by Pipeline – Minimum Federal Standards."

Williams will require that all Federal, State, and local ordinances and applicable utility set backs are complied with to the full extent.

ENCROACHMENTS

It is Williams philosophy to minimize encroachments and excavation activity within the limits of our pipeline Right-of-Way. Encroaching parties will design projects such that proposed improvements remain outside the pipeline Right-of-Way. Improvements that will encroach into the Right-of-Way will be designed and constructed such that the safe operation and maintenance of the pipelines is not diminished. Many of Williams Right-of-Way agreements prohibit encroachments. Williams will enforce applicable provisions in its Right-of-Way agreements where it believes the continued safe operation and maintenance of the pipeline facilities could be threatened.

NOTIFICATION AND CONSTRUCTION SAFETY REQUIREMENTS

1. In order to prevent unnecessary delays, Williams encourages close communication with our representative throughout your entire project. A Williams representative should participate in all pre-construction meetings. In addition, Williams can conduct a safety/informational presentation to any interested parties, including contractors, local governmental maintenance crews, and developers.

2. "One Call" systems require 48 to 72 hours notice prior to any excavation activities or equipment use on or in close proximity to Williams pipeline facilities. Dial 811 to be connected to your State One Call system. No equipment use or excavation will occur in the vicinity of Williams facilities until notification to "One Call" has been made. A Williams representative will be on site prior to and during any equipment use or excavation activities. Any crossings made without a Williams representative on site will be excavated at the excavator's expense to provide Williams an opportunity to inspect all affected pipeline facilities.

3. Excavations must be barricaded to protect Williams pipelines from exposure to vehicular traffic and to ensure public safety. Williams representatives must be provided safe access to all open excavations. Excavations must be properly sloped or shored in accordance with OSHA regulations.

PLAN DESIGN AND REVIEW REQUIREMENTS

1. Residential and/or commercial developments will be laid out such that the Right-of-Way is designated as "open" or "common" space. Maintaining an open Right-of-Way reduces public exposure and minimizes disruptions during pipeline maintenance and construction. Lot divisions will be established on either side of the Right-of-Way resulting in the actual Right-of-Way being "open" or "common" areas.

2. In most cases, Williams will require the submittal of two or more full size plan and profile drawings to the appropriate Williams office for prior review and written approval by Williams. All drawings must show, in detail, all of Williams facilities and other features that will allow Williams to determine the impact of the proposed construction or maintenance activity on its facilities. Encroachment plans will include a scope of work, description, and a location map depicting the project site area. Sufficient geographical references such as legal property lines, roads, and appropriate deed information for the properties involved will be provided.

3. In order to ensure that all proposed improvements are designed in accordance with Williams encroachment specifications, Williams requires a minimum of thirty business days lead-time to review proposed encroachments. Encroachments involving road crossings will require additional review time. Any proposed road which requires pipeline modifications or a dedicated Right-of-Way will require significant lead-time.

4. If there are any changes to approved plans, additional review by Williams and subsequent written authorization will be required.

5. In some cases, there is a significant delay between the review and approval of submitted plans and actual construction. In such cases, proposed encroachment related activities will be subject to Williams requirements in effect at the time the work actually takes place.

Williams EASEMENT, PERMITS AND AGREEMENTS

1. A **Williams Encroachment/Foreign Line Crossing Permit Form** or a **letter of no objection** may be required for any proposed construction within Williams Right-of-Way. This document prepared by Williams, will outline the responsibilities, conditions, and liabilities of each party. If required, this document must be executed by the encroaching party and in Williams possession prior to any work being performed on the Right-of-Way.

2. Williams will determine if a recorded **encroachment agreement** will be required for any proposed construction within Williams Right-of-Way. This agreement, prepared by Williams, will outline the responsibilities, conditions, and liabilities of each party. This agreement will be fully executed and in Williams possession prior to any work being performed on the Right-of-Way.

3. Williams will determine if a **reimbursement agreement** will be required for any construction within Williams Right-of-Way. This agreement, prepared by Williams, will outline the reimbursement procedure for necessary and appropriate preliminary engineering and actual field inspection work. This fully executed agreement, including a check made payable to the applicable Williams pipeline company for the estimated cost of Williams services, will be in Williams possession prior to any work being performed on the Right-of-Way.

GENERAL REQUIREMENTS

1. No above ground structures or appurtenances are to be located within the Williams Right-of-Way. The structures and appurtenances include, but are not limited to: utility poles, towers, foundations, guy wires, structures supporting aerial lines, satellite dishes, manholes, catch basins, utility pedestals, transformers, fire hydrants, utility sheds, decks, swimming pools with associated improvements, etc.

2. An authorized Williams representative must be on site prior to and during any surface-disturbing work or equipment crossings performed within the Right-of-Way. Williams representative will assist in determining the location of the pipeline, the Right-of-Way width, and existing cover over the pipeline and will remain on site to monitor all activities within the Right-of-Way.

3. No cut or fill on the Williams Right-of-Way is permitted without Williams written approval.

4. Williams, at its discretion, may request evidence of comprehensive general liability insurance coverage (minimum of $2,000,000 coverage) and other appropriate and usual insurance prior to any activity, maintenance, and/or construction on or near Williams Right-of-Way and facilities. In the event of significant excavation under or over Williams pipelines, Williams will require that the applicable Williams pipeline company be named as additional insured on the Certificate of Liability Insurance. The insurance limits, terms, and conditions that may be required will be dependent on the specific facilities potentially impacted and what would be usually and prudently obtained in similar industry situations.

5. All foreign lines will cross Williams Right-of-Way at an angle as near to 90 degrees as possible. In situations where there are multiple parallel Williams pipelines, the proposed foreign lines will either cross over or under all of Williams pipelines in the Right-of-Way. No horizontal or vertical bends are permitted within Williams Right-of-Way. Parallel occupancy of Williams Right-of-Way will not be permitted.

6. All foreign lines crossing Williams pipeline or related facilities will be installed with a minimum of 24" of clearance between the existing Williams facilities and the proposed foreign line. The foreign line will be installed at a uniform depth across the full width of the Williams Right-of-Way. Williams may require that all foreign lines be installed under its existing pipelines and related facilities.

7. Williams facilities are electrically protected against corrosion. Each metallic foreign line that enters or crosses Williams Right-of-Way must have a test lead installed. In addition, the utility contractor installing the metallic foreign line must excavate and expose one or more of Williams existing pipelines to provide for the installation of test leads by Williams employees. All necessary measures (coatings, electrical bonds, etc.) will be taken to ensure that the proposed pipe or utility is adequately protected from potential interference effects. Requests for cooperative testing will be directed to Williams Division Office, "Attn.: Supervisor, Asset Integrity."

8. Williams may require that foreign lines be identified with permanent aboveground markers where the lines enter and exit the Williams Right-of-Way. It is the line owner's responsibility to obtain any rights to install the markers, and to maintain the markers. A direct burial warning tape should be placed 12" to 18" above the foreign line and extend across the entire width of Williams Right-of-Way.

9. Foreign lines crossing Williams facilities will be installed in accordance with all applicable codes and requirements governing such installations.

10. Stockpiling brush, trash, or other debris on the Right-of-Way is prohibited, as it may conceal pipeline markers and hinder pipeline inspections or routine maintenance.

FENCES

1. A site specific inspection is required to determine whether the proposed fence posts must be kept a minimum of 4' or 5' from the edge of any Williams pipeline or related pipeline facility. A Williams representative must be on site to determine the location of the fence posts within the Right-of-Way and for the duration of the digging of the posts. Posts installed within the Right-of-Way must be hand dug. All proposed fence crossings over Williams pipelines will cross at an angle of 90°, or as near as reasonably practicable.
2. Williams will have the free right of ingress and egress. Williams may require that new fences have a 12' wide gate installed within the Right-of-Way at a location approved by Williams. The gate will be installed as to minimize vehicular and equipment travel over the existing Williams facilities.

LANDSCAPE GUIDELINES

1. No trees are permitted on Williams Right-of-Way. Additionally, the canopy of any trees planted adjacent to the Right-of-Way must not extend into the Right-of-Way at maturity. Any branches extending into the Right-of-Way will be side cut by Williams at its discretion.
2. With prior approval from Williams, some types of low growing, shallow-rooted shrubs may be permitted on the Right-of-Way provided their maximum mature height will not exceed 5' and are not within 5' of the edge of the pipeline. Williams requires that the mature plantings will not prevent Williams representatives from seeing down the Right-of-Way during routine patrols

or walking down the Right-of-Way directly over the pipelines as they perform required inspections. Under no circumstances will mechanical equipment be used in the planting of shrubs.

3. Williams reserves the right to cut and/or remove plantings as required in the operation, inspection, and maintenance of its pipeline facilities; further, Williams assumes no responsibility for any cost involved in the replacement of said cut and/or removed landscape plantings.

4. All sprinkler or irrigation systems will require review by a Williams representative. Sprinkler heads will not be permitted within 10' of any pipeline or related facility. All crossings of the Williams pipelines or related facilities with feeder lines will be hand dug.

STREETS, ROADS, TRAILS, PATHS AND DRIVEWAYS

1. Williams must complete a preliminary engineering evaluation for all roads, streets, driveways, etc., proposed on Williams Right-of-Way. Any pipe casing, concrete slabs, or other protection required by Williams will be installed at no expense to Williams. Williams may require a pipeline inspection prior to construction.

2. The recommended minimum total cover over Williams existing pipelines is 66" at all driveways, highways, roads, streets, etc. The recommended minimum total cover over Williams existing pipelines in adjacent drainage ditches is 48".

3. Vibratory equipment is prohibited within the limits of the Williams Right-of-Way. Vibratory equipment is not permitted to be used for achieving applicable compaction requirements.

4. Driveways, highways, roads, streets, etc. crossing over Williams pipeline facilities will cross at an angle as near to 90 degrees as possible. All crossings must be over straight pipe and at locations free of any crossovers. Parallel occupancy of the Right-of-Way will not be permitted.

5. Williams will retain the right to cut all present and proposed driveways, highways, roads, streets, etc. and will have no responsibility for restoration, loss of use or access, or any other costs.

6. Access to the earth above each pipeline for leak detection (flame ionization) and cathodic protection surveys must be maintained.

EQUIPMENT USE IN CLOSE PROXIMITY TO THE PIPELINES

1. To protect Williams pipelines from external loading, Williams must perform an engineering evaluation to determine the effects of any proposed equipment use. Mats, timber bridges, or other protective materials deemed necessary by Williams will be placed over Williams facilities for the duration of any loading. Protective materials will be purchased, placed, and removed at no cost to Williams. The Right-of-Way must be returned to its original condition.

2. Williams may require temporary markings to identify areas where equipment use is authorized.

3. No vibratory equipment is permitted within the limits of, or in close proximity to, the Williams Right-of-Way.

DRAINAGE, IMPOUNDMENT OF WATER, AND EROSION CONTROL

1. Williams may conduct preliminary engineering studies for any proposed drainage channels or ditches that will discharge toward or within the Right-of-Way. Drainage channels or ditches must be adequately protected from erosion and provide a minimum of 48" of cover over the pipelines. Altering (clearing, re-grading, or changing alignment of) an existing drainage channel or ditch requires written approval from Williams.

2. Impoundment of water on Williams Right-of-Way is not permitted. Soil erosion control measures will not be installed within the Williams Right-of-Way without prior written Williams approval.

EXCAVATIONS AND BLASTING

1. Plans for excavation on the Right-of-Way require prior approval by Williams. **No machine excavation will be performed within 24" of Williams pipelines or related facilities.** Williams onsite representative may require hand digging at a distance greater than 24".

2. When a backhoe is used for excavation, the bucket teeth should be curled under each time the bucket is brought back into the ditch to reduce the chance of the teeth contacting the pipeline. Side cutters must be removed from all buckets. At the discretion of Williams onsite representative, a bar may have to be welded across the bucket teeth.

3. No mechanical excavation may be performed by reaching over any Williams facilities.

4. Prior to any plowing or ripping of soil on the Right-of-Way, particularly in association with agricultural activities, plans should be reviewed with your local Williams representative to ensure proper cover exists. No vibratory plows are permitted to be used on the Williams Right-of-Way.

5. A detailed blasting plan must be submitted for review and written authorization prior to any proposed blasting within 200' (1,500' for surface mining) of Williams pipeline facilities and a Williams representative must be on site during all blasting. In order to provide for necessary and appropriate analysis by Williams, each licensed blasting contractor must also complete and submit a Williams Blasting Data Sheet. The blasting plan and data sheets must be submitted a minimum of ten business days prior to the proposed blasting. Specific requirements applicable to proposed blasting will be provided to the licensed blasting contractor.

BURIED COMMUNICATION (TELEPHONE, TV, DATA TRANSMISSION, FIBER OPTIC) AND BURIED POWER LINE CROSSINGS

1. Utilities crossing Williams facilities are required to be cased to protect the integrity of the utility and the safety of Williams and third party excavators in the future.

2. All buried communications (other than single residential telephone and TV) crossing Williams facilities will be installed in steel casing for the full width of Williams Right-of-Way.

3. All buried electric cables (other than 24 volt DC power lines), including single residential service drops, crossing Williams facilities will be installed in steel casing for the full width of Williams Right-of-Way.

4. All buried single residential telephone, cable TV, and 24 volt DC power will be encased in schedule 40 PVC casing for the full width of Williams Right-of-Way.

5. All fiber optic cable, including single drops, will be installed in steel casing for the full width of Williams Right-of-Way.

SANITARY SEWER AND WATER CROSSINGS

All sanitary sewer and pressurized water lines will be protected with steel casing for the full width of Williams Right-of-Way. Gravitational flow systems will be either: (1) ductile iron or steel pipe (adequately protected from Williams cathodic protection system), (2) plastic pipe installed in steel casing, or (3) concrete pipe for the full width of Williams Right-of-Way. No piping connections will be allowed within 5' of any Williams pipeline. All ductile iron utility crossings will include restrained joints for the full width of Williams right-of way

COMBUSTIBLE MATERIAL LINES

1. All plastic combustible material lines will be installed in steel casing for the full width of Williams Right-of-Way.

2. Williams may require that steel combustible material lines (adequately protected from Williams cathodic protection system) be installed under existing Williams pipeline facilities.

BORED CROSSINGS

1. Williams existing pipeline facilities will be test pitted to verify the horizontal and vertical location of all facilities prior to any proposed boring operations. Once all required test pits have been performed, both plan view and profile drawings will be submitted to Williams. Plan and profile drawings are required for all proposed boring operations.

2. All proposed bores will include the installation of steel casing for the full width of Williams Right-of-Way.

3. Prior to any boring, inspection holes will be excavated to verify the depth of the bore as it approaches each pipeline. Inspection holes must be excavated to allow Williams on site representative to visually see the boring head prior to the point where it travels beneath each pipeline. The contractor must provide and maintain instrumentation to accurately locate the boring head.

OVERHEAD LINE CROSSINGS

1. Overhead line crossings will be installed with a minimum of 30' of vertical clearance above the Williams Right-of-Way to provide adequate equipment clearance. No poles or appurtenances will be located on the Williams Right-of-Way.

2. Overhead line crossings will not be installed within 25' (measured horizontally) of any gas vent (e.g. relief valve, blow down vent).

3. Overhead lines will cross Williams facilities at an angle as near to 90 degrees as possible. Parallel occupancy of the Williams Right-of-Way will not be permitted.

4. In addition to these Williams minimum clearances, all local utility minimum clearances must be adhered to.

DISPOSAL SYSTEMS

No septic tanks, liquid disposal systems, or hazardous waste disposal systems will be allowed on Williams Right-of-Way or within 25' of Williams facilities. This prohibition includes, but is not limited to, facilities that have the potential of discharging effluent from sewage disposal systems, the discharge of any hydrocarbon substance, the discharge or disposal of any regulated waste, or any other discharge that may prove damaging or corrosive to Williams facilities.

STATEMENT REGARDING RIGHTS

1. Nothing contained herein will be construed to convey, waive, or subordinate any of Williams existing rights whatsoever.

2. Williams will be fully and completely compensated for any damages to its facilities resulting from the acts of third parties who are working in the vicinity of Williams facilities with or without Williams consent.

3. Williams will be indemnified from and against all claims, losses, demands, damages, causes of action, suits, and liability of every type and character, including all expenses of litigation, court costs, and attorneys fees, for injury to or death of any person, or for damage to any property, arising out of or in connection with third party work in the vicinity of Williams facilities.

WilSOP ENCROACHMENT/FOREIGN LINE CROSSING PERMIT FORM

OMS ID 000233

****Must read when using this form: "Williams Requirements for Landowner & Third Party Construction", located in 75.01.01, Attachment A.**

811 Know what's below. Call before you dig.

Permit No.	
Revision Date	
One Call Report No.	

This Encroachment/Foreign Line Crossing Permit is made and entered into on the date indicated below by and between the encroaching party ("PERMITTEE") and ("COMPANY"), as set forth below, for the purpose of allowing PERMITTEE to construct or maintain an encroachment and/or foreign line crossing on company's right-of-way or facilities. Facilities shall include, but are not limited to: fee properties, easements, pipelines, and valve sites.

Encroaching Party "PERMITTEE":	Company Name "COMPANY":		
Name:	COMPANY Representative:		
Address:	Address:		
Phone:	Phone:		
Landowner's Name:	Division/District:	Phone:	COLLECT CALLS ACCEPTED

ENCROACHMENT/FOREIGN LINE CROSSING LOCATION

Line/Tract No	Parcel Name/ID	Latitude	Longitude	
Section	Township	Range	County/Parish	State
Alignment Sheet/ Map No.	Mile Post	Engineering Stations	ROW Width/Config.	
Type of Encroachment/Foreign Line Crossing ☐ 3rd Party Crossing ☐ Landowner Activity ☐ New Development ☐ Other				

ENCROACHMENT/FOREIGN LINE CROSSING DESCRIPTION

Attach Company's Foreign Line Sketch to this Permit as Exhibit "A" illustrating encroachment or foreign line crossing. If applicable, insert additional conditions not reflected in this Permit as Exhibit "B". Both Exhibits shall become a part hereof. Brief Description of encroachment/foreign line crossing:

Does Encroachment or Foreign Line Crossing require excavation or survey per WilSOP O&M Procedure 70.10.01 section 5.1? ☐ No ☐ Yes
If yes, record form WGP-0092 No. or survey information:

YOUR LOCAL ONE CALL NUMBER IS _____

If damage to "COMPANY" facilities is a result of negligence by the encroaching party's (PERMITTEE'S) failure to adhere to the state "CALL BEFORE YOU DIG" law, "COMPANY" will pursue restitution to the full extent of the law.

This permit is granted subject to the terms, requirements, and conditions shown below and strictly in accordance with specifications shown in the "Williams Gas Pipeline Requirements for Landowner & Third Party Construction", located in 75.01.01, Attachment A.

- It is understood that the PERMITTEE will cause the encroachment and/or foreign line crossing at no expense to COMPANY. PERMITTEE agrees to supply COMPANY plans and drawings, in detail, illustrating the proposed encroachment and/or foreign line crossing and COMPANY'S facilities, unless COMPANY elects not to require such plans.
- So that "Company" may schedule its personnel and not delay PERMITTEE'S work, PERMITTEE agrees to notify ""COMPANY" 48-72 hours before any work commences on or near its right-of-way Facilities.
- This permit does not change or modify any provisions of "COMPANY'S existing right-of-way contracts or easements, unless such easements are required to be amended as a result of PERMITTEE'S encroachment and/or foreign line crossing. PERMITTEE acknowledges that the granting of this Permit may require amendment of the existing right-of-way contract or easement to reflect a change in land use or land rights.
- This permit shall be revocable in the event of noncompliance of any terms, requirements, conditions, and specifications of this Permit upon written notice given to PERMITTEE and/or current owner of record.
- PERMITTEE agrees to save harmless COMPANY, its officers, agents, employees and its subcontractors and their officers, agents and employees from any and all claims for damages, injury or death resulting from the continuation and maintenance of said encroachment and/or foreign line crossing. A COMPANY representative must be present during all construction activities that may impact the pipeline facilities. PERMITTEE shall be liable for all costs incurred for any damages.
- PERMITTEE agrees that COMPANY may remove any encroachment and/or foreign line crossing, or portion thereof, if in COMPANY'S judgment it is reasonably necessary to do so in order to construct, alter, maintain, repair or replace gas transmission facilities located within the right of way and easement. Should COMPANY remove any such encroachments, foreign line crossings or portions thereof, COMPANY will not be liable to PERMITTEE or its successors or assigns for any damages resulting by reason of such removal, except for those damages arising out of the sole negligence of COMPANY.
- COMPANY will request evidence of general liability and other appropriate and usual insurance prior to any activity and/or construction on or near COMPANY rights-of-way. In the event of excavation under COMPANY pipelines, the applicable COMPANY pipeline must be named as additional insured. Any rights of subrogation or recovery will be waived in favor of WGP. The insurance limits, terms and conditions that may be required will be dependent on the specific facilities potentially impacted and what would be usually and prudently obtained in similar industry situations.

PERMITTEE

On this____ day of_____, 20____, I acknowledge that I have received, and reviewed with a "COMPANY" representative, the requirements, conditions and specifications of this Permit. I also understand the provision and prescribed penalties as provided under the law regarding excavation.

By:_____

Title:_____

COMPANY

By:_____

Title:_____

Pipelines and Informed Planning Alliance

The Pipeline & Hazardous Material Safety Administration (PHMSA) initiated the Pipelines and Informed Planning Alliance (PIPA) to help communities make risk-informed decisions for land use planning and development adjacent to transmission pipelines.

One way to protect communities and reduce transmission pipeline risks is for developers to be aware of transmission pipeline locations and risks when making decisions regarding development within 1,000 feet of pipelines. It is important that his dialogue between developers and pipeline operators occurs early in the planning process while changes can more easily be made.

PIPA has developed recommended practices for protecting communities, protecting transmission pipelines, and communicating among stakeholders. You can access PIPA's recommended practices at http://primis.phmsa.dot.gov/comm/pipa/landuseplanning.htm.

Sample of PIPA New Development Recommended Practices

NO.	TITLE AND PRACTICE STATEMENT	LOCAL GOVERNMENT	PROPERTY DEVELOPMENT/ OWNER	TRANSMISSION PIPELINE OPERATOR
ND02	**Gather Information for Design of Property Development near Transmission Pipelines** In designing a proposed property development the property developer/ owner should use all reasonable means to obtain information about transmission pipeline facilities in the area of the proposed development.		Yes	Yes
ND03	**Review Acceptability of Proposed Land Use of Transmission Pipeline Right of Way Prior to Design** The property developer/owner should review preliminary information about acceptable land uses on a transmission pipeline right of way prior to the design of a property development.		Yes	
ND04	**Coordinate Property Development Design and Construction with Transmission Pipeline Operator** When property development is planned within the consultation zone (reference PIPA Recommended Practice BL05), the property developer/ owner and the transmission pipeline operator should communicate to ensure possible impacts of pipeline incidents and maintenance needs are considered during development design and construction.		Yes	Yes
ND08	**Collaborate on Alternate Use and Development of Transmission Pipeline Right of Way** Property developers/owners, local governments and transmission pipeline operators may collaborate on alternative use of the transmission pipeline right of way and related maintenance.	Yes	Yes	Yes
ND17	**Reduce Transmission Pipeline Risk in New Development for Residential, Mixed-Use, and Commercial Land Use** New development within a transmission pipeline planning area (see PIPA Recommended Practice BL06) should be designed and buildings located to reduce the consequences that could result from a transmission pipeline incident and to provide adequate access to the pipeline for operations and maintenance.	Yes	Yes	
ND18	**Consider Transmission Pipeline Operation Noise and Odor in Design and Location of Residential, Mixed-Use, and Commercial Land Use Development**	Yes	Yes	Yes

NOTES:

NOTES:

Remember, Call Before You Dig.

A new, federally-mandated national "Call Before You Dig" number, 811, was created to help protect you from unintentionally hitting underground utility lines while working on digging projects. If you plan to dig or do any type of excavation, be sure to dial 811 at least three business days before you begin. Calling 811 before every digging job gets your underground utility lines marked for free.

811®

Know what's below.
Call before you dig.

One free, easy call gets your utility lines marked AND helps protect you from injury and expense.

How 811 Works

One easy phone call to 811 starts the process to get your underground utility lines marked for free. When you call 811 from anywhere in the country, your call will be routed to your local One Call Center. Local One Call Center operators will ask you for the location of your digging job and route your call to affected utility companies. Your utility companies will then send a professional locator to your location to mark your lines within a few days. Once your underground lines have been marked, you will know the approximate location of your utility lines and can dig safely.

What Are the Signs of a Natural Gas Pipeline Leak?

- Blowing or hissing sound
- Dust blowing from a hole in the ground
- Continuous bubbling in wet or flooded areas
- Gaseous or hydrocarbon odor
- Dead or discolored vegetation in an otherwise green area
- Flames, if the leak has ignited

What Should I Do if I Suspect a Pipeline Leak?

Your personal safety should be your first concern:

- Evacuate the area and try to prevent anyone from entering.
- Abandon any equipment being used in or near the area.
- Avoid introducing any sources of ignition to the area.
- Call 911 or contact local fire or law enforcement.
- Notify the pipeline company.
- Do not attempt to extinguish a natural gas fire, and do not attempt to operate pipeline valves.

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0115/04373

ATTACHMENT E

STATE OF GEORGIA
COUNTY OF CLAYTON

INTERIM WAIVER AND RELEASE UPON PAYMENT

The undersigned mechanic and/or materialman has been employed by the Clayton County Water Authority to furnish:

_____ [describe materials and/or labor]; for the construction of improvements known as:

_____ [title of the project or building];

which is located in the City of _____, County of _____, and is owned by the Clayton County Water Authority at the following address:

_____

_____

_____

and more particularly described by the following metes and bounds description, land lot district, or block and lot number:

See Attachment: ❑ yes ❑ no

Upon the receipt of the sum of: $_____;

the mechanic and/or materialman waives and releases any and all liens or claims of liens it has upon the foregoing described property through the date signed below and excepting those rights and liens that the mechanic and/or materialman might have in any retained amounts, on account of labor or materials, or both, furnished by the undersigned to or on account of said contractor for said building or premises.

NOTICE: WHEN YOU EXECUTE AND SUBMIT THIS DOCUMENT, YOU SHALL BE CONCLUSIVELY DEEMED TO HAVE BEEN PAID IN FULL THE AMOUNT STATED ABOVE, EVEN IF YOU HAVE NOT ACTUALLY RECEIVED SUCH PAYMENT, 60 DAYS AFTER THE DATE STATED ABOVE UNLESS YOU FILE EITHER AN AFFIDAVIT OF

NONPAYMENT OR A CLAIM OF LIEN PRIOR TO THE EXPIRATION OF SUCH 60 DAY PERIOD.

_____(L.S.)
(Signature of Deponent)

_____
(Printed/Typed Name and Title)

Deponent, individually, and as duly authorized agent and duly elected and acting officer of Contractor

_____
(Company Name)

PERSONALLY APPEARED BEFORE ME, a Notary Public in and for said State and County, the Deponent, who, being personally known to the undersigned and being duly sworn and on oath deposed and said that the within and foregoing statements are true and correct this _____day of _____, 20_____.

