
 <p>CLAYTON COUNTY Water AUTHORITY</p> <p>1600 Battle Creek Road, Morrow, GA 30260</p>	Flint River Outfall Replacement - Phase 3	
	ADDENDUM 1	
	DATE	Tuesday, August 27, 2019
	BID NUMBER	2019-PME-14
	BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time	
ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.		

REVISIONS:

1. Replace the Bid Form of the RFB documents with the revised Bid Form provided with this Addendum. Revisions were made to page 2-4.5 to Work Item No. 58 to change from “8-inch Water Line Installation” to “6-inch Water Line Installation” and to Work Item No. 59 from “8-inch Water Line Tie-In Installation” to “6-inch Water Line Tie-In Installation”. Revisions are highlighted in yellow.
2. Replace Division 4 Section 1 of the RFB documents with revised Division 4 Section 1 provided with this Addendum. Revisions were made to page 4-1.8 to Work Item No. 58 to change from “8-inch Water Line Installation” to “6-inch Water Line Installation”, and to Work Item No. 59 from “8-inch Water Line Tie-In Installation” to “6-inch Water Line Tie-In Installation”. Revisions are highlighted in yellow.
3. Replace Division 4 Section 2 of the RFB documents with revised Division 4 Section 2 provided with this Addendum. Revision was made to page 4-2.3 to replace the wording “eight (8)” inches with the wording “six (6)”, under 2.3 Ductile Iron Pipe; item “C”. Revisions are highlighted in yellow.
4. Replace Division 4 Section 3 of the RFB documents with revised Division 4 Section 3 provided with this Addendum. Revisions were made as follows:
 - a) On page 4-3.26, the word “average” was replaced with the word “peak” when referring to flow interruption, under 3.4 Flow Interruption; item “E”. Revisions are highlighted in yellow.
 - b) On page 4-3.45 Section 3.12.4 additions were made to item B and item C. Revisions are highlighted in yellow.
5. Replace Construction Plan Drawings included in the RFB documents with the revised Construction Plan provided with this Addendum through the following link: [Flint River Outfall Replacement - Phase-3 Drawings](#). Revisions were made to the following drawings only:

Drawing No.	Sheet No.
P-5	10
P-6	11
P-11	16
P-18	24
P-20	26

 <p>CLAYTON COUNTY Water AUTHORITY</p> <p>1600 Battle Creek Road, Morrow, GA 30260</p>	Flint River Outfall Replacement - Phase 3	
	ADDENDUM 1	
	DATE	Tuesday, August 27, 2019
	BID NUMBER	2019-PME-14
	BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time	
ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.		

QUESTIONS:

1. Does this include a materials bid?

Answer: Refer to Division 4, Section 2 of the RFB documents. An indication is provided in each material section of whether the material is to be provided by the Contractor or provided by CCWA.

2. What is the estimated construction budget?

Answer: CCWA's construction budget for the project is \$12.4 million. The budget includes contracted services, materials and construction management services.

3. Could you please tell me the allowable lane closure hours for this project? I found work hours, adjusted by location, however, I need to know if lane closure hours differ.

Answer: Refer to Division 4, Section 3.1.10 of the RFB documents. The time periods indicated in the section apply to all work associated with the project.

4. Will CCWA provide the 40' of 54" open cut casing material, including spacers, etc. near STA 23+25?


Answer: No. Refer to Division 4, Section 2.1 of the RFB documents. Where a material is required and not specifically described in the Material Requirements Section, the material shall be provided by the Contractor.

5. On Sheet #16 of 36 the plan view matchline indicates STA 116+75, however the profile indicated STA 117+75 for the same matchline. Please confirm STA 116+75 is correct.

Answer: Station 116+75 is correct. Refer to Revision No. 5 of this Addendum.

6. Can a pipe trench detail for Primary and Secondary Pipe Installation, w / bedding requirements for outside of pavement be provided?

Answer: Yes. Pipe bedding details for gravity flow sewer have been added to Drawing. Refer to Revision No. 5 of this Addendum.

 <p>CLAYTON COUNTY Water AUTHORITY</p> <p>1600 Battle Creek Road, Morrow, GA 30260</p>	Flint River Outfall Replacement - Phase 3	
	ADDENDUM 1	
	DATE	Tuesday, August 27, 2019
	BID NUMBER	2019-PME-14
	BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time	
ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.		

7. Is the intent of work sequence, to not allow primary pipe installation past STA 68+00 until all restoration efforts are provided in yards along Roxbury Rd?

Answer: Yes.

8. Can clearing operations, including fence removal, be performed through front and back yards along Roxbury Rd well ahead of schedule for pipe laying activities?

Answer: All tasks in front yards, including clearing operations and fence removal to complete work between station 54+50 to station 68+00, must be completed in five (5) months. Work associated with flow bypass in the back yards is not time restricted.

9. Can all easement stipulations with Property Owners, where limits of disturbance crosses yards be provided for bid purposes?

Answer: Yes. See below stipulations. Stipulations will be addressed by CCWA using pay items in the contract, if necessary.


- 382 Roxbury Dr - Driveway to be widened on the west side of existing driveway approximately 12' wide and 20' long.
- 430 Roxbury Dr - The two bald cypress trees in the backyard are not to be harmed in any way when the temporary sewer pipe is put in or taken out.

10. There are a couple of locations where limits of disturbance crosses corners or carports or sheds. Do we need to include removal and replacement of these with our bid?

Answer: The Contractor should include in their bid the cost of the work they believe needs to be performed. CCWA does not intend on removing/replacing carports or sheds.

11. Two sets of drawings were provided with the Request for Bid. Please confirm the 36-count set of drawings is what we are bidding, and not the 13-count set of drawings.

Answer: The 36-count set of drawings are for bidding purposes and construction. The 13-count set of drawings are part of Attachment C (Geotechnical Report).

 <p>CLAYTON COUNTY Water AUTHORITY</p> <p>1600 Battle Creek Road, Morrow, GA 30260</p>	Flint River Outfall Replacement - Phase 3	
	ADDENDUM 1	
	DATE	Tuesday, August 27, 2019
	BID NUMBER	2019-PME-14
	BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time	
ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.		

12. Does the bypass pumping system need to be designed for the average flow rates provided in the flow interruption specification, or do they need to be designed for peak flows as required in 3.4, F. 3.? Can these peak flows be provided?

Answer: Design for peak flow. Refer to Revision No. 4 a. of this Addendum.

13. Can I get a copy of any addenda that have been released to date?

Answer: Any Addenda issued will posted on the CCWA website.

14. Can I get a copy of the Prebid sign in sheet and update plan holders list?

Answer: Pre-bid meeting sign-in sheets are provided on page 6-8 and the plan holders list will be provided on page 9-10 with this Addendum.

15. Please confirm that Existing 18” SS in Garden Walk Blvd. is to be grout filled and not removed on Sheet #24, despite both demolition methods being shown.

Answer: The existing 18” sanitary sewer in Garden Walk Blvd. is to be grout filled. Refer to Revision No. 4 b. of this Addendum.

16. Sheet #18 indicated 6” water main. Bid Form and Specifications describe 8” water main. Please confirm we are supposed to quote installation of 8”.

Answer: A 6” water main is to be installed. The bid form and specifications have been revised to indicate 6” material. Refer to Revision No.’s 1, 2 and 3 of this Addendum.

17. a.) Can the nearest lane of travel be closed to perform demolition of existing 27” SS and existing manhole in Garden Walk Blvd.?


b.) Also, what pavement restoration efforts are required for this area?

Answer: a) Yes.

Answer: b) Refer to Revision No. 4b of this Addendum.

18. What restoration efforts are required for SS demolition on Sequoyah MS property?

Answer: Replace soil and grassing to match existing where ground areas are disturbed. Pay Items from the contract will be utilized.

 <p>CLAYTON COUNTY Water AUTHORITY</p> <p>1600 Battle Creek Road, Morrow, GA 30260</p>	Flint River Outfall Replacement - Phase 3	
	ADDENDUM 1	
	DATE	Tuesday, August 27, 2019
	BID NUMBER	2019-PME-14
	BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time	
ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.		

19. Will typical asphalt detail (2.5” binder, 1.5” Type “E” or “F”) be required for church driveway, Roxbury Dr, Atlanta Gastroenterology Associates/Hospital parking lots, and Garden Walk Blvd?

Answer: Yes.

20. Where is Geogrid by Contractor required to be installed on this project?

Answer: When installing Concrete Block-Pipe Anchors, Geogrid is to be placed under the stone.

21. Are we required to install temporary fence gates across driveways where temporary fencing spans from side of house to side of house, STA 55+50 to STA 61+50 and STA 65+15 to STA 65+40?

Answer: Yes.

<i>Acknowledgment of receipt of this addendum must be signed and included in your bid response.</i>	
COMPANY NAME	
SIGNATURE	
DATE	



1600 Battle Creek Road, Morrow, GA 30260

Flint River Outfall Replacement - Phase 3

ADDENDUM 1

DATE	Tuesday, August 27, 2019
BID NUMBER	2019-PME-14
BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time

ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.

