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 BAILEY FAMILY ENTERPRISES, LLC.
 TAXID: 08117 005005
 DB 7112, PG 644
 PB 113, PG 217

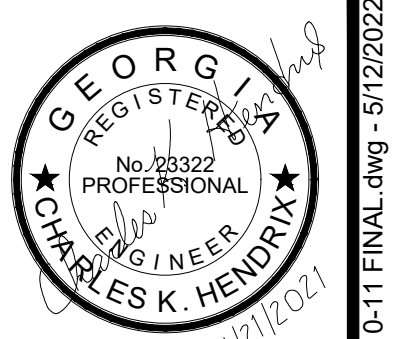
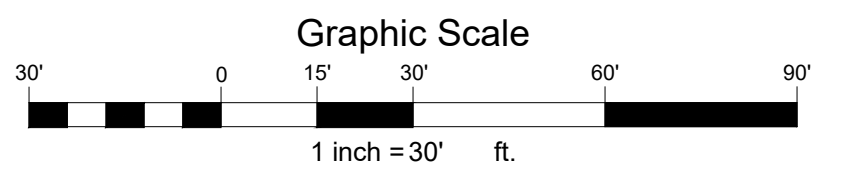
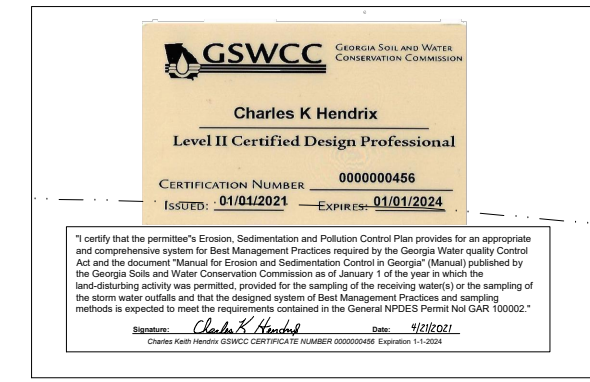
ALL DISTURBED AREAS SHALL BE
 SODDED AS FINAL GRASSING.

REMOVE SILT FENCE AS SOD IS
 INSTALLED.

REMOVE CONSTRUCTION EXITS AS
 FINAL ROADS ARE INSTALLED.

REMOVE TEMPORARY SEDIMENT
 BASIN PIPING AND ACCESSORIES

 **EROSION CONTROL PLAN EAST**
 1"=30'



Infracore Consultants, Inc.