Notary Public _____

Commission Expiration Date: _____

(NOTARY SEAL)

_____ _____
(Witness) (Address)

ATTACHMENT F

STATE OF GEORGIA
COUNTY OF CLAYTON

WAIVER AND RELEASE UPON FINAL PAYMENT

The undersigned mechanic and/or materialman has been employed by the Clayton County Water Authority to furnish:

_____ [describe materials and/or labor]; for the construction of improvements known as:

_____ [title of the project or building];

which is owned by the Clayton County Water Authority at the following address:

_____
_____
_____
_____

and more particularly described by the following metes and bounds description, land lot district, or block and lot number:

See Attachment: ❑ yes ❑ no

Upon the receipt of the sum of: $_____;

the mechanic and/or materialman waives and releases any and all liens or claims of liens or any right against any labor and/or material bond it has upon the foregoing described property.

THE MECHANIC AND/OR MATERIALMAN WAIVES AND RELEASES ANY AND ALL LIENS OR CLAIMS OF LIENS IT HAS UPON THE FOREGOING DESCRIBED

PROPERTY OR ANY RIGHTS AGAINST ANY LABOR AND/OR MATERIAL BOND ON ACCOUNT OF LABOR OR MATERIALS, OR BOTH, FURNISHED BY THE UNDERSIGNED TO OR ON ACCOUNT OF SAID CONTRACTOR FOR SAID PROPERTY.

NOTICE: WHEN YOU EXECUTE AND SUBMIT THIS DOCUMENT, YOU SHALL BE CONCLUSIVELY DEEMED TO HAVE BEEN PAID IN FULL THE AMOUNT STATED ABOVE, EVEN IF YOU HAVE NOT ACTUALLY RECEIVED SUCH PAYMENT, 60 DAYS AFTER THE DATE STATED ABOVE UNLESS YOU FILE EITHER AN AFFIDAVIT OF NONPAYMENT OR A CLAIM OF LIEN PRIOR TO THE EXPIRATION OF SUCH 60 DAY PERIOD.

PERSONALLY APPEARED BEFORE ME, the undersigned attesting officer, duly authorized by law to administer oaths (the "Deponent"), who being duly sworn according to law, deposes and says on oath:

1. That Deponent is the duly authorized agent and duly elected and acting officer of _____ (the "Contractor"), and is duly authorized to execute this Final Contractor's Affidavit, Lien Waiver and Indemnification (this "Affidavit") in a representative capacity on behalf of Contractor, as well as in Deponent's individual capacity, and Deponent has made diligent inquiry into and is personally familiar with and has full knowledge of all facts set forth herein.

2. That Contractor acted as the sole general contractor in charge of and directly responsible for the building and construction of all improvements (the "Work") located as reflected above (the "Property"), all of which Work was performed pursuant to the terms of that certain agreement dated _____ (the "Agreement") by and between Contractor and the Clayton County Water Authority as the owner or agent of the owner of the Property (the "Owner"). The Work includes, without limitation, all Work under or related to the Agreement and all change orders to the Agreement, and all supplemental contracts and subcontracts, whether oral or written, for any extra, additional or replacement labor or materials. Contractor is, and performed the Work as, an independent general contractor and Contractor is not an agent of Owner, and all of the Work was furnished and performed at the instance of Contractor as general contractor.

3. That the Work has been fully and finally completed in strict accordance with the terms of the Agreement, and Contractor has at all times since the commencement of the Work been in direct charge of all aspects of the Work, and Contractor has obtained a current valid permanent certificate of occupancy for the Property and the Work, and the Work has been completed within the boundary lines of the Property.

4. Upon receipt of the sum reflected above, Contractor acknowledges that Owner has paid in full to Contractor the full contract price under the Agreement (the "Contract Price"), which Contract Price includes, without limitation, all amounts and bills for all labor, materials, fixtures and supplies of any type whatsoever used in the Work. Upon receipt of these monies, all contractors, subcontractors, subcontractors of subcontractors, materialmen, suppliers and laborers will be paid in full the agreed price or reasonable value for all materials and supplies ordered, used or furnished and services and labor rendered in connection with or as a part of the Work, and none of such parties have or will have any claim, demand or lien against the Property, and all of the amounts paid by Owner to Contractor under the Agreement have been and will be used to pay for labor or materials used in the Work when no liens or claims of lien were filed or outstanding. There are no disputes regarding the Agreement or any other contracts or subcontracts with respect to the Work or the Property, and, except for bills associated with these final monies, there are no amounts due or unpaid bills of any nature, either for labor or services related to the Work or the Property or any materials which have been or may have been placed upon, or applied or delivered to the Property, and Contractor does hereby unconditionally agree to hold harmless and indemnify Owner from and against all claims for mechanic's or materialman's liens or claims of lien, including, without limitation, any attempted foreclosure thereof, which in any way arise out of or are related to the Work or the Property, including, without limitation, any attorney's fees incurred in connection therewith.

5. That Contractor does hereby for itself, and its employees, suppliers, subcontractors, mechanics and materialmen and all other persons acting for, through, or under Contractor, waive, remise, relinquish and release all right to file or to have filed or to maintain any materialman's or mechanic's lien or liens or claim or claims against the Property or arising out of or related to the Work. This Affidavit is executed and given in favor of and for the benefit of, and may be relied upon by, Owner and each and every party legally or equitably, now or hereafter, owning or holding any interest in the Property.

6. That this Affidavit is a sworn statement made under the provisions of Official Code of Georgia Annotated Section 44-14-361.2, and is made for the purpose of inducing Owner to pay to Contractor the balance of the Contract Price pursuant to the terms of the Agreement.

_____(L.S.)
(Signature of Deponent)

_____
(Printed/Typed Name and Title)

Deponent, individually, and as duly authorized agent and duly elected and acting officer of Contractor

_____
(Company Name)

PERSONALLY APPEARED BEFORE ME, a Notary Public in and for said State and County, the Deponent, who, being personally known to the undersigned and being duly sworn and on oath deposed and said that the within and foregoing statements are true and correct this _____day of _____, 20_____.

Notary Public _____

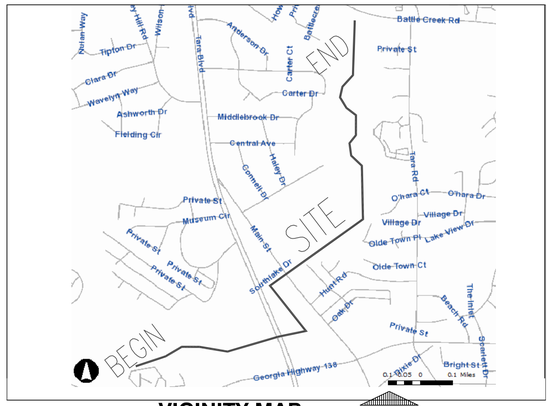
Commission Expiration Date: _____

(NOTARY SEAL)

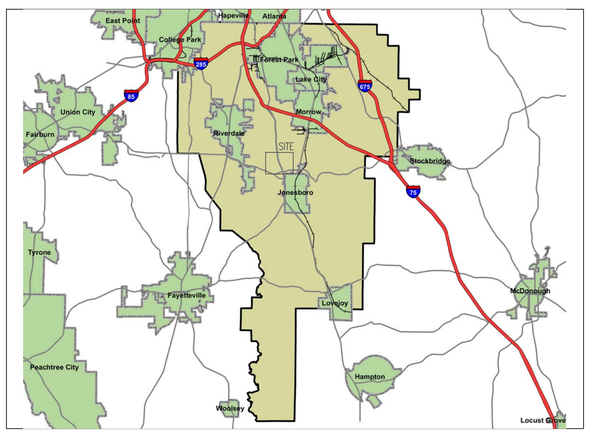
_____ _____
(Witness) (Address)

CONSTRUCTION PLAN

CONSTRUCTION PLAN
FOR
JESTERS CREEK EAST
OUTFALL REPLACEMENT
PHASE ONE



VICINITY MAP GRID NORTH



LOCATION MAP GRID NORTH

DRAWING INDEX			
DRAWING #	TITLE	STATIONS	SHEET #
C-1	COVER SHEET		1
S-1	SITE PLAN	0+00 TO 41+00	2
S-2	SITE PLAN	30+00 TO 63+00	3
S-3	SITE PLAN	53+00 TO 89+41.59	4
P-1	PLAN & PROFILE	0+00 TO 15+000	5
P-2	PLAN & PROFILE	15+00 TO 31+00	6
P-3	PLAN & PROFILE	31+00 TO 46+00	7
P-4	PLAN & PROFILE	46+00 TO 60+50	8
P-5	PLAN & PROFILE	60+50 TO 75+00	9
P-6	PLAN & PROFILE	75+00 TO 90+03	10
P-7	DEMOLITION PLAN	0+00 TO 31+00	11
P-8	DEMOLITION PLAN	31+00 TO 60+50	12
P-9	DEMOLITION PLAN	60+50 TO 89+64	13
P-10	CONSTRUCTION DETAILS		14
ES-1	EROSION CONTROL PLAN	0+00 TO 23+00	15
ES-2	EROSION CONTROL PLAN	23+00 to 47+50	16
ES-3	EROSION CONTROL PLAN	47+50 to 67+50	17
ES-4	EROSION CONTROL PLAN	67+50 TO 89+64	18
ES-5	EROSION CONTROL DETAILS		19
ES-6	NPDES SAMPLING AND BASIN MAP		20
ES-7	EROSION CONTROL NPDES NOTES		21

GENERAL NOTES:

1. PROJECT PURPOSE
   REPLACE EXISTING DETERIORATED 30&36-INCH SANITARY SEWER PIPES WITH 8,900 L.F. OF 36-INCH SANITARY SEWER PIPE. AND COMPLETE ALL NECESSARY RE-CONNECTIONS.
2. OWNER/DEVELOPER
   CLAYTON COUNTY WATER AUTHORITY
   1600 BATTLE CREEK ROAD
   MORROW GEORGIA, 30260
   OFFICE:(770)961-2130
   FAX:(770)960-5229
3. 24 HOUR CONTACT
   CLAYTON COUNTY WATER AUTHORITY
   GARFIELD W. COUSINS (CCWA)
   GSWCC#00000076216
   OFFICE (770)302-3429
   CELL (770)843-7891
4. PROJECT ADDRESS/LOCATION
   THE WORK WILL START AT THE SEWER MAIN JUST TO THE WEST OF THE REAR OF THE BRIDGE CROSSING APARTMENTS LOCATED ON GA. HIGHWAY 138, THEN HEAD NORTHEASTERLY TOWARD TARA BOULEVARD AND CROSSING AND TURNING NORTH TO SOUTHLAKE DRIVE, THEN NORTHEAST TO A POINT NEAR THE REAR OF THE PROPERTIES LOCATED ON OLD TOWN PLACE. THEN TURNING AND RUNNING NORTH TO BATTLECREEK ROAD.
5. PROJECT FUNDING
   SOURCE NAME: CLAYTON COUNTY WATER AUTHORITY
6. SITE VISIT
   THE PROPOSED ROUTE AND IMMEDIATE VICINITY WAS VISITED BY THE PLAN DESIGNER ON AUGUST 29, 2018 PRIOR TO COMPLETING THE EROSION CONTROL PLAN.
7. TOTAL PROJECT AREA AND DISTURBED AREA
   PROJECT AREA: 1,039,113 S.F. (23.85 ACRES)
   DISTURBED AREA: 993,625.45 S.F. (22.81 ACRES)
8. 100-YEAR FLOOD PLAIN
   THIS PROJECT APPEARS TO CROSS IDENTIFIED 100 YEAR FLOOD HAZARD AREAS IN CLAYTON COUNTY THROUGHOUT THE PROJECT.

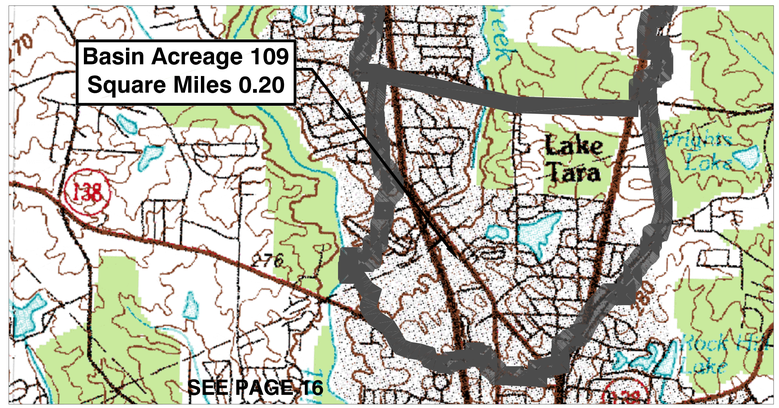
   CLAYTON COUNTY F.I.R.M. COMMUNITY PANELS:

   CLAYTON CO.: PANEL NUMBER 130063C 0086F DATED JUNE 7, 2017
9. WETLANDS
   THE DELINEATION OF JURISDICTIONAL WATERS FOR THIS PROJECT WAS COMPLETED BY CCR ENVIRONMENTAL, INC. IN DEC. OF 2018. BASED ON THE RESULTS OF THE DELINEATION THE PROJECT ROUTE APPEARS TO CROSS JURISDICTIONAL WATERS. (SEE PAGES 15 THROUGH 18).

   THE OWNER/DEVELOPER AND ENGINEER HAVE REVIEWED THE APPROPRIATE LOCAL, STATE, AND FEDERAL REGULATIONS REGARDING DEVELOPMENT ACTIVITIES ADJACENT TO FLOODPLAINS, STATE WATERS, AND WETLANDS AND HAVE DETERMINED THAT THIS DEVELOPMENT PLAN SATISFIES THE STANDARDS PRESENTED IN APPLICABLE REGULATIONS.
10. U.S. ARMY CORPS OF ENGINEERS
    A PRE-CONSTRUCTION NOTIFICATION HAS BEEN SUBMITTED TO THE U.S.A.C.O.E.
11. NPDES MONITORING
    STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION ACTIVITY SHALL BE MONITORED AS PART OF THIS PROJECT.
12. STATE WATERS
    BASED ON VISUAL RECONNAISSANCE ON AUGUST 29, 2018, THE PROJECT ROUTE DOES APPEAR TO CROSS STATE WATERS.
13. STATE PLANE COORDINATE SYSTEM
    THE CONSTRUCTION DRAWINGS WERE PREPARED USING THE FOLLOWING COORDINATE SYSTEMS.
    HORIZONTAL CONTROL: NORTH AMERICAN DATUM 83/94
    VERTICAL CONTROL: NATIONAL GEODETIC VERTICAL DATA 88.
    GRID ZONE: GEORGIA WEST 1002.

GRID NORTH

811 Know what's below. Call before you dig.



USGS TOPOGRAPHIC MAP: ATLANTA GA.
MAP DATE: 1996
SCALE: 1:5000

CONSTRUCTION SCHEDULE

ITEM	JUNE/19				JULY/19				AUG/19				SEPT/19				OCT/19				NOV/19				DEC/19				JAN/20				FEB/20				MAR/20				APRIL/20				MAY/20				JUNE/20			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
INSTALL EROSION CONTROL																																																		
EROSION CONTROL MAINTENANCE																																																		
UTILITY CONSTRUCTION & CLEARING																																																		
REGRASSING																																																		

PLANS PREPARED BY:

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

THESE DRAWINGS ARE THE PROPERTY OF CLAYTON COUNTY WATER AUTHORITY AND MAY NOT BE REPRODUCED, COPIED, OR OTHERWISE REUSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF CLAYTON COUNTY WATER AUTHORITY. THE ACCEPTANCE OF THESE DRAWINGS SHALL BE CONSTRUED AS AN ACCEPTANCE OF THE FOREGOING AGREEMENT.

PROJECT NAME:

JESTERS CREEK EAST
OUTFALL REPLACEMENT
PHASE ONE

LAND LOTS 207,208,209,210,211&177,
DISTRICT 13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: COVER SHEET

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY: KW	DRAWING #: C-1
	SCALE: N.T.S.

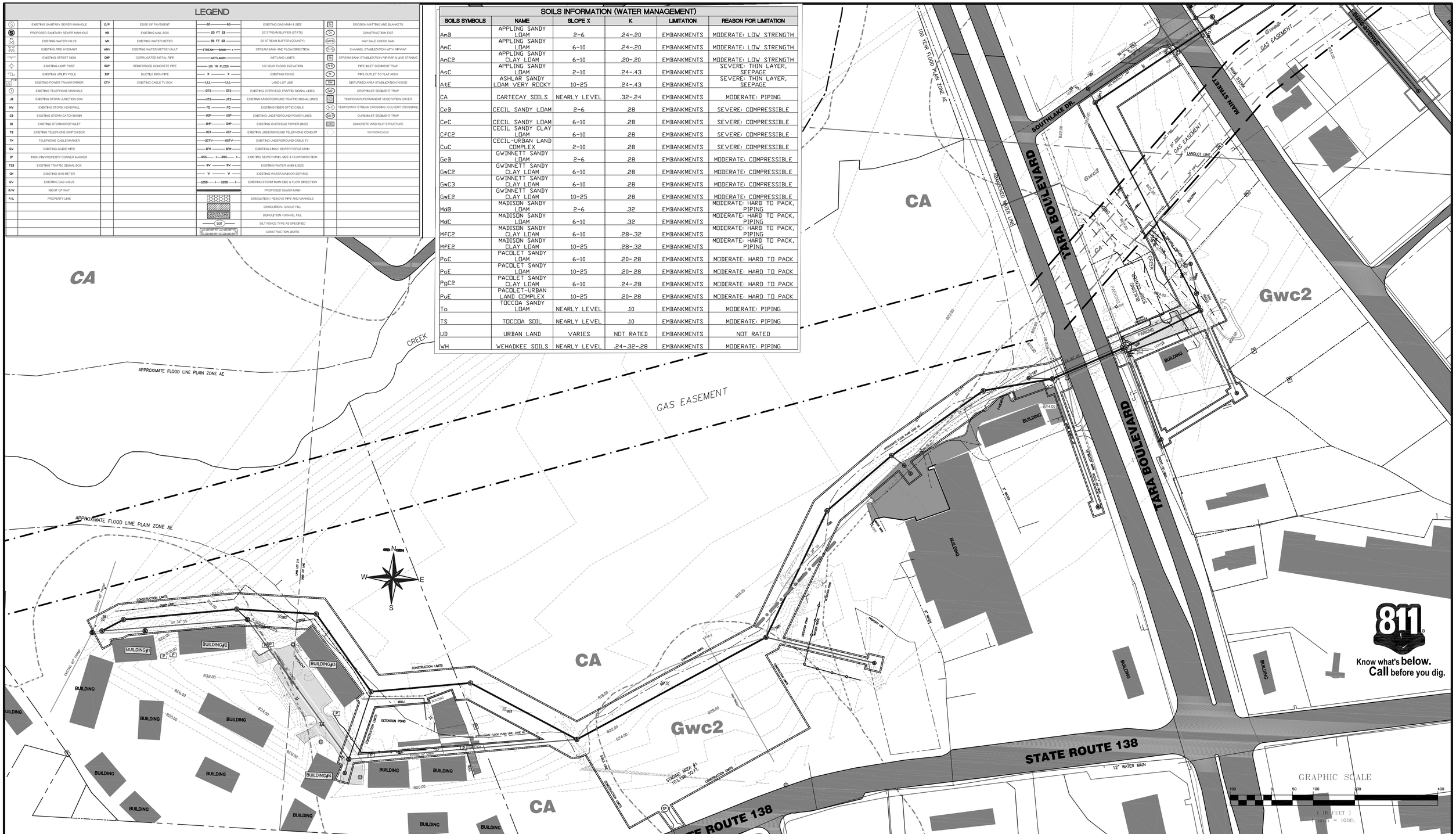
SHEET NUMBER 1 OF 21

LEGEND

EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	SS SS	EXISTING GAS MAIN & SIZE	EROSION MATTING AND BLANKETS
PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CONSTRUCTION EXIT
EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	HAY BALE CHECK DAM
EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	CHANNEL STABILIZATION WITH RIP-RAP
EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	PIPE INLET SEDIMENT TRAP
EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	PIPE OUTLET TO FLAT AREA
EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LL LL	LAND LOT LINE	DISTURBED AREA STABILIZATION W/SOD
EXISTING TELEPHONE MANHOLE			OTS OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	DROP INLET SEDIMENT TRAP
EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TEMPORARY/PERMANENT VEGETATION COVER
EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	CURB INLET SEDIMENT TRAP
EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CONCRETE WASHOUT STRUCTURE
EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT	REVISION CLOUD
TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV	
EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN	
IRON PIN/PROPERTY CORNER MARKER			8SS 8SS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION	
EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE	
EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE	
EXISTING GAS VALVE			12SD 12SD	EXISTING STORM MAIN SIZE & FLOW DIRECTION	
RIGHT OF WAY				PROPOSED SEWER MAIN	
PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE	
				DEMOLITION / GROUT FILL	
				DEMOLITION / GRAVEL FILL	
			Sd1	SILT FENCE TYPE AS SPECIFIED	
				CONSTRUCTION LIMITS	

SOILS INFORMATION (WATER MANAGEMENT)

SOILS SYMBOLS	NAME	SLOPE %	K	LIMITATION	REASON FOR LIMITATION
AmB	APPLING SANDY LOAM	2-6	.24-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
AmC	APPLING SANDY LOAM	6-10	.24-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
AmC2	APPLING SANDY CLAY LOAM	6-10	.20-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
AsC	APPLING SANDY LOAM	2-10	.24-.43	EMBANKMENTS	SEVERE: THIN LAYER, SEEPAGE
AtE	ASHLAR SANDY LOAM VERY ROCKY	10-25	.24-.43	EMBANKMENTS	SEVERE: THIN LAYER, SEEPAGE
CA	CARTECAY SOILS	NEARLY LEVEL	.32-.24	EMBANKMENTS	MODERATE: PIPING
CeB	CECIL SANDY LOAM	2-6	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CeC	CECIL SANDY LOAM	6-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CfC2	CECIL SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CuC	CECIL-URBAN LAND COMPLEX	2-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
GeB	GWINNETT SANDY LOAM	2-6	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwC2	GWINNETT SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwC3	GWINNETT SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwE2	GWINNETT SANDY CLAY LOAM	10-25	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
MdB	MADISON SANDY LOAM	2-6	.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MdC	MADISON SANDY LOAM	6-10	.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MfC2	MADISON SANDY CLAY LOAM	6-10	.28-.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MfE2	MADISON SANDY CLAY LOAM	10-25	.28-.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
PaC	PACOLET SANDY LOAM	6-10	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PaE	PACOLET SANDY LOAM	10-25	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PgC2	PACOLET SANDY CLAY LOAM	6-10	.24-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PuE	PACOLET-URBAN LAND COMPLEX	10-25	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
To	TOCCOA SANDY LOAM	NEARLY LEVEL	.10	EMBANKMENTS	MODERATE: PIPING
TS	TOCCOA SOIL	NEARLY LEVEL	.10	EMBANKMENTS	MODERATE: PIPING
UD	URBAN LAND	VARIES	NOT RATED	EMBANKMENTS	NOT RATED
WH	WEHADKEE SOILS	NEARLY LEVEL	.24-.32-.28	EMBANKMENTS	MODERATE: PIPING



PLANS PREPARED BY:

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

Providing Quality Water and Quality Services To Our Community

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210,211&177
DISTRICT 13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: SITE PLAN

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: S-1
	SCALE: 1"=100"
	SHEET NUMBER 2 OF 21

SOILS INFORMATION (WATER MANAGEMENT)

SOILS SYMBOLS	NAME	SLOPE %	K	LIMITATION	REASON FOR LIMITATION
AmB	APPLING SANDY LOAM	2-6	.24-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
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AmC2	APPLING SANDY CLAY LOAM	6-10	.20-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
AsC	APPLING SANDY LOAM	2-10	.24-.43	EMBANKMENTS	SEVERE: THIN LAYER, SEEPAGE
AtE	ASHLAR SANDY LOAM VERY ROCKY	10-25	.24-.43	EMBANKMENTS	SEVERE: THIN LAYER, SEEPAGE
CA	CARTECAY SOILS	NEARLY LEVEL	.32-.24	EMBANKMENTS	MODERATE: PIPING
CeB	CECIL SANDY LOAM	2-6	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CeC	CECIL SANDY LOAM	6-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CfC2	CECIL SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CuC	CECIL-URBAN LAND COMPLEX	2-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
GeB	GWINNETT SANDY LOAM	2-6	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwC2	GWINNETT SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwC3	GWINNETT SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwE2	GWINNETT SANDY CLAY LOAM	10-25	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
MaB	MADISON SANDY LOAM	2-6	.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MaC	MADISON SANDY LOAM	6-10	.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MfC2	MADISON SANDY CLAY LOAM	6-10	.28-.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MfE2	MADISON SANDY CLAY LOAM	10-25	.28-.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
PaC	PACOLET SANDY LOAM	6-10	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PaE	PACOLET SANDY LOAM	10-25	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PgC2	PACOLET SANDY CLAY LOAM	6-10	.24-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PuE	PACOLET-URBAN LAND COMPLEX	10-25	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
To	TOCCOA SANDY LOAM	NEARLY LEVEL	.10	EMBANKMENTS	MODERATE: PIPING
TS	TOCCOA SOIL	NEARLY LEVEL	.10	EMBANKMENTS	MODERATE: PIPING
UD	URBAN LAND	VARIES	NOT RATED	EMBANKMENTS	NOT RATED
WH	WEHADKEE SOILS	NEARLY LEVEL	.24-.32-.28	EMBANKMENTS	MODERATE: PIPING

LEGEND

EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	GG	EXISTING GAS MAIN & SIZE	EROSION MATTING AND BLANKETS
PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CONSTRUCTION EXIT
EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	HAY BALE CHECK DAM
EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	CHANNEL STABILIZATION WITH RIP-RAP
EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	PIPE INLET SEDIMENT TRAP
EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	PIPE OUTLET TO FLAT AREA
EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DISTURBED AREA STABILIZATION W/SOD
EXISTING TELEPHONE MANHOLE			OTS OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	DROP INLET SEDIMENT TRAP
EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TEMPORARY/PERMANENT VEGETATION COVER
EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	CURB INLET SEDIMENT TRAP
EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CONCRETE WASHOUT STRUCTURE
EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT	REVISION CLOUD
TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV	
EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN	
IRON PIN/PROPERTY CORNER MARKER			RSS RSS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION	
EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE	
EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE	
EXISTING GAS VALVE			12SS 12SS	EXISTING STORM MAIN SIZE & FLOW DIRECTION	
RIGHT OF WAY				PROPOSED SEWER MAIN	
PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE	
				DEMOLITION / GROUT FILL	
				DEMOLITION / GRAVEL FILL	
			SAT	SILT FENCE TYPE AS SPECIFIED	
				CONSTRUCTION LIMITS	

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1" = 100'

811 Know what's below. Call before you dig.

PLANS PREPARED BY:

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:
JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210,211&177
DISTRICT 13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: SITE PLAN