Clayton County Water Authority

Non-Mandatory Pre-Bid Meeting
1600 Battle Creek Road, Morrow, Georgia 30260

Department: **STORMWATER**
 Bid Title: **ANNUAL CONTRACT FOR FENCE INSTALLATIONS AND REPAIRS**
 Bid Date and Time: **Tuesday, August 20, 2019 at 3:00 P.M. (local time)**

Page 1 of 3

COMPANY NAME	REPRESENTATIVE	PHONE NUMBER	EMAIL ADDRESS
CCWA	Hilda Flores	770-960-5223	ccwa_procurement@ ccwa.us
	Stan Court	770-960-5223	
	Kathy Bogaert		
	Blake Joyner		
	Keith Watkins		
	Karen Riser		
	Chikwa Moore		



1600 Battle Creek Road, Morrow, GA 30260

Flint River Outfall Replacement - Phase 3

ADDENDUM 1

DATE	Tuesday, August 27, 2019
BID NUMBER	2019-PME-14
BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time

ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.

Clayton County Water Authority

Non-Mandatory Pre-Bid Meeting
1600 Battle Creek Road, Morrow, Georgia 30260

Department: STORMWATER

Bid Title: ANNUAL CONTRACT FOR FENCE INSTALLATIONS AND REPAIRS

Bid Date and Time: Tuesday, August 20, 2019 at 3:00 P.M. (local time)

Page 2 of 3

COMPANY NAME	REPRESENTATIVE	PHONE NUMBER	EMAIL ADDRESS
CCWA			
Ruby Collins	megan Griffin	410-241-0514	mgriffin@rubycollins.com
G&S Services	Tammy Maddox	478-621-4410	tammy@gbands.com
JOHN D. STEPHENS	HANK MERRILL	770-972-8000	HMERRILL@JOHNSTEPHENS.COM
KEITH SEILER Seiler & Assoc. (Surveyors)	Keith Seiler	770-652-7147	kseiler@seiler-assoc.com
Garfield County	CCWA	770-960-5223	ccwa_procurement@ccwa.us
VLLW GROUP LLC	VALISTER Wilson	678-922-2480	valistere@vllwgroupllc.com



1600 Battle Creek Road, Morrow, GA 30260

Flint River Outfall Replacement - Phase 3

ADDENDUM 1

DATE	Tuesday, August 27, 2019
BID NUMBER	2019-PME-14
BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time

ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.

Clayton County Water Authority

Non-Mandatory Pre-Bid Meeting
1600 Battle Creek Road, Morrow, Georgia 30260

Department: **STORMWATER**
 Bid Title: **ANNUAL CONTRACT FOR FENCE INSTALLATIONS AND REPAIRS**
 Bid Date and Time: **Tuesday, August 20, 2019 at 3:00 P.M. (local time)**

Page 3 of 3

COMPANY NAME	REPRESENTATIVE	PHONE NUMBER	EMAIL ADDRESS
<i>Morgan Contracting</i>	<i>Justin Morgan</i>	<i>865-324-9999</i>	<i>jmorgan@morgan1.com</i>
<i>Kylem Inc</i>	<i>Jay Andrade</i>	<i>404-569-7395</i>	<i>Jay.Andrade@KylemInc.com</i>
<i>PYE Barker</i>	<i>Teff Fellman</i>	<i>678-787-9899</i>	<i>JFellman@pyebarker.com</i>
<i>TyBe Company LLC</i>	<i>Ethan Clark</i>	<i>731-377-5462</i>	<i>eclark@Southcon.us</i>
<i>Reynolds Construction</i>	<i>Brett Clay</i>	<i>404-831-3559</i>	<i>bclay@reynoldscon.com</i>
<i>CCWA</i>	<i>CLIFFORD BERSE</i>	<i>770-960-5223</i>	<i>ccwa-procurement@ccwa.us</i>



1600 Battle Creek Road, Morrow, GA 30260

Flint River Outfall Replacement - Phase 3

ADDENDUM 1

DATE	Tuesday, August 27, 2019
BID NUMBER	2019-PME-14
BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time

ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.

FLINT RIVER OUTFALL REPLACEMENT - PHASE 3 - VENDOR LIST				
	Company Name	Address	City, ST, Zip	Contact email address
1	ADC & Associates, Inc.	5396 Hillside Dr. Ste. E	Forest Park	
2	Advanced Drainage systems, Inc.			Catherine.Kiever@ads-pipe.com
3	AllSouth Construction, Inc.	9124 North Park Drive	Covington, Ga. 30014	jbballsouth@bellsouth.net
4	American Contractors Grading and Paving, Inc.			tim@amcontractors.net
5	American Pipe			jmccullough@american-usa.com
6	Astra Group Inc.	1611 Perry Blvd	Atlanta, GA 30318	clong@astragroupinc.com
7	Ballard MC			
8	BHF Technology	P.O. Box 110143	Atlanta, GA 30311	
9	Brent Scarbrough & Company Inc.	155 Robinson Drive	Fayetteville, Ga. 30214	info@brent.us
10	Brown Electrical Services			brownelectricalservices@gmail.com
11	BRTU Construction, Inc.	2920 Campbellton Rd.	Atlanta	sint@brtuconstruction.com
12	Cajenn Construction & Rehabilitation Services, Inc.	2070 A. Cheshire Bridge Rd.	Atlanta	cristy@cajenn.com
13	Cantsink of Atlanta			ryan@cantsink.com
14	Celebrity Fence Co., Inc.			cfco@cs.com
15	CHARTER CONSTRUCTION SERVICES, INC.			kay@chartercs.com
16	Cheoah Construction			jimmass2@gmail.com
17	Civil Works			sharukh@civilworks.us
18	CJ HEARNE CONSTRUCTION			cjhearneconst@bellsouth.net
19	Classic City Utility, Inc.	1099 Boulevard SE	Atlanta	mikeclassiccit@yahoo.com
20	Cleveland Carter Enterprises, Inc	5396 Hillside Drive	Forest Park	admin@cceatlanta.com
21	CMES, Inc.			Pravin.P@cmesinc.net
22	ConstructConnect	30 Technology Parkway South Suite 100	Norcross, GA 30092	gwen.tanghai@ConstructConnect.com
23	CTC Construction, LLC	127 Richardson Street	Atlanta	greg@ctcconstruct.com
24	Development Site Services Inc.	475 Swanson Road, P.O. Box 1149	Tyrone, GA 30290	jgreen@developmentsiteservices.com
25	Dodge Data & Analytics		Atlanta, GA	support@construction.com
26	Double P Grading Inc.			Eddie@doublepgradinginc.com
27	Eagle Excavation Inc.	4369 Tanners Church Rd.	Ellenwood, Ga. 30294	info@eaglexinc.com
28	Foley Products Company	208 Jefferson Street	Newnan, GA 30263	thrasher@foleyproducts.com
29	Frankie Thompson Enterprises, Inc.	1292 Jimson Circle SE	Conyers	frankie@frankiethompson.com
30	Garney Construction	5895 Shiloh Road, Suite 114	Alpharetta, GA 30005	dhall@garney.com
31	GB&S Services			tammy@gbands.com
32	Georgia Development Partners			MMelton@gdpbuilds.com
33	Gibsons Grouting			dbolev@gibsonsgROUTING.com
34	GS Construction, Inc.			gsconstructioninc@gmail.com
35	Hall Construction	670 Hall Road	Hampton, Ga. 30228	Hallconst1@aol.com
36	Haren Construction Company, Inc.		Etowah, TN 37331	sdrumright@harenconstruction.com
37	Insituform Technologies	1410 Gould Blvd	LaVergne, TN 37086	RMiller@aegion.com
38	Integrated Construction Management, Inc.	2260-F Lithonia Industrial Blvd.	Lithonia	gvalda@intergratedconst.com
39	isec Engineering			cwright@ISEC.engineering
40	J. Fletcher Creamer & Sons, Inc.	101 East Broadway	Hackensack, NJ 07601	info@ifcson.com
41	J. G. Leone Enterprises, Inc.			jgl@jgleone.com
42	John D Stephens, Inc.	272 Hurricane Shoals Rd, NE	Lawrenceville, GA 300146	Hmerrill@johndstephens.com
43	John Plott Company, Inc.			aharshman@jplott.com
44	K.M. Davis Contracting Co., Inc.	3259 Austel Rd	Marietta, GA 30008-6835	montebasley@bellsouth.net
45	Keith Seiler & Associates			kseiler@seilerassoc.com
46	Kemi Construction Co., Inc.	2550 W. Point Ave.	College Park	vakinpelu@kemiconstruction.com
47	Ken Blair			kwblair@aol.com
48	Kiewit			Don.DohalLow@kiewit.com
49	L.T. & Associates, LLC	4011 Herron Pass, SW	Atlanta	ltandassociates@bellsouth.net
50	Layne Heavy Civil	300 E. Broad Street	Fairburn, GA 30213	



1600 Battle Creek Road, Morrow, GA 30260

Flint River Outfall Replacement - Phase 3

ADDENDUM 1

DATE	Tuesday, August 27, 2019
BID NUMBER	2019-PME-14
BID OPENING DATE	Thursday, September 5, 2019 at 10:30 a.m. local time
PRE-BID MEETING DATE	Tuesday, August 20, 2019 at 2:00 p.m. local time

ADDENDUM MUST BE SIGNED AND INCLUDED IN YOUR RESPONSE TO THE RFB.