DATE: 4/21/2021	REVISION
PROJECT NUMBER: 001	DATE

DSGN: CKH
 DRWN: CKH
 CHCK: RWT

FLOWERY BRANCH WRF EXPANSION
CITY OF FLOWERY BRANCH, GA
E S & P C PLAN
FINAL PLAN EAST

SHEET NO.
 EC-11

GENERAL		11-M-01	CLARIFIERS - BOTTOM PLAN	00-SD-03	STANDARD DETAILS 3 OF 4	100-S-01	STAIR AND PLATFORM PLANS, SECTIONS AND DETAILS	04-E-08	SCHEMATIC WIRING DIAGRAM
00-G-00	SHEET INDEX	11-M-02	CLARIFIERS - TOP PLAN	00-SD-04	STANDARD DETAILS 4 OF 4	100-S-02	STAIR AND PLATFORM PLANS, SECTIONS AND DETAILS	04-E-09A	SCHEMATIC WIRING DIAGRAM
00-G-01	GENERAL NOTES AND LEGEND	11-M-03	CLARIFIERS - SECTIONS	00-SD-05	BUILDING DETAILS AND SCHEDULES	100-S-03	STAIR AND PLATFORM PLANS, SECTIONS AND DETAILS	04-E-09B	SCHEMATIC WIRING DIAGRAM
00-G-02	PROCESS FLOW DIAGRAM	12-M-01	RAS-WAS-SCUM PUMP STATION - PLAN	01-S-01	INFLUENT PUMP STATION PLANS			04-E-10	SCHEMATIC WIRING DIAGRAM
00-G-03	PROCESS FLOW DIAGRAM	12-M-02	RAS-WAS-SCUM PUMP STATION - SECTIONS	01-S-02	INFLUENT PUMP STATION SECTIONS			04-E-11	SCHEMATIC WIRING DIAGRAM
00-G-04	PROCESS FLOW DIAGRAM	12-M-03	RAS-WAS-SCUM PUMP STATION - SECTIONS 2	01-S-03	INFLUENT PUMP STATION DETAILS			04-E-12	SCHEMATIC WIRING DIAGRAM
00-G-05	HYDRAULIC PROFILE	14-M-01	DISC FILTERS - TOP PLAN	02-S-01	ELECTRICAL BUILDING FOUNDATION PLAN			04-E-12A	SCHEMATIC WIRING DIAGRAM
00-G-06	HYDRAULIC PROFILE	14-M-02	DISC FILTERS - BOTTOM PLAN					04-E-12B	SCHEMATIC WIRING DIAGRAM
		14-M-03	DISC FILTERS - SECTIONS	02-S-02	ELECTRICAL BUILDING ROOF PLAN AND DETAILS			04-E-13	SCHEMATIC WIRING DIAGRAM
		15-M-01	MEMBRANE INFLUENT PUMP STATION PLAN	02-S-03	ELECTRICAL BUILDING SECTIONS AND DETAIL			04-E-14	SCHEMATIC WIRING DIAGRAM
		15-M-02	MEMBRANE INFLUENT PUMP STATION SECTIONS	02-S-04	ELECTRICAL BUILDING ELEVATIONS			04-E-15	SCHEMATIC WIRING DIAGRAM
		16-M-00	MEMBRANE BUILDING - MOBILE TREATMENT UNIT SCHEMATIC	02-S-05	ELECTRICAL BUILDING 'D' PLAN, ELEVATIONS AND DETAIL			04-E-18A	SCHEMATIC WIRING DIAGRAM
		16-M-01	MEMBRANE BUILDING - DEMOLITION PLAN	03-S-01	HEADWORKS FOUNDATION PLAN			04-E-18B	SCHEMATIC WIRING DIAGRAM
		16-M-02	MEMBRANE BUILDING - DEMOLITION SECTIONS	03-S-02	HEADWORKS INTERMEDIATE PLAN			04-E-19	SCHEMATIC WIRING DIAGRAM
		16-M-03	MEMBRANE BUILDING - INFLUENT PIPING	03-S-03	HEADWORKS TOP OF STRUCTURE PLAN			04-E-20	SCHEMATIC WIRING DIAGRAM
		16-M-04	MEMBRANE BUILDING - INFLUENT SECTIONS	03-S-04	HEADWORKS SECTIONS			04-E-21	SCHEMATIC WIRING DIAGRAM
		16-M-05	MEMBRANE BUILDING - EFFLUENT PIPING	03-S-05	HEADWORKS SECTIONS			04-E-22	SCHEMATIC WIRING DIAGRAM
		16-M-06	MEMBRANE BUILDING - EFFLUENT SECTIONS	03-S-06	HEADWORKS SECTIONS			04-E-23	SCHEMATIC WIRING DIAGRAM
		16-M-07	MEMBRANE BUILDING - RF SYSTEM INTAKE PIPING	03-S-07	HEADWORKS SECTIONS			04-E-24	SCHEMATIC WIRING DIAGRAM
		16-M-08	MEMBRANE BUILDING - RF SECTIONS	03-S-08	HEADWORKS SECTIONS			04-E-25	SCHEMATIC WIRING DIAGRAM
		16-M-09	MEMBRANE BUILDING - RF SYSTEM FEED PIPING	03-S-09	HEADWORKS SECTIONS			04-E-26	SCHEMATIC WIRING DIAGRAM
		16-M-10	MEMBRANE BUILDING - RF SYSTEM SECTIONS	03-S-10	HEADWORKS SCHEDULES AND DETAILS			04-E-27	SCHEMATIC WIRING DIAGRAM
		16-M-11	MEMBRANE BUILDING - CIP SYSTEM SUPPLY PIPING	05-S-01	EQ EFFLUENT PUMP STATION PLANS			04-E-28	SCHEMATIC WIRING DIAGRAM
		16-M-12	MEMBRANE BUILDING - CIP SYSTEM SUPPLY SECTIONS	05-S-02	EQ EFFLUENT PUMP STATION SECTIONS			04-E-29	SCHEMATIC WIRING DIAGRAM
		16-M-13	MEMBRANE BUILDING - CIP SYSTEM RETURN PIPING	05-S-03	EQ EFFLUENT PUMP STATION ELEVATIONS			05-E-01	ELECTRICAL INSTALLATION DETAILS
		16-M-14	MEMBRANE BUILDING - CIP SYSTEM RETURN SECTIONS	05-S-04	EQ EFFLUENT PUMP STATION DETAILS			05-E-02	ELECTRICAL INSTLLATRION DETAILS
		16-M-15	MEMBRANE BUILDING - COMPRESSED AIR SYSTEM	08-S-01	PRIMARY SPLITTER BOX PLANS			05-E-03	ELECTRICAL INSTALLATION DETAILS
		16-M-16	MEMBRANE BUILDING - COMPRESSED AIR SYSTEM ENLARGMENT	08-S-02	PRIMARY SPLITTER BOX SECTIONS			05-E-04	ELECTRICAL INSTLLATRION DETAILS
		16-M-17	MEMBRANE BUILDING - DRAIN PIPING	09-S-01	BIOLOGICAL TREATMENT FOUNDATION PLAN			06-I-00	P&ID LEGEND AND NOTES
		16-M-18	MEMBRANE BUILDING - DRAIN PIPING SECTIONS	09-S-02	BIOLOGICAL TREATMENT TOP OF STRUCTURE PLAN			06-I-01	INFLUENT PS P&ID
		16-M-19	MEMBRANE BUILDING - XR RETURN SYSTEM	09-S-03	BIOLOGICAL TREATMENT SECTIONS			06-I-02	INFLUENT METERING FLUME P&ID
		16-M-20	MEMBRANE BUILDING - XR RETURN SYSTEM SECTIONS	09-S-04	BIOLOGICAL TREATMENT SECTIONS			06-I-03	INFLUENT SCREENS P&ID
		16-M-21	MEMBRANE BUILDING - POTABLE WATER PLAN	09-S-05	BIOLOGICAL TREATMENT WALL SECTIONS			06-I-04	VORTEX GRIT SYSTEM P&ID
		16-M-22	MEMBRANE BUILDING - MISC SECTIONS	09-S-06	BIOLOGICAL TREATMENT WALL SECTIONS			06-I-06	EQUALIZATION TANK P&ID
		17-M-01	UV DISINFECTION SYSTEM - TROJAN - PLAN AND SECTIONS	09-S-07	BIOLOGICAL TREATMENT WALL SECTIONS			06-I-07	EQ TANK EFFLUENT PUMP STATION P&ID
		17-M-02	UV DISINFECTION SYSTEM - WEDECO - PLAN AND SECTIONS	11-S-01	CLARIFIER FOUNDATION PLAN			06-I-08	SPLITTER BOX NO. 1 P&ID
		18-M-01	CASCADE AERATION - BOTTOM PLAN	11-S-02	CLARIFIERS T/STRUCTURE PLAN			06-I-09	BIOLOGICAL PROCESS BASIN P&ID
		18-M-02	CASCADE AERATION - SECTIONS	11-S-03	CLARIFIER SECTON AND DETAILS			06-I-10	SPLITTER BOX NO. 2 P&ID
		21-M-01	METAL SALT CHEMICAL STORAGE PLAN	11-S-04	CLARIFIER SECTON AND DETAILS			06-I-11	SECONDARY CLARIFIERS P&ID
		21-M-02	METAL SALT CHEMICAL STORAGE SECTIONS AND DETAILS	12-S-01	RAS-WAS-SCUM PUMP STATION FOUNDATION & FLOOR PLAN			06-I-12	RAS-WAS-SCUP PUMP STATION P&ID
		22-M-01	NaOH CHEMICAL STORAGE - PLAN	12-S-02	RAS-WAS-SCUM PUMP STATION T/STRUCTURE PLAN			06-I-13	DISK FILTERS P&ID
		22-M-02	NaOH CHEMICAL STORAGE - SECTIONS AND DETAILS	12-S-03	RAS-WAS-SCUM PUMP STATION T/STRUCTURE PLAN			06-I-14	MEMBRANE INFLUENT PUMP STATION P&ID
		23-M-01	AEROBIC DIGESTERS - DEMOLITION PLAN	12-S-04	RAS-WAS-SCUM PUMP STATION SECTIONS			06-I-15	MEMBRANE FILTER SYSTEM
		23-M-02	AEROBIC DIGESTERS - TOP PLAN	12-S-05	RAS-WAS-SCUM PUMP STATION SECTIONS AND DETAILS			V06-I-01	MEMBRANE VENDOR P&ID 1 OF 5
		23-M-03	AEROBIC DIGESTERS - BOTTOM PLAN	12-S-05	RAS-WAS-SCUM PUMP STATION SECTIONS AND DETAILS			V06-I-02	MEMBRANE VENDOR P&ID 2 OF 5
		23-M-04	AEROBIC DIGESTERS - SECTIONS	14-S-01	DISC FILTER FOUNDATION PLAN AND DETAILS			V06-I-03	MEMBRANE VENDOR P&ID 3 OF 5
		23-M-05	AEROBIC DIGESTERS - SECTIONS & DETAILS	14-S-02	DISC FILTER SECTION AND DETAIL			V06-I-04	MEMBRANE VENDOR P&ID 4 OF 5
		24-M-01	BLOWER BUILDING PLAN AND SECTION	14-S-03	DISC FILTER ELEVATIONS			V06-I-05	MEMBRANE VENDOR P&ID 5 OF 5
		25-M-01	PACKAGE BOOSTER PUMP STATION DEMOLITION PLAN	15-S-01	MEMBRANE PUMP STATION PLANS AND DETAILS			06-I-18	UV DISINFECTION P&ID
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		25-M-03	PACKAGE BOOSTER PUMP STATION FINAL PLAN	16-S-01	MEMBRANE BUILDING FOUNDATION PLAN			06-I-20	EFFLUENT PUMP STATION P&ID
		00-MD-01	MECHANICAL DETAILS 1	16-S-02	MEMBRANE BUILDING SECTIONS			06-I-22	CHEM FEED P&ID - METAL SALT
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				17-S-01	UV SYSTEM - TROJAN PLANS			06-I-25	BLOWERS P&ID
				17-S-02	UV SYSTEM - TROJAN SECTION			06-I-26	REUSE TANK AND PUMP STATION P&ID
				17-S-03	UV SYSTEM - TROJAN SECTION AND ELEVATIONS			06-I-27	BELT PRESS P&ID
				17-S-04	UV SYSTEM - WEDECO PLANS			07-I-01	SCADA BLOCK DIAGRAM
				17-S-05	UV SYSTEM - WEDECO SECTION			08-E-01	AEROBIC DIGESTER & EQ TANK HAZARDOUS AREA BOUNDARIES
				17-S-06	UV SYSTEM - WEDECO SECTION AND ELEVATIONS			08-E-02	INFLUENT PS HAZARDOUS AREA BOUNDARIES
				18-S-01	CASCADE AERATOR PLAN AND SECTIONS			08-E-03	HEADWORKS HAZARDOUS AREA BOUNDARIES
				21-S-01	METAL SALT CHEMICAL STORAGE PLAN AND SECTION			08-E-04	BIOLOGICAL PROCESS BASINS HAZARDOUS AREA BOUNDARIES
				22-S-01	NaOH CHEMICAL STORAGE PLAN AND SECTION			08-E-05	RAS-WAS-SCUM PS HAZARDOUS AREA BOUNDARIES
				23-S-01	AEROBIC DIGESTER PLAN			09-H-01	HVAC SCHEDULES AND SPECIFICATIONS
								09-H-02	HVAC PLANS AND DETAILS
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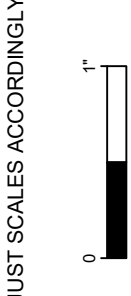