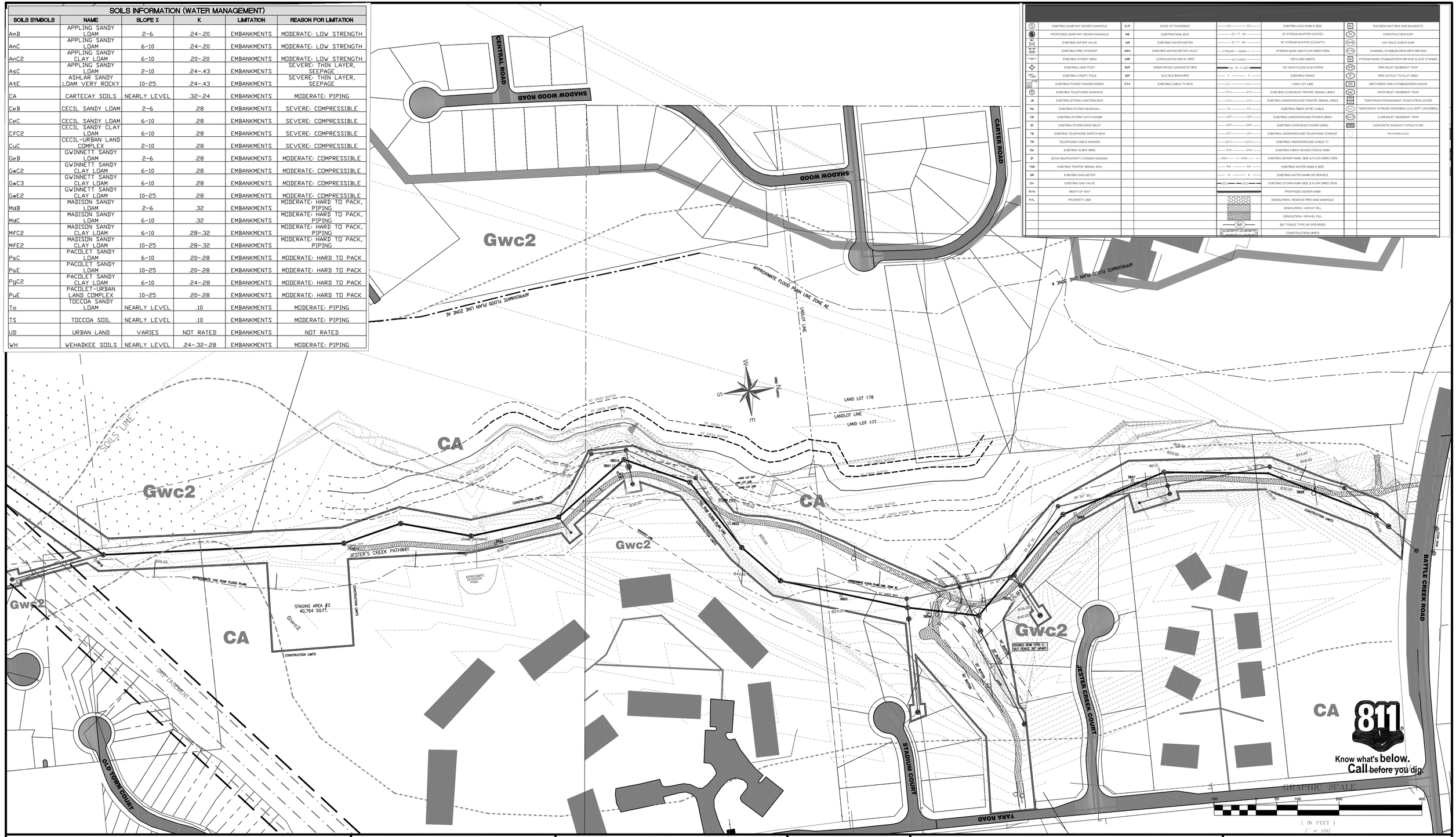
DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: S-2
	SCALE: 1"=100"

SHEET NUMBER 3 OF 21

SOILS INFORMATION (WATER MANAGEMENT)

SOILS SYMBOLS	NAME	SLOPE %	K	LIMITATION	REASON FOR LIMITATION
AmB	APPLING SANDY LOAM	2-6	.24-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
AmC	APPLING SANDY LOAM	6-10	.24-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
AmC2	APPLING SANDY CLAY LOAM	6-10	.20-.20	EMBANKMENTS	MODERATE: LOW STRENGTH
AsC	APPLING SANDY LOAM	2-10	.24-.43	EMBANKMENTS	SEVERE: THIN LAYER, SEEPAGE
AtE	ASHLAR SANDY LOAM VERY ROCKY	10-25	.24-.43	EMBANKMENTS	SEVERE: THIN LAYER, SEEPAGE
CA	CARTECAY SOILS	NEARLY LEVEL	.32-.24	EMBANKMENTS	MODERATE: PIPING
CeB	CECIL SANDY LOAM	2-6	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CeC	CECIL SANDY LOAM	6-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CfC2	CECIL SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
CuC	CECIL-URBAN LAND COMPLEX	2-10	.28	EMBANKMENTS	SEVERE: COMPRESSIBLE
GeB	GWINNETT SANDY LOAM	2-6	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwC2	GWINNETT SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwC3	GWINNETT SANDY CLAY LOAM	6-10	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
GwE2	GWINNETT SANDY CLAY LOAM	10-25	.28	EMBANKMENTS	MODERATE: COMPRESSIBLE
MaB	MADISON SANDY LOAM	2-6	.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MaC	MADISON SANDY LOAM	6-10	.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MfC2	MADISON SANDY CLAY LOAM	6-10	.28-.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
MfE2	MADISON SANDY CLAY LOAM	10-25	.28-.32	EMBANKMENTS	MODERATE: HARD TO PACK, PIPING
PaC	PACOLET SANDY LOAM	6-10	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PaE	PACOLET SANDY LOAM	10-25	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PgC2	PACOLET SANDY CLAY LOAM	6-10	.24-.28	EMBANKMENTS	MODERATE: HARD TO PACK
PuE	PACOLET-URBAN LAND COMPLEX	10-25	.20-.28	EMBANKMENTS	MODERATE: HARD TO PACK
To	TOCCOA SANDY LOAM	NEARLY LEVEL	.10	EMBANKMENTS	MODERATE: PIPING
TS	TOCCOA SOIL	NEARLY LEVEL	.10	EMBANKMENTS	MODERATE: PIPING
UD	URBAN LAND	VARIES	NOT RATED	EMBANKMENTS	NOT RATED
WH	WEHADKEE SOILS	NEARLY LEVEL	.24-.32-.28	EMBANKMENTS	MODERATE: PIPING

EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6G 6G	EXISTING GAS MAIN & SIZE	ES	EROSION MATTING AND BLANKETS
PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	HB	HAY BALE CHECK DAM
EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK I	STREAM BANK AND FLOW DIRECTION	CS	CHANNEL STABILIZATION WITH RIP-RAP
EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	SS	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	FIB	PIPE INLET SEDIMENT TRAP
EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	PO	PIPE OUTLET TO FLAT AREA
EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DA	DISTURBED AREA STABILIZATION W/SOD
EXISTING TELEPHONE MANHOLE			OTS OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	IDP	DROP INLET SEDIMENT TRAP
EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TP	TEMPORARY/PERMANENT VEGETATION COVER
EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	SCE	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	CIP	CURB INLET SEDIMENT TRAP
EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CWP	CONCRETE WASHOUT STRUCTURE
EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV		
EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN		
IRON PIN/PROPERTY CORNER MARKER			8SS 8SS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE		
EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE		
EXISTING GAS VALVE			2SS 2SS	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
RIGHT OF WAY				PROPOSED SEWER MAIN		
PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
				DEMOLITION / GROUT FILL		
				DEMOLITION / GRAVEL FILL		
			Silt	SILT FENCE TYPE A/B SPECIFIED		
				CONSTRUCTION LIMITS		



PLANS PREPARED BY:

CLAYTON COUNTY WATER AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210,211&177
DISTRICT 13 CLAYTON COUNTY, GEORGIA

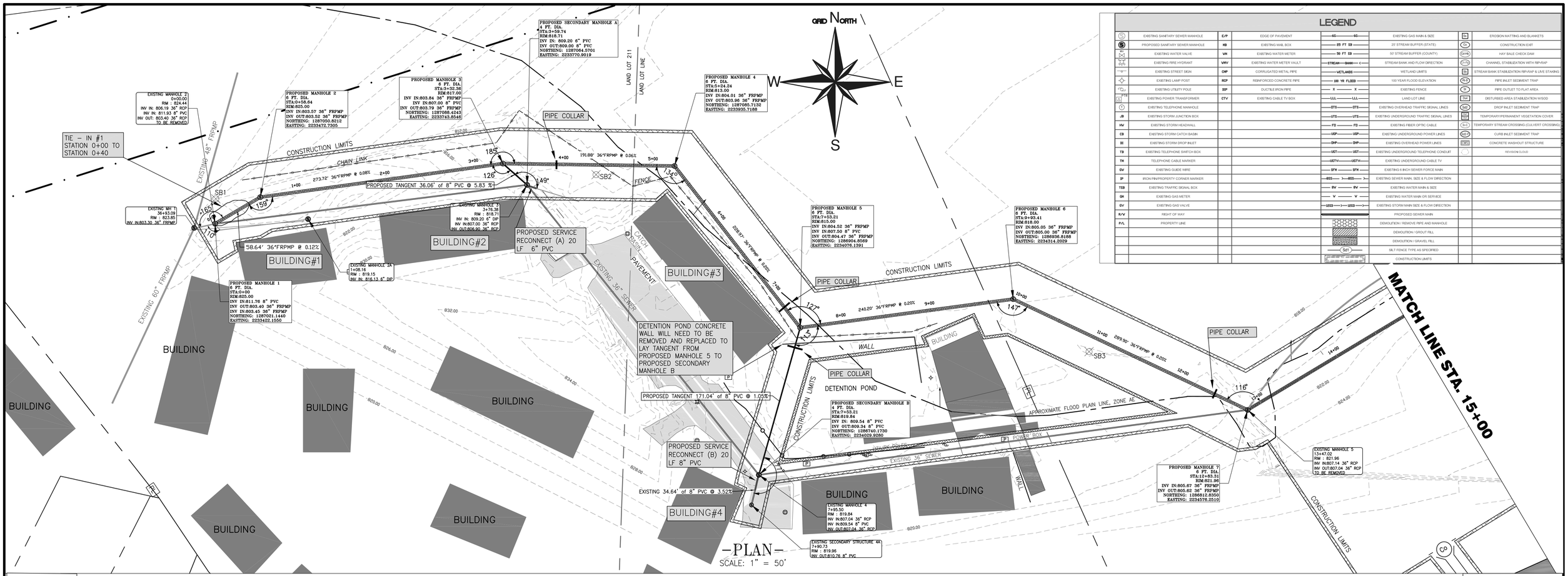
SEAL:

REVISIONS:

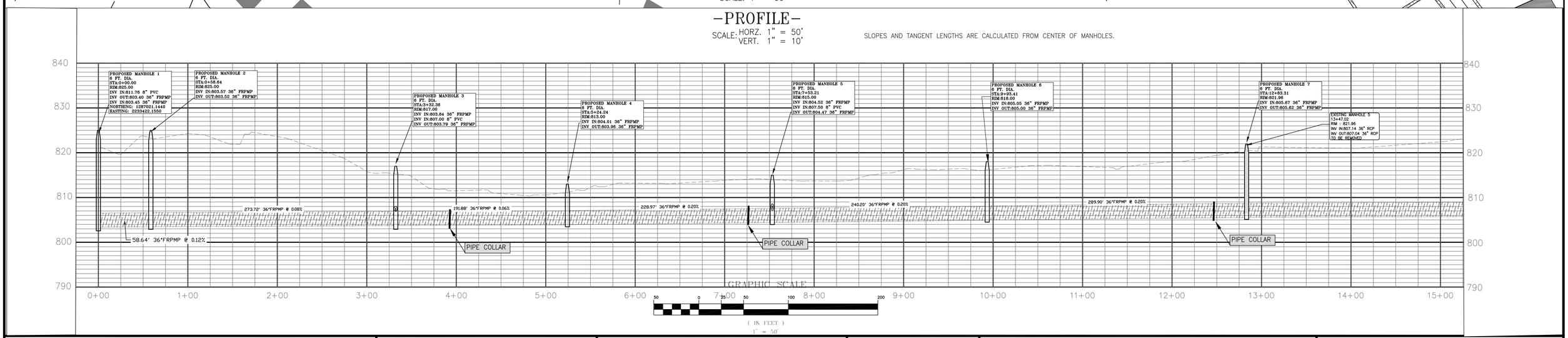
DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: SITE PLAN

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: S-3
	SCALE: 1"=100"
	SHEET NUMBER 4 OF 21



–PLAN–
SCALE: 1" = 50'



PLANS PREPARED BY:

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

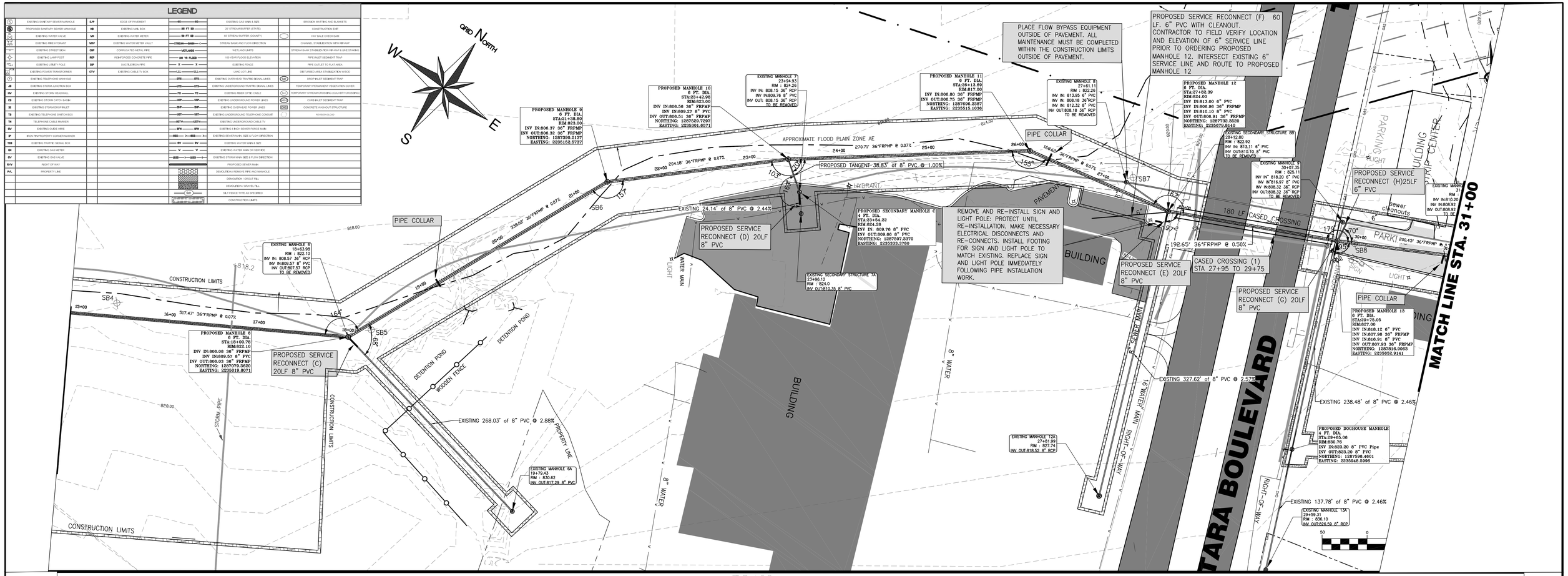
SHEET TITLE: PLAN & PROFILE

DESIGN BY: CCWA	DATE: 1-14-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: P-1
	SCALE: 1"=50'

SHEET NUMBER 5 OF 21

LEGEND

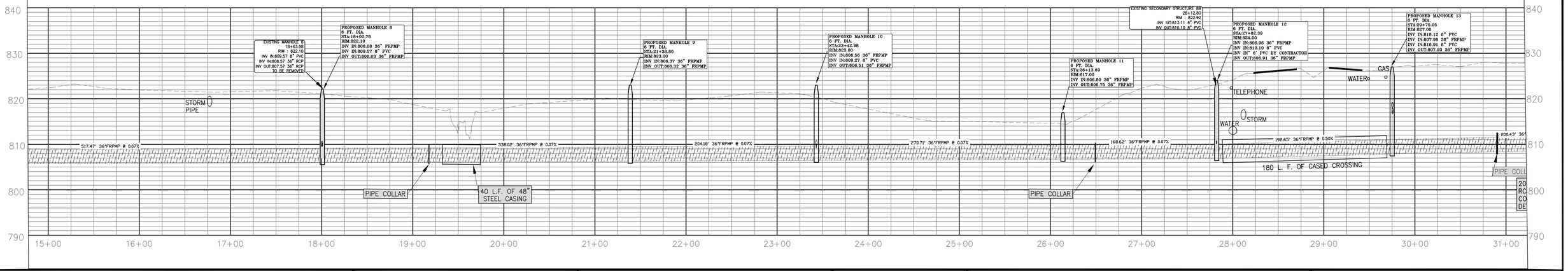
	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6S 6S	EXISTING GAS MAIN & SIZE		EROSION MATTING AND BLANKETS
	PROPOSED SANITARY SEWER MANHOLE	XS	EXISTING SAN. BOX	25 FT SB	25' STREAM BUFFER (STATE)		CONSTRUCTION EXIT
	EXISTING WATER VALVE	VA	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)		HAY BALE CHECK DAM
	EXISTING FIRE HYDRANT	VAV	EXISTING WATER METER VAULT	STREAM	STREAM BANK AND FLOW DIRECTION		CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	CRP	CORRUGATED METAL PIPE	WETLAND	WETLAND LIMITS		STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION		PIPE INLET SEDIMENT TRAP
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE		PIPE OUTLET TO FLAT AREA
	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE		DISTURBED AREA STABILIZATION WOOD
	EXISTING TELEPHONE MAN-HOLE			OHTS OHTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES		DROP INLET SEDIMENT TRAP
	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES		TEMPORARY/PERMANENT VEGETATION COVER
	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE		TEMPORARY STREAM CROSSING (CULVERT CROSSING)
	EXISTING STORM CATCH BASIN			OP OP	EXISTING UNDERGROUND POWER LINES		CURB INLET SEDIMENT TRAP
	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES		CONCRETE WASHOUT STRUCTURE
	EXISTING TELEPHONE SWITCH BOX			UP UP	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
	TELEPHONE CABLE MARKER			UCTV UCTV	EXISTING UNDERGROUND CABLE TV		
	EXISTING GUIDE WIRE			STS STS	EXISTING 8 INCH SEWER FORCE MAIN		
	IRON PIN/PROPERTY CORNER MARKER			8SS 8SS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
	EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE		
	EXISTING GAS METER			V V	EXISTING WATER MAIN OR SERVICE		
	EXISTING GAS VALVE			6GS 6GS	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
	RIGHT-OF-WAY				PROPOSED SEWER MAIN		
	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					SILT FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		



–PLAN–
SCALE: 1" = 50'

–PROFILE–
SCALE: HORZ. 1" = 50'
VERT. 1" = 10'

SLOPES AND TANGENT LENGTHS ARE CALCULATED FROM CENTER OF MANHOLES.



PLANS PREPARED BY:		PROJECT NAME:	REVISIONS:				SHEET TITLE: PLAN & PROFILE	
CLAYTON COUNTY WATER AUTHORITY Providing Quality Water and Quality Services To Our Community	CLAYTON COUNTY WATER AUTHORITY 1600 BATTLE CREEK ROAD MORROW, GEORGIA 30260	JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE LAND LOTS 207,208,209,210&211 DISTRICT 13 CLAYTON COUNTY, GEORGIA	DATE:	NO.:	REQUESTED BY:	DESCRIPTION:	DESIGN BY: CCWA	DATE: 1-15-19
							DRAWN BY: JRM	JOB #: 81810
							CHECKED BY:	DRAWING #: P-2
								SCALE: 1"=50'
		SEAL:						SHEET NUMBER 6 OF 21

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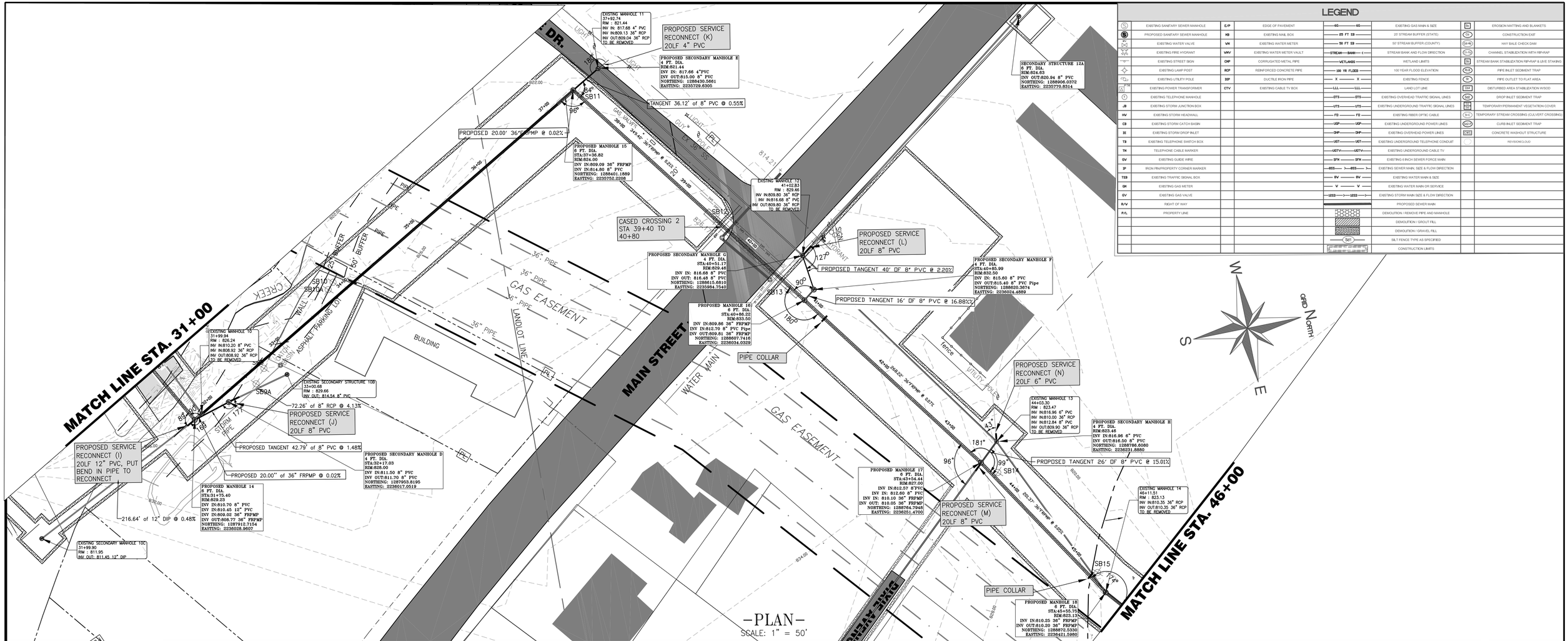
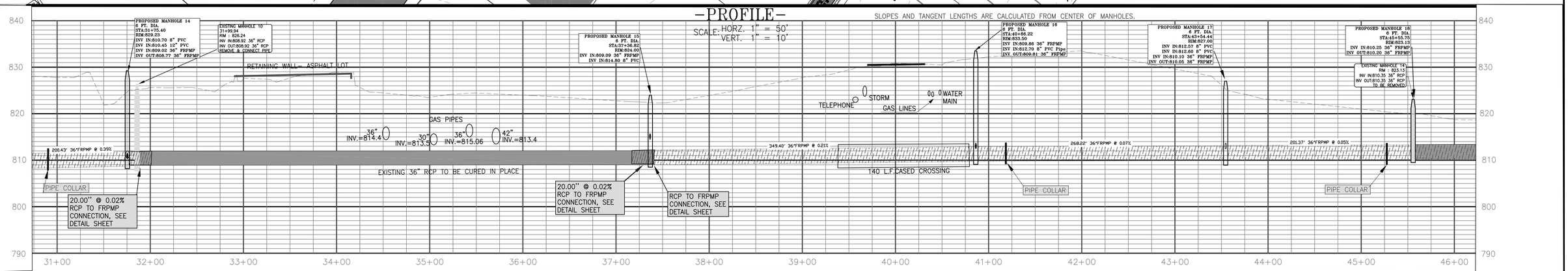
LEGEND

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	GG GG	EXISTING GAS MAIN & SIZE
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)
WV WM	EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION
	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE
T T T	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE
T	EXISTING TELEPHONE MANHOLE			STS STS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES
HW	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES
DI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT
TM	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV
GV	EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN
IP	IRON PIN/PROPERTY CORNER MARKER			SSS SSS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION
TSB	EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE
GM	EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE
GV	EXISTING GAS VALVE			18SS 18SS	EXISTING STORM MAIN SIZE & FLOW DIRECTION
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE
					DEMOLITION / GROUT FILL
					DEMOLITION / GRAVEL FILL
				S#1	SILT FENCE TYPE AS SPECIFIED
					CONSTRUCTION LIMITS

					EROSION MATTING AND BLANKETS
					CONSTRUCTION EXIT
					HAY BALE CHECK DAM
					CHANNEL STABILIZATION WITH RIP-RAP
					STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
					PIPE INLET SEDIMENT TRAP
					PIPE OUTLET TO FLAT AREA
					DISTURBED AREA STABILIZATION W/SOD
					DROP INLET SEDIMENT TRAP
					TEMPORARY/PERMANENT VEGETATION COVER
					TEMPORARY STREAM CROSSING (CULVERT CROSSING)
					CURB INLET SEDIMENT TRAP
					CONCRETE WASHOUT STRUCTURE
					REVISION CLOUD



–PLAN–
SCALE: 1" = 50'



PLANS PREPARED BY:

CLAYTON COUNTY WATER AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: PLAN & PROFILE

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: P-3
	SCALE: 1"=50'

SHEET NUMBER 7 OF 21

LEGEND

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6G 6G	EXISTING GAS MAIN & SIZE	EM	EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	(SHHB)	HAY BALE CHECK DAM
FH	EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	(C-TS)	CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	(SB)	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	(IHS)	PIPE INLET SEDIMENT TRAP
PTO	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	(O)	PIPE OUTLET TO FLAT AREA
PTD	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	(DAS)	DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			OTS OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	(DIS)	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	(TSV) (PSV)	TEMPORARY/PERMANENT VEGETATION COVER
HW	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	(S-C)	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	(CIS)	CURB INLET SEDIMENT TRAP
DI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	(CWT)	CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TH	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV		
GV	EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN		
IP	IRON PIN/PROPERTY CORNER MARKER			8SS 8SS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
TSB	EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE		
GM	EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			12SD 12SD	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					DEMOLITION / GRAVEL FILL		
				SF	SILT FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		

GRID NORTH

MATCH LINE STA. 46+00

MATCH LINE STA. 60+50

PROPOSED MANHOLE 19
6 FT. DIA.
STA:51+95.42
RIM:821.18
INV IN:810.55 36" FRPMP
INV OUT:810.50 36" FRPMP
NORTHING: 1289282.4620
EASTING: 2259912.6650

EXISTING MANHOLE 15
52+51.10
RIM : 821.18
INV IN:810.43 36" RCP
INV OUT:810.68 36" RCP
TO BE REMOVED

PIPE COLLAR

PROPOSED MANHOLE 20
6 FT. DIA.
STA:55+43.67
RIM:822.29
INV IN: 812.62 8" PVC
INV IN:810.87 36" FRPMP
INV OUT:810.82 36" FRPMP
NORTHING: 1289039.0650
EASTING: 2257148.1060

EXISTING MANHOLE 16
55+97.40
RIM : 822.29
INV IN:810.53 30" RCP
INV IN:812.62 8" PVC
INV OUT:810.43 36" RCP
TO BE REMOVED

PROPOSED SERVICE
RECONNECT (O)
20LF 8" PVC

SB16 SB17 SB18

822.00

CONSTRUCTION LIMITS

639.68' 36"FRPMP @ 0.04%

348.25' 36"FRPMP @ 0.08%

560.59' 36"FRPMP @ 0.06%

227.59' 8" pvc @ 0.69%

185°

GAS EASEMENT

EXISTING SECONDARY STRUCTURE 16A
54+55.38
RIM : 825.20
INV OUT:814.20 8" PVC

APPROXIMATE 100 YEAR FLOOD PLAIN

811 Know what's **below.** **Call** before you dig.

GRAPHIC SCALE

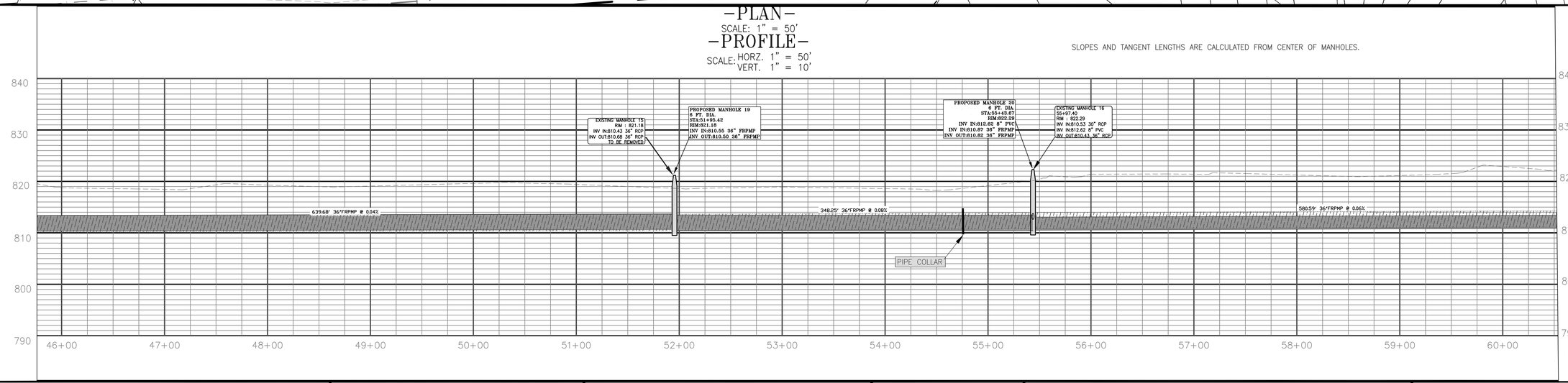
50 0 25 50 100 200

(IN FEET)
1" = 50'

—PLAN—
SCALE: 1" = 50'

—PROFILE—
SCALE: HORZ. 1" = 50'
VERT. 1" = 10'

SLOPES AND TANGENT LENGTHS ARE CALCULATED FROM CENTER OF MANHOLES.