FLINT RIVER OUTFALL REPLACEMENT - PHASE 3 - VENDOR LIST

Company Name	Address	City, ST, Zip	Contact email address
51 Legacy Water Group, LLC			jklebowski@legacywatergroup.com
52 Lewis Contracting Services, LLC	457 Flat Shoals Ave. ste 2	Atlanta	jlewis@lewiscontractingservices.com
53 Lori's Transportation & Excavation, LLC			info@loristransportation.net
54 McIntyre Fencing Co.			linda@mcintyrefencing.com
55 Metals & Materials Engineers, LLC	4130 Shirley Drive	Atlanta	bbennett@mmelab.com
56 MHR International, Inc.	1075 Peachtree St. NE Ste. 3650	Atlanta	mross@mhrinternational.com
57 Mid-South Builders, Inc.	P.O. Box 878	Lithonia	
58 Moorhead Construction	1513 Anderson St	Belton, SC 29627	office@moorheadconstruction.com
59 Morgan Contracting, Inc.	916 Katherine Avenue	Knoxville, TN 37921	imorgan@morgan1.com
60 Multi-Energy Group, LLC	1924 Lenox Road, NE	Atlanta	info@multi-eg.com
61 North Georgia Pipeline, Inc		Dahlonega, Ga. 30533	sperry@northgeorgiaconcrete.com
62 North Georgia Pipeline, Inc.	85 Chestatee Industrial Park Dr.	Dahlonega, GA 30533	SPerry@northgeorgiaconcrete.com
63 Oldcastle Precast			Bill.Meier@oldcastle.com
64 Pye Barker			jfellman@pyebarker.com
65 R2T, Inc.	303 Perimeter Center N, Suite 300	Atlanta	kim.ajy@r2tinc.com
66 Rain For Rent			info@rainforrent.com
67 RAM Jack USA			arthur@ramjackusa.com
68 RDJE, Inc.	679 Hwy 29 South, Suite A	Newnan, GA 30263	EShipley@RDJEInc.com
69 Reeves & Young, LLC	4000 SmithtownRd. Suite 200	Suwanee, GA 30024	dwelch@reevesyoung.com
70 Reynolds Construction	300 East Broad Street	Fairburn, GA 30213	bcclay@revnoldscon.com
71 Rockdale Pipeline Inc.	P.O. Box 1157	Conyers, Ga. 30012	srcoolley@rockdalepipeline.com
72 Ruby-Collins, Inc.	4806 Wright Dr.	Smyrna, GA 30082	scline@ruby-collins.com
73 Russo Corporation			ivaughn@russocorp.com
74 Scott Bridge Company Inc.	2641 Interstate Dr.	Opelika, AL 36803	DGreen@scottbridge.com
75 Site Engineering, Inc.	7025 Best Friend Rd	Atlanta, GA 30340	tamara@siteengineeringinc.com
76 Site Engineering, Inc.	7025 Best Friend Rd	Atlanta, GA 30340	tamara@siteengineeringinc.com
77 SoCo Contracting Company, Inc.	3175 Presidential Drive	Atlanta, Georgia 30340	mjoell@soco-contracting.com
78 SoilTek	P.O. Box 1918	Flowery Branch, GA 30542	ahare@soiltekga.com
79 Sol Construction, LLC	4120 Presidential Pkwy. Ste. 115	Atlanta	jromez@solconstructionllc.com
80 Stephen Industries			cclark@stephensmids.com
81 Strack Inc.	125 Laser Industrial Court	Fairburn, Ga. 30213	jasonr@strackinc.com
82 Sunbelt Rentals			kebin.friel@sunbeltrentals.com
83 Swing Construction Company, Inc.	3189 Oxbridge Way	Lithonia	swingco@gmail.com
84 TGS Construction Services	313 Worthington Lane	McDonough, GA 30253	tsgno@yahoo.com
85 The Blue Book Building & Construction Network			info@thebluebook.com
86 The Corbett Group, LLC	7667 McKay Industrial	Drive Douglasville, GA 30134	mcorbett@thecorbettgroup.net
87 The Renee Group			Aiefferson@TheReneeGroup.com
88 Thompson Pipe Group			aboer@thompsonpipegroup.com
89 Thomson Pump			kkrause@thompsonpump.com
90 Thrasher Contracting, LLC	1500 Marietta Road	Atlanta, GA	
91 Twelve & Associates, LLC	2270 Northwest Pkwy SE Suite 185	Marietta, GA 30067	jjolley@12assoc.com
92 TyBe Company LLC			ecclark@southcon.us
93 United Grading & Excavating	199-A Fairburn Industrial Blvd.	Fairburn, Georgia 30213	cmatticola@unitedgrading.com
94 Unity Construction Co., Inc.	3941 Flint Hill Road	Powder Springs, GA 30127	alanunity@bellsouth.net
95 VLW Group LLC			yalister@vlwgroupllc.com
96 Value Jetting Sewer & Drain	P.O. Box 547	Conley	valuejetting@bellsouth.net
97 Wayne Davis Concrete			McCarson@waynedavisconcrete.com
98 Xylem Inc			Jay.andraade@xyleminc.com
99 YAH Group, LLC	1077 4th Street, Unit 1	Stone Mountain	victorkuma@live.com

Division 2

Bid Requirements

Section 4: Bid Form (Revised)

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 **Flint River Outfall Replacement – Phase 3** 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 contract time 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.

Division 2

Bid Requirements

Section 4: Bid Form (Revised)

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 five hundred and forty-seven (547) 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 (Revised)

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	794,200		
3	Silt Fence Installation	N/A	LF	27,217		
4	Silt Fence Removal	N/A	LF	27,217		
5	Construction Access Road Installation	N/A	LF	7,565		
6	Construction Access Road Removal	N/A	LF	7,565		
7	Erosion and Sediment Control Installation	N/A	SF	1,039,800		
8	Sod Installation	N/A	SF	32,110		
9	Permanent Re-Grassing	N/A	SF	259,900		
10	NPDES Monitoring and Reporting	N/A	LS	1		
11	Permanent Fence Replacement	N/A	LF	2,080		
12	Temporary Fence	Install/Remove	LF	10,144		
13	Asphalt Placement	N/A	SF	180,200		
14	Pavement Striping	N/A	LF	11,940		
15	Pavement Marking	N/A	EA	13		
16	Concrete Placement	N/A	CF	9,900		
17	Concrete Curb Placement	N/A	LF	2,285		
18	Tie-In No. 1	N/A	LS	1		
19	Tie-In No. 2	N/A	LS	1		

Division 2

Bid Requirements

Section 4: Bid Form – Pay Item Schedule (Revised)

No.	Work Item	Detail	Unit	Estimated Quantity	Unit Price	Extended Total
20	Cased Crossing No. 1	Design	LS	1		
21		Cased Crossing	LF	140		
22		Pipe and Grout	LF	140		
23	Cased Crossing No. 2	Design	LS	1		
24		Cased Crossing	LF	60		
25		Pipe and Grout	LF	60		
26	Cased Crossing No. 3	Design	LS	1		
27		Cased Crossing	LF	100		
28		Pipe and Grout	LF	100		
29	Cased Crossing No. 4	Design	LS	1		
30		Cased Crossing	LF	40		
31		Pipe and Grout	LF	40		
32	Cased Crossing No. 5	Design	LS	1		
33		Cased Crossing	LF	140		
34		Pipe and Grout	LF	140		
35	Cased Crossing No. 6	Cased Crossing	LF	90		
36	Cased Crossing No. 7	Design	LS	1		
37		Cased Crossing	LF	100		
38		Pipe and Grout	LF	100		

Division 2

Bid Requirements

Section 4: Bid Form – Pay Item Schedule (Revised)

No.	Work Item	Detail	Unit	Estimated Quantity	Unit Price	Extended Total
39	Primary 42-inch Pipe Installation	N/A	LF	5,268		
40	Primary 36-inch Pipe Installation	N/A	LF	4,092		
41	Primary 30-inch Pipe Installation	N/A	LF	2,152		
42	Secondary 24-inch Pipe Installation	N/A	LF	129		
43	Secondary 8-inch Pipe Installation	N/A	LF	490		
44	Service Re-Connection	Initial 20 Feet	EA	14		
45		Additional Footage	LF	176		
46	Vibration Monitoring	Structures	EA	20		
47	Primary 6-ft Diameter Manhole Installation	Base	EA	24		
48		Riser	VF	213		
49	Primary 5-ft Diameter Manhole Installation	Base	EA	27		
50		Riser	VF	247		
51	Primary 4-ft Diameter Manhole Installation	Riser	VF	153		
52	Secondary 4-ft Diameter Manhole Installation	Base	EA	9		
53		Riser	VF	91		
54	Proposed Secondary Bypass Location	N/A	EA	3		
55	Manhole Invert Construction	6-Foot Diameter	EA	24		
56		5-Foot Diameter	EA	27		
57		4-Foot Diameter	EA	9		
58	6-inch Water Line Installation	N/A	LF	1,170		
59	6-inch Water Line Tie-In Installation	N/A	EA	3		

Division 2

Bid Requirements

Section 4: Bid Form – Pay Item Schedule (Revised)

No.	Work Item	Detail	Unit	Estimated Quantity	Unit Price	Extended Total
60	Shortside Water Service Installation	N/A	EA	12		
61	Longside Water Service Installation	N/A	EA	9		
62	Unsuitable Soil Excavation	N/A	CF	240,000		
63	Rock Excavation	N/A	CF	288,000		
64	Pipe Collar Installation	N/A	EA	21		
65	Concrete Slab over Pipe	N/A	LF	145		
66	Pipe Anchor	N/A	EA	26		
67	Demolition Bulkhead Installation	30-inch Pipe	EA	10		
68		27-inch Pipe	EA	42		
69		18-inch Pipe	EA	6		
70		12-inch Pipe	EA	6		
71		8-inch Pipe	EA	2		
72	Demolition Pipe Grouting	N/A	CF	13,478		
73	Demolition Manhole Abandonment	Riser Removal	VF	57		
74		Gravel Fill Existing Manholes	VF	162		
75	Demolition Block Wall	N/A	LS	1		
76	Unforeseen Existing Conditions Allowance	N/A	Allowance	1	\$500,000.00	\$500,000.00
TOTAL BID AMOUNT						

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 (Revised)

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:

EMAIL ADDRESS:

WEBSITE:

DATE:

UTILITY CONTRACTOR'S
LICENSE NUMBER (Required):

END OF SECTION

Division 4 **Specifications**

Section 1: Work Assignment and Measurement for Payment (Revised)

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 (Revised)

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.