Infracore Consultants, Inc.

PROJECT NUMBER: ---- PROJECT DATE: JUNE 2022 REVISION ADDENDUM NO. 1	DATE 06/30/2022
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DESIGNED BY: AHW
 DRAWN BY: AHW
 REVIEWED BY: WSH

BAR BELOW IS 1" LONG FOR
 SCALES PLONG ON THIS SHEET.
 IF NO SCALE IS PLONG ON THIS SHEET,
 ADJUST SCALES ACCORDINGLY.



FLOWERY BRANCH WRF

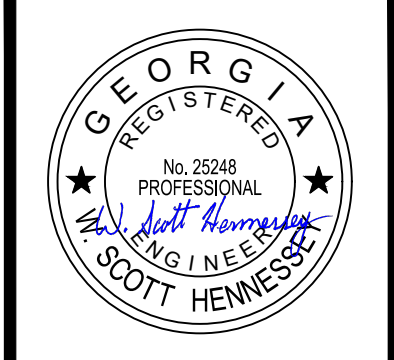
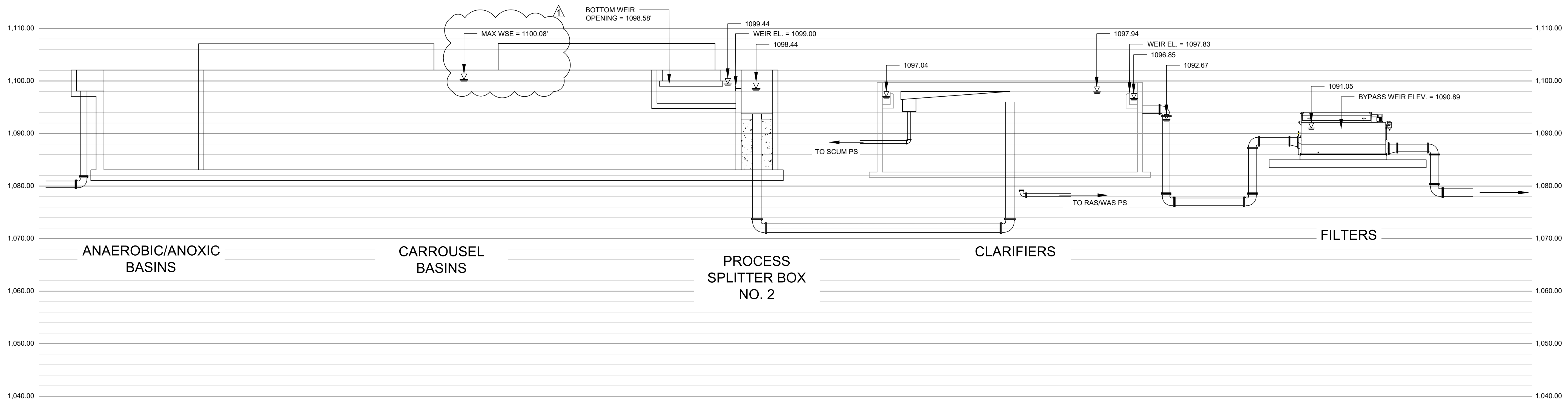
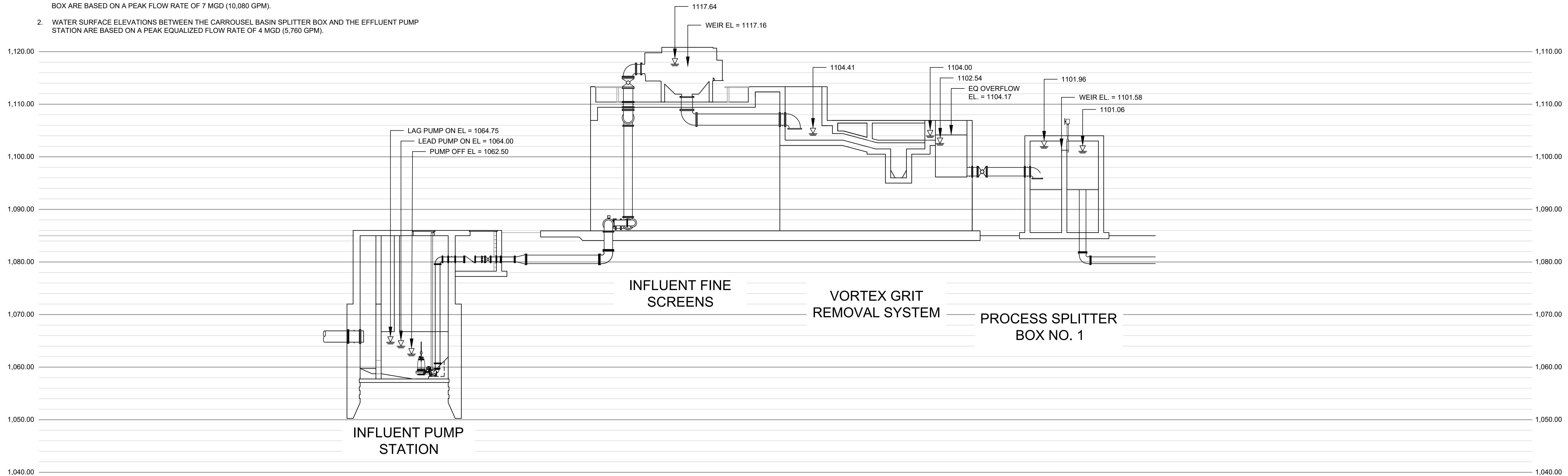
UPGRADE TO 2.2 MGD