PLANS PREPARED BY:

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

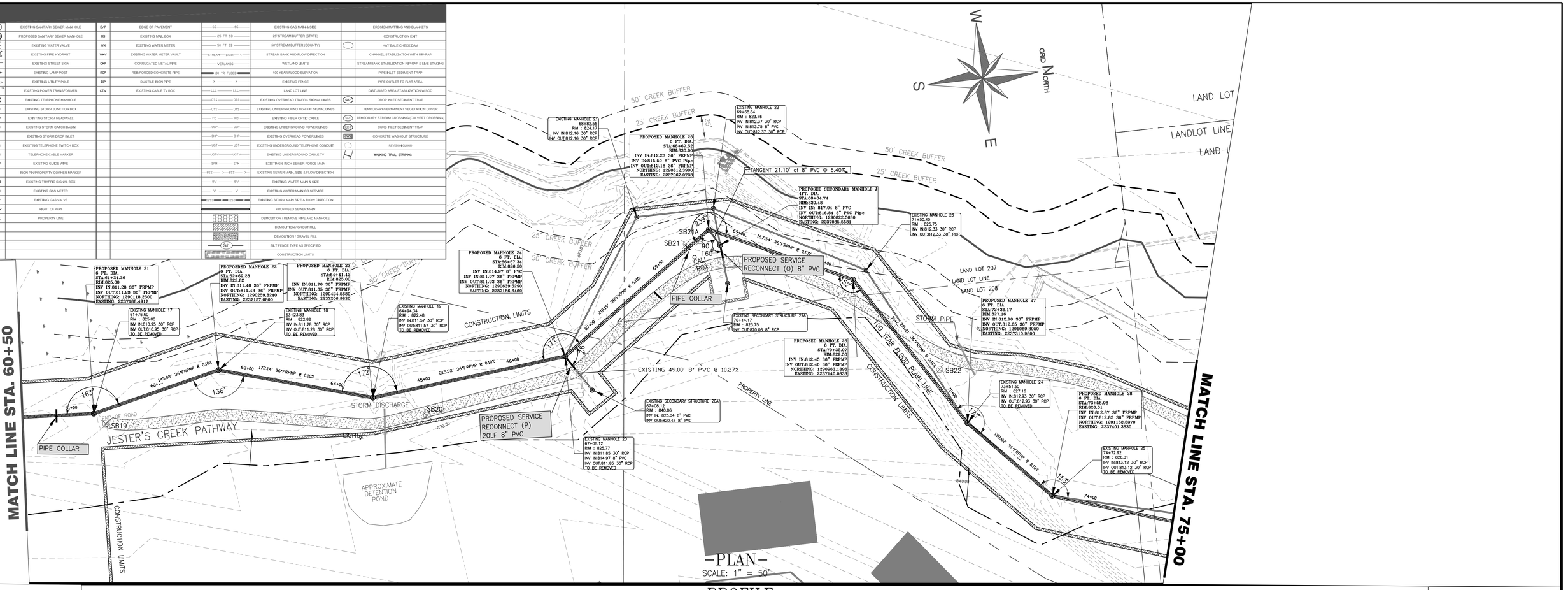
REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: PLAN & PROFILE

DESIGN BY: CCWA	DATE:	1-15-19
DRAWN BY: JRM	JOB #:	81810
CHECKED BY:	DRAWING #:	P-4
	SCALE:	1"=50'
	SHEET NUMBER	8 OF 21

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	65	EXISTING GAS MAIN & SIZE		EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)		CONSTRUCTION EXIT
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)		HAY BALE CHECK DAM
WV	EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION		CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS		STREAM BANK STABILIZATION RIPRAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION		PIPE INLET SEDIMENT TRAP
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X	EXISTING FENCE		PIPE OUTLET TO FLAT AREA
T/P	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL	LAND LOT LINE		DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	SDI	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES		TEMPORARY/PERMANENT VEGETATION COVER
HV	EXISTING STORM HEADWALL			FO	EXISTING FIBER OPTIC CABLE		TEMPORARY STREAM CROSSING (CULVERT/ CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP	EXISTING UNDERGROUND POWER LINES		CURB INLET SEDIMENT TRAP
DI	EXISTING STORM DROP INLET			OHP	EXISTING OVERHEAD POWER LINES		CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TM	TELEPHONE CABLE MARKER			UGTV	EXISTING UNDERGROUND CABLE TV		WALKING TRAIL STRIPING
GV	EXISTING GUIDE WIRE			STM	EXISTING 6 INCH SEWER FORCE MAIN		
IP	IRON PIN/PROPERTY CORNER MARKER			SS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
TSB	EXISTING TRAFFIC SIGNAL BOX			WV	EXISTING WATER MAIN & SIZE		
GK	EXISTING GAS METER			W	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			SS	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					DEMOLITION / GRAVEL FILL		
				SDI	SILT FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		



-PLAN-

SCALE: 1" = 50'

-PROFILE-

SCALE: HORZ. 1" = 50'
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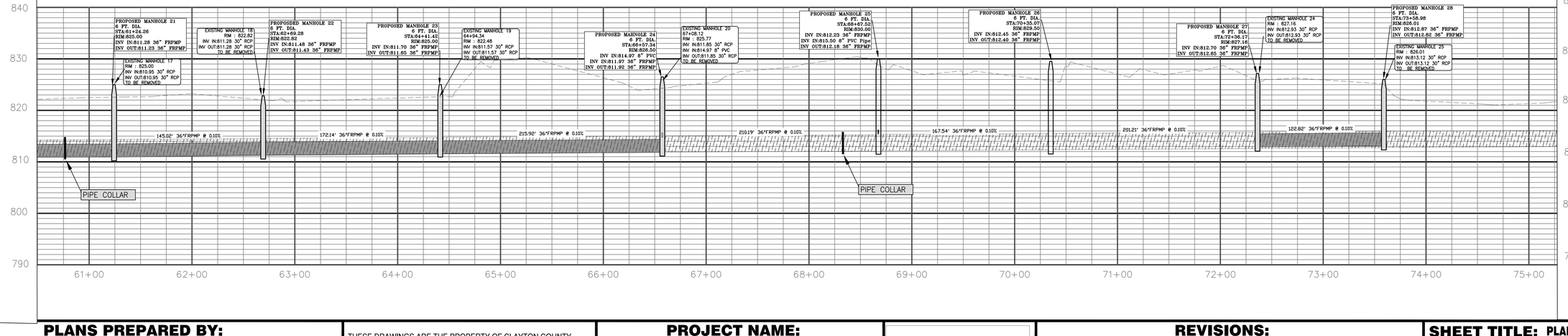
SLOPES AND TANGENT LENGTHS ARE CALCULATED FROM CENTER OF MANHOLES.



PLANS PREPARED BY:

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: PLAN & PROFILE

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: P-5
	SCALE: 1"= 50'
	SHEET NUMBER 9 OF 21

LEGEND

EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	GG	EXISTING GAS MAIN & SIZE	EROSION MATTING AND BLANKETS
PROPOSED SANITARY SEWER MANHOLE	XS	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CONSTRUCTION EXIT
EXISTING WATER VALVE	VA	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	HAY BALE CHECK DAM
EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	CHANNEL STABILIZATION WITH RIP-RAP
EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	PIPE INLET SEDIMENT TRAP
EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	F	EXISTING FENCE	PIPE OUTLET TO FLAT AREA
EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL	LAND LOT LINE	DISTURBED AREA STABILIZATION W/SOD
EXISTING TELEPHONE MANHOLE			OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	DROP INLET SEDIMENT TRAP
EXISTING STORM JUNCTION BOX			UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TEMPORARY/PERMANENT VEGETATION COVER
EXISTING STORM HEADWALL			FO	EXISTING FIBER OPTIC CABLE	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
EXISTING STORM CATCH BASIN			UGP	EXISTING UNDERGROUND POWER LINES	CURB INLET SEDIMENT TRAP
EXISTING STORM DROP INLET			OHP	EXISTING OVERHEAD POWER LINES	CONCRETE WASHOUT STRUCTURE
EXISTING TELEPHONE SWITCH BOX			UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT	REVISION CLOUD
TELEPHONE CABLE MARKER			UGTV	EXISTING UNDERGROUND CABLE TV	WALKING TRAIL SIGN
EXISTING GUIDE WIRE			SFM	EXISTING 8 INCH SEWER FORCE MAIN	WALKING TRAIL STRIPING
IRON PIN/PROPERTY CORNER MARKER			SSS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION	
EXISTING TRAFFIC SIGNAL BOX			WV	EXISTING WATER MAIN & SIZE	
EXISTING GAS METER			W	EXISTING WATER MAIN OR SERVICE	
EXISTING GAS VALVE			USTS	EXISTING STORM MAIN SIZE & FLOW DIRECTION	
RIGHT OF WAY				PROPOSED SEWER MAIN	
PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE	
				DEMOLITION / GROUT FILL	
				DEMOLITION / GRAVEL FILL	
			SF	SILT FENCE TYPE AS SPECIFIED	
				CONSTRUCTION LIMITS	

MATCH LINE STA. 75+00

PROPOSED MANHOLE 29
6 FT. DIA.
STA:76+71.97
RIM:827.50
INV IN:813.23 36" FRPMP
INV IN:815.60 8" PVC Pipe
INV OUT:813.18 36" FRPMP
NORTHING: 1291449.0095
EASTING: 2237501.6682

EXISTING MANHOLE 26
77+78.66
RIM : 825.60
INV IN:813.48 30" RCP
INV IN:814.68 8" PVC
INV OUT:813.38 30" RCP

PROPOSED TANGENT 27.25' of 8" PVC @ 1.84%

312.97' 36"FRPMP @ 0.10%

30" SEWER MAIN

PIPE COLLAR

SB23

SB24

SB25

PROPOSED TANGENT 32.41' 8" PVC @ 11.69%

119.10' 36"FRPMP @ 0.10%

173.01' 36"FRPMP @ 0.10%

198.13' 36"FRPMP @ 0.10%

264.09' 36"FRPMP @ 0.10%

251.24' 36"FRPMP @ 0.10%

279.15' 36"FRPMP @ 0.14%

EX 30" SS

SECONDARY 1
6 FT. DIA.
STA:76+78.03
RIM:828.50
INV IN:816.30 8" PVC Pipe
INV OUT:816.10 8" PVC Pipe
NORTHING: 1291448.8551
EASTING: 2237528.9129

EXISTING 226.12' of 8" VCP @ 5.63%

PROPOSED SERVICE RECONNECT (R) 20LF 8" PVC

PROPOSED SERVICE RECONNECT (S) 20LF 8" PVC

PROPOSED TANGENT 36.91' of 8" PVC @ 15.25%

PROPOSED MANHOLE 30
6 FT. DIA.
STA:78+44.98
RIM:829.50
INV IN:815.74 8" PVC
INV OUT:813.51 36" FRPMP
NORTHING: 1291617.4552
EASTING: 2237541.1202

PROPOSED SECONDARY MANHOLE L
4 FT. DIA.
STA:78+44.98
RIM:837.36
INV IN:821.57 8" PVC
INV OUT:821.37 8" DIP
NORTHING: 1291617.1027
EASTING: 2237528.0313

DOUBLE ROW TYPE C SILT FENCE 36" APART

EXISTING 248.36' of 8" DIP @ 5.51%

EXISTING SECONDARY 1-1
77+25.19
RIM : 830.71
INV OUT:829.02 8" RCP

RELOCATED WALKING PATH

50' BUFFER

25' BUFFER

creek

JESTER CREEK COURT

EXISTING SECONDARY 27A
79+93.71
RIM : 836.78
INV OUT:835.26 8" RCP

PROPOSED MANHOLE 31
6 FT. DIA.
STA:79+64.08
RIM:828.50
INV IN:816.06 8" PVC Pipe
INV IN:813.63 36" FRPMP
INV IN:813.58 36" FRPMP
NORTHING: 1291705.4538
EASTING: 2237458.7191

EXISTING MANHOLE 28
80+42.31
RIM : 827.04
INV IN:813.55 30" RCP
INV OUT:813.55 30" RCP

EXISTING MANHOLE 27
79+09.96
RIM : 827.65
INV IN:813.62 30" RCP
INV IN:816.92 8" DIP
INV OUT:813.62 30" RCP

PROPOSED MANHOLE 32
6 FT. DIA.
STA:81+62.22
RIM:826.00
INV IN:813.88 36" FRPMP
INV OUT:813.83 36" FRPMP
NORTHING: 1291847.4067
EASTING: 2237322.5769

PROPOSED SECONDARY MANHOLE M
4 FT. DIA.
STA:79+65.08
RIM:827.06
INV IN:820.05 8" PVC
INV OUT:819.85 8" PVC Pipe
NORTHING: 1291726.6451
EASTING: 2237481.3643

PROPOSED SERVICE RECONNECT (T) 20LF 8" PVC

EXISTING 78.55' 8" DIP @ 10.80%

EXISTING SECONDARY STRUCTURE 28A
82+42.31
RIM : 830.41
INV OUT:829.22 8" PVC

EXISTING SECONDARY STRUCTURE 30B
84+35.86
RIM : 831.16
INV OUT:821.11 8" RCP

PROPOSED MANHOLE 33
6 FT. DIA.
STA:84+26.31
RIM:826.00
INV IN:814.19 36" FRPMP
INV IN:817.90 8" PVC
INV OUT:814.14 36" FRPMP
NORTHING: 1292101.2885
EASTING: 2237249.5658

PROPOSED TANGENT 33.78' 8" pvc @ 3.26%

251.24' 36"FRPMP @ 0.10%

STORM PIPE

EXISTING 20.10' of 8" PVC @ 5.27%

PROPOSED SERVICE RECONNECT (U) 20LF 8" PVC

PROPOSED SECONDARY MANHOLE M
4 FT. DIA.
STA:84+35.34
RIM:825.03
INV IN:819.10 8" PVC Pipe
INV OUT:818.90 8" PVC
NORTHING: 1292106.0860
EASTING: 2237283.3000

EXISTING SECONDARY STRUCTURE 30A
85+11.97
RIM : 820.94
INV IN:820.16 8" PVC
INV OUT:820.21 8" RCP

PROPOSED MANHOLE 34
6 FT. DIA.
STA:86+77.55
RIM:827.50
INV IN:814.49 36" FRPMP
INV OUT:814.44 36" FRPMP
NORTHING: 1292350.4704
EASTING: 2237281.9769

EXISTING MANHOLE 31
87+62.01
RIM : 822.00
INV IN:814.83 30" RCP
INV OUT:814.83 30" RCP

EXISTING MANHOLE 32
89+50.40
RIM : 830.05
INV IN:814.78 30" RCP
INV IN:814.78 30" RCP

EX 30" SS

SB26

SB27

SB28

PROPOSED 20 LF 36" FRPMP

CONSTRUCTION LIMITS

PIPE COLLAR

PROPOSED TEMPORARY DOGHOUSE MANHOLE
6 FT. DIA.
STA:89+96.66
RIM:825.05
INV OUT:815.08 30" RCP
NORTHING: 1292623.5484
EASTING: 2237442.8601

PROPOSED MANHOLE 35
6 FT. DIA.
STA:89+56.59
RIM:829.00
INV IN: 815.00 36" FRPMP
INV OUT:814.95 36" FRPMP
NORTHING: 1292597.0928
EASTING: 2237412.7439

EXISTING 30" RCP @ 0.22 %

TIE - IN #2
STATION 89+25 TO
STATION 89+76.59

EXISTING MANHOLE 33
RIM : 834.28
INV OUT:815.28 30" RCP

BATTLE CREEK ROAD

GRID NORTH

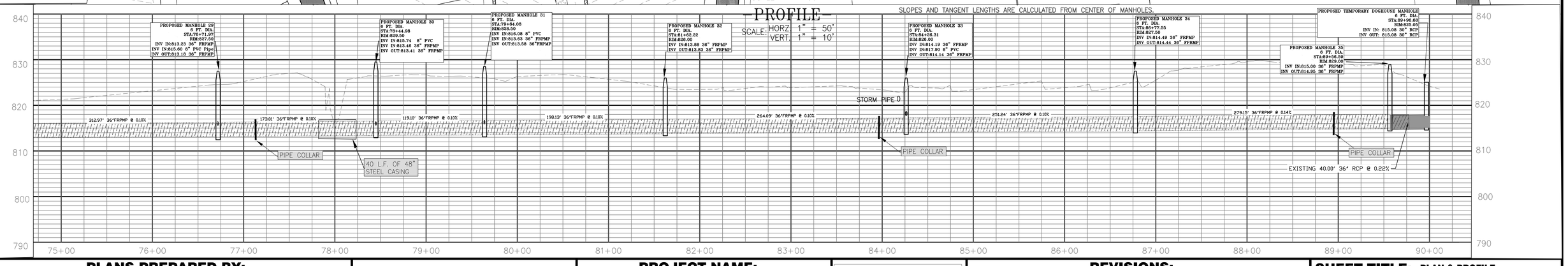
GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1" = 50'

811 Know what's below. Call before you dig.

-PLAN-
SCALE: 1" = 50'

-PROFILE-
SCALE: HORZ 1" = 50'
VERT. 1" = 10'

SLOPES AND TANGENT LENGTHS ARE CALCULATED FROM CENTER OF MANHOLES.



PLANS PREPARED BY:

CLAYTON COUNTY WATER AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: PLAN & PROFILE

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: P-6
	SCALE: 1"=50'

SHEET NUMBER 10 OF 21

LEGEND

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6G 6G	EXISTING GAS MAIN & SIZE	ES	EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	GBK	HAY BALE CHECK DAM
WV	EXISTING FIRE HYDRANT	VWV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	CRip	CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	SB	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	SCB	PIPE INLET SEDIMENT TRAP
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	SI	PIPE OUTLET TO FLAT AREA
TF	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DA1	DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			DTS DTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	SDI	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TV	TEMPORARY/PERMANENT VEGETATION COVER
HV	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	SC	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	CIP	CURB INLET SEDIMENT TRAP
DI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CW	CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TM	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV		
GV	EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN		
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GM	EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			12SD 12SD	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					DEMOLITION / GRAVEL FILL		
				SF	SILT FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		

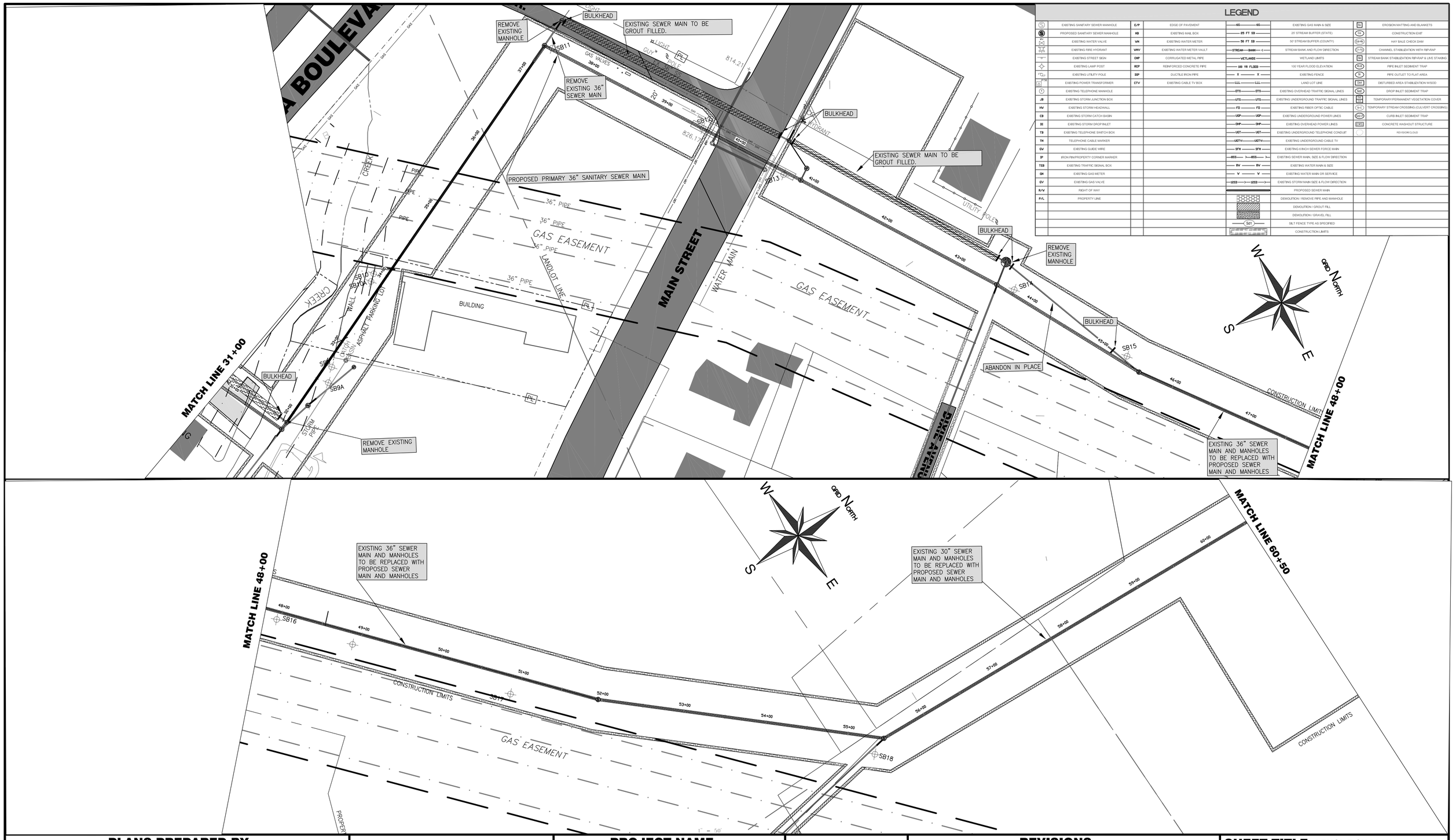
PLANS PREPARED BY:				
CLAYTON COUNTY Water AUTHORITY Providing Quality Water and Quality Services To Our Community	**CLAYTON COUNTY WATER AUTHORITY** **1600 BATTLE CREEK ROAD** **MORROW, GEORGIA 30260**	THESE DRAWINGS ARE THE PROPERTY OF CLAYTON COUNTY WATER AUTHORITY AND MAY NOT BE REPRODUCED, COPIED, OR OTHERWISE REUSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF CLAYTON COUNTY WATER AUTHORITY. THE ACCEPTANCE OF THESE DRAWINGS SHALL BE CONSTRUED AS AN ACCEPTANCE OF THE FOREGOING AGREEMENT.	**PROJECT NAME:** **JESTERS CREEK EAST PHASE ONE** **OUTFALL REPLACEMENT** LAND LOTS 207,208,209,210&211 DISTRICT 13 CLAYTON COUNTY, GEORGIA	**SEAL:**

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: DEMOLITION PLAN

DESIGN BY: CCWA	DATE:	1-15-19
DRAWN BY: JRM	JOB #:	81810
CHECKED BY:	DRAWING #:	P-7
	SCALE:	1"=50'
	SHEET NUMBER	11 OF 21



PLANS PREPARED BY:					
CLAYTON COUNTY Water AUTHORITY Providing Quality Water and Quality Services To Our Community	CLAYTON COUNTY WATER AUTHORITY 1600 BATTLE CREEK ROAD MORROW, GEORGIA 30260	THESE DRAWINGS ARE THE PROPERTY OF CLAYTON COUNTY WATER AUTHORITY AND MAY NOT BE REPRODUCED, COPIED, OR OTHERWISE REUSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF CLAYTON COUNTY WATER AUTHORITY. THE ACCEPTANCE OF THESE DRAWINGS SHALL BE CONSTRUED AS AN ACCEPTANCE OF THE FOREGOING AGREEMENT.	PROJECT NAME: JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE LAND LOTS 207,208,209,210&211 DISTRICT 13 CLAYTON COUNTY, GEORGIA	SEAL:	REVISIONS:

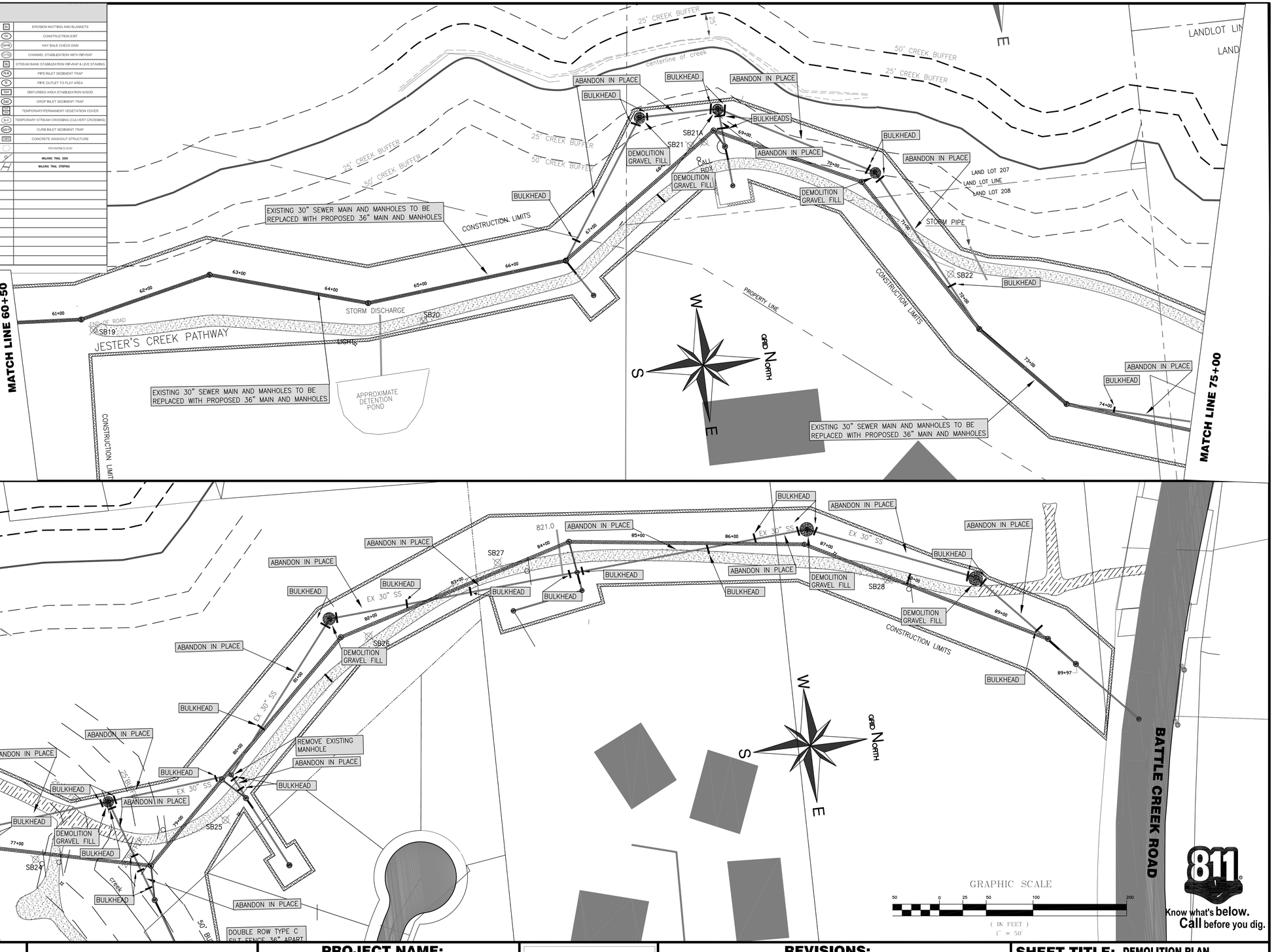
DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: DEMOLITION PLAN

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: P-8
	SCALE: 1"=50'
	SHEET NUMBER 12 OF 21

LEGEND

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6S 6S	EXISTING GAS MAIN & SIZE	EM	EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	HBD	HAY BALE CHECK DAM
WV	EXISTING FIRE HYDRANT	VWV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	CSR	CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	DNP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	SR	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	PSB	PIPE INLET SEDIMENT TRAP
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	PE	PIPE OUTLET TO FLAT AREA
PTR	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DSA	DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			OTS OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	DIS	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TPS	TEMPORARY/PERMANENT VEGETATION COVER
HW	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	SCC	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	CIS	CURB INLET SEDIMENT TRAP
DI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CWS	CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TM	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV		WALKING TRAIL SIGN
GW	EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN		WALKING TRAIL STRIPING
IP	IRON PIN/PROPERTY CORNER MARKER			SSS SSS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
TSB	EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE		
GM	EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			18SD 18SD	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					DEMOLITION / GRAVEL FILL		
				Silt	SILT FENCE TYPE A/S SPECIFIED		
					CONSTRUCTION LIMITS		



PLANS PREPARED BY:

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

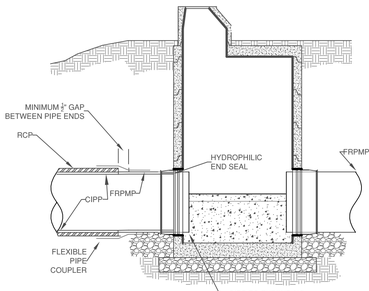
REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

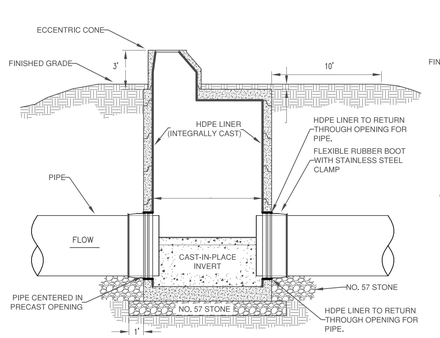
SHEET TITLE: DEMOLITION PLAN

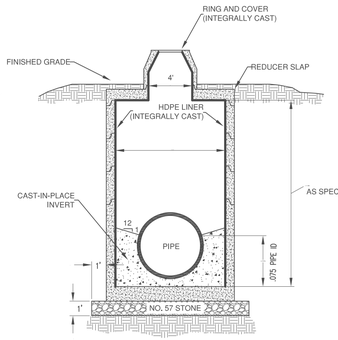
DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: P-9
	SCALE: 1"= 50'
	SHEET NUMBER 13 OF 21

811 Know what's below. Call before you dig.



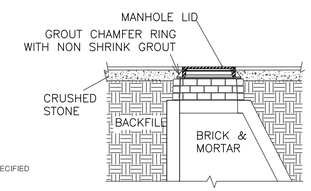
CIPP AT RCP/FRPMP TRANSITION DETAIL (TYPICAL)
N.T.S.





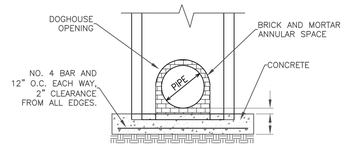
1. MAINTAIN 1/2" CLEARANCE BETWEEN PIPE AND CAST-IN PLACE INVERT AT ALL EDGES / SURFACES.
2. SHELF AND INVERT SHALL BE TROWEL FINISHED.
3. WHEN BRICK IS USED AS A FILLER, PROVIDE MINIMUM 2 INCHES GROUT OVER BRICK.
4. INSTALL 4' DIAMETER CONE SECTION ON THE UPSTREAM SIDE OF THE LARGE DIAMETER MANHOLE.

LARGE DIAMETER MANHOLE SECTION
N.T.S.

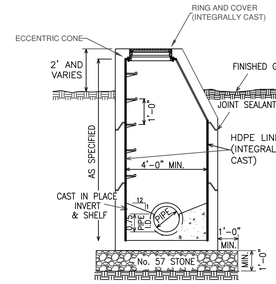


NOTES:
1. BRICKS SHALL BE STACKED NO MORE THAN FIVE COARSES.
2. BRICKS SHALL BE BEDDED AND JOINTED IN MORTAR PER CCWA SPECIFICATIONS.
3. CONTRACTOR SHALL APPLY A MINIMUM 1/2" THICK MORTAR COATING (SMOOTH FINISH) TO INTERIOR FACE OF BRICK.

TYPICAL MANHOLE IN PAVEMENT
N.T.S.



DOGHOUSE MANHOLE OVER EXISTING SEWER
N.T.S.



NOTES:
1. MAINTAIN 1/2" CLEARANCE BETWEEN PIPE AND CAST-IN PLACE INVERT AT ALL EDGES / SURFACES.
2. SHELF AND INVERT SHALL BE TROWEL FINISHED.
3. WHEN BRICK IS USED AS A FILLER, PROVIDE MINIMUM 2 INCHES GROUT OVER BRICK.

SMALL DIAMETER MANHOLE SECTION
N.T.S.

GENERAL NOTES

1. CONSTRUCTION OF THE SANITARY SEWER MAIN SHALL CONFORM TO THE CLAYTON COUNTY WATER AUTHORITY (CCWA) DOCUMENT TITLED "CONSTRUCTION SPECIFICATIONS FOR THE JESTERS CREEK EAST, OUTFALL REPLACEMENT PHASE ONE.
2. ALL WORK SHALL BE PERFORMED BY A GEORGIA LICENSED UTILITY CONTRACTOR.
3. CONTRACTOR SHALL HAVE A CLAYTON COUNTY WATER AUTHORITY APPROVED SET OF PLANS ON THE JOB SITE AT ALL TIMES.
4. CONTRACTOR SHALL NOTIFY THE CLAYTON COUNTY WATER AUTHORITY 48 HOURS PRIOR TO BEGINNING CONSTRUCTION, (770.961-2130)
5. CONTRACTOR SHALL VERIFY LOCATION AND DEPTHS OF ALL EXISTING UTILITIES IN THE PROJECT AREA PRIOR TO BEGINNING CONSTRUCTION.
6. CCWA SHALL OBTAIN ALL LAND DISTURBANCE ACTIVITY AND GRADING PERMITS.
7. ALL PERMANENT EASEMENTS AND CONSTRUCTION EASEMENTS SHALL BE OBTAINED BY CLAYTON COUNTY WATER AUTHORITY BEFORE CONSTRUCTION BEGINS.
8. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MATERIAL UNLESS OTHER WISE INDICATED IN THE CONTRACT DOCUMENTS.
9. CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY COMPANY FOR SECURING/STABILIZING UTILITY POLES.
10. ALL PETROLEUM PRODUCTS SHALL BE STORED AND USED IN AN AREA THAT PROVIDES A SECONDARY CONTAINMENT FEATURE, AND SHALL BE LOCATED IN AN AREA WITH THE LEAST FORESEEABLE IMPACT IF A CATASTROPHIC EVENT SHOULD OCCUR. EMERGENCY CONTACT NUMBERS AND PROCEDURES FOR SPILLS SHALL BE AVAILABLE ON-SITE.

SITE PREPARATION AND COMPLETION

1. PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITY, THE LIMITS OF LAND DISTURBANCE SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES RIBBONS, OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE ACTIVITY SHALL BE DEMARCATED FOR THE DURATION OF THE CONSTRUCTION ACTIVITY. NO LAND DISTURBANCE SHALL OCCUR OUTSIDE THE CONSTRUCTION LIMITS INDICATED ON THE APPROVED PLANS.
2. CONTRACTOR SHALL PERFORM ALL SURVEY WORK ON PROJECT.
3. CONTRACTOR SHALL, AT ALL TIMES, MAINTAIN FLAG MEN, SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER SAFETY DEVICES IN ACCORDANCE WITH THE DOT'S CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND AS MAY BE NECESSARY TO PROPERLY PROTECT TRAFFIC UPON THE ROAD AND TO WARN AND SAFEGUARD THE PUBLIC AGAINST INJURY OR DAMAGE.
4. MATERIAL STAGING AREA SHALL BE COORDINATED WITH CCWA.
5. THE 80-FOOT WIDE CONSTRUCTION LANE MAY BE CLEARED AT THE CONTRACTOR'S DISCRETION. A 20-FOOT WIDE LANE CENTERED OVER THE PIPE ALIGNMENT SHALL BE CLEARED OF ALL TREES AND DEBRIS.
6. TREES, ASPHALT, AND OTHER CONSTRUCTION DEBRIS SHALL BE REMOVED OFF SITE BY CONTRACTOR.
7. EXCAVATED SOIL NOT USED IN BACK FILL SHALL BE REMOVED OFF SITE BY CONTRACTOR.
8. REMOVE/REPLACE FENCING AS NECESSARY TO FACILITATE CONSTRUCTION. NO FENCING SHALL BE LEFT DOWN/NOT SECURED OVERNIGHT. ANY FENCING DAMAGED SHALL BE REPLACED WITH NEW TO MATCH EXISTING CONDITIONS AND DIMENSIONS.

EXCAVATION

1. CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLY AND REPLACEMENT OF ROCK EXCAVATION WITH SUITABLE SOIL. SUITABLE SOIL SHALL BE SOIL THAT DOES NOT CONTAIN ORGANIC DEBRIS LARGER/OR ROCK GREATER THAN 3 INCH IN SIZE.
2. TRENCH BOXES SHALL BE UTILIZED WHEN TRENCHING THROUGH RESIDENTIAL PROPERTY AND PUBLIC RIGHT OF WAYS.

INSTALLATION

1. PIPES SHALL BE LAID IN ACCORDANCE WITH APPLICABLE DETAILS. OVER EXCAVATION OR REMOVAL OF UNSUITABLE SOIL SHALL BE REPLACED WITH STONE..
2. PIPES SHALL BE LAID IN DRY CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEWATERING.
3. LAYING AND JOINTING OF PIPE AND FITTINGS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. DAMAGED PIPE AND FITTINGS SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AS REQUIRED BY THE CCWA. REPAIRS SHALL BE COMPLETED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
5. MANHOLE COVERS NOT LOCATED IN PAVEMENT SHALL BE INTEGRALLY CAST IN THE TOP CONE SECTION.
6. MANHOLES NOT LOCATED IN PAVED AREAS SHALL HAVE A RIM ELEVATION NOT LESS THAN 24 INCHES FROM FINISHED GROUND ELEVATION. UNLESS OTHERWISE NOTED.
7. MAINTAIN A 10-FOOT HORIZONTAL SEPARATION AND A 24-INCH VERTICAL SEPARATION BETWEEN ALL WATER AND SEWER LINES UNLESS INDICATED OTHERWISE.
8. INSTALL WARNING TAPE ABOVE PIPE AS INDICATED ON TYPICAL PIPE DETECTION INSTALLATION DETAIL.
9. FROM THE BOTTOM OF PIPE TO 6 PIPE DIAMETER, PIPE BEDDING MATERIAL SHALL BE SHOVEL SLICED/CONSOLIDATED USING ANY MEANS PRIOR TO PLACING SUBSEQUENT BACKFILL.
10. BACK FILL UNDERLYING PAVEMENT, DIRT AND GRAVEL ROADS AND ROAD RIGHT OF WAYS SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR ANALYSIS (ASTM D-698).
11. BACK FILL NOT UNDERLYING PAVED AREAS SHALL BE COMPACTED TO 90% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR ANALYSIS (ASTM D-698).
12. CREEK CROSSINGS SHALL BE ACCOMPLISHED USING MUD MATS WITH BOTTOM OF MAT ELEVATION ABOVE SURFACE WATER LEVEL.
13. ANY EXISTING ROAD SIGN REMOVED FOR CONSTRUCTION SHALL BE REPLACED BY THE END OF THE WORKING DAY.
14. THE CONTRACTOR SHALL NOT CLOSE OR BLOCK ANY HIGHWAY, STREET, OR ROADWAY WITHOUT FIRST OBTAINING PERMISSION FROM THE PROPER AUTHORITIES.
15. THE CONTRACTOR SHALL COORDINATE TEMPORARY RELOCATION OF ALL FENCES WITH PROPERTY OWNERS PRIOR TO CROSSING HOME OWNERS PROPERTY IF NECESSARY DUE TO PETS OR LIVESTOCK.
16. THE CONTRACTOR SHALL REPLACE ALL FENCE WITH EXISTING FENCE MATERIAL UNLESS EXISTING FENCE MATERIALS ARE DAMAGED. IF MATERIALS ARE DAMAGED, CONTRACTOR WILL BE RESPONSIBLE FOR REPLACING WITH NEW MATERIAL.

CONCRETE AND PAVEMENT

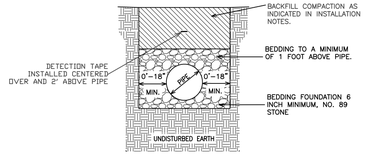
1. ALL CONCRETE SHALL HAVE A MINIMUM 3,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS UNLESS NOTED OTHERWISE.
2. SAW CUT ASPHALT AND CONCRETE PAVEMENT TO BE REMOVED. CONTRACTOR SHALL MATCH NEW PAVEMENT EDGES TO EXISTING PAVEMENT EDGES.
3. WIDTH OF PAVEMENT AND CURB REPLACEMENT SHALL NOT EXCEED 12 FEET UNLESS NOTED OTHERWISE.
4. WORK PERFORMED THROUGH AREAS OF PAVEMENT SHALL BE IMMEDIATELY COMPLETED TO GRADE WITH GRADED AGGREGATE BASE. PAVEMENT SHALL BE REPLACED NO LATER THAN THE DAY AFTER REMOVAL. TEMPORARY PAVEMENT REPLACEMENT MAY BE ALLOWED AT THE DISCRETION OF THE CCWA INSPECTOR. ANY IN-PLACE PAVEMENT, ADJACENT TO WORK AREA, THAT IS DAMAGED PRIOR TO PERMANENT REPLACEMENT SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR.
5. CONCRETE DRIVEWAY SHALL HAVE TOOLED OR SAW CUT CONTROL JOINTS SPACED AT NOT GREATER THAN 1.5 TIMES DRIVEWAY WIDTH. CONTROL JOINTS SHALL HAVE A MINIMUM DEPTH OF 1 INCH. SAW CUT CONTROL JOINT WITHIN 24 HOURS OF PLACING CONCRETE.
6. ALL DRIVEWAYS WHICH ARE OPEN CUT SHALL BE STABILIZED WITH GRADED AGGREGATE BASE (GAB) AND MAINTAINED UNTIL THE PAVEMENT IS REPLACED.
7. ALL CAST-IN-PLACE CONCRETE SHALL BE PLACED IN WOOD FORMS UNLESS NOTED OTHERWISE.
8. ALL FORM MATERIAL SHALL BE REMOVED PRIOR TO BACK FILL.
9. CONCRETE FORMS SHALL SUPPORT PLACED CONCRETE FOR A MINIMUM OF 12 HOURS UNLESS NOTED OTHERWISE.
10. CONCRETE TRUCK WASHOUT SHALL BE CONTAINED WITHIN TRENCH WITH NO MATERIAL LEAVING THE SITE OR IMPACTING VEGETATED OR NON-DISTURBED AREAS.

PIPE TESTING

1. TESTING SHALL BE PERFORMED WHEN ALL BACKFILL TO FINISHED AND COMPACTION ARE COMPLETE AND DEWATERING HAS BEEN DISCONTINUED FOR A MINIMUM 24 HOUR PERIOD AT THE LOCATION OF THE TEST.
2. AIR PRESSURE TESTING: GRAVITY SEWER PIPE SHALL BE SUBJECTED TO A LOW AIR PRESSURE TEST AT EACH JOINT. PIPE SHALL BE FREE OF DIRT AND DEBRIS PRIOR TO TESTING. THE INTERNAL AIR PRESSURE OF THE PIPE SHALL BE RAISED TO APPROXIMATELY FOUR (4) PSI. THE TEST SHALL BEGIN WHEN THE STABILIZED PRESSURE IS AT A MINIMUM OF 3.5 PSI. TEST SHALL BE CONSIDERED ACCEPTABLE WHEN AN AIR PRESSURE EQUIVALENT TO THE STABILIZED PRESSURE IS MAINTAINED FOR A PERIOD OF 5 MINUTES.
3. TELEVISING: GRAVITY SEWER PIPE SHALL BE TELEVISED TO ENSURE INTEGRITY. TEST SHALL BE CONSIDERED ACCEPTABLE WHEN THE TELEVISED PIPE DOES NOT REVEAL THE FOLLOWING: CRACKS IN PIPE, PROTRUDING GASKETS, LEAKING JOINTS, PIPE DEFORMATIONS, OTHER DEFICIENCIES.
4. DEFORMATION TESTING: GRAVITY SEWER PIPE SHALL BE TESTED FOR DEFORMATION OF THE PIPE. PIPE SHALL BE FREE OF DIRT AND DEBRIS. DEFORMATION MAY NOT BE MORE THAN 3% OF THE PIPE'S MANUFACTURED PUBLISHED DIAMETER. DEFORMATION SHALL BE DETERMINED BY USING A STANDARD MEASURING DEVICE THROUGHOUT THE ENTIRE LENGTH OF THE PIPE SEGMENTS. TEST SHALL BE CONSIDERED ACCEPTABLE WHEN MEASURED DEFORMATION IS LESS THAN 3% OF THE PIPE'S MANUFACTURED PUBLISHED INSIDE DIAMETER.

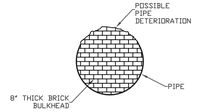
MANHOLE TESTING

1. VISUAL TESTING: EACH MANHOLE SHALL BE TESTED. MANHOLE TESTING SHALL BE PERFORMED BY VISUALLY OBSERVING FOR WATER INFILTRATION AT ALL MANHOLE SECTIONS, AT ALL MANHOLE / RUBBER BOOT SEAL CONNECTIONS. TESTING SHALL BE PERFORMED WHEN ALL BACKFILL TO FINISH GRADE AND COMPACTION ARE COMPLETE AND DEWATERING HAS BEEN DISCONTINUED FOR A MINIMUM 24 HOUR PERIOD AT THE LOCATION OF THE TEST AND PRIOR TO SEALING HDPE LINER JOINTS. TEST SHALL BE CONSIDERED ACCEPTABLE WHEN NO WATER INFILTRATION IS OBSERVED AT ANY DESCRIBED OBSERVATION POINTS.

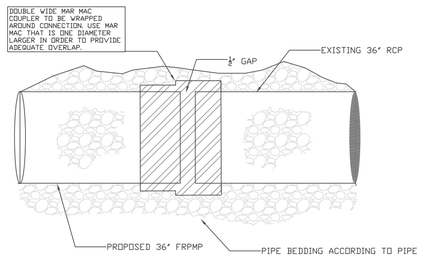


NOTE: 1) UNSUITABLE SOILS ENCOUNTERED IN BOTTOM OF EXCAVATED TRENCH SHALL BE EXCAVATED & REPLACED WITH NO. 57 STONE. ONLY SUITABLE SOIL SHALL BE USED AS BACKFILL.

TYPICAL SANITARY SEWER PIPE BEDDING
N.T.S.



BULKHEAD FOR ABANDONED PIPE
N.T.S.



COUPLING DETAIL
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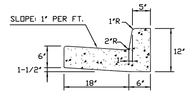

TYPICAL CURB AND GUTTER
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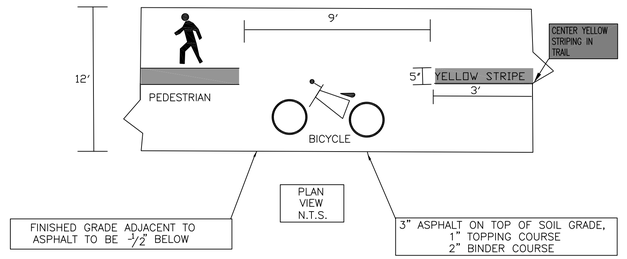

WALKING TRAIL REPLACEMENT DETAIL
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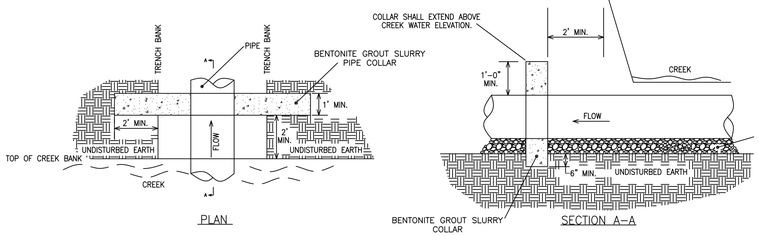

TYPICAL PIPE COLLAR
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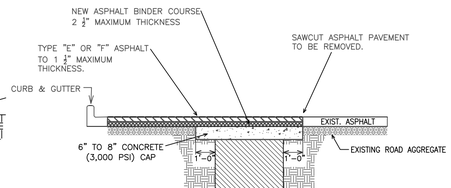

TYPICAL ASPHALT CROSSING
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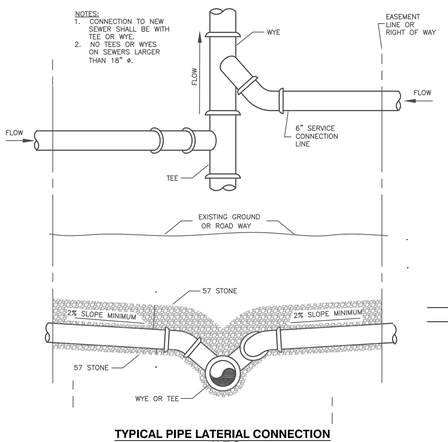

TYPICAL PIPE LATERIAL CONNECTION
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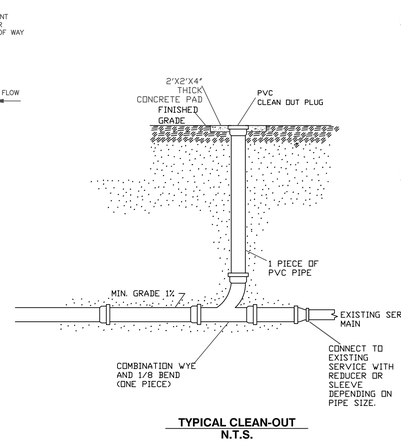
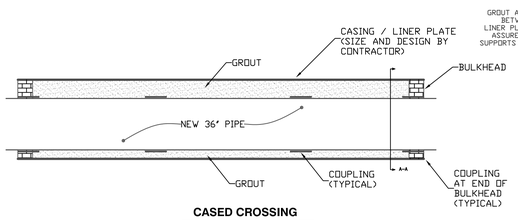


TYPICAL CLEAN-OUT
N.T.S.



CASED CROSSING
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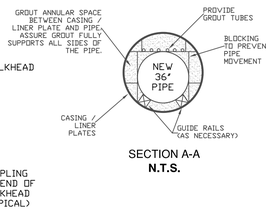
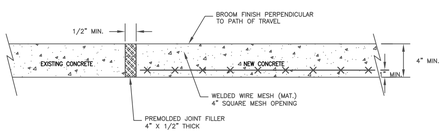


SECTION A-A
N.T.S.



TYPICAL CONCRETE PAVEMENT DETAIL
N.T.S.

Know what's **below.** **Call** before you dig.