Work Item 2. Easement Clearing: Defined as the Contractor completing clearing and grubbing in the permanent 20-foot easement areas and other areas

Division 4

Specifications

Section 1: Work Assignment and Measurement for Payment (Revised)

as necessary within the construction limits and disposing 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 and/or filter sock installation in accordance with Construction Documents. The Work Item will be paid on a per “linear foot” unit cost of single-row silt fence and/or filter sock 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/or filter sock 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 of single-row silt fence and/or filter sock removed 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.

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

Division 4

Specifications

Section 1: Work Assignment and Measurement for Payment (Revised)

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. Sod Installation: Defined as the Contractor completing the installation of sod, throughout the width of the construction limits in the front yards in accordance with the Construction Documents. 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. 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 10. 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 11. 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 12. 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

Division 4

Specifications

Section 1: Work Assignment and Measurement for Payment (Revised)

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

Work Item 13. Asphalt Placement: Defined as the Contractor removing and/or milling existing asphalt of various thicknesses due to construction activity and disposing of 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 14. Pavement Striping: Defined as the Contractor installing painted line(s) of the appropriate size (match existing), 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 15. Pavement Markings: Defined as the Contractor installing painted handicap and directional arrow symbol(s) of the appropriate size (match existing), color and thickness to asphalt and concrete surfaces of parking lots. 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 16. 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 17. 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 Item 18. 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.

Division 4 **Specifications**

Section 1: Work Assignment and Measurement for Payment (Revised)

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 Item 19. Tie-In No. 2: Defined as the Contractor completing all necessary work as described in the Contract Documents to install work from station 120+31 to and including station 120+41.19 as 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 20, 23, 26, 29, 32 and 36. Cased Crossing No. 1, No. 2, No. 3, No. 4, No. 5 and No. 7 (Design): Defined as the Contractor completing all necessary work as described in the Contract Documents to design Cased Crossing No. 1, No. 2, No. 3, No. 4, No. 5 and No. 7. 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 21 – 22, 24 – 25, 27 – 28, 30 – 31, 33 - 34 and 37 – 38. Cased Crossing No. 1, No. 2, No. 3, No. 4, No. 5 and No. 7 (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, No. 2, No. 3, No. 4, No. 5 and No. 7. 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.

Work Item 35. Cased Crossing No. 6: Defined as the Contractor completing all necessary work as described in the Contract Documents to complete Cased Crossings No. 6 for bypass pumping access. 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 in accordance with the Pay Item Schedule and applicable work Detail as authorized/approved by CCWA.

Work Items 39 – 41. 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 120+31 (beginning of Tie-In No. 2). This Work Item does not include pipe

Division 4 **Specifications**

Section 1: Work Assignment and Measurement for Payment (Revised)

installed as part of Work Items Cased Crossing No. 1, No. 2, No. 3, No. 4, and No. 5. The work will be measured horizontally from center of manhole to center of manhole. 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 42 - 43. Secondary Pipe Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install the Secondary Pipe. This Work Item does not include pipe installed as part of Work Item Cased Crossing No. 7. The work will be measured horizontally from center of manhole to center of manhole. 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 44 – 45. 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 N. 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 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 46. Vibration Monitoring: Defined as the Contractor completing vibration monitoring and reporting for requested retaining walls, shrines, houses and 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 Items 47 – 53. 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 120+31 (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

Division 4

Specifications

Section 1: Work Assignment and Measurement for Payment (Revised)

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 Item 54. Proposed Secondary Bypass Location Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install proposed secondary bypass locations “A”, “B” and “C”. 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 55 – 57. 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.

Work Item 58. 6-inch Water Line Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install the 8-inch water line from survey station 0+00 to survey station 11+70 on (drawing W-1 / sheet 18). The work will be measured horizontally from end of pipe to end of pipe. 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 as authorized/approved by CCWA.

Work Item 59. 6-inch Water Line Tie-In Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to connect the new 8-inch water line to the existing water line. The Work Items will be paid on a per “each” 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 (Revised)

Work Item 60. Shortside Water Service Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install copper “Type K” pipe of requested size to replace the customers water services from the water main to the customers meter on the water main side of the road. 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 61. Longside Water Service Installation: Defined as the Contractor completing all necessary work as described in the Construction Documents to install copper “Type K” pipe of requested size to replace the customer water service from the water main to the cutomers meter on the otherside of the street from the water main. 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 62. 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 63. Rock Excavation: Defined as the Contractor completing the removal and disposal off site of rock and replacing removed volume of rock inside of the pipe zone with stone and outside of the pipe zone with suitable soil 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 64. 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 Item 65. Concrete Slab over Pipe: Defined as the Contractor completing the installation of concrete of various depths, lengths and widths placed above sewer pipe to resist pipe flotation in accordance with the Contract Documents.

Division 4

Specifications

Section 1: Work Assignment and Measurement for Payment (Revised)

The Work Item will be paid on a per “liner foot” unit cost in accordance with the Pay Item Schedule as authorized/approved by CCWA.

Work Item 66. Pipe Anchor: Defined as the Contractor completing the installation of concrete to anchor pipe 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 67 – 71. Demolition Bulkhead Installation: Defined as the Contractor completing demolition bulkhead work in accordance with the Contract Documents. Bulkheads will be installed on 30”, 27”, 18”, 12” and 8” nominal size 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 72. 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 73 – 74. 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 75. Deolition Block Wall: Defined as the Contractor completing the removal and offsite disposal of the existing block wall from survey station 92+77 to survey station 93+94?. 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 Item 76. Unforeseen Existing Conditions Allowance: 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.

END OF SECTION

Division 4

Specifications

Section 2: Material Requirements (Revised)

2.1 General

- A. This section describes in general the materials that are to be provided for the work.
- B. An indication is provided in each below section of whether the material is to be provided by the Contractor or provided by CCWA.
- C. The material conformance reference forms a part of the specifications and shall be of the latest editions.
- D. 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.
- 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.
 - 1. ASTM D3262: Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe

Division 4

Specifications

Section 2: Material Requirements (Revised)

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.
- D. Coupling and Gasket description.
1. Pipe joint unless otherwise specified shall be field connected with fiberglass sleeve coupling.

Division 4

Specifications

Section 2: Material Requirements (Revised)

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 Ductile Iron Pipe

- A. Provided by CCWA.
- B. Material conformance reference.
 1. ANSI/AWWA C151/A21.51: Ductile-Iron Pipe, Centrifugally Cast.
 2. ANSI/AWWA C153/A21.53: American National Standard for Ductile-Iron Compact Fittings for Water Service.
 3. ANSI/AWWA C111/A21.11: Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings.
 4. ANSI/AWWA C104/A21.4: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
 5. ANSI/AWWA C116/A21.16: Protective Fusion-Bonded Coatings for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings.
 6. ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus.
 7. ASTM 2794: Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 8. ASTM G95: Standard Test Method for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method).
- C. Pipe description.
 1. Pipe six (6) inches in diameter shall be Class 50.
 2. Pipe 42 inches in diameter shall be pressure class 150.
 3. Pipe barrel (Typical) shall be within manufacturer's casting tolerance.
 4. Pipe barrel (For Field Adjustment) shall be fully gauged within manufacturer's tolerance for spigot ends.
 5. Joint shall be standard push-on.
 6. The following information shall be cast in or stamped on each pipe.

Division 4

Specifications

Section 2: Material Requirements (Revised)

- a. Weight, class or nominal thickness.
 - b. Casting period.
 - c. Manufacturer's identifying mark.
 - d. Year the pipe was manufactured.
 - e. The letters "DI" or "DUCTILE".
7. Nominal length per joint of pipe is 18 feet or 20 feet.
8. Joint lubricant as provided by the pipe manufacturer.
- D. Fitting description.
1. Mechanical fittings for use with push-on joint pipe shall be standard mechanical, compact series, having a minimum pressure rating of 250 psi.
- E. Gasket description.
1. Gaskets shall be plain rubber (Styrene Butadiene Copolymer).
 2. Gaskets (FIELD LOK®) and (MJ FIELD LOK®) used to restrain push-on joint pipe and/or standard mechanical joint fittings, respectively, shall be plain rubber (Styrene Butadiene Copolymer) modified with stainless steel teeth.
- F. Retaining glands and adapter coupling description.
1. Retaining gland where joint restraint is not required shall be standard mechanical.
 2. Retaining gland (MEGALUG®) where the gland acts as the restraining mechanism, shall include gripping wedges with torque limiting twist-off nuts.
 3. Retaining gland (MJ FIELD LOK®) where the gasket acts as the restraining mechanism shall be suited for application.
 4. Adapter coupling (Foster Adapter®) shall be a bolt-through positive restraining connector between two standard mechanical joints.
- G. Bolt description.
1. Bolts and nuts used for standard mechanical connections shall be tee head type with heavy hex nut.
 2. Bolts and nuts used for flanged connections shall be hex type of low carbon steel, cadmium plated or zinc plated.