SHEET INDEX

00-G-00

NOTES:

1. WATER SURFACE ELEVATIONS BETWEEN THE INFLUENT PUMP STATION AND THE CARROUSEL BASIN SPLITTER BOX ARE BASED ON A PEAK FLOW RATE OF 7 MGD (10,080 GPM).
2. WATER SURFACE ELEVATIONS BETWEEN THE CARROUSEL BASIN SPLITTER BOX AND THE EFFLUENT PUMP STATION ARE BASED ON A PEAK EQUALIZED FLOW RATE OF 4 MGD (5,760 GPM).



Infracore Consultants, Inc.
ESI
 ENGINEERING STRATEGISTS, INC.

PROJECT NUMBER: ----	DATE
PROJECT DATE: JUNE 2022	06/30/2022
REVISION	
1	ADDENDUM NO. 1

DESIGNED BY: AHW
 DRAWN BY: AHW
 REVIEWED BY: WSH

BAR BELOW IS 1" LONG FOR SCALE. ALL DIMENSIONS ARE IN FEET UNLESS NOTED OTHERWISE. ADJUST SCALES ACCORDINGLY.

FLOWERY BRANCH WRF
 UPGRADE TO 2.2 MGD
 HYDRAULIC PROFILE

00-G-05

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- NOTES:
- CONTRACTOR SHALL COORDINATE ALL FINAL EQUIPMENT INSTALLATION LOCATIONS WITH THE RESPECTIVE SHOP DRAWING SUBMITTALS.
 - LEVEL TRANSDUCER INSTRUMENT SHALL BE CONTAINED INSIDE OF A WALL MOUNTED 6" PVC PIPE STILLING WELL. THE LEVEL TRANSDUCER TRANSMITTER SHALL BE HANDRAIL MOUNTED, IN THE GENERAL LOCATION SHOWN. CONTRACTOR SHALL SUPPLY ALL NECESSARY MOUNTING HARDWARE TO INSTALL THE 6" PVC STILLING WELL PLUMB AND SECURE, AS REQUIRED FOR A FUNCTIONAL LEVEL MEASUREMENT SYSTEM.
 - HEAT TRACE AND INSULATE CHEMICAL FEED PIPING.



Infracore Consultants, Inc.
ESI
 ENGINEERING STRATEGIES, INC.

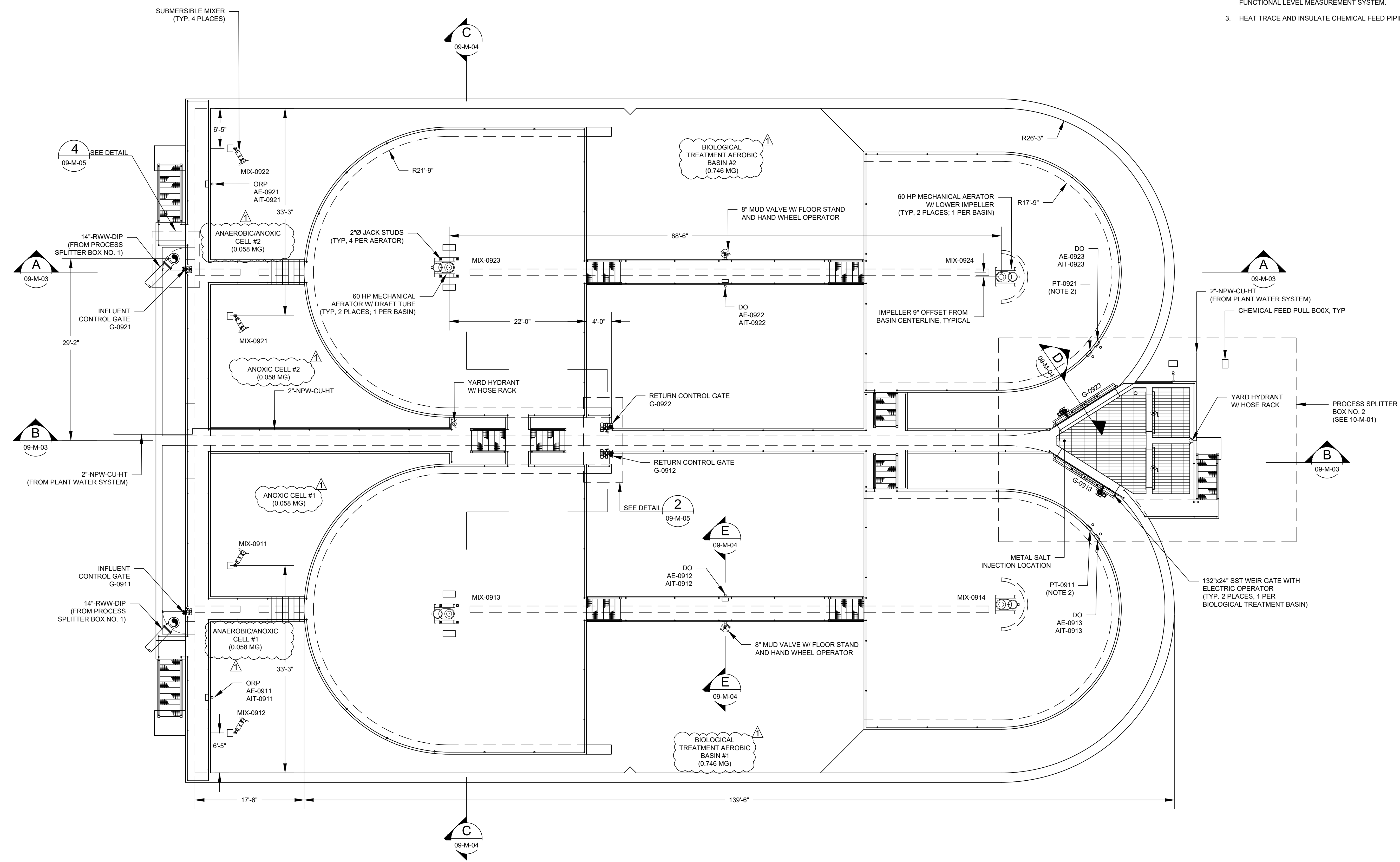
PROJECT NUMBER: 09-M-02	DATE: 06/07/2022
PROJECT DATE: JUNE 2022	REVISION: 1
ADDENDUM NO. 1	