PLANS PREPARED BY: CCWA

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

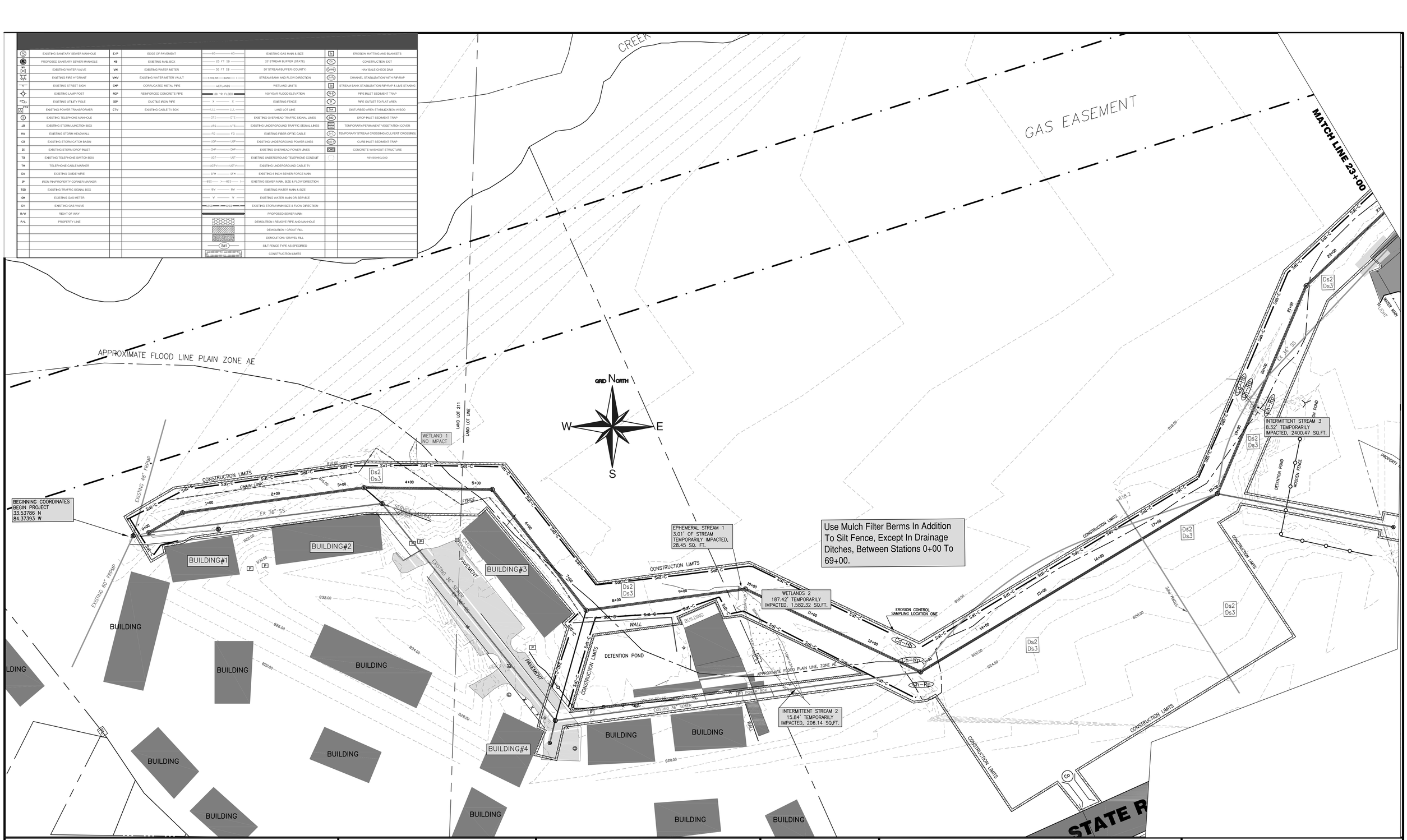
DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: CONSTRUCTION DETAILS

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: P-10
	SCALE: N.T.S.

SHEET NUMBER 14 OF 21

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6"G 6"G	EXISTING GAS MAIN & SIZE	ES	EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25' FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50' FT SB	50' STREAM BUFFER (COUNTY)	(S-HB)	HAY BALE CHECK DAM
WV FIRE	EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	(S-CS)	CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	SS	STREAM BANK STABILIZATION RIPRAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	(S-I)	PIPE INLET SEDIMENT TRAP
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	(S-O)	PIPE OUTLET TO FLAT AREA
PTR	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DAS	DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			DTS DTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	(S-DI)	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TPS	TEMPORARY/PERMANENT VEGETATION COVER
HW	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	(S-CC)	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	(S-CI)	CURB INLET SEDIMENT TRAP
DI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CWS	CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TM	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV		
GV	EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN		
IP	IRON PIN/PROPERTY CORNER MARKER			BSS BSS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
TSB	EXISTING TRAFFIC SIGNAL BOX			8V 8V	EXISTING WATER MAIN & SIZE		
GM	EXISTING GAS METER			V V	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			24SD 24SD	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					DEMOLITION / GRAVEL FILL		
				Silt	SILT FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		



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CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

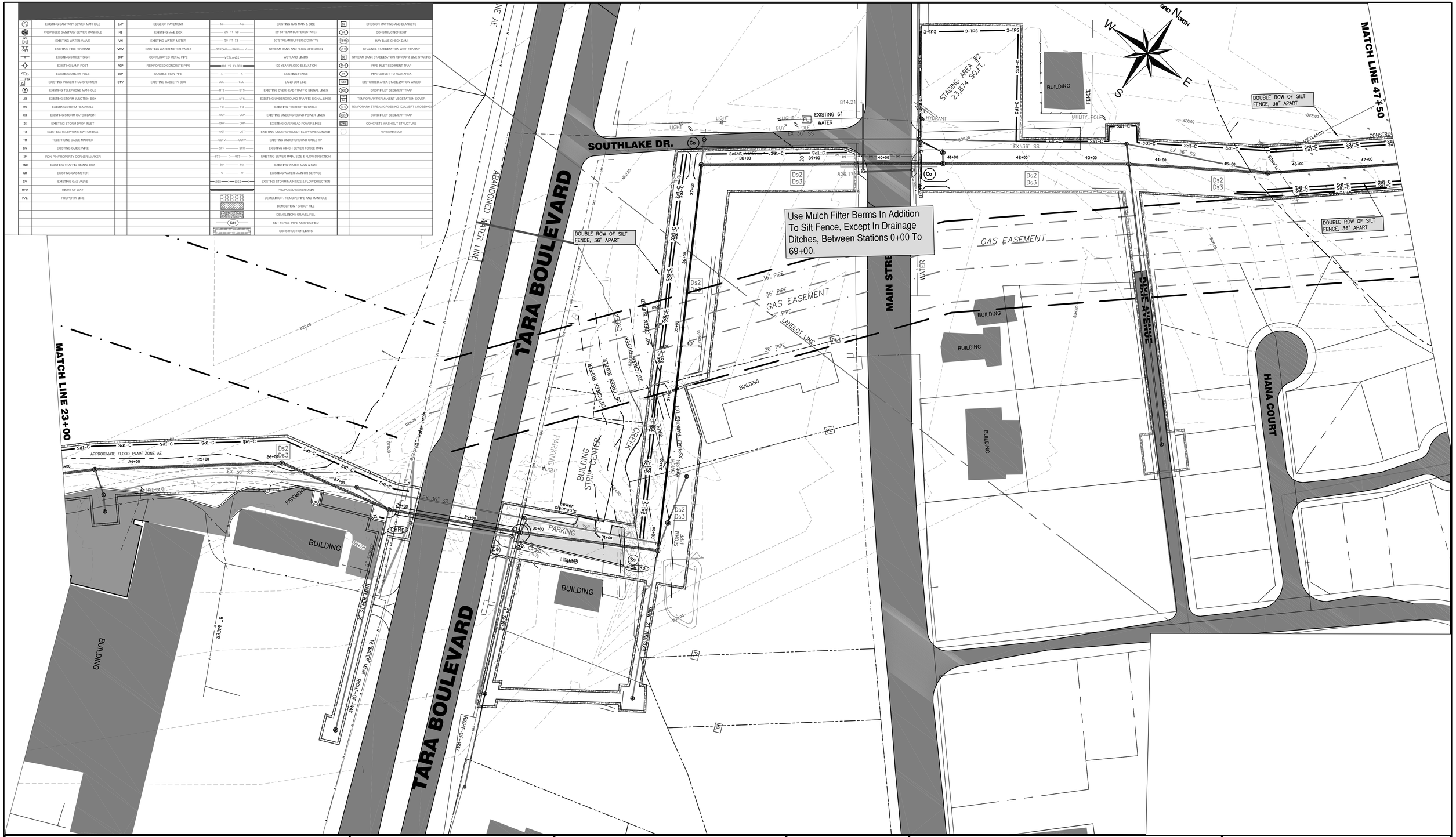
REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: EROSION CONTROL PLAN

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: ES-1
	SCALE: 1"=60'
	SHEET NUMBER 15 OF 21

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6G 6G	EXISTING GAS MAIN & SIZE	EM	EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	CHB	HAY BALE CHECK DAM
WV	EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	CRIP	CHANNEL STABILIZATION WITH RIPRAP
SIGN	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	SRIP	STREAM BANK STABILIZATION RIPRAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	PSB	PIPE INLET SEDIMENT TRAP
UP	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	PE	PIPE OUTLET TO FLAT AREA
T 718 A	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DSA	DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			DTS DTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	DIB	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TP	TEMPORARY/PERMANENT VEGETATION COVER
HW	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	SCC	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	CIB	CURB INLET SEDIMENT TRAP
DI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CWS	CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TM	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV		
GW	EXISTING GUIDE WIRE			STM STM	EXISTING 6 INCH SEWER FORCE MAIN		
IP	IRON PIN/PROPERTY CORNER MARKER			BSS BSS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
TSB	EXISTING TRAFFIC SIGNAL BOX			8W 8W	EXISTING WATER MAIN & SIZE		
GM	EXISTING GAS METER			W W	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			STM STM	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					DEMOLITION / GRAVEL FILL		
				Sd1	SILT FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		



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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

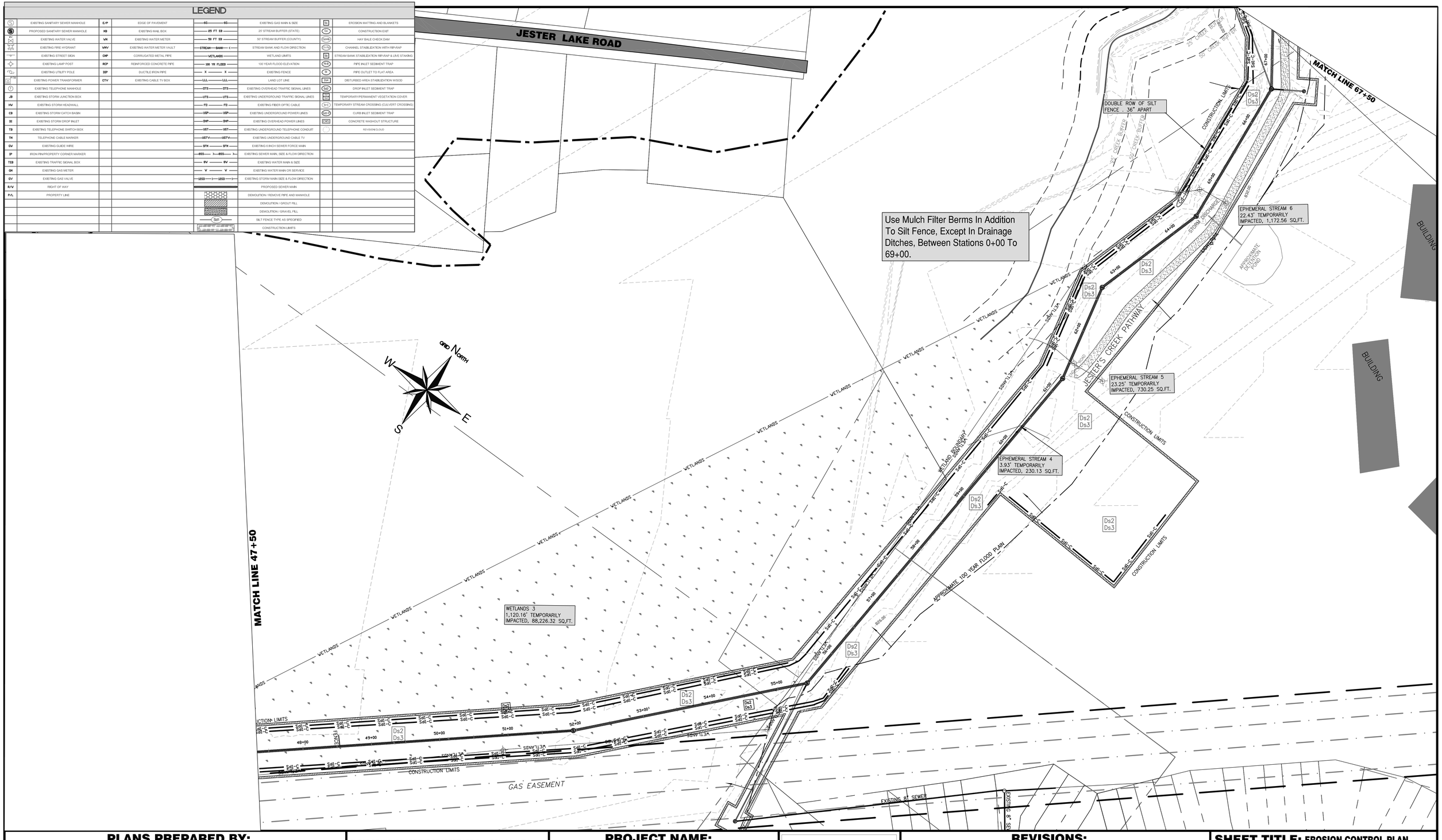
DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: EROSION CONTROL PLAN

DESIGN BY: CCWA	DATE:	1-15-19
DRAWN BY: JRM	JOB #:	81810
CHECKED BY:	DRAWING #:	ES-2
	SCALE:	1"=60'
	SHEET NUMBER	16 OF 21

LEGEND

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	6G 6G	EXISTING GAS MAIN & SIZE	EB	EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
W	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	(C+HB)	HAY BALE CHECK DAM
WV	EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	(C+RS)	CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	SB	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	PIB	PIPE INLET SEDIMENT TRAP
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	PO	PIPE OUTLET TO FLAT AREA
TPE	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DSA	DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			OTS OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	DIB	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TV	TEMPORARY/PERMANENT VEGETATION COVER
HV	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	(SC)	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	GIB	CURB INLET SEDIMENT TRAP
SI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CW	CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TM	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV		
GV	EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN		
IP	IRON PIN/PROPERTY CORNER MARKER			SS SS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
TSB	EXISTING TRAFFIC SIGNAL BOX			8V 8V	EXISTING WATER MAIN & SIZE		
GM	EXISTING GAS METER			V V	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			12SS 12SS	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GRAVEL FILL		
				SB7	SB,7 FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		



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PROJECT NAME:

JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: EROSION CONTROL PLAN

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: ES-3
	SCALE: 1"=60'
	SHEET NUMBER 17 OF 21

Use Mulch Filter Berms In Addition To Silt Fence, Except In Drainage Ditches, Between Stations 0+00 To 69+00.

MATCH LINE 67+50

MATCH LINE 75+00

MATCH LINE 60+50

LAND LOT 178

LANDLOT LINE

LAND LOT 177

LAND LOT 207

LAND LOT LINE

LAND LOT 208

50' CREEK BUFFER

25' CREEK BUFFER

ChRp

STORM PIPE

100 YEAR FLOOD PLAIN LINE

CONSTRUCTION LIMITS

PROPERTY LINE

APPROXIMATE FLOOD PLAIN LINE, ZONE AE

30" SEWER MAIN

EX 30" SS

PERENNIAL STREAM 7
52.67' TEMPORARILY
IMPACTED, 2,146.35 SQ.FT.

DOUBLE ROW TYPE C
SILT FENCE 36" APART

50' BUFFER

25' BUFFER

ENDING COORDINATES
END PROJECT
33.55347 N
84.36099 W

STADIUM COURT

JESTER CREEK COURT

TARA ROAD

BATTLE CREEK ROAD

LEGEND

S	EXISTING SANITARY SEWER MANHOLE	E/P	EDGE OF PAVEMENT	65 65	EXISTING GAS MAIN & SIZE	EM	EROSION MATTING AND BLANKETS
S	PROPOSED SANITARY SEWER MANHOLE	MB	EXISTING MAIL BOX	25 FT SB	25' STREAM BUFFER (STATE)	CE	CONSTRUCTION EXIT
WV	EXISTING WATER VALVE	WM	EXISTING WATER METER	50 FT SB	50' STREAM BUFFER (COUNTY)	SCHB	HAY BALE CHECK DAM
WMV	EXISTING FIRE HYDRANT	WMV	EXISTING WATER METER VAULT	STREAM BANK	STREAM BANK AND FLOW DIRECTION	CLRip	CHANNEL STABILIZATION WITH RIP-RAP
	EXISTING STREET SIGN	CMP	CORRUGATED METAL PIPE	WETLANDS	WETLAND LIMITS	SBL	STREAM BANK STABILIZATION RIP-RAP & LIVE STAKING
	EXISTING LAMP POST	RCP	REINFORCED CONCRETE PIPE	100 YR FLOOD	100 YEAR FLOOD ELEVATION	RIB	PIPE INLET SEDIMENT TRAP
	EXISTING UTILITY POLE	DIP	DUCTILE IRON PIPE	X X	EXISTING FENCE	O	PIPE OUTLET TO FLAT AREA
TP	EXISTING POWER TRANSFORMER	CTV	EXISTING CABLE TV BOX	LLL LLL	LAND LOT LINE	DM	DISTURBED AREA STABILIZATION W/SOD
T	EXISTING TELEPHONE MANHOLE			OTS OTS	EXISTING OVERHEAD TRAFFIC SIGNAL LINES	SID	DROP INLET SEDIMENT TRAP
JB	EXISTING STORM JUNCTION BOX			UTS UTS	EXISTING UNDERGROUND TRAFFIC SIGNAL LINES	TSP PSP	TEMPORARY/PERMANENT VEGETATION COVER
HW	EXISTING STORM HEADWALL			FO FO	EXISTING FIBER OPTIC CABLE	Sr-C	TEMPORARY STREAM CROSSING (CULVERT CROSSING)
CB	EXISTING STORM CATCH BASIN			UGP UGP	EXISTING UNDERGROUND POWER LINES	CIS	CURB INLET SEDIMENT TRAP
DI	EXISTING STORM DROP INLET			OHP OHP	EXISTING OVERHEAD POWER LINES	CWS	CONCRETE WASHOUT STRUCTURE
TB	EXISTING TELEPHONE SWITCH BOX			UGT UGT	EXISTING UNDERGROUND TELEPHONE CONDUIT		REVISION CLOUD
TM	TELEPHONE CABLE MARKER			UGTV UGTV	EXISTING UNDERGROUND CABLE TV	Sr-C	Temporary Culvert stream crossing
GV	EXISTING GUIDE WIRE			SFM SFM	EXISTING 6 INCH SEWER FORCE MAIN		
IP	IRON PIN/PROPERTY CORNER MARKER			SSS SSS	EXISTING SEWER MAIN, SIZE & FLOW DIRECTION		
TSB	EXISTING TRAFFIC SIGNAL BOX			8V 8V	EXISTING WATER MAIN & SIZE		
GM	EXISTING GAS METER			V V	EXISTING WATER MAIN OR SERVICE		
GV	EXISTING GAS VALVE			SD12 SD12	EXISTING STORM MAIN SIZE & FLOW DIRECTION		
R/W	RIGHT OF WAY				PROPOSED SEWER MAIN		
P/L	PROPERTY LINE				DEMOLITION / REMOVE PIPE AND MANHOLE		
					DEMOLITION / GROUT FILL		
					DEMOLITION / GRAVEL FILL		
				SIF	SILT FENCE TYPE AS SPECIFIED		
					CONSTRUCTION LIMITS		

811 Know what's below. Call before you dig.

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1" = 60'

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JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE

LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: EROSION CONTROL PLAN

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: ES-4
	SCALE: 1"= 60'

SHEET NUMBER 18 OF 21

TEMPORARY VEGETATION COVER

1/ Temporary cover crops are very competitive and will crown out perennials if seeded too heavily.
2/ Reduce seeding rates by 50% when drilled.
3/ PLS is an abbreviation for Pure Live Seed.
Chart represents the Southern Piedmont Major Land Resource Area of Georgia.

SPECIES	BROADCAST RATES 2/ PER ACRE	BROADCAST RATES 2/ PER 1000 SQ FT	PLANTING DATES (THICK LINES INDICATE OPTIMAL DATES, NARROW LINES INDICATE PERMISSABLE DATES) J F M A M J J A S O N D
LESPEDEZA, ANNUAL (Lespedeza striata)	40 LB.	0.9 LB.	
ALONE			
IN MIXTURES	10 LBS.	0.2 LB.	
LOVEGRASS, WEEPING (Eragrostis curvula)	4 LBS.	0.1 LB.	
ALONE			
IN MIXTURES	2 LBS.	0.05 LBS.	
MILLET, BROWNTOP (Panicum fasciculatum)	40 LBS.	0.9 LB.	
ALONE			
IN MIXTURES	10 LBS.	0.2 LB.	
MILLET, PEARL (Pennisetum glaucun)			
ALONE	50 LBS.	1.1 LB.	
RYEGRASS, ANNUAL (Lolium temulentun)			
ALONE	40 LBS.	0.9 LB.	
WHEAT (Triticum aestivun)	3 BU. (180 LBS.)	4.1 LBS.	
ALONE			
IN MIXTURES	1/2 BU. (30 LBS.)	0.7 LB.	

Ds2

PERMANENT VEGETATION COVER

1/ Reduce seeding rates by 50% when drilled.
2/ PLS is an abbreviation for Pure Live Seed.
Chart represents the Southern Piedmont Major Land Resource Area of Georgia.

SPECIES	BROADCAST RATES 1/ PER ACRE	BROADCAST RATES 1/ PER 1000 SQ FT	PLANTING DATES (THICK LINES INDICATE OPTIMAL DATES, NARROW LINES INDICATE PERMISSABLE, BUT MARGINABLE DATES) J F M A M J J A S O N D
BERMUDA, COMMON (Cynodon dactylon)Hulled seed			
ALONE	10 LBS.	0.2 LB.	
WITH OTHER PERENNIALS	6 LBS.	0.1 LB.	
BERMUDA, COMMON (Cynodon dactylon)Unhulled seed			
WITH TEMP. COVER	10 LBS.	0.2 LB.	
WITH OTHER PERENNIALS	6 LBS.	0.1 LB.	
BERMUDA SPRIGS (Cynodon dactylon)Unhulled seed	40 CU. FT.	0.9 CU. FT	
COASTAL, COMMON, OR TIFT 44	SOD PLUGS 3' X 3'	SOD PLUGS 3' X 3'	
CENTIPEDE (Eremochlos ophiuroides)	BLOCK SOD ONLY		
CROWN VETCH (Coronilla varia)			
WITH WINTER ANNUALS OR COOL SEASON GRASSES	15 LBS.	0.3 LB.	
FESCUE, TALL (Festuca arundinacea)			
ALONE	50 LBS.	1.1 LB.	
WITH OTHER PERENNIALS	30 LBS.	0.7 LB.	
LOVEGRASS, WEEPING (Eragrostis curvula)			
ALONE	4 LBS.	0.1 LB.	
WITH OTHER PERENNIALS	2 LBS.	0.05 LB.	

Ds3

FERTILIZER REQUIREMENTS

1/ Apply in spring following seeding.
2/ Apply in split applications when high rates are used.
3/ Apply in 3 split applications.
4/ Apply when plants are pruned.
5/ Apply to grass species only.
6/ Apply when plants grow to a height of 2 to 4 inches.

TYPE OF SPECIES	YEAR	ANALYSIS OR EQUIVALENT N-P-K	RATE	N TOP DRESSING RATE
1. Cool season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 lbs./ac. 1000 lbs./ac. 400 lbs./ac.	50-100 lbs./ac. 1/ 2/ - 30
2. Cool season and legumes	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500 lbs./ac. 1000 lbs./ac. 400 lbs./ac.	0-50 lbs./ac. 1/ - -
3. Ground covers	First Second Maintenance	10-10-10 10-10-10 10-10-10	1300 lbs./ac. 3/ 1300 lbs./ac. 3/ 1100 lbs./ac.	- - -
4. Temporary cover crops seeded alone	First	10-10-10	500 lbs./ac.	30 lbs./ac. 5/
5. Warm season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 lbs./ac. 800 lbs./ac. 400 lbs./ac.	50-100 lbs./ac. 2/ 6/ 50-100 lbs./ac. 2/ 30 lbs./ac.
5. Warm season grasses and legumes	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500 lbs./ac. 1000 lbs./ac. 400 lbs./ac.	50 lbs./ac. 6/

Ds3

GEORGIA
UNIFORM CODING SYSTEM
FOR SOIL EROSION AND SEDIMENT CONTROL PRACTICES
GEORGIA SOIL AND WATER CONSERVATION COMMISSION

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	"GSP" ILLUSTRATION	DESCRIPTION
CD	CHANNEL DIVERSION		6.20	A small temporary berm or dam constructed across a swale or drainage way to divert runoff to a stabilized outlet.
CS	CHANNEL STABILIZATION		6.30	Improving, constructing or stabilizing an open channel, using vegetative measures.
CW	CONSTRUCTION WATERWAY		6.40	A vegetated stable and protected waterway lined with erosion resistant vegetation and constructed to convey runoff from terraces, diversions, or other water management systems.
CP	CONSTRUCTION ENTRANCE PROTECTION		6.50	Stone placed at the point of ingress or egress of construction site (including access roads), to reduce or eliminate the tracking of sediment onto off-site vehicles transportation routes.
CR	CROSS DRAINAGE		6.60	A temporary channel constructed to convey flow around a construction site while it is being developed and before it is stabilized.
DI	DIVERSION		6.70	An earth channel or ridge located above, below or across a slope to divert runoff for use as a temporary or permanent structure.
DW	DRAINAGE WELL		6.80	Typically consist of "drop inlets," "risers" or other material designed to safely conduct water from the surface of the ground to a lower elevation.
DC	DUMPSTER CONTAINMENT		6.90	A paved waste area, enclosed (roofed) or covered with a tarp, to contain dry waste and prevent surface runoff when it rains.
F	FLUME		7.00	A temporary stone lined or paved channel for conveying water down steep slopes.
GW	GRADE WATERWAY		7.10	Rock filter baskets which are basket-shaped wire gabion forming and stabilizing a waterway.
GB	GRADE BANK		7.20	Permanent earthen ridges located to protect channels or waterways where channels flow from steep slopes to flat areas, or to direct water to form gullies.
LD	LEVEL DIVERSION		7.30	A structure to convert concentrated flow of water to sheet flow and to spread it out uniformly over undisturbed soil or undisturbed vegetation.
PW	PAVED FLUME		7.40	A permanent or temporary stone lined open channel used where velocity is high or drainageway.
RW	RIPRAP		7.50	A well installed to stabilize soil and fill areas with angular stone, used where other forms of erosion control are difficult to apply.
RC	ROCK CHECK DAM		7.60	A small temporary dam constructed across a drainage ditch, channel or swale to reduce velocity of concentrated flow and to promote sediment deposition. Sediment trapped behind the dam can usually be removed and disposed of.
SD	SURFACE DRAIN		7.70	A trench or pipeline installed to remove excess surface water from the surface of the ground.
SU	SURFACE ROUGHENING		7.80	Surface roughening by tracking, stair-stepping, or grooving.
TP	TEMPORARY PIPE		7.90	A temporary pipeline used to convey water across areas where permanent pipe is not yet installed.
TS	TEMPORARY SLOPE DRAIN		8.00	A temporary device that conveys water from the top to the bottom of a slope. Usually consists of flexible tubing or conduit.
TR	TEMPORARY STREAM CROSSING		8.10	A temporary structure placed in a stream to provide a dry crossing for construction equipment.
VS	VEGETATIVE SLOPE STABILIZATION		8.20	The use of readily available native plant species, adapted to the climate, soil characteristics, on the project, or mulches and geotextiles to stabilize slopes.
WS	WATER SPREADER		8.30	A protective grading used to prevent erosion and provide temporary irrigation to promote vegetation on steep slopes, where trees, or shrubs.
WT	WATTLING		8.40	Fabricated sediment barriers used for diversions, fillslopes, berms, dikes or similar functions.