Division 4

Specifications

Section 2: Material Requirements (Revised)

H. Lining / Coating description.

1. 8" Pipe – (typical) shall have a manufacturer provided exterior coating of asphalt and a cement lining in accordance with manufacturer's standard coating and lining requirement.
2. 42" Pipe – Typical (Lining / Coating Type A) shall have a manufacturer provided liner of Protecto 401™ ceramic epoxy or approved equal. Exterior spigot end (coated 6 inches along the exterior barrel of the pipe) shall be coated with a manufacturer provided Protecto 401™ ceramic epoxy or approved equal. Remaining portion of the exterior barrel of the pipe shall have a manufacturer provided coating of asphalt. All linings and coatings shall be in accordance with manufacturer's standard published lining / coating requirements.
3. 42" Pipe – Typical (Lining / Coating Type B) shall have a manufacturer provided liner of Protecto 401™ ceramic epoxy or approved equal. Exterior spigot end (coated 24 inches along the exterior barrel of the pipe) shall be coated with a manufacturer provided Ceramapure™ PL90 or approved equal. Remaining portion of the exterior barrel of the pipe shall have a manufacturer provided coating of asphalt. All linings and coatings shall be in accordance with manufacturer's standard published lining / coating requirements.
4. 42" Pipe – Field Adjustment (Lining / Coating Type C) shall have manufacturer provided interior liner of Protecto 401™ ceramic epoxy or approved equal. Exterior of the pipe (along the entire exterior barrel of the pipe) shall be coated with a manufacturer provided Ceramapure™ PL90 or approved equal. All linings and coatings shall be in accordance with manufacturer's standard published lining / coating requirements.

Acceptable Manufacturers

- U.S. Pipe.
- American Cast Iron Pipe Company.
- As Approved.

2.4 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

Division 4

Specifications

Section 2: Material Requirements (Revised)

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. The following information shall be stamped on each pipe.
 - a. Class identifier.
 - b. ASTM designation.
 - c. Manufacturer's identifying mark.
 3. Nominal length per joint of pipe is 14 feet or 20 feet.
 4. Pipe shall be green in color for sanitary sewer service.
 5. 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).

Division 4

Specifications

Section 2: Material Requirements (Revised)

Acceptable Manufacturers

- As Approved.

2.5 Copper Pipe and Fitting

- A. Material provided by CCWA.
- B. Material conformance reference.
 - 1. ASTM B88: Standard Specification for Seamless Copper Water Tube.
 - 2. ASTM B124: Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes.
 - 3. ASTM B124: Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes.
 - 4. ANSI B16.22: Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- C. Pipe Description.
 - 1. Buried service three-quarter ($\frac{3}{4}$) inches in diameter to one (1) inch in diameter shall be seamless, annealed copper tube, Type “K”.
 - 2. Buried service greater than one (1) inch in diameter shall be hard-drawn copper tube, Type “L”.
 - 3. Exposed or above-ground service shall be hard-drawn copper tube, Type “L”.
- D. Fitting Description.
 - 1. Fittings for annealed copper tube, Type “K”, shall be brass flared type.
 - 2. Fittings for hard-drawn copper tube, Type “L”, shall be wrought copper suited for silver brazed joints or ProPress type fitted with EPDM gaskets.
 - 3. Lead free solder and flux shall be used in making connections where applicable.
 - 4. Meter couplings and tail pieces shall be cast brass threaded type.

Acceptable Manufacturers

- As Approved.

2.6 Gate Valve

- A. Material Provided by CCWA.
- B. Material conformance reference.
 - 1. AWWA 509: Resilient-Seated Gate Valves for Water Supply Service.

Division 4

Specifications

Section 2: Material Requirements (Revised)

2. AWWA 515: Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service.
 3. AWWA/ANSI C550 and C121/A21.16: Protective Interior Coatings for Valves and Hydrants.
- C. Description.
1. Valve shall be 250 psi pressure class.
 2. Valve body shall be ductile iron with all exterior surfaces coated with a fusion-bonded epoxy coating.
 3. Valve shall be bronze mounted, beveled geared, with a non-rising stem and O-ring stem seals.
 4. All exposed fasteners, nuts and bolts shall be stainless steel.
 5. Valve shall open in a counter-clockwise direction.
 6. Valve end connections shall be flanged or standard mechanical.
 7. Buried valves shall be nut operated; non-buried valves shall have hand-wheel operators.
 8. Valve used in conjunction with a tapping saddle shall be as follows.
 - a. Offset type that allows the tapping device to mount to the pipe and pass through the opened valve.
 - b. End connection to the tapping sleeve shall be flanged. End connection to accept pipe shall be mechanical joint.
 9. Valve exterior shall be coated with six (6) to eight (8) mils of fusion bonded epoxy. Valve shall be listed by a certifying agency that the coating complies with ANSI/NSF 61.
 10. The following information shall be stamped on each valve.
 - a. Manufacturer's identifying mark.
 - b. Pressure Class.
 - c. The letters "DI" or DUCTILE.
 - d. Place of Manufacturing.

Acceptable Manufacturers

- American Darling.
- U.S. Pipe Company.
- Mueller Company.
- M&H Valve Company.

2.7 Valve Box

- A. Material provided by CCWA.

Division 4

Specifications

Section 2: Material Requirements (Revised)

B. Description.

1. Valve box shall be of the two-piece type and manufactured of cast iron.
2. Section assembly shall be either slip or screw.
3. Internal diameter is 5.25 inches.
4. Valve box shall be fitted with a cast iron cover with the word “WATER” or “SEWER” integrally cast in the cover depending on the service.

Acceptable Manufacturers

- Bingham-Taylor.
- As Approved.

2.8 Corporation Valve

A. Material provided by CCWA.

B. Material conformance reference.

1. ASTM B61 and B62: Standard Specification for Steam or Valve Bronze Castings.

C. Description.

1. Valve shall be of the ball valve type and manufactured of bronze complying with NSF 61.
2. Valve shall be suited for a minimum working pressure of 150 psi.
3. Valve shall have crosscut threading, for direct tap into pipe, and a flared copper outlet.
4. Valve shall be $\frac{3}{4}$ inch or one (1) inch in size as required by the service.

Acceptable Manufacturers

- Ford Meter Box Co.
- Mueller Brass.
- A.Y. McDonald Mfg.
- As Approved.

2.9 Curb Stop Valve

A. Material provided by CCWA.

B. Material conformance reference.

1. ASTM B61 and B62: Standard Specification for Steam or Valve Bronze Castings.

Division 4

Specifications

Section 2: Material Requirements (Revised)

C. Description.

1. Valve shall be of the ball valve type and manufactured of bronze and comply with NSF 61.
2. Valve shall be suited for a minimum working pressure of 150 psi.
3. Internal ball shall be manufactured of low carbon steel coated with brass.
4. Internal O-rings and seats shall be of Buna-N.
5. Valve shall be fitted with iron pipe threads on the influent side and flared copper on the discharge side.
6. Valve shall be fitted with wing locks suitable to accept a keyed padlock.
7. Valve shall be $\frac{3}{4}$ inch, one (1) inch or two (2) inches in size as required by the service.

Acceptable Manufacturers

- Ford Meter Box Co.
- Mueller Brass.
- A.Y. McDonald Mfg.
- As Approved.

2.10 Fire Hydrant

A. Material provided by CCWA.

B. Material conformance reference.

1. AWWA C502: Dry-Barrel Fire Hydrants.

C. Description.

1. Fire hydrant shall be of the compression type, closing with line pressure, in compliance with NFPA, 1993 edition.
2. Hydrant shall have a 4-1/2 inch main valve and a non-freeze design with an automatic drain that closes fully when main valve is opened.
3. Hydrant shall be furnished having factory burying depths of 4'-6" or 5'-0". Deeper burying depths shall be accomplished using extension kits provided by same manufacturer.
4. Break-away device shall be situated +/- 3 inches from finished grade.
5. Hydrant standpipe, fittings and upper barrel shall be ductile iron. Parts designed to break away may be cast iron.
6. Hydrant bolts below ground level shall be stainless steel.
7. Hydrant lead to main line connection shall be mechanical joint.

Division 4

Specifications

Section 2: Material Requirements (Revised)

8. The means of attaching the barrel to the standpipe shall permit 360° rotation of the barrel.
9. Hydrant barrel shall break away from the standpipe at an elevation above ground level without causing damage to the standpipe and stem. When barrel is broken away, internal valve shall function and repairs shall be permitted without excavating or turning off water supply.
10. Hydrants shall be bronze mounted and all internal working parts shall be bronze. Valve seat shall screw into retainer.
11. Internal working parts shall be removable without disturbing the barrel.
12. The operating nut situated atop the hydrant shall be hexagonal and constructed of ductile iron or cast iron and open in a counter clockwise direction. The threads shall be enclosed in an operating chamber separated from the hydrant barrel by a rubber O-ring stem seal lubricated by a grease or oil reservoir.
13. Hydrant shall be equipped with two 2-1/2 inch threaded (7.5 threads per inch) hose connections and one 4-1/2 inch threaded (4 threads per inch) hose connection. Hose and pump connections shall be threaded and pinned to seal the connection to the barrel. Threads shall comply with National Standard Threads. Each connection shall be equipped with a cap and chain.