DESIGNED BY: AHW	AWH
DRAWN BY: AHW	WSH
REVIEWED BY:	

FLOWERY BRANCH WRF
 UPGRADE TO 2.2 MGD
 BIOLOGICAL TREATMENT - TOP PLAN

09-M-02

ISSUED FOR BID



TOP PLAN (ELEV. 1107.08')
 1/8" = 1'-0"

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SECTION 00010
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APPENDIX A

SUBSURFACE GEOTECHNICAL REPORT – GEO-HYDRO PROJECT # 191126.20
SUBSURFACE GEOTECHNICAL REPORT – GEO-HYDRO PROJECT # 210203.20

BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

BIDDER (Name and Address):

SURETY (Name/Address of Principal Place of Business):

OWNER:

**City of Flowery Branch
5410 W. Pine Street
Flowery Branch, GA 30542**

BID

Bid Due Date:

at 10:00 A.M., Local Time on *July 15, 2022*

Project/Description:

The work includes all labor, materials, and incidentals necessary to install and/or construct the following major items as shown on the drawings and described in the specifications:

- **Influent pumping station**
- **Headworks consisting of mechanical screens, grit chambers and flow measurement device**
- **Carrousel aeration basins with anaerobic and anoxic zones**
- **Secondary clarifiers**
- **Return activated sludge and waste activated sludge pumping station**
- **Cloth media filters - one new and one to be relocated**
- **Reconstruction of the Pall membrane system**
- **Ultraviolet disinfection system**
- **Conversion of the existing biological system to an aerobic digestion system**
- **New emergency generator**
- **Yard piping to support the plant improvements**
- **Electrical system expansion**
- **Grading and site work**

BOND

Bond Number: _____

Date (Not later than Bid due date): _____

Penal sum: **FIVE PERCENT OF BID**

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

BIDDER

SURETY

Bidder's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature and Title

By: _____
(Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

Note: Above addresses are to be used for giving required notice.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner, or
 - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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SECTION 00430
CORPORATE CERTIFICATE

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

This _____ day of _____, 20____.

Corporate
Secretary:

(signature)

(printed name)

(SEAL)

** END OF SECTION **

SECTION 00450
AFFIDAVIT OF STATUS

**Affidavit Verifying Status
For the City of Flowery Branch
Public Benefit Application**

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

1. _____ I am a United States citizen

OR

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

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

By: _____
(signature)

(printed name)

Date: _____

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

(Notary Public) (signature)

My Commission Expires: _____

(SEAL)

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

**** END OF SECTION ****

SECTION 00470
CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is contracting with the City of Flowery Branch has registered with and is participating in a federal work authorization program [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services pursuant to this contract with the City of Flowery Branch, contractor will secure from such subcontractor(s) similar verification of compliance with O.C.G.A. § 13-10-91 on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and to provide a copy of each such verification to the City of Flowery Branch at the time the subcontractor(s) is retained to perform such service.

Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

EEV/Basic Pilot Program User Identification Number: _____

Contractor Name: _____

By: _____
(signature of authorized agent)

(printed name of authorized agent)

Title: _____

Date: _____

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

(Notary Public) (signature)

My Commission Expires: _____

(SEAL)

** END OF SECTION **

SECTION 00480
SUBCONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is contracting with _____ (name of contractor), which has a contract with the City of Flowery Branch has registered with and is participating in a federal work authorization program [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform Control Act of 1986 (IRCA), P.L. 99-603], in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

EEV/Basic Pilot Program User Identification Number: _____

Subcontractor
Name: _____

By: _____
(signature of authorized agent)

(printed name of authorized agent)

Title: _____

Date: _____

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

(Notary Public)

(signature)

My Commission Expires: _____

(SEAL)

** END OF SECTION **

SECTION 02060
DEMOLITION OF EXISTING FACILITIES

1 GENERAL

1.1 SCOPE

- A. The work in this Section consists of furnishing all material, equipment, and labor necessary for demolishing and disposing of all materials from existing structures, piping and other designated facilities indicated on the drawings. Work includes all excavation and backfilling required for removing existing facilities.

1.2 SUBMITTALS

- A. The Contractor shall submit a detailed demolition plan for approval at least 10 days before demolition is started. The demolition plan shall include a detailed description of the methods and equipment to be used for each operation and the sequence of work. The demolition procedures shall provide for safe conduct of work, protection of the property and new work, which is to remain undisturbed and coordination with other work or operation which may be in progress.

2 PRODUCTS (NOT USED)

3 EXECUTION

3.1 DEMOLITION

- A. All material shall be removed as necessary for construction, or in any event, to a minimum depth of three feet below finished grades as shown on the Drawings.
- B. The Contractor will be responsible for any damage caused to other structures, and shall be held liable for any and all repairs, replacement of parts or renovations required to restore any structure, portion of structure, equipment or items, not intended for demolition. The Contractor shall restore any damaged facilities to their condition prior to demolition provided the damage was the result of the demolition. If the Contractor does not repair any such damage immediately, or if the repairs are not suitable to the Owner, the Owner reserves the right to have such repairs made by another party and deduct the cost of required repairs from money due Contractor.
- C. In addition to these specifications, the Contractor shall utilize the demolition details and requirements noted and detailed on the drawings.
- D. Dust-tight, weather-tight partitions shall be erected to protect existing facilities from dust and weather while wrecking is in progress and until such time as closures have been made. Partitions may be constructed of wood and shall have a covering of tarred roofing felt on the weather side.
- E. All salvageable metal materials shall remain the property of the Owner, unless otherwise noted, and shall be cleaned and stored on the Owner's property as directed by the Owner.