VEGETATIVE PRACTICES

CODE	PRACTICE	DETAIL	"GSP" ILLUSTRATION	DESCRIPTION
BF	BATCH DIKE		6.10	Strip of established original vegetation, a vegetative buffer strip established or planted in the natural direction of runoff flow, to remove sediment from runoff.
Cs	CACTUS AND SIMILAR PLANTINGS		6.11	Planting vegetation on slopes that are steeper than 3:1 and require special techniques.
Ds1	ASPHALT EMULSION (TACK COAT)		6.12	Establishing temporary protection for disturbed areas by applying asphalt emulsion and binder to suitable grading stream to produce an erosion resistant surface.
Ds2	ASPHALT EMULSION (MULCH)		6.13	Intercepting a temporarily vegetative cover with asphalt emulsion and binder.
Ds3	ASPHALT EMULSION (PENETRATING)		6.14	Establishing a permanent vegetative cover with asphalt emulsion and binder.
Ds4	ASPHALT EMULSION (SURFACE TREATMENT)		6.15	A permanent vegetative cover using tack or binder and a layer of crushed stone.
Dv	DUST CONTROL		6.16	Controlling surface and air movement of dust on construction site, roadways and borrow areas.
FSC	FLOCCULANTS ON SOIL		6.17	Substance formulated to assist in the settling of suspended soil particles in runoff water.
Ss	SLOPE STABILIZATION		6.18	The use of readily available native plant species, adapted to the climate, soil characteristics, on the project, or mulches and geotextiles to stabilize slopes.
Sv	SLOPE VEGETATION		6.19	A protective grading used to prevent erosion and provide temporary irrigation to promote vegetation on steep slopes, where trees, or shrubs.
Tm1	TEMPORAL MULCH		6.21	Fabricated sediment barriers used for diversions, fillslopes, berms, dikes or similar functions.

GSWCC (Amended 1 2015)

GRADED RIP-RAP STONE

1. GEORGIA DEPARTMENT OF TRANSPORTATION

D.O.T. NO. 1	SIZE INCHES (SQ. OPENING) MAX.	AVG. 2	MIN.	COMMON USES
TYPE 3	12	9	5	CREEK BANKS PIPE OUTLETS LAKES & SHORELINES
TYPE 1	24	12	7	RIVERS

TABLE C-3

GRADED RIP-RAP STONE

1. NATIONAL STONE ASSOCIATION
2. AT LEAST 50% OF THE INDIVIDUAL STONE PARTICLES MUST BE EQUAL OR LARGER THAN THIS LISTED SIZE.

FLOW VELOCITY (FT./SEC.)	N.S.A. NO. 1	SIZE INCHES (SQ. OPENING) MAX.	AVG. 2	MIN.	FILTER STONE N.S.A. NO. 1
2.5	R-1	1 1/2	3/4	NO. 8	FS-1
4.5	R-2	3	1 1/2	1	FS-1
6.5	R-3	6	3	2	FS-2
9.0	R-4	12	6	2	FS-2
11.5	R-5	18	9	5	FS-2
13.0	R-6	24	12	7	FS-3
14.5	R-7	30	15	12	FS-3

TABLE C-1

GENERAL NOTES
1. A COPY OF THE APPROVED LAND DISTURBANCE PLAN AND PERMIT SHALL BE PRESENT ON THE SITE WHENEVER WORK IS IN PROGRESS.
2. EROSION AND SEDIMENT CONTROL SHALL BE THE CONTRACTOR'S RESPONSIBILITY FOR COMPLIANCE, INSTALLATION, MAINTENANCE AND REMOVAL AS REQUIRED BY THE STATE OF GEORGIA MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA 2016 EDITION AS PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THESE SPECIFICATIONS PRIOR TO ANY CONSTRUCTION ACTIVITIES. THE INSTALLATION OF THE REQUIRED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS A FIRST STEP IN CONSTRUCTION.
3. **THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.**
4. FAILURE TO INSTALL, OPERATE AND/OR MAINTAIN ALL EROSION CONTROL MEASURES SHALL BE JUSTIFICATION TO STOP CONSTRUCTION ON THE JOB SITE UNTIL SUCH MEASURES ARE CORRECTED IN ACCORDANCE WITH THE APPROVED PLANS OR AS DIRECTED BY THE ENGINEER.

SITE PREPARATION
1. PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITY, THE LIMITS OF LAND DISTURBANCE SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES RIBBONS, OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE ACTIVITY SHALL BE DEMARCATED FOR THE DURATION OF THE CONSTRUCTION ACTIVITY. NO LAND DISTURBANCE SHALL OCCUR OUTSIDE THE APPROVED LIMITS INDICATED ON THE APPROVED PLANS.
2. MATERIAL STAGING AREA SHALL BE ENCOMPASSED WITH REFERENCED SILT FENCE.

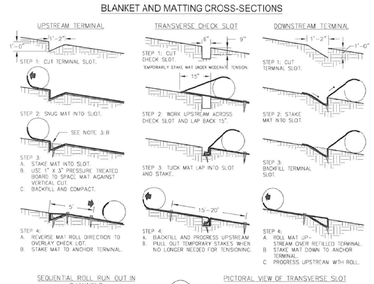
DURING CONSTRUCTION
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION CONTROL CREATED BY DRAINAGE PATTERNS AT VARIOUS STAGES DURING CONSTRUCTION. EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES.
2. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
3. THE LOCATION OF SOME EROSION CONTROL DEVICES MAY BE ALTERED FROM THAT SHOWN ON PLANS AS APPROVED BY THE DESIGN ENGINEER AND CLAYTON COUNTY LAND DEVELOPMENT.
4. CONSTRUCTION EXITS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT OF WAY. THIS MAY REQUIRE PERIODIC DRESSINGS WITH STONE, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEAN OUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLE ON SITE ONTO PUBLIC ROADWAY OR INTO STORM DRAIN SHALL BE REMOVED IMMEDIATELY.
5. CONTROL DUST USING WATER OR OTHER METHODS AS REQUIRED TO PREVENT DUST FROM BEING A NUISANCE TO THE PUBLIC AND CONCURRENT WITH ON SITE WORK.
6. DISTURBED SOIL SHALL BE STABILIZED WITH EROSION AND SEDIMENT CONTROL MEASURES EACH DAY AND PRIOR TO ANY RAIN EVENT AS FOLLOWS: (A) DISTURBED SOIL SHALL BE RETURNED TO FINAL GRADE. (B) EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED. (C) GRADED SOIL SHALL BE TREATED WITH LIME AND FERTILIZER. (D) APPLY TEMPORARY AND/OR PERMANENT VEGETATION.
7. STRAW MULCHING SHALL BE USED WITH TEMPORARY AND PERMANENT VEGETATION SEEDING. STRAW SHALL BE FREE OF WEED SEEDS AND SPREAD AT A RATE OF 90 POUNDS PER 1,000 SQUARE FEET.
8. THE CONTRACTOR SHALL INSTALL MATTING AND BLANKETS WITHIN ALL DRAINAGE DITCHES UNLESS NOTED OTHERWISE.
9. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED BY THE CERTIFIED INSPECTOR AT THE END OF EACH DAYS WORK AND AT THE END OF EACH AND EVERY RAIN EVENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND/OR REPLACEMENT OF ANY FAILED OR INADEQUATELY FUNCTIONING SEDIMENT CONTROL DEVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE OF EROSION AND SEDIMENT CONTROL DEVICES.
10. THE CONTRACTOR SHALL REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE BARRIER.
11. ALL SILTS AND/OR SEDIMENT REMOVED FROM THE EROSION SEDIMENT CONTROL DEVICES SHALL BE DISPOSED OF ONSITE IN SUCH A MANNER AS TO PREVENT SAID SILTS AND/OR SEDIMENTS FROM REENTERING THE CONTROL DEVICES AND/OR EXITING THE SITE THROUGH THE STORM DRAINAGE SYSTEMS AND/OR SURFACE DRAINAGE.
12. EROSION CONTROL MEASURES WILL BE MAINTAINED UNTIL ALL DISTURBED SOIL WITHIN THE CONSTRUCTION AREA HAS BEEN COMPLETELY STABILIZED WITH PERMANENT VEGETATION AND ALL ROADS/DRIVEWAYS HAVE BEEN PAVED.

SITE COMPLETION
1. FINAL STABILIZATION SHALL BE WITH SAME VEGETATION AS EXISTING. UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES WILL BE CONSIDERED ACCEPTABLE WHEN 100% OF THE SOIL SURFACE IS UNIFORMLY COVERED IN PERMANENT VEGETATION WITH A DENSITY OF 70% OR GREATER, OR EQUIVALENT PERMANENT STABILIZATION MEASURES HAVE BEEN USED.
2. THE CONTRACTOR SHALL REMOVE SILT FENCE IN AREAS THAT HAVE UNDERGONE FINAL STABILIZATION AS DETERMINED BY CCWA INSPECTOR. CONTRACTOR SHALL DISPOSE SAID SILT FENCE IN ACCORDANCE WITH LOCAL REGULATIONS.
3. CONTRACTOR SHALL CONTACT LOCAL COUNTY EXTENSION FOR WETLAND SPECIES TO REPLANT.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND OR MAINTAINING ALL JOB SITE WORK AREAS THAT ARE BEING STABILIZED OR HAVE UNDERGONE FINAL STABILIZATION UNTIL CCWA HAS ISSUED A LETTER OF FINAL ACCEPTANCE.

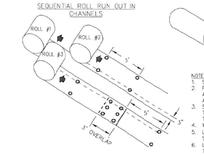
COUNTY REQUIRED NOTES
1. ANY REVISION TO THE PLANS AFTER THE INITIAL SUBMITTAL, OTHER THAN THE RESPONSE TO THE PLAN REVIEW COMMENTS, WILL BE INDICATED ON REVISIONS AND SUBMITTED WITH A WRITTEN EXPLANATION OF THE REVISIONS AND THE REASONS.
2. ANY VARIATIONS FROM THE PERMITTED PLANS, CHANGES IN DESIGN RESULTING FROM FIELD CONDITIONS, OR SUBSTITUTION OF CONSTRUCTION MATERIALS ARE TO BE REVIEWED AND APPROVED BY THE RESPONSIBLE DESIGN ENGINEER AND CLAYTON COUNTY LAND DEVELOPMENT.
3. PLANS ARE REVIEWED IN GENERAL. SPECIFIC DETAILS AND CALCULATIONS MAY NOT BE CHECKED. THE ENGINEERS STAMP AND SIGNATURE GUARANTEES THE ACCURACY OF THE CALCULATIONS AND DESIGN. PLAN APPROVAL DOES NOT OBLIGATE THE COUNTY TO ACCEPT THE WORK, NOR DOES IT RELIEVE THE DEVELOPER AND / OR ENGINEER FROM COMPLIANCE WITH ANY OTHER COUNTY, STATE OR FEDERAL ORDINANCES AND LAWS. PLAN APPROVAL DOES NOT RELIEVE THE DEVELOPER FROM THE RESPONSIBILITY FOR DAMAGES TO ADJACENT OR DOWNSTREAM PROPERTY RESULTING FROM THIS DEVELOPMENT.
3. WETLANDS SHOWN ON THIS PLAN ARE UNDER THE JURISDICTION OF THE U.S. ARMY CORPS OF ENGINEERS. LOT OWNERS MAY BE SUBJECT TO PENALTY BY LAW FOR DISTURBANCE TO THESE WETLAND AREAS WITHOUT PROPER AUTHORIZATION.
4. THE STATE 25' BUFFER WILL BE DISTURBED APPROXIMATELY 584 LINEAR FEET BETWEEN STATIONS 32+00-34+20 AND STATIONS 68+10-70+20 CONTAINING AN AREA OF 13,470 SQ.FT. BOTH AREAS OF IMPACT ARE DUE TO GRADING ACTIVITIES AND BMP PLACEMENT.VARIANCES ARE REQUIRED FOR BOTH AREAS. STREAM AT STATION 78+00 IMPACTS 158 SQ.FT. AND NO VARIANCE WILL BE REQUIRED.
5. AREAS USED AS BURIAL PITS DURING DEVELOPMENT MUST BE LOCATED OUTSIDE THE RIGHT-OF-WAY AND ARE TO BE LOCATED AND IDENTIFIED ON THE FINAL PLAT. **GEORGIA DNR EPD REQUIREMENTS ARE TO BE MET: "NO PORTION OF WASTE DISPOSAL SHALL BE LOCATED WITHIN 100 LINEAR FEET OF ANY PROPERTY LINE OR ENCLOSED STRUCTURE".**

TYPICAL INSTALLATION GUIDELINES FOR ROLLED EROSION CONTROL PRODUCTS (RECP)

BLANKET AND MATTING CROSS-SECTIONS



SEQUENTIAL ROLL RUN OUT IN CHANNELS



PICTORIAL VIEW OF TRANSVERSE SLOT

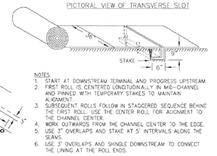
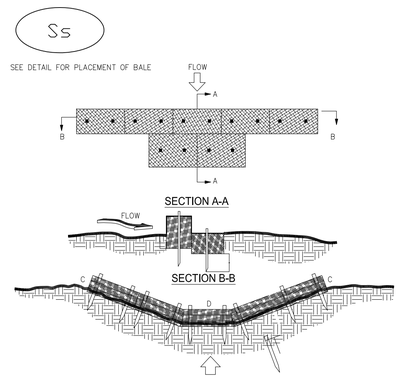
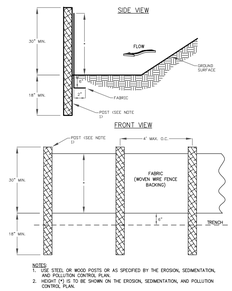


Figure 6-10.1 - Typical Installation Guidelines for Matting and Blankets



NOTES:
1. BALES SHOULD BE BOUND WITH WIRE OR NYLON STRING AND SHOULD BE PLACED IN ROWS WITH BALE ENDS TIGHTLY ABUTING THE ADJACENT BALES.
2. REMOVE #4 REBAR AFTER STRAW BALES ARE NO LONGER IN PLACE.
3. POINT C OF SECTION B-B SHOULD ALWAYS BE HIGHER THAN POINT D.

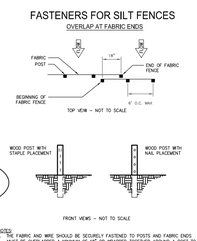
HAY BALE CHECK DAM
N.T.S.
Cd-Hb



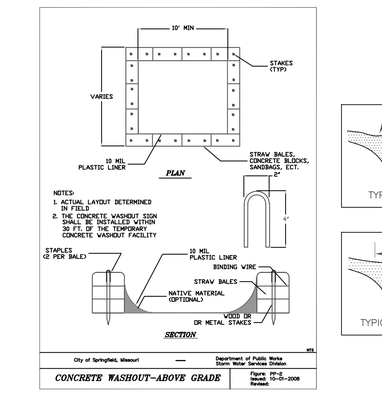
NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT 2'-0" TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

TYPE "S" SILT FENCE
N.T.S.
Sd1-C

FASTENERS FOR SILT FENCES

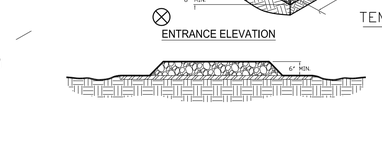


NOTES:
1. THE FABRIC AND WIRE SHOULD BE SECURELY FASTENED TO POSTS AND FABRIC ENDS MUST BE OVERLAPPED A MINIMUM OF 18" OR WRAPPED TOGETHER AROUND A POST TO PROVIDE A CONTINUOUS FABRIC BARRIER AROUND THE INLET.

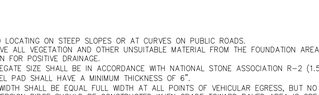


NOTES:
1. ACTUAL LAYOUT DETERMINED IN FIELD
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY

EXIT DIAGRAM

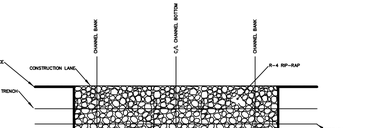


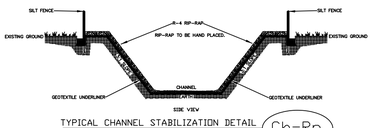
ENTRANCE ELEVATION



CONSTRUCTION EXIT
N.T.S.
Co

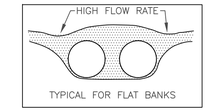
NOTES:
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
4. GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6".
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

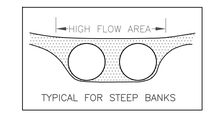


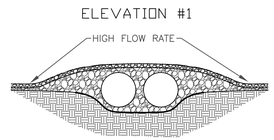


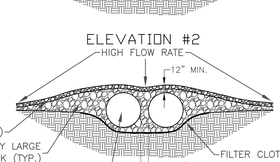
TYPICAL CHANNEL STABILIZATION DETAIL
N.T.S.
Ch-Rp

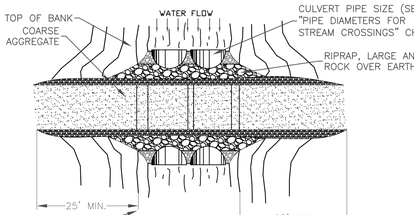
PLAN











PLAN

NOTES:
1. THIS TYPE OF CROSSING CAN BE INSTALLED IN BOTH A WET OR DRY WEATHER STREAM CONDITION WHERE THE DRAINAGE AREA ECEEDS 10 ACRES.
2. REMOVE DURING CLEANUP.
3. Sr-C 1 USE TWO 30 INCH HDPE PIPE.
4. Sr-C 2 USE 24 INCH HDPE PIPE.

TEMPORARY CULVERT STREAM CROSSING DETAIL
N.T.S.
Sr-C

PLANS PREPARED BY:CCWA

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

THESE DRAWINGS ARE THE PROPERTY OF CLAYTON COUNTY WATER AUTHORITY AND MAY NOT BE REPRODUCED, COPIED, OR OTHERWISE REUSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF CLAYTON COUNTY WATER AUTHORITY. THE ACCEPTANCE OF THESE DRAWINGS SHALL BE CONSTRUED AS AN ACCEPTANCE OF THE FOREGOING AGREEMENT.

PROJECT NAME:
JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE
LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: EROSION CONTROL DETAILS

DESIGN BY: CCWA	DATE:	1-15-19
DRAWN BY: JRM	JOB #:	81810
CHECKED BY:	DRAWING #:	ES-5
	SCALE:	N.T.S.
	SHEET NUMBER	19 OF 21

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
INFRASTRUCTURE CONSTRUCTION PROJECTS

SWCD:_____

Project N Jester's Creek East phase one **Address:**__7836 Tara boulevard
City/County:____ Morrow/ Clayton **Date on Plans:**_____ 8/29/2018
Name & email of person filling out checklist:_____**Randy mcDougald** Randy.mcdougald@ccwa.com

TO BE SHOWN ON ES&PC PLAN

Plan Page #	Included Y/N	
16	y	1 The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of Ja of the year in which the land-disturbing activity was permitted. (The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed)
cover	y	2 Level II certification number issued by the Commission, signature and seal of the certified design professional. (Signature, seal and Level II number must be on each sheet pertaining to ES&PC Plan or the Plan will not be review
17	y	3 The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution contr
cover	y	4 Provide the name, address, email address, and phone number of primary permittee.
cover	y	5 Note total and disturbed acreage of the project or phase under construction.
18-21	y	6 Provide the GPS locations of the beginning and end of the Infrastructure project. Give the Latitude and Longitude in decimal degrees.
cover	y	7 Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisio
17	y	8 Description of the nature of construction activity.
cover	y	9 Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary
17	y	10 Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential ar wetlands, marshlands, etc. which may be affected.
17	y	11 Design professional's certification statement and signature that the site was visited prior to development of the ES&F Plan as stated on Part IV page 21 of the permit.
17	y	12 Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropri and comprehensive system of BMPs and sampling to meet permit requirements as stated on Part IV page 20 of the
17	y	13 Design professional certification statement and signature that the permittee's ES&PC Plan provides for representati sampling as stated on Part IV.D.6.c (3) page 37 of the permit as applicable.*
17	y	14 Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation initial sediment storage requirements, perimeter control BMPs, and sediment basins within 7 days after installation." in accordance with Part IV.A.5 page 26 of the permit.*
17	y	15 Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed sti buffers as measured from the point of wrested vegetation or within 25-feet of the coastal marshland buffer as measu from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."
15	y	16 Provide a description of any buffer encroachments and indicate whether a buffer variance is required.
17	y	17 Clearly note the statement that "Amendments/revisions to the ES&PC Plan which have a significant effect on BMPs hydraulic component must be certified by the design professional."*
17	y	18 Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorizec Section 404 permit."*
15	y	19 Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion ar sediment control measures and practices prior to land disturbing activities."
17	y	20 Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the ap Plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implen to control or treat the sediment source."
17	y	21 Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with or temporary seeding."
17	y	22 Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile ups of and within the same watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which disc to the Impaired Stream Segment.*
17	y	23 If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in item 2 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan.*
17	y	24 BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the at the construction site is prohibited.*
17	y	25 Provide BMPs for the remediation of all petroleum spills and leaks.
17	y	26 Description of the measures that will be installed during the construction process to control pollutants in storm water will occur after construction operations have been completed.*
17	y	27 Description of practices to provide cover for building materials and building products on site.*
17	y	28 Description of the practices that will be used to reduce the pollutants in storm water discharges.*
cover	y	29 Description anc chart or timeline of the intended sequence of major activities which disturb soils for the major portior the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utili activities, temporary and final stabilization).
17	y	30 Provide complete requirements of inspections and record keeping by the primary permittee.*
17	y	31 Provide complete requirements of sampling frequency and reporting of sampling results.*
17	y	32 Provide complete details for retention of records as per Part IV.F. of the permit.*
17	y	33 Description of analytical methods to be used to collect and analyze the samples from each location.*
17	y	34 Appendix B Rationale for NTU values at all outfall sampling points where applicable.*
18-21	y	35 Delineate all sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged also provide a summary chart of the justification and analysis for the representative sampling as applicat
17	y	36 A description of appropriate controls and measures that will be implemented at the construction site including: (1) ini sediment storage requirements and perimeter control BMPs, (2) intermediate grading and drainage BMPs, and (3) fi BMPs. For construction sites where there will be nc mass grading and the initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the Plan may combine all of the BMPs into phase.*
18-21	y	37 Graphic scale and North arrow.
18-21	y	38 Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Existing Contours	USGS 1": 2000' Topographical Sheets
Proposed Contours	1": 400' Centerline Profile

18-21	y	39 Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional E as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document found at www.gaswcc.org.
18-21	y	40 Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 Edition.*
18-21	y	41 Delineation of the applicable 25-foot or 50-foot undisturbed buffers adjacent to State waters and any additional buffe required by the Local Issuing Authority. Clearly note and delineate all areas of impact.
18-21	y	42 Delineation of on-site wetlands and all State waters located on and within 200 feet of the project site.
16	y	43 Delineation and acreage of contributing drainage basins on the project site.
cover	y	44 Delineate on-site drainage and off-site watersheds using USGS 1": 2000' topographical sheets.
17	y	45 An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
	n/a	46 Storm drain pipe and weir velocities with appropriate outlet protection to accommodate discharges without erosion. Identify/Delineate all storm water discharge points.
3-Jan	y	47 Soil series for the project site and their delineation.
3-Jan	y	48 The limits of disturbance for each phase of construction.
17	y	49 Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment stor volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not atta must be included in the Plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual ir included for structural BMPs and all calculations used by the design professional to obtain the required sediment sto when using equivalent controls. When discharging from sediment basins and impoundments, permittees are require utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw wate the surface are not feasible, a written justification explaining this decision must be included in the Plan.
18-21	y	50 Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion ar Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, with legend.
15	y	51 Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set fort the Manual for Erosion and Sediment Control in Georgia.
15	y	52 Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates a seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that se will take place and for the appropriate geographic region of Georgia.

*If using this checklist for a project that is less than 1 acre and not part of a common development but within 200 ft of a perennial stream the * checklist items would be N/A

Effective January 1, 20

811 Know what's **below.** **Call** before you dig.

APPENDIX 1
THE ES&PC PLAN MUST INCLUDE AT LEAST FOUR (4) OF THE FOLLOWING BMPS FOR THOSE AREAS OF THE SITE WHICH DISCHARGE TO A IMPAIRED STREAM SEGMENT AND FOR SITES WHICH EPD HAS APPROVED IN WRITING A REQUEST TO DISTURB 50 ACRES OR MORE AT ANY ONE TIME.