Acceptable Manufacturers

- American - Darling M73.
- U.S. Pipe - M94.
- Mueller Company - A421: Ductile Iron Hydrant
- M&H Valve Company - 129: Ductile Iron Hydrant

2.11 Water Meter Box (Residential and Light Commercial)

- A. Material provided by CCWA.
- B. Description.
 1. Meter box shall manufactured from high-density polyethylene or fiber reinforced plastic.
 2. Box lid shall be fiber reinforced plastic.
 3. Minimum outside dimensions of the lid shall be 16-5/8 inches by 11-7/16 inches.
 4. Down legs on each corner shall be a minimum of 1-1/2 inches long.

Division 4

Specifications

Section 2: Material Requirements (Revised)

Acceptable Manufacturers

- D/FW Plastics.
- CDR – 24 inches by 60 inches for 1-1/2 inch and 2 inch meter assemblies.
- Other Approved.

2.12 Sodium Hypochlorite

- A. Material provided by Contractor.
- B. Material conformance reference.
 - 1. AWWA C651: Disinfecting Water Mains.
- C. Description.
 - 1. Liquid containing 6 percent sodium hypochlorite solution intended for use as disinfection of potable water.

Acceptable Manufacturers

- As Approved.

2.13 Steel Rod

- A. Material provided by Contractor.
- B. Material conformance reference.
 - 1. ASTM F593: Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
 - 2. ASTM F594: Standard Specification for Stainless Steel Nuts.
- C. Description.
 - 1. Steel rod shall be all-thread, 3/4-inch diameter having standard National Pipe Threads.
 - 2. Steel rod shall be one continuous piece. Mechanical or welded splices are prohibited.
 - 3. Steel rod, nut and washer shall be stainless steel, grade 304.

Acceptable Manufacturers

- As Approved.

2.14 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).

Division 4

Specifications

Section 2: Material Requirements (Revised)

Acceptable Manufacturers

- As Approved

2.15 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.

2.16 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.

Division 4

Specifications

Section 2: Material Requirements (Revised)

- 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.

2.17 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.

Division 4

Specifications

Section 2: Material Requirements (Revised)

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.

Division 4

Specifications

Section 2: Material Requirements (Revised)

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.

Division 4

Specifications

Section 2: Material Requirements (Revised)

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

2.18 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.

2.19 Utility Marking Tape

- A. Material provided by Contractor.
- B. Material conformance reference.

Division 4

Specifications

Section 2: Material Requirements (Revised)

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.

Acceptable Manufacturers

- As Approved.

2.20 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.

Division 4

Specifications

Section 2: Material Requirements (Revised)

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.
 2. Welded Wire: 4x4 – W2.1xW2.1 wire 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.

2.21 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.

Division 4

Specifications

Section 2: Material Requirements (Revised)

4. Water shall be clean, potable and free from deleterious amounts of alkalis, acids and organic matter.

Acceptable Manufacturers

- As Approved.

2.22 Grout

- A. Material provided by Contractor.
- B. Description.
 1. Minimum 200 psi, cement/sand high-flow mixture, commercial readily available.

Acceptable Manufacturers

- As Approved.

2.23 Pipe Collar (Anti Seep)

- A. Material provided by Contractor.
- B. Description.
 1. Bentonite-clay coated aggregate.

Acceptable Manufacturers

- Aqua-Blok.
- As Approved.

2.24 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.

Division 4

Specifications

Section 2: Material Requirements (Revised)

Acceptable Manufacturers

- As Approved.

2.25 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.

2.26 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.

2.27 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:

Division 4

Specifications

Section 2: Material Requirements (Revised)

- 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.

Acceptable Manufacturers

- Tensar – TriAx Geogrid.

2.28 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 (Revised)

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. This section requires the Contractor to provide documents to CCWA in accordance with the GEFA requirements.
- B. The following GEFA documents/forms shall be provided.
 1. Changes to Approved Subcontractors Form, page GEFA-14.

Division 4

Specifications

Section 3: Construction Standards (Revised)

2. Certification by Proposed Subcontractor Regarding Equal Employment Opportunity, page GEFA-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. DBE Annual Report Form 5700-52A. Provide subcontractor and payment information when requested.
6. 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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. This section requires the Contractor to provide documents to CCWA.
- B. Prepare and submit to CCWA for 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.
- C. Show a 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

2. Mobilization and other preliminary activities.
 3. Site clearing.
 4. Access Road Installation.
 5. Tie-In (1).
 6. Tie-In (2).
 7. Water Line Installation.
 8. Pipe and manhole installation work.
 9. Cased Crossing No. 1. through No. 7.
 10. Proposed Secondary Bypass Location.
 11. Pipe and manhole demolition work.
 12. Asphalt Replacement
 13. Project restoration.
 14. Project cleanup and demobilization.
- D. 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;

Division 4

Specifications

Section 3: Construction Standards (Revised)

- B. 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.
- C. 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.
- D. 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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

Division 4

Specifications

Section 3: Construction Standards (Revised)

(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 Items “B, C and D” below. Other times may be allowed by CCWA permission only.
- B. No work shall be allowed on the following days/dates except to maintain flow bypass:
 - 1. November 28-29, 2019
 - 2. December 24-25, 2019
 - 3. January 1, 2020
 - 4. May 25, 2020
 - 5. July 3, 2020
 - 6. September 7, 2020
 - 7. November 26-27, 2020
 - 8. December 24-25, 2020
 - 9. January 1, 2021
- C. All work between station 54+50 to station 68+00 must be completed during the following times except to maintain flow bypass:
 - 1. All work must be completed in five (5) months.
 - 2. Work will only be allowed Monday through Friday.
 - 3. Work times will be from 8 a.m. to 5 p.m.
- D. All work between station 89+50 to station 94+00 must be completed during the following except to maintain flow bypass:
 - 1. Work times will be from 8 a.m. to 5 p.m.

Division 4

Specifications

Section 3: Construction Standards (Revised)

3.1.11 Site Safety and Precaution

- A. This section requires the Contractor to provide documents to CCWA.
- B. 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.
- C. 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.
- D. 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- E. 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.
- F. 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.
- G. 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.
- H. 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.
- I. 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.
- J. 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

3.1.12 Site Access and Traffic Control

- A. This section requires the Contractor to provide documents to CCWA.
- B. Site Access.
 - 1. All access to the site shall be through the “Staging Areas” or “Construction Entrances” designated as shown on the Construction Drawings. Access from public roads, parking lots or private property is not allowed.
 - 2. 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.
 - 3. Access to homes and business must be maintained at all times.
 - 4. Contractor shall keep roads open at all times at the Hospital for Hospital access. See Note No. 1, on Construction Drawings No. P-9, Sheet No. 14.
- C. Traffic Control.
 - 1. 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.
 - 2. 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 CCWA 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.
 - 3. 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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

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.

Division 4 **Specifications**

Section 3: Construction Standards (Revised)

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. This section requires the Contractor to provide documents to CCWA.
- B. Complete the following videos and provide in 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.
- C. Complete a minimum of 10 photos each month that sufficiently documents work progress and provide to CCWA in 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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, #4, #5 and #6 along the Project route as shown on Construction Drawings S-1, S-2, S-3 and S-4.
 - 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. This section requires the Contractor to provide documents to CCWA.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- B. Stake/flag in advance of the Contractor's work the Construction Limits and wetlands as shown on the Construction Drawings.
- C. CCWA will provide a survey coordinate file for Contractor use.
- D. 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.
- E. CCWA may perform periodic checks of the Contractor's survey work to verify accuracy. The Contractor shall facilitate CCWA's work.
- F. Complete a surveyed as built of the manholes installed for the project and provide data electronically in such manner as required.
 - 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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. This section requires the Contractor to provide documents to CCWA.
- B. The Contractor shall propose a work sequence(s) to perform the work and submit for approval.
- C. From station 54+50 to station 68+00 the following shall be followed and incorporated into a work sequence.
 - 1. As soon as a tangent is installed and backfilled, testing must be completed/passed before starting on the next tangent.
 - 2. Start restoring front yards, pouring driveways and installing fencing once testing is complete and passed for that tangent.
 - a. Final restoration must be completed from station 54+50 to station 59+00 before pipe installation can start at station 63+39.41.
 - b. Final restoration must be completed from station 59+00 to station 63+25 before pipe installation can start at station 65+93.35.
 - c. Final restoration must be completed from station 63+25 to station 68+00 before pipe installation can start at station 71+44.63.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- D. From station 95+00 to station 112+00 the following shall be followed and incorporated into a work sequence.
1. Only two (2) parking lots may be occupied, disturbed and having work taking place at a time.
 2. Parking lot (A) must be restored with final paving and striping before starting work in parking lot (C).
 3. Parking lot (B) must have asphalt patch to grade and striping before starting work in parking lot (D).
 4. Parking lot (C) must have asphalt patch to grade and striping before starting work from station 108+74.97.
 5. Parking lot (D) must have asphalt patch to grade and striping while work is taking place from station 108+74.97 to station 112+00.
 6. Service reconnects and demolition shall be completed in parking lots (B, C, D) immediately upon installation of flow by-pass for the work from station 112+00 to station 122+30.36.
 7. Milling, paving and striping shall be completed in parking lots (B, C, D) immediately upon installation of service reconnects and demolition.