3.2 DISPOSAL

- A. All materials designated to be demolished and removed shall become the property of the Contractor, unless noted otherwise.
- B. The Contractor shall remove all demolished structures, piping and materials from the work site and dispose of it in a legal manner.
- C. All demolished structures, equipment and materials, which are either left in place or removed to the disposal site, shall be in a non-hazardous condition.

** END OF SECTION **

SECTION 11360
DISC FILTRATION

1 GENERAL

1.1 SCOPE OF WORK

- A. The work covered by this section includes furnishing all labor, materials, and equipment required to install, test, and place into satisfactory operation the Disc Filtration system and appurtenances as specified herein and as shown on the drawings.

1.2 SUBMITTALS

- A. The Contractor shall submit shop drawings and product data to the Engineer in accordance with the requirements of Section 01300, Submittals.
- B. At a minimum, the submittals shall contain, but not be limited to, the following information to establish compliance with these specifications.
 - 1. Drawings showing plan, elevation, and appropriate cross sections of the equipment being provided.
 - 2. Complete engineering data including, but not limited to, descriptive data, material specifications, motor performance data, piping diagrams, and wiring diagrams, as appropriate, to support the design of the equipment being provided.
 - 3. Calculations that provide a basis of design for each piece of equipment. Calculations shall justify the capacity and the horsepower requirements for each type of equipment provided and shall be sealed by a registered professional engineer.
 - 4. Submit control panel schematics and layout drawings and submit manufacturer's catalog information for all components used.
 - 5. Printed warranty.

1.3 OPERATION AND MAINTENANCE DATA

- A. The Contractor shall provide operation and maintenance data in accordance with the requirements of Section 01730, Operating and Maintenance Data.

1.4 STORAGE AND PROTECTION

- A. Equipment shall be stored and protected in accordance with the requirements of the manufacturer and Section 01620, Storage and Protection.

1.5 WARRANTIES AND BONDS

- A. The Contractor shall provide a warranty against defective or deficient materials and workmanship in accordance with the requirements of Section 01740, Warranties and Bonds.
- B. The equipment manufacturer shall provide a warranty against defective or deficient equipment, workmanship and materials under normal use, operation and service. The warranty shall be for one (1) year from the date of Engineer's acceptance of the work. The warranty shall be in printed form and apply to all similar units.

2 PRODUCTS

2.1 MANUFACTURER

- A. The Disc Filtration system shall be Hydrotech Model HSF2214-1F disc filters as manufactured by Kruger.

2.2 DESIGN CRITERIA

- A. Provide one (1) disc filtration system unit that meets the following design criteria:

Parameter	Value
Influent Source	Secondary Clarified Influent
Average Day Flow (per unit)	2.2 MGD
Peak Day Flow (per unit)	4 MGD
Influent TSS	≤20 mg/l
Effluent TSS	≤5 mg/l

2.3 SYSTEM REQUIREMENTS

- A. Manufacturer, Kruger, shall be responsible for providing a complete and operational system.
- B. In general, the complete disc filtration system shall consist of the following:
 1. Two (2) disc filtration units, one (1) existing, relocated unit and one (1) new unit. New disc filter shall be equal to the existing disc filter except that pipe attachment locations shall be mirrored to facilitate side-by-side plumbing as shown on the Drawings.
 2. A new control panel shall be provided for Disc Filter No. 2.
 3. Relocated metal stairs and access platform (located outside the disc filter units).
 4. New metal ladder and access platform (located centrally between the disc filter units).
 5. New submersible backwash waste pump and backwash waste day tank, including all operational floats, conduit and wiring, mounting hardware, and all appurtenances required for a functional backwash waste pumping system.
- C. The Contractor shall be responsible for coordination with the Manufacturer in order to provide all required conduit and wiring to ensure a complete and operational system

2.4 MATERIALS

A. Filter Unit

- ~~1. Disc Diameter: _____ 2.2 meters~~
- ~~2. Peak Hydraulic Loading Rate: _____ 5.0 gpm/ft²~~
- ~~3. Media Pore Size: _____ 10 μm~~
- ~~4. Filter Cloth Material _____ Polyester~~
- ~~5. Number of Discs per unit: _____ 14~~
- ~~6. Chassis Material: _____ 304 SS~~
- ~~7. Cover Material: _____ GRP~~
- ~~8. Tank Material: _____ 304 SS~~
- ~~9. Influent/Effluent Flange: _____ ANSI 20"~~
- ~~10. Bypass Flange: _____ ANSI 20"~~
- ~~11. Backwash Waste Flange: _____ ANSI 6"~~
1. **Disc Diameter: 2.2 meters**
2. **Peak Hydraulic Loading Rate: 5.0 gpm/ft²**
3. **Total Filter Area per Unit: 845 ft²**
4. **Submerged Filter Area per Unit: 549 ft²**
5. **Media Pore Size: 10 μm**
6. **Filter Cloth Material Polyester**
7. **Number of Discs per unit: 14**

- 8. **Chassis Material:** **304 SS**
- 9. **Cover Material:** **GRP**
- 10. **Tank Material:** **304 SS**
- 11. **Influent/Effluent Flange:** **ANSI 20"**
- 12. **Bypass Flange:** **ANSI 20"**
- 13. **Backwash Waste Flange:** **ANSI 6"**

[ADDENDUM 1]

B. Filter Drive Unit

- 1. Drive Motor Horsepower: 1.5 hp
- 2. Drive Assembly: Chain and Sprocket

C. Backwash Cleaning System

- 1. Backwash Water Pump Horsepower: 15 hp
- 2. Backwash Pressure: 110 psi
- 3. Backwash Pump Rated Flow: 96 gpm

D. Backwash Waste System

- 1. Existing Backwash Waste Holding Tank Size: 6'-0" dia. X 5'-0" tall
- 2. Existing Backwash Waste Holding Tank Material: 304 SS
- 3. Backwash Waste Pump Type: Submersible
- 4. Backwash Waste Pump Horsepower: 5 hp
- 5. Backwash Waste Pump Duty Point: 160 GPM @ 17 feet
- 6. Backwash waste pump shall conform to Section 11245, Submersible Pumps.