The four items chosen must be appropriate for the site conditions

Plan Page #	Included Y/N	
	n/a	a. During construction activities, double the width of the 25 foot undisturbed vegetated buffer along all State waters requiring a buffer and the 50 foot undisturbed vegetated buffer along all State waters classified as "trout streams" requiring a buffer. During construction activities, EPD will not grant variances to any such buffers that are increased in width.
	n/a	b. Increase all temporary sediment basins and retrofitted storm water management basins to provide sediment storage of at least 3600 cubic feet (134 cubic yards) per acre drained.
	n/a	c. Use baffles in all temporary sediment basins and retrofitted storm water management basins to at least double the conventional flow path length to the outlet structure.
	n/a	d. A large sign (minimum 4 feet x 8 feet) must be posted on site by the actual start date of construction. The sign must be visible from a public roadway. The sign must identify the following: (1) construction site, (2) the permittee(s), (3) the contact person(s) and telephone number(s), and (4) the permittee–hosted website where the Plan can be viewed must be provided on the submitted NOI. The sign must remain on site and the Plan must be available on the provided website until a NOT has been submitted.
17	y	e. Use flocculants or coagulants and/or mulch to stabilize areas left disturbed for more than seven (7) calendar days in accordance with Section III. D.1. of the NPDES Permit.
16-17	y	f. Conduct turbidity sampling after every rain event of 0.5 inch or greater within any 24 hour period, recognizing the exceptions specified in Section IV.D.6.d. of the NPDES Permits.
	n/a	g. Comply with the applicable end-of-pipe turbidity effluent limit, without the "BMP defense" as provided for in O.C.G.A. 12-7-6 (a)(1).
	n/a	h. Reduce the total planned site disturbance to less than 50% impervious surfaces (excluding any State-mandated buffer areas from such calculations). All calculations must be included on the Plan.
	n/a	i. Limit the amount of disturbed area at any one time to no greater than 25 acres or 50% of the total planned site, whichever is less. All calculations must be included on the Plan.
	n/a	j. Use "Dirt II" techniques available on the EPD website to model and manage construction storm water runoff (including sheet flow). All calculations must be included on the Plan. (https://epd.georgia.gov/erosion-and-sedimentation).
	n/a	k. Add appropriate organic soil amendments (e.g., compost) and conduct pre- and post-construction soil sampling to a depth of six (6) inches to document improved levels of soil carbon after final stabilization of the construction site.
17-19-21	y	l. Use mulch filter berms, in addition to a silt fence, on the site perimeter wherever construction storm water (including sheet flow) may be discharged. Mulch filter berms cannot be placed in waterways or areas of concentrated flow.
	n/a	m. Use appropriate erosion control slope stabilization instead of concrete in all construction storm water ditches and storm drainages designed for a 25 year, 24 hour rainfall event.
	n/a	n. Use flocculants or coagulants under a passive dosing method (e.g., flocculant blocks) within construction storm water ditches and storm drainages that feed into temporary sediment basins and retrofitted management basins.
	n/a	o. Install sod for a minimum 20 foot width (in lieu of seeding) after final grade has been achieved, along the site perimeter wherever storm water (including sheet flow) may be discharged.
	n/a	p. Conduct soil tests to identify and to implement site-specific fertilizer needs.
17	y	q. Certified personnel for primary permittees shall conduct inspections at least twice every seven (7) calendar days and within 24 hours of the end of the storm that is 0.5 inches rainfall or greater in accordance with Section IV.D.4.a.(3)(a) – (c); secondary permittees, Section IV.D.4.b.(3)(a) – (c); and tertiary permittees Section IV.D.4.c.(3)(a) – (c) *
	n/a	r. Apply the appropriate compost blankets (minimum depth 1.5 inches) to protect soil surfaces until vegetation is established during the final stabilization phase of the construction activity.
	n/a	s. Use alternative BMPs whose performance has been documented to be superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). (If using this item please refer to the Alternative BMP guidance document found at www.gaswcc.georgia.gov)
	n/a	t. Limit the total planned site disturbance to less than 15% impervious surfaces (excluding any state mandated buffer areas from such calculations). All calculations must be included in the Plan.
	n/a	u. Conduct inspections during the intermediate grading and drainage BMP phase and during the final BMP phase of the project by the design professional who prepared the Plan in accordance with Section IV.A.5 of the permit. The Plan must include a statement that the primary permittee must retain the design professional who prepared the Plan to conduct inspections during the intermediate grading and drainage BMP phase and during the final BMP phase.
	n/a	v. Install Post Construction BMPs (e.g., runoff reduction BMPs) which remove 80% TSS as outlined in the Georgia Stormwater Management Manual known as the Blue Book or an equivalent or more stringent design manual.

Effective January 1, 2019

* This requirement is different for infrastructure projects:
Certified personnel for primary permittees shall conduct inspections at least once every fourteen (14) calendar days and within 24 hours of the end of the storm that is 0.5 inches rainfall or greater in accordance with Section IV.D.4.a.(3)(a) – (c) of this permit.

Target NTU and Permit Violation
A. See the following table for NTU Target Valve.

NTU TARGET VALVE
CONSTRUCTION SITE SIZE: 16.84 ACRES SURFACE WATER DRAINAGE TO WARM WATER FISHERIES

SAMPLE ID	FLOW DESCRIPTION	NTU TARGET VALVE	RECEIVING WATERS	DRAINAGE AREA
SAMPLE POINT #1	OUTFALL	75	Jester's creek	.10 SQ MI

PLANS PREPARED BY: CCWA

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

THESE DRAWINGS ARE THE PROPERTY OF CLAYTON COUNTY WATER AUTHORITY AND MAY NOT BE REPRODUCED, COPIED, OR OTHERWISE REUSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF CLAYTON COUNTY WATER AUTHORITY. THE ACCEPTANCE OF THESE DRAWINGS SHALL BE CONSTRUED AS AN ACCEPTANCE OF THE FOREGOING AGREEMENT.

PROJECT NAME:
JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE
LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: NPDES SAMPLING& BASIN MAP

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 81810
CHECKED BY:	DRAWING #: ES-6
	SCALE: N.T.S.
	SHEET NUMBER 20 OF 21

Section 1: General County Required Notes

A. ES&PC 24–Hour Contact:
Garfield W. Cousins (CCWA)
GSWCC Level 1B
Certification Number: 0000076216
Office (770) 302–3429
Mobile (770) 843–7891

B. ES&PC plan prepared by and the person ultimately responsible for the installation and maintenance of erosion and sedimentation control practices on this site and who to be contacted in the event of a Stop Work Order is:
Clifford W. Beroset
GSWCC Level II Certified Design Professional
Certification Number: 0000005289
Office (678) 422–2828
Mobile (678) 727–6444

C. Plans are reviewed in general. Specific details and calculations may not be checked. The engineer's stamp and signature guarantees the accuracy of the calculations and design. Plan approval does not obligate the county to accept the work, nor does it relieve the developer and/or engineer from compliance with any other county, state or federal ordinances and laws. Plan approval does not relieve the developer from the responsibility for damages to adjacent or downstream property resulting from this development.

D. Any revisions to the plans after the initial submittal, other than the response to the plan review comments, will be indicated as revisions and submitted with a written explanation of the revisions and the reasons therefore.

E. Any variations from the permitted plans, changes in design resulting from field conditions, or substitution of construction materials are to be reviewed and approved by the responsible design engineer.
THERE IS A TRIBUTARY TO JESTER'S CREEK THE PROJECT DOES IMPACT.

F. The owner/Developer and Engineer have reviewed the appropriate local, state and federal regulations regarding development activities adjacent to flood plains, state waters and wetlands and have determined that this development plan satisfies all the applicable standards.

Section 2: NPDES Notes

Part 1.0 Permit Conditions

A. A National Pollutant Discharge Elimination System (NPDES) Monitoring Program has been prepared for the project as a requirement of the State of Georgia, Department of Natural Resources, Environmental Protection Division (Georgia EPD) due to more than one (1) acre of land will be disturbed during construction. Because of the area of soil disturbance, erosion and sedimentation control practices and monitoring as set forth by Georgia EPD's General Permit No. GAR 100002 are required for this project and shall be implemented as described herein and in accordance with the Construction Plan and the "Manual for Erosion and Sediment Control in Georgia" (Manual), latest edition, published by the State Soil and Water Conservation Commission.

B. The following NPDES information has been prepared in general accordance to Georgia EPD's General Permit No. GAR 100002, "Authorization to Discharge Under the National Pollutant Discharge Elimination System, Storm Water Discharges Associated with Construction Activity For Infrastructure Construction Projects", effective August 1, 2018.

General
Notice of Intent
The owner (CCWA) is the Primary Permittee and shall obtain coverage under Georgia EPD's General Permit No. GAR 100002. No later than 14 days prior to commencing construction, the CCWA shall submit a Notice of Intent to the Georgia EPD and to Clayton County Transportation/Vehicle Development who are the issuing authorities of the Land Disturbance Activity Permit.

B. Proper design, installation and maintenance of erosion and sedimentation control practices shall constitute a complete defense to any allegation of noncompliance. A copy of this document and all reporting shall remain at the site of construction or at an easily accessible location for review by the Georgia EPD.

C. A discharge of storm water runoff from disturbed areas where erosion and sedimentation control practices have not been properly designed, installed or maintained shall constitute a violation of the referenced permit for each day on which such discharge results in the turbidity of construction related storm water being increased more than those valves listed in table: NTU Target Valve. Maintenance of erosion and sedimentation control practices as a result of routine inspections shall not be considered a violation

Notice of Termination
The CCWA shall terminate coverage under Georgia EPD's General Permit No. GAR 100002 when entire project has undergone final stabalization , all stormwater discharges associated with construction activity that are authorized by this permit have ceased, the site is in compliance with this permit and all temporary BMP's have been removed. a notice of termination shall be submitted to CCWA to the Georgia EPD and to Clayton County Transportation and Development who are the issuing authorities of the Land Disturbance Activity Permit.

Part 2.0 ES&PC Plan Certifications and Statements

A. "I certify that the permittee's Erosion, Sedimentation and Pollution Control Plan provides for an appropriate and comprehensive system of best management practices required by the Georgia Water Quality Control Act andNPDES the document "Manual for Erosion and Sediment Control in Georgia" (Manual) published by the State Soil and Water Conservation Commission as of January 1 of the year in which the land–disturbing activity was permitted, provides for the sampling of the receiving water(s) or the sampling of the storm water outfalls and that the designed system of best management practices and sampling methods is expected to meet the requirements contained in the General NPDES Permit No. GAR 100002.

Clifford W. Beroset, P.E.
Clayton County Water Authority
GSWCC Level II Certified Design Professional
Certification Number: 0000005289
Issued: 05/06/2018 Expires: 05/06/2021

B. "I certify under the penalty of law that this plan was prepared after a site visit to the locations described herein by myself or my authorized agent, under my direct supervision.

Clifford W. Beroset, P.E.
Clayton County Water Authority
GSWCC Level II Certified Design Professional
Certification Number: 0000005289
Issued: 05/06/2018 Expires: 05/06/2021

C. "The design professional who prepare the ES&PC Plan is to inspect the installation of the initial sediment storage requirements, perimeter control BMPs in accordance with part IV.A.5 within 7 days after installation."

Part 3.0 Site Information

Description and Construction Activity
The project consists of replacing approximately 5,246 linear feet of 36–inch Sanitary Sewer & 3,746 linear feet of 30" Sanitary Sewer. The pipe will be laid through existing sanitary sewer easements from Jester's Creek Pathway at Battlecreek Rd. Southerly to highway 41 and easterly to the rear of the apartments located at 590 Georgia Highway 138, Jonesboro Georgia.

Total project acreage and disturbed acreage is 16.84 acres in Clayton County currently stabilized with asphalt, wooded and grass areas.

RECEIVING WATERS:
Project receiving waters is Jester's Creek and an unnamed tributary to Jester's creek. The project does impact an onsite wetland area.

Storm Water Discharge
A. Based on a reconnaissance of the project route, performed on 29 AUG. 2018 surface waters were observed along the proposed route.

B. Peak Runoff Discharges are not estimated for the project because the pipe route is not being developed with impervious surface. Final grades and vegetation will match existing. No change will occur to the pre and post runoff coefficient.

Non–Storm Water Discharge
Non–storm water discharges associated with construction activity at the site shall include the use of potable water to flush clean the interior of the laid pipe. Silt fence and hay bales shall be utilized to prevent soil erosion.

Part 4.0 Storm Water Pollution Controls

Erosion and Sedimentation
A. Initial Perimeter Control BMPs will consist of installing silt fence prior to construction activities.
Use flocculants or coagulants and/or mulch to stabilize areas left disturbed for more than seven (7) calendar days in accordance with Section III. D.1. of the NPDES Permit.
"Use mulch filter berms, in addition to a silt fence, on the site perimeter wherever construction storm water (including sheet flow) may be discharged from station 0+00 to station 69+00. Mulch filter berms cannot be placed in waterways or areas of concentrated flow."
B. Intermediate Grading and Drainage BMPs.
1. Where pavement is removed and excavation completed, No. 57 stone will be installed level with adjacent grades.
2. Silt fence, hay bales and blankets shall be utilized as intermediate BMPs where applicable.
C. Final BMPs.
1. All disturbed areas shall be permanently stabilized with paving and vegetation where applicable.

Storm Water Management
The majority of the site area will be stabilized as existing using temporary and permanent grassing in accordance with the Construction Drawings. Temporary silt fence, installed during construction, shall be left in–place until grassed areas have gone through final stabilization. Final stabilization means that all soil disturbing activities at the site have been completed, and that for unpaved areas not covered by permanent structures, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or equivalent permanent stabilization measures have been used.

Other Controls
A. Off–site vehicle tracking of dirt, soils and sediments and the generation of dust shall be minimized or eliminated to the maximum extent practical.

B. Petroleum containers shall be double–walled and placed in locations that produce the least opportunity for accidents. No petroleum products will be intentionally drained onto the ground surface. Free–phase petroleum products accidentally spilled onto the ground surface will be immediately removed using an absorbent material. Absorbent material will subsequently be placed in a sealable container for off site disposal.

Part 4.0 Inspections and Maintenance

General
The Contractor shall perform all inspections as indicated in the following schedule using certified Personnel. Certified Personnel means a person who has successfully completedthe appropriate certification course approved by the Georgia soil and water consevation commission for continuing education units, or an equivalent course approved by the Georgia Soil and Water Conservation Commission.

Inspection Schedule
A. Each day when any construction activity occurs on the site, the following items shall be inspected:
1. Areas where petroleum products are stored, used or handled to determine whether spills and leaks have occurred from vehicles and equipment; and
2. Construction site entrance/exit to determine whether off–site tracking of soil is occurring.

B. At least once every seven (7) calendar days and within 24 hours of 0.5 inches or greater rainfall event, the following items shall be inspected:
1. Disturbed areas that have not undergone final stabilization to determine whether erosion is occurring;
2. Areas used for storage of materials that are exposed to precipitation that have not undergone final stabilization to determine whether erosion is occurring; and
3. Erosion control and sedimentation measures identified in Contract Documents to ensure that they are functioning properly.

C. Once per month, the following items shall be inspected:
1. The areas that have undergone final stabilization to determine the evidence or the potential for erosion and sedimentation;
2. Erosion control and sedimentation measures identified in Contract Documents to ensure that they are functioning properly; and
3. Discharge/outfall locations to determine whether erosion and sedimentation control measures are being effective.

Rainfall Data
At the time soil disturbance begins (after clearing and grubbing is completed for a particular drainage area), the Contractor shall measure and record rainfall once every 24–hour period until a Notice of Termination is submitted to the Georgia

PART 5.0

Records and Retention
A. The Primary Permitee shall retain the following records at the construction site or the records shall be readily available at a designated alternate location from commencement of construction until such time as a NOT is submitted to EPD.
Copy of all Notices of Intent submitted to EPD.
Copy of the Erosion, Sedimentation and Pollution Control Plan.
The design professional's report of the results of the inspections
Copy of all sampling information, results and reports.
Copy of all inspection reports.
Copy of all violation summaries and violation summary reports.
Daily rainfall information.
B. All records associated with the NPDES permit shall be retained by the Primary Permitee for a period of three (3) years from the date the Notice of Termination is submitted to EPD.

Maintenance
The Contractor shall maintain erosion and sedimentation controls as detailed in the Construction Notes.

Part 6.0 Storm Water Sampling

Sampling Certification
"I certify that the permittee's Erosion, Sedimentation and Pollution Control Plan provides for the monitoring of: (a) all perennial and intermittent streams and other water bodies shown on the USGS topographic map and all other field verified perennial and intermittent streams and other water bodies, or (b) where any such specific identified perennial or intermittent stream and other water body is not proposed to be sampled, I have determined in my professional judgment, utilizing the factors required in the General NPDES Permit No. GAR 100002, that the increase in the turbidity of each specific identified sampled receiving water will be representative of the increase in the turbidity of a specific identified un–sampled receiving water."

Clifford W. Beroset, P.E.
Clayton County Water Authority

Sampling Locations
Sampling location is depicted on the Construction Drawings and are located on an outfall ditch leading to Jester's Creek.

The outfall is assumed to represent all discharge points along the project route. Said representation is based on similar soil types depicted on Drawing P1 thru P–3 and topography shown throughout the stationing. Additionally, soil erosion and sedimentation control measures located and depicted on the Construction Drawings are consistent in rationale throughout the stationing. Construction of this project shall not alter existing grades or make significant changes in existing vegetative cover along the route.

Sample Type
A. Storm water grab samples shall be collected by manual or automatic means. Two (2) samples shall be collected from each sample point. Prior to collecting samples, each sample container shall be labeled using a permanent marker and clear taped as follows:

Project Title: Jester's Creek East, Phase one Date: 8–1–2018
Sample Point: Jester's Creek at Station 13+00

B. Samples shall be collected, as practical, from the center and in the middle depth of the stream in clean glass or plastic jars (150 ml or larger) and sealed with appropriate lids. Floating debris shall be kept from entering the sample.

C. Manual, automatic or rising stage sampling may be utilized. Samples should be analyzed immediately, but in no case later than 48 hours after collection. However, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through the automatic analysis is utilized. I f automatic sampling is utilized and the automatic sampler is not activated during the qualifying event, the permittee must utilize manual sampling or rising stage sampling during the next qualifying event. Dilution of samples is not required. Samples may be analyzed directly with a properly calibrated turbidimeter. Samples are not required to be cooled.

Sample Frequency
"Certified personnel for primary permittees shall conduct inspections at least once every seven (7) calendar days and within 24 hours of the end of the storm that is 0.5 inches rainfall or greater in accordance with Section IV.D.4.a.(3)(a) ? (c);
"Conduct turbidity sampling after every rain event of 0.5 inch or greater within any 24 hour period, recognizing the exceptions specified in Section IV.D.6.d. of the NPDES Permits."

2. In addition to (a) above, for each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a storm water discharge that occurs during normal business hours as defined in this permit either 90 days after the first sampling event or after all mass grading operations have been completed, but prior to submittal of a NOT, in the drainage area of the location selected as the representative sampling location, whichever comes first;

3. At the time of sampling performed pursuant to (1) and (2) above, if BMPs in any area of the site that discharges to a receiving water or from an outfall are not properly designed, installed and maintained, corrective action shall be defined and implemented within two (2) business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours* until the selected turbidity standard is attained, or until post–storm even inspections determine that BMPs are properly designed, installed and maintained; and

4. Where sampling pursuant to (1), (2) or (3) above is required but not possible (or not required because there was no discharge), the permittee, in accordance with Part IV.D.4.a(6), must include a written justification in the inspection report of why sampling was not performed. Providing this justification does not relieve the permittee of any subsequent sampling obligations under (1), (2) or (3) above.

Sample Analysis and Records
A. Each storm water sample shall be analyzed for Nephelometric Turbidity Units (NTUs) using methodologies and procedures established by 40 CFR Part 136, the guidance document titled "NPDES Storm Water Sampling Guidance Document, EPA 833–B–92–001" or procedures described in the publication "Standard Methods, Edition

B. Should samples be transported from the job site for analysis, a chain–of–custody record shall be prepared to accompany the samples to the laboratory. Results of each analyses shall be recorded. The Contractor shall provide the CCWA with copies of all documentation pertaining to storm water sampling on a monthly basis.

Reporting to the Georgia EPD
The CCWA shall report storm water monitoring analytical results to the Georgia EPD for only those months when storm water samples are collected. The summary of analytical results shall be submitted to Georgia EPD by the 15th day of each month following a qualifying reporting period via return receipt certified mail. Sampling reports shall be submitted to the Georgia EPD at the address listed below.

Mountain District – Atlanta Satellite
Georgia Environmental Protection Division
4244 International Parkway, Suite 114
Atlanta, GA 30354–3906

Section 3: Erosion and Sedimentation Control Notes

Part 1.0 General

A. A copy of the approved land disturbance plan and permit shall be present on the site.

B. Erosion and Sediment control shall be the Contractor's responsibility for compliance, installation, maintenance, and removal as required by the State of Georgia Manual for Erosion and Sediment Control in Georgia 2016 Edition as published by the Georgia Soil and Water Conservation Commission. The Contractor shall become familiar with these specifications prior to any construction activities. The installation of the required erosion and sediment control measures shall be installed as a first step in construction.

C. Stormwater associated with construction activity will be discharged into an Impaired Stream Segment that has been listed for the criterion violated of Bio F (Impaired Fish Community) and/or Bio M (Impaired Macroinvertebrate Community) as based on review of Georgia's 2012, 305(b)/303(d) List Documents – Approved May 31, 2014. Jester's Creek enters the FLINT RIVER WITHIN ONE MILE.
A TMDL Implementation Plan Has Not Been Finalized for Flint River.

Temporary Sediment Storage
Construction Drainage Area: 58 acres.

Temporary sediment storage required: 67 cy/acre x 58 acres = 3,886 cy.

Sd1 is suited to treat sediment from sheet flow.
1' of Sd1= 2.22 cy storage
15590 L.F. OF SD1 = 34298 Cy of storage
1 check dam = 6.67 cy of storage
3 check dams = 20.01 cy of storage
34,324 cy of storage provided
The temporary storage of sediment using Sd1 is applicable to this project due to stormwater discharge from the site is via sheet flow; The minimum sediment storage requirement is being met, and appropriate BMP's for the site have been designed and should be sufficient to control erosion.

F. Any amendments/revisions to the ES&PC plan which have significant effect on BMPs with a hydraulic component must be certified by the design professional.

G. Failure to install, operate and/or maintain all erosion control measures shall be a justification to stop construction on the job site until such measures are corrected in a accordance with the approved plans or as directed by the Engineer.

Part 2.0 Site Preparation

A. Prior to commencing land disturbance activity, the limits of land disturbance shall be clearly and accurately demarcated with stakes ribbons, or other appropriate means. The location and extent of all authorized and disturbance activity shall be demarcated for the duration of the construction activity. No land disturbance shall occur outside the approve limits indicated on the approved plans.

B. Material staging area shall be encompassed with referenced silt fence.

Contractor shall provide cover(e.g. plastic sheeting,temporary roofs) for all loose materials to minimize the exposure of these products tp precipitation and to stormwater, or a similarly effictive means(such as designed to minimize the discharge of of pollutants from these area. Minimazation of exposure i's not required in cases where exposure of a specific material or product poses little risk to stormwater contamination (such as final; products and materials intended for outdoor use).

Part 3.0 During Construction

A. Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for the effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source.

B. Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding.

C. Non–exempt activities shall not be conducted within the 25 or 50–foot undisturbed stream buffers as measured from the point of wrested vegetation or within 25–feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits.

D. Waste materials shall not be discharged to waters of the state, except as authorized by a section 404 permit.

E. The location of some erosion control devices may be altered from that shown on plans as approved by a Certified Design Personnel.

F. Mud and silt are strictly prohibited from leaving the site and depositing on the public thoroughfare.

G. Construction exits shall be maintained in a condition which will prevent tracking or flow of mud onto public right of way. This may require periodic dressing with stone, as conditions demand, and repair and/or clean out of any structures used to trap sediment. All materials spilled, dropped, washed, or tracked from vehicle or site onto public roadway or into storm drain shall be removed immediately.

H. Control dust using water or other methods as required to prevent dust from being a nuisance to the public and concurrent with on site work.

I. Disturbed soil shall be stabilized with erosion and sediment control measures each day and prior to any rain event as follows: (A) Disturbed soil shall be returned to final grade, (B) Erosion and Sediment Control devices shall be installed, (C) Graded soil shall be treated with lime and fertilizer, (D) Apply temporary and/or permanent vegetation as required.

J. Straw mulching shall be used with temporary and permanent vegetation applications and shall be free of weed seeds and spread at a rate of 90 pounds per 1,000 square feet. Where matting and blankets symbols are shown along with temporary seeding and permanent vegetation symbol, matting and blankets shall be installed in place of straw mulching.

K. The Contractor shall install matting and blankets within all drainage ditches unless noted otherwise.

L. The Contractor shall be responsible for the repair and/or replacement of any failed or inadequately installed sediment control device. The Contractor shall be responsible for all maintenance of erosion and sediment control devices.

M. The Contractor shall remove accumulated silt when the silt has accumulated to one–half the original height of the barrier.

N. All silts and/or sediment removed from the erosion/sediment control devices shall be disposed of onsite in such a manner as to prevent said silts and/or sediments from reentering the control devices and/or exiting the site through the storm drainage systems and/or surface drainage.

O. Concrete truck washout location shall be in a temporary truck wash area located at the site entrance. Washdown of Tools, Mixer chutes Hopper and Rear of Vehicle shall be contained within a pit or trench with no material leaving the site or impacting vegetated or non–disturbed areas. Disposal of material shall include the breaking of material into small amounts for trash disposal or removal from site to an appropriate landfill.Washout of the drum at the construction site is prohibited

P. Paint and/or other chemicals shall be stored in secured facilities with restricted access to employees only. Cleanup and disposal of this material shall be in accordance with all recognized local and federal requirements. All disposal shall be approved to off–site waste facilities classified to accept that material.

Q. All petroleum products shall be stored and used in an area that provides a secondary containment feature, and shall be located in an area with the least foreseeable impact if a catastrophic event should occur. Emergency contact numbers and procedures for spills shall be available on–site.

R. Erosion Control measures will be maintained until all disturbed soil within the construction area has been completely stabilized with permanent vegetation and all roads/driveways have been paved.

S. The following measures will be installed during construction to control pollutants in stormwater that will occur after construction operations have been completed.

Permanent grassing will be established in areas where sheet flow runoff has been disturbed.

Rip rap and fabric will be provided in areas where concentrated flow runoff will occur from outlet structures.

Rip rap and fabric will be provided in permanent easement areas to stabilize channels, stream banks of stream crossings.

Rip rap and fabric and vegetative practices will be provided to stabilize stream banks of stream crossings outside the areas of permanent grassing.

Part 4.0 Site Completion

A. Final stabilization means that 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or landscaped according to the plan (uniformly covered landscaping materials in planned landscaped areas), or equivalent permanent stabilization measures.

B. The Contractor shall remove silt fence in areas that have undergone final stabilization as determined by CCWA Inspector. Contractor shall dispose said silt fence in accordance with local regulations.

C. The Contractor shall be responsible for repairing and/or maintaining all job site work areas that are being stabilized or have undergone final stabilization until CCWA has issued a letter of final acceptance.

PLANS PREPARED BY:CCWA

CLAYTON COUNTY Water AUTHORITY
Providing Quality Water and Quality Services To Our Community

CLAYTON COUNTY WATER AUTHORITY
1600 BATTLE CREEK ROAD
MORROW, GEORGIA 30260

THESE DRAWINGS ARE THE PROPERTY OF CLAYTON COUNTY WATER AUTHORITY AND MAY NOT BE REPRODUCED, COPIED, OR OTHERWISE REUSED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN CONSENT OF CLAYTON COUNTY WATER AUTHORITY. THE ACCEPTANCE OF THESE DRAWINGS SHALL BE CONSTRUED AS AN ACCEPTANCE OF THE FOREGOING AGREEMENT.

PROJECT NAME:
JESTERS CREEK EAST OUTFALL REPLACEMENT PHASE ONE
LAND LOTS 207,208,209,210&211 DISTRICT
13 CLAYTON COUNTY, GEORGIA

SEAL:

REVISIONS:

DATE:	NO.:	REQUESTED BY:	DESCRIPTION:

SHEET TITLE: EROSION CONTROL NPDES NOTES

DESIGN BY: CCWA	DATE: 1-15-19
DRAWN BY: JRM	JOB #: 3
CHECKED BY:	DRAWING #: ES-7
	SCALE: N.T.S.

SHEET NUMBER 21 OF 21