3.2.1 Sanitary Sewer Sequence

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

<u>Sequence No. 1</u>	<u>Survey Stations (0+00 – 54+00)</u>
-----------------------	---------------------------------------

- | | |
|----|--|
| A. | Provide flow by-pass from the following lines and into existing 42" Outfall at existing Manhole between the edge of Valley Hill Road and Proposed Primary Manhole (1). <ol style="list-style-type: none">1. 27" Outfall from existing Manhole between the edge of Roxbury Drive and Proposed Primary Manhole (19)2. Service (A)3. Proposed Secondary By-pass (A)4. Proposed Secondary By-pass (B) |
| B. | Remove the overflow concrete coffer dam wall from the invert of the Existing Manhole in Roxbury Road at station 52+22.22 to allow flow. |
| C. | Install a plug in the outgoing 12" line from the Existing Manhole in Roxbury Road at station 52+22.22 to Proposed Primary Manhole (17). |

Division 4

Specifications

Section 3: Construction Standards (Revised)

- D. Complete Tie-In No. 1. And install Proposed 42" and 36" pipe and Proposed Primary Manholes from Tie-In No. 1 to Proposed Primary Manhole (18).
- E. Test all pipe and manholes installed up to Proposed Primary Manhole (18).
- F. Reconnect Proposed Secondary By-pass (A, B) and Services (A, B, C) when practicable.
- G. Complete restoration and proposed demolition.

Note: Continue to run original bypass while setting up by-pass for Sequence No. 2.

Sequence No. 2 Survey Stations (50+42.18 – 85+00)

- A. Provide flow by-pass from existing 27" Outfall next to the parking lot between Proposed Primary Manholes (36 & 37) to Proposed Primary Manhole (16).
- B. Provide flow by-pass from the following Service.
 - 1. Service (D)
- C. Discontinue flow by-pass from Sequence No. 1.
- D. Install Proposed 36" pipe and Proposed Primary Manholes from Proposed Primary Manhole (18) to Proposed Primary Manhole (32).
- E. Install Proposed Secondary Manhole (A).
- F. Test all pipe and manholes install up to Proposed Primary Manhole (32).
- G. Reconnect Service (D).
- H. Complete restoration and proposed demolition.

Note: Continue to operate flow by-pass while setting up flow by-pass for Sequence No. 3.

Sequence No. 3 Survey Stations (77+85.70 – 112+00)

- A. Provide flow by-pass for existing 27" Outfall from Existing Manhole in the parking lot between Proposed Primary Manholes (37 & 38) to Proposed Manhole (31).
- B. Provide flow by-pass from the following Services.
 - 1. Service (E)
 - 2. Service (F)

Division 4

Specifications

Section 3: Construction Standards (Revised)

3. Service (I)
4. Proposed Secondary By-pass (C)
- C. Install a plug in the existing 18" sewer line that runs parallel with Upper Riverdale Road in an existing manhole east of the work taking place for Proposed Secondary Manhole (I)
- D. Discontinue flow by-pass from Sequence No. 2.
- E. Install Proposed 36" and 30" pipe and Proposed Manholes from Proposed Manhole (32) to Proposed Manhole (47) including Cased Crossing (1, 2, 3, 4, 7).
- F. Install tangent from Proposed Primary Manhole (43) to within 20-feet of Proposed Secondary Manhole (E).
- G. Install required tangents and Secondary Manholes (B, C, F, H, I).
- H. Test all pipes and manholes up to installed Proposed Manhole (47).
- I. Reconnect Proposed Secondary By-pass (C) and Services (E, F, G, I).
- J. Remove plug from the existing 18" sewer line east of Proposed Secondary Manhole (I).
- K. Complete restoration and proposed demolition.
- L. Install Cased Crossing (6) for flow by-pass for Sequence No. 4.

Note: Continue to operate flow by-pass while setting up by-pass for Sequence No. 4.

Sequence No. 4 Survey Stations (95+00 – 122+30.36)

- A. Provide flow by-pass from the existing 27" Outfall from station 122+30.36 to Proposed Primary Manhole (45).
- B. Provide flow by-pass from the following Services.
 1. Service (H)
 2. Service (J)
 3. Service (K)
 4. Service (L)
 5. Service (M)
 6. Service (N)
- C. Discontinue by-pass pumping from Sequence No. 3.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- D. Install required tangents and Secondary Manholes (G, D, E).
- E. Test tangents and secondary manholes.
- F. Reconnect Services (H, J, K, L).
- G. Install 30" pipe and Proposed Manholes from Proposed Manhole (47) to Proposed Manhole (52) including Cased Crossing (5) and complete Tie-In No. 2.
- H. Test all pipe and manholes installed up to Proposed Temporary Dog House Manhole (1).
- I. Reconnect Services (M, N).
- J. Discontinue flow by-pass.
- K. Complete restoration and proposed demolition.

3.2.2 Water Main Sequence

- A. The following work sequence is general in nature and intended to guide the Contractor in performing the work.
- B. Water Line installation shall start once the Sewer Installation is 48+00 on the sewer alignment.
- C. Water Line installation and testing shall be complete before Sewer Installation starts at station 54+50.

Sequence No. 1

Survey Stations (0+00 – 11+70)

- A. Install concrete for the thrust restraint tie-back on the existing water main just downstream and upstream of station 0+00 and station 11+70.
- B. Install tee, valves and thrust blocking on the existing water main at station 0+00 and station 11+70.
- C. Connect the thrust restraint tie-back to the installed tees at station 0+00 and station 11+70.
- D. Install Proposed water main, fire hydrants, tee and thrust blocks from station 0+00 to station 11+70.
- E. Test all pipe from station 0+00 to station 11+70.
- F. Connect the existing water main on Pemrock Court to the Proposed Tee on the Proposed Water Main from Pemrock Court.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- G. Install Proposed Short and Long Side Services and reconnect to the homeowners existing services.
- H. Cut and remove sections of the existing water main between the new installed tees at station 0+00 and station 11+70.
- I. Install plugs in the valves exposed by removing the sections of the existing water line.
- J. Bulkhead the ends of the abandoned water main.

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 be installed and remain in-place until construction is completed in the respective area. Locations for Temporary Fencing are as follows:
 - 1. On the west side of the construction limits from station 0+00 to station 6+80.

Division 4

Specifications

Section 3: Construction Standards (Revised)

2. On the north side of the construction limits from side of house to side of house starting at station 55+50 to station 61+50, station 65+15 to station 65+40.
3. On the south side of the construction limits behind the house from station 55+00 to station 56+00.
4. On the east side of the construction limits from the back corner of the house to station 67+50.
5. Both sides of the construction limits for the construction entrance coming from Roxbury Drive to the construction limits for the outfall at station 69+25.
6. On the west side of the construction limits from station 69+25 to station 72+50.
7. On the west side of the construction limits from station 89+90 to Upper Riverdale Road.
8. Parallel to the south side of Upper Riverdale Road from the west corner of the construction limits to the east corner.
9. Parallel to the east side of Garden Walk Boulevard. and the north side of Upper Riverdale Road of the construction limits shown on the construction drawings.
10. Parallel to the north side of Upper Riverdale Road from the west corner of the construction limits to the east corner.
11. Both sides of the construction limits from station 95+10 to station 110+50. Do not cross the roads with fencing. Install parallel to the roads.
12. Parallel to the west side of Garden Walk Blvd. from station 111+25 to station 113+70.
13. Around the four sides of staging areas #1, #2, #3 and #6. Need to install gates at each 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,

Division 4

Specifications

Section 3: Construction Standards (Revised)

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 5+00 to station 52+25, station 67+00 to station 90+00 and station 115+00 to station 120+41 to be used to transport material for construction.
- B. Contractor is to maintain access road during construction at their expense.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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 topsoil, graded to match existing adjacent grades.
- E. Area to be seeded and mulched once topsoil 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 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 the construction lane.
- 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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 Block Wall

- A. Remove Block wall/footing from Station 92+77 to Station 93+94 to complete sewer pipe installation.
- B. Upon removal, wall debris shall be loaded and disposed of off-site the same day of removal.
- C. Finished grade will be sloped to a 3 to 1 slope.
- D. Install rip-rap on slope from Station 91+88 to Station 94+00.

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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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 where indicated on Construction Drawings. 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 monitoring and reporting in accordance with NPDES standards and erosion control notes.
 - 1. Submit results of monitoring and reporting 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 sidewalk, 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

3.4 Flow Interruption

- A. This section requires the Contractor to provide documents to CCWA.
- B. Prepare a flow interruption plan for CCWA review and approval.
- C. No excavation activities shall commence until a flow interruption plan is approved by CCWA.
- D. Flow interruption may be completed using plugging and/or bypass pumping methods. Use upstream manholes for bypass pumping. Newly installed 42", 36", 30" and 24" sanitary sewer segments (manhole to manhole) may receive flow as soon as all testing is completed and accepted.
- E. The following list provides **peak** flows that are to be considered when planning flow interruption.
 - 1. 30" Outfall at Station 9+00: 4,800 gpm
 - 2. 30" Outfall at Station 35+00: 4,800 gpm
 - 3. 27" Outfall at Station 50+00: 4,800 gpm
 - 4. 27" Outfall at Station 89+00: 4,800 gpm
 - 5. 27" Outfall upstream of Station 120+41: 4,800 gpm
 - 6. 8" Proposed Secondary Bypass Location (A): 300 gpm
 - 7. 8" Proposed Secondary Bypass Location (B): 300 gpm
 - 8. 8" Proposed Secondary Bypass Location (C): 600 gpm
 - 9. 6" Service Connection (A): minimal gpm
 - 10. 12" Service Connection (B): 1,200 gpm
 - 11. 6" Service Connection (C): minimal gpm
 - 12. 8" Service Connection (D): 300 gpm
 - 13. 8" Service Connection (E): 300 gpm
 - 14. 8" Service Connection (F): minimal gpm
 - 15. 18" Service Connection (G): 1,000 gpm
 - 16. 8" Service Connection (H): 100 gpm
 - 17. 4" Service Connection (I): minimal gpm
 - 18. 12" Service Connection (J): 100 gpm
 - 19. 8" Service Connection (K): 100 gpm
 - 20. 8" Service Connection (L): 100 gpm