2.5 DISC FILTER CONTROL PANEL

- A. Manufacturer, Kruger, shall provide one (1) filter control system including panels and accessories for Disc Filter No. 2. The existing relocated filter shall have the existing control panel relocated including all associated equipment, alarms, and accessories.
- B. The automatic and manual controls for operation of the Disk Filter system shall be furnished fully assembled, wired and pre-programmed in a UL 508A Certified Industrial Control Panel. Controls shall be provided to control or monitor equipment as described in the contract drawings. The control panel shall include as a minimum the following components:
 - 1. NEMA 4X Stainless Steel enclosure. A 304 10-gauge stainless steel sun shield shall be included. Sunshield shall overhang the front of the panel a minimum of 10".
 - 2. Main breaker with external lockable handle
 - 3. All required combination type motor starters
 - 4. 480/120V control power transformer
 - 5. Operator devices (pushbuttons and selector switches) mounted through the control enclosure door for manual operation of the filter. Transformer type pilot lights and illuminated pushbuttons shall be provided for indication of an operation status. Lights shall be a 6 VAC incandescent type lamp. Color coding shall be applied as required and is as follows:

Amber – Alarm active, caution
 Green – Valve open, motor running
 Red – Valve closed
 White – Information

All operator devices shall be UL Listed, 30.5mm style, NEMA Type 4X rated, oil and water tight with finger safe guards located on the contact blocks to prevent accidental contact with wire connections. Operator device function shall be identified with an engraved white Gravoply nameplate with black letters. Operator devices shall be Allen-Bradley 800H, Square D 9001, or approved equal.

6. A UL listed active tracking filter shall be provided to protect the PLC and HMI power feeds from high-frequency noise and low-energy transients. It shall be designed for a single-phase input voltage of 120/240VAC operating at 47 to 63 Hz. The unit shall reduce normal mode transients to plus or minus 2 volts, provide surge capacity of 45,000 amps and protect in all modes (Line to neutral, line to ground and neutral to ground).
 7. Automatic operation of the Filter shall be controlled through a Allen Bradley MicroLogix 1400 programmable logic controller (PLC) mounted inside the control panel. The PLC components shall consist of a base unit, expansion I/O modules, and memory module. All input and output points supplied (including unused) shall be wired to terminal blocks. The PLC user memory shall consist of a minimum of 20K words of program and data. All PLC hardware shall be UL listed and operate at an ambient temperature of -4° to 140° F (-20° to 60° C). The PLC shall include all required I/O modules.
 8. An Ethernet switch shall be provided inside the control enclosure to provide connectivity between the PLC, operator interface and plant networking. The switch shall support both 10 and 100 Mbit/s operation and provide for store and forward switching mode. The switch shall have five (5) 10/100Base-T ports with RJ-45 sockets and shall support auto-crossing, auto-negotiation and auto-polarity. Maximum distance between devices shall be 100m. One of the EtherNet/IP ports shall be dedicated to communication link to plant SCADA system.
 9. The control system shall be equipped with a UL listed operator interface that provides control display screens with screen sun protection cover. These screens shall be used by the operator to monitor and control filter status, setpoint and alarm information.
 10. The Interface shall allow the Operator access to adjust the following operating parameters:
 - a. Backwash interval, Backwash duration, Solids Waste interval, Solids Waste duration, Number of Backwashes between Solids Waste interval.
 11. The operator interface shall provide information to assist the Operator in assessing the status of the filter system. The interface screen shall display, at minimum, the following parameters:
 - a. Water level in the filter, Time since last Backwash, Time since last Solids Waste withdrawal, Elapsed time on the Drive Motor, Elapsed time on the Backwash/Waste Pump(s), Total Backwash time and cycles, Total Solids Waste withdrawal time and cycles.
 12. The operator interface shall allow the Operator to:
 - a. Initiate Backwash
 - b. Control all electric actuated valves
 13. The interface shall display the alarm history. The alarm history shall include the time and date of the most recent 25 alarms along with the description of the alarm.
 14. The interface shall also display current alarms, including the date, time and a description of the alarm.
 15. As a diagnostic aid to the Operator, the interface shall display the time between Backwashes for the most recent 40 Backwashes.
- C. Control panel shall include all required components for Disc Filter system safe and proper operation. See Electrical Drawings for additional information and requirements.

2.6 INSTRUMENTATION

- A. Manufacturer, Kruger, shall provide three (3) liquid level probes. Manufacturer shall be responsible for calibration and start-up of the instruments supplied by Manufacturer. Manufacturer shall be responsible for verifying the suitability of the instruments associated with the existing disc filter unit, prior to its relocation. Manufacturer shall be responsible for providing any replacement control panels and/or instrumentation associated with the relocation of the existing disc filter unit.
- B. The Contractor shall be responsible for the following:
 - 1. Installation of the disc filter control panels.
 - 2. All interconnecting wiring and/or conduit between the supplied control panels and disc filter equipment.
 - 3. Any junction or pull boxes or any other like device needed to supply the interconnecting wiring.
 - 4. All field connections/terminations to the supplied control panels, the disc filter equipment and between the disc filter equipment and supplied control panels.
 - 5. All supports and anchoring required for installation of the disc filter units.
 - 6. Plumbing/interconnecting piping, electrical connections, and instrument installation.

2.7 ACCESS PLATFORMS, GRATING AND HANDRAILS

- A. Contractor shall be responsible for the relocation of the existing access platforms located at the existing disc filter area. The two (2) existing metal access platforms, access ladders, handrails, and all mounting hardware shall be relocated and installed on the outer sides of the new disc filter facility.
- B. Contractor shall be responsible for providing all required mounting hardware and accessories required for installation of the relocated access platform, ladders and handrails.
- C. Contractor shall coordinate with the disc filter Manufacturer to ensure proper access is provided by the relocated access platforms.
- D. Contractor shall provide a new access platform, ladder, handrails and required mounting hardware as shown on the Drawings to be installed between the disc filter units.
- E. Contractor shall coordinate with the disc filter Manufacturer to ensure proper access is provided by the new access platform.

3 EXECUTION

3.1 INSTALLATION

- A. Disc Filtration system and appurtenances, all required access platforms, and backwash waste system shall be installed in accordance with the Manufacturers requirements to produce a finished product that is clean and demonstrates true craftsmanship.
- B. Manufacturer shall allow for a minimum of one (1) trip to the project site to assist the contractor with the installation of the equipment. If additional trips are required, they shall be the responsibility of the Contractor and there shall be no additional cost to the Owner.

3.2 STARTUP AND TESTING

- A. The complete disc filtration system and all appurtenances shall be field tested after installation to demonstrate proper operation to the satisfaction of the Engineer. Field tests shall be conducted by the Manufacturer or his Authorized Representative. All tests shall be performed in the presence of the Engineer. Test results shall be in printed form and signed by the Manufacturer or his Representative and supplied to the Owner.
- B. Manufacturer shall allow for a minimum of one (1) trip to the project site for startup and testing of the equipment. If additional trips are required, they shall be the responsibility of the Contractor and there shall be no additional cost to the Owner.

3.3 CERTIFICATION

- A. A Manufacturer's representative that is qualified in the particular equipment requirements shall fully inspect and certify the equipment installation. Written certifications shall be provided that state the equipment is installed properly, is operating within the design parameters, and will be warranted as required by the specifications.