Division 4

Specifications

Section 3: Construction Standards (Revised)

21.6" Service Connection (M): minimal gpm

22.8" Service Connection (N): minimal gpm

- F. 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.
- G. 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.
- H. 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- I. All pump/engine assemblies shall be fully enclosed and equipped with sound suppression systems.
- J. All bypass pump suction point locations and discharge point locations shall be covered/sealed to prevent odor.
- K. 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.
- L. 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.
- M. 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.
- N. 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.
- O. 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.
- P. The Contractor will indemnify and hold harmless the CCWA for any fines or third-party claims for personal or property damage arising from flow

Division 4

Specifications

Section 3: Construction Standards (Revised)

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. This section requires the Contractor to provide documents to CCWA.
- B. Provide an excavation dewatering plan for CCWA review and approval.
- C. Refer to “Geotechnical Investigation Report, Clayton County Water Authority, Flint River Outfall Replacement Phase 3, Jonesboro, Clayton County, Georgia, dated April 11, 2019.
- D. Provide dewatering systems as necessary to maintain excavations dry at all times during construction.
- E. Water withdrawn from excavations or dewatering systems shall be filtered using containerized sedimentation systems, filter bags and/or filter tubes.
- F. Install appropriate erosion control measures as may be necessary.
- G. Sediment collected within the systems shall be disposed of offsite.

3.6 Vibration Monitoring

- A. This section requires the Contractor to provide documents to CCWA.
- B. Prepare a vibration monitoring plan for CCWA review.
- C. Monitor Retaining Walls, Shrine, Houses and Buildings for vibration damage during construction in accordance with industry standards.
 - 1. Three (3) Retaing Walls on the West side of the Proposed Sewer Line from Station 2+00 to Station 4+00.
 - 2. Shrine on the East side of the proposed Sewer Line next to Station 3+00.
 - 3. Eleven (11) Houses on Roxbury Drive on the North side of the Proposed Sewer Line from Station 55+00 to Station 66+00.
 - 4. One (1) House on Roxbury Drive on the West of the Proposed sewer line nest to Station 66+50.
 - 5. Two (2) Houses on Roxbury Drive on the West side of the Proposed Sewer Line from Station 71+00 to Station 72+50.

Division 4

Specifications

Section 3: Construction Standards (Revised)

6. Building on the West side of the Proposed Sewer Line from Station 90+00 to Station 93+75.
 7. Building on the East side of the Proposed Sewer Line from Station 102+50 to Station 104+00.
- D. Monitoring shall take place during excavation work, pipe installation, manhole installation, backfilling, compaction and grading at each location.
- E. 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.
- F. 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. This section requires the Contractor to provide documents to CCWA.
- B. Prepare an excavation shoring plan for CCWA review.
- C. Refer to “Geotechnical Investigation Report, Clayton County Water Authority, Flint River Outfall Replacement Phase 3, Jonesboro, Clayton County, Georgia, dated April 11, 2019.
- D. The Contractor shall assume the responsibility for design and construction of excavation shoring and bracing capable of supporting excavations and construction loads.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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.
- E. Use trench boxes wherever possible to prevent the weakening of surrounding soils.
- F. 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, Flint River Outfall Replacement Phase 3, Jonesboro, Clayton County, Georgia, dated April 11, 2019.
- 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, No. 57 stone or No. 89 stone and consolidate with vibrator. 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- H. Install temporary fence (8-feet in height) around any open excavation at the end of each workday 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 inside the pipe zone with suitable stone and outside of the pipe zone with suitable soil.
- G. Excavated rock shall be removed from the project site and disposed of.

Division 4 **Specifications**

Section 3: Construction Standards (Revised)

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.

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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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. 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. Where casing is being installed in an open excavation, casing lengths shall be as long as practicable and joined by single grooved butt weld for the entire circumference of the casing.
- Q. Place a plug in the open end of uncompleted laid piping at the end of each day.
- R. When installing water mains/piping, piping shall be laid to above existing grade and to direction as requested by CCWA to facilitate flushing. CCWA shall perform all flushing operations and Contractor shall provide access/cooperate to facilitate the work. Upon completion of flushing, mains/piping shall be laid to required grade.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- S. Pipe shall not be placed in service until all testing has been accepted by CCWA.
- T. 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 Concrete Thrust Restraint

- A. Install concrete thrust restraint at locations where pipe/fitting separation is possible and/or where directed by CCWA.
- B. Thrust force shall act against face of undisturbed soil.
- C. Do not place soil backfill on poured concrete until 24 hours after concrete placement.

3.8.4 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. Hydrostatic Pressure Testing: Pressurized piping installed between new valves or other fittings including all service lines and associated fittings shall be subjected to a hydrostatic pressure test.

Division 4

Specifications

Section 3: Construction Standards (Revised)

1. For water mains and services, piping shall be filled with clean potable water to a pressure of 250 psi (as measure at the lowest point in the piping system) or to a pressure determined by CCWA. The test shall begin after the pressure has stabilized for a period of 15 minutes. Test and pipe shall be considered acceptable when the stabilized pressure is maintained for a period of two (2) hours or other time as determined by CCWA.
- D. 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 42", 36", and 30" 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.
- E. 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.

3.8.5 Pipe Disinfection

- A. Complete potable water main/piping disinfection procedures as required by CCWA and detailed in the ANSI/AWWA C651 Standard and AWWA "Disinfection of Pipelines and Storage Facilities Field Guide".
- B. When required as directed by CCWA, install necessary taps and valves to facilitate disinfection procedures.
 1. Operate equipment and inject chlorine at required concentrations and quantity.

Division 4

Specifications

Section 3: Construction Standards (Revised)

2. CCWA shall operate all valves and hydrants during disinfection procedures.
 3. The contact period for disinfection will be 24 hours or as determined by CCWA on case-by-case basis.
 4. When disinfection is complete, remove all taps and valves installed for procedure. CCWA will flush piping such that the chlorine residual within the new water main/piping is equal that of the existing water main system.
- C. Upon completion of disinfection procedures and flushing, CCWA will collect samples for laboratory analysis. A minimum of 48 hours is required for analysis to determine acceptable disinfection.

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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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.

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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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.

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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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, No. 2, No. 3, No. 4, No. 5, No. 6 and No. 7

3.11.1 Design

- A. This section requires the Contractor to provide documents to CCWA.
- B. Design a suitable means to complete each trenchless cased-crossing at Upper Riverdale Road (Cased-Crossing No. 1 and No. 7), at Entrances for the Hospital (Cased-Crossing No. 2 and No 3), at Medical Center Drive (Cased-Crossing No. 4) and at Garden Walk Blvd. (Cased-Crossing No. 5 and No. 6).
 - 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.
- C. 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", 30" and 24" sanitary sewer pipe.
 - 2. Casing Material: Provide manufacturer, specifications, jointing method and end seal method.

Division 4

Specifications

Section 3: Construction Standards (Revised)

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 Upper Riverdale Road, Hospital Entrances, Medical Center Drive and Garden Walk Blvd.

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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

2. Grout fill annular space between the outside of the casing material and ground/other material surfaces at the end of each workday or sooner as may 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 3.8.4 “Pipe Testing” prior to installing the sanitary sewer pipe.
- B. The sanitary sewer pipe shall be tested in accordance with Section 3.8.4 “Pipe Testing”.

3.12 Demolition

3.12.1 Bulkhead

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

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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.

3.12.2 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.

3.12.3 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

3.12.4 Gravel Fill

- A. Gravel fill manholes at locations shown on the Construction Drawings or at requested locations.
- B. In wooded and grassed areas, remove manhole cone and sections to a minimum of three (3) feet below finished surface grade.
 - 1. Place No. 57 stone into manhole from invert to top of remaining section.
 - 2. Place suitable soil and compact soil from top of remaining section to finish surface grade in accordance with backfill and compaction requirements.
- C. In paved areas, saw cut pavement in a square shape and large enough to remove manhole ring/cover, grade bricks, mortar, etc. above cone section.
 - 1. Place No. 57 stone into manhole from invert to top of cone section.
 - 2. Place concrete to finish surface grade in accordance with concrete work requirements.

3.13 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.

3.14 Concrete Work

3.14.1 Concrete Placement

- A. Construct formwork to lines and elevations as shown on Construction Drawings.
- B. Clean forms of dirt and debris prior to each use.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- C. Install steel reinforcement and/or wire as shown on Construction Drawings, support on chairs and secure to prevent movement.
- D. 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.
- E. Place concrete using suitable means and consolidate concrete with vibrator of suitable vibrations per minute.
- F. Screed slabs / curbs by use of straight edge or screed board.
- G. 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 1/4 of the slab depth.
- H. Concrete walks shall be finished with a slight broom finish perpendicular to the travel path.
- I. 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.
- J. Removal of formwork shall take place no sooner than 24 hours after placement of concrete.

3.14.2 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.

Division 4

Specifications

Section 3: Construction Standards (Revised)

- 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.

3.15 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.

3.16 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