3.4 TRAINING

- A. Training shall be conducted in accordance with Section 01790, Demonstration and Training.
- B. The Manufacturer shall conduct two (2) training classes for the Owner's personnel. The training classes shall be conducted on two consecutive days.
- C. Training classes shall not be conducted concurrently with startup and testing; therefore, Manufacturer shall allow for one (1) additional trip to the project site.
- D. Training classes shall not be conducted until the Manufacturer has certified that the equipment is properly installed and operational.
- E. Training classes shall be scheduled with the Owner a minimum of one (1) week prior to conducting the class.

3.5 ACCEPTANCE

- A. Acceptance of equipment will not be made until all equipment has been installed and tested, the Manufacturer has certified the installation, the manufacturer has conducted the required training classes, final operation and maintenance manuals have been submitted to the engineer, and all spare parts have been turned over to the Owner.

** END OF SECTION **

SECTION 11500
POLYETHYLENE STORAGE TANKS

1 GENERAL

1.1 SCOPE OF WORK

- A. The work covered by this section includes furnishing all labor, materials, and equipment required to install, test, and place into satisfactory operation high density cross-linked polyethylene storage tanks and appurtenances as specified herein and as shown on the drawings.

1.2 SUBMITTALS

- A. The Contractor shall submit shop drawings and product data to the Engineer in accordance with the requirements of Section 01300, Submittals.
- B. At a minimum, the submittals shall contain, but not be limited to, the following information to establish compliance with these specifications.
1. Dimensional drawings of tanks showing the location and orientation of openings, fittings, accessories, restraints, and supports
 2. Tank and fitting material
 - a. Resin manufacturer data sheet
 - b. Fitting material
 - c. Gasket style and material
 - d. Hardware material
 3. Calculations prepared and stamped by an engineer registered in the state of Georgia.
 - a. Wall thickness calculations per ASTM D 1998 using 600 PSI design hoop stress
 - b. Tank restraint system
 4. Electrical heat trace and foam insulation data sheets
 5. Printed warranty
 6. Certified Factory Test Report
 - a. Material verification
 - b. Wall thickness verification
 - c. Fitting placement verification
 - d. Visual inspection
 - e. Impact test
 - f. Gel test
 - g. Hydrostatic test

1.3 OPERATION AND MAINTENANCE DATA

- A. The Contractor shall provide operation and maintenance data in accordance with the requirements of Section 01730, Operating and Maintenance Data.

1.4 STORAGE AND PROTECTION

- A. Equipment shall be stored and protected in accordance with the requirements of the manufacturer and Section 01620, Storage and Protection.

1.5 WARRANTIES AND BONDS

- A. The Contractor shall provide a warranty against defective or deficient materials and workmanship in accordance with the requirements of Section 01740, Warranties and Bonds.

- B. The equipment manufacturer shall provide a warranty against defective or deficient equipment, workmanship and materials under normal use, operation and service. The warranty shall be for five (5) years from the date of Engineer's acceptance of the work. The warranty shall be in printed form and apply to all similar units.

2 PRODUCTS

2.1 MANUFACTURERS

- A. Approved manufacturers include:
1. Poly Processing Company
 2. Snyder Industries, Inc.
 3. Assmann Corporation of America

2.2 DESIGN CRITERIA

- A. Provide one (1) high density cross-linked polyethylene storage tanks that meets the following design criteria.

Volume	Minimum 6,000 Gallons
Chemical Stored	Sodium Hypochlorite
Chemical Concentration	12.5%
Specific Gravity	1.20
Minimum Ambient Air Temperature	0 °F
Tank Diameter	Maximum 12'-0"
Tank Specific Gravity Rating	1.90
Exposure	Outside

- B. Provide one (1) high density cross-linked polyethylene storage tanks that meets the following design criteria.

Volume	Minimum 6,000 Gallons
Chemical Stored	Metal Salt (PACl)
Chemical Concentration	25%
Specific Gravity	1.20
Minimum Ambient Air Temperature	0 °F
Tank Diameter	Maximum 12'-0"
Tank Specific Gravity Rating	1.90
Exposure	Outside

2.3 CONSTRUCTION

A. General

1. Tanks shall be rotationally-molded, vertical, high density cross-linked polyethylene, one-piece seamless construction, cylindrical in cross-section, flat bottomed, domed top, and vertical.

2. Tanks shall be provided with an entrance man-way, fittings, electrical heat tracing, spray-on urethane foam insulation, and exterior coating.
3. Tanks shall have no bolt hole penetrations through the tank wall below the maximum storage level. All outlets below the maximum storage level shall be integrally molded outlets. Anchorage of accessories to the sidewalls shall be accomplished with stainless steel straps with welded on threaded studs that wrap around the tank.
4. Tanks shall be marked to identify the manufacturer, date of manufacture and serial number.
5. Unless otherwise specified, all metallic hardware, bolts, nuts, washers, etc. shall be Type 316 stainless steel.
6. All gasket materials shall be EPDM.

B. Polyethylene Storage Tanks

1. Tanks shall be manufactured using high density cross-linked polyethylene resin manufactured by Exxon Mobil Chemicals, or equal.
2. All materials shall be NSF/ANSI Standard 61 certified for storage of the specified chemical(s).
3. Resin shall contain a minimum of a UV 8 ultraviolet stabilizer.
4. Tank material shall meet or exceed the following properties:

Property	ASTM	Value
Density, g/cc	D1505	0.938-0.946
Environmental Stress Cracking Resistance, F50, hours, 10% Igepal	D1693	>1,000
Tensile Strength, Ultimate PSI, 2-inch/minimum	D638	>2,600
Elongation at Break, %, 2-inch/minimum	D638	>300
Vicat Softening Point, °F	D1525	248
Impact Brittleness Temperature, °F	D746	< -180
Flexural Modulus, PSI	D790	87,000

5. Wall thickness for a given hoop stress is to be calculated in accordance with ASTM D 1998. Tanks shall be designed using a hoop stress no greater than 600 psi at 100 °F. Wall thickness calculations shall assume that all tank contents have a specific gravity of not less than 1.9.
6. In NO case shall the tank thickness be less than design thickness.
7. The wall thickness of any cylindrical portion at any fluid level shall be determined by the following equation.

$$T = P \times OD/2SD \text{ or } 0.433 \times SG \times OD \times H \times OD/2SD$$

Where:

- T = wall thickness, in
- P = pressure, psi
- SG = specific gravity, gm/cc
- H = fluid head, ft
- OD = outside diameter, ft
- SD = hydrostatic design stress, 600 psi

8. The minimum wall thickness shall be sufficient to support its own weight in an upright position without external support but shall not be less than 0.1875" thick.

9. Top head shall be integrally molded with the cylindrical wall. Its minimum thickness shall be equal to the thickness of the top of the straight sidewall. In most cases, flat areas shall be provided for attachment of large fittings on the dome of the tank.
10. Bottom head shall be integrally molded with the cylindrical wall.
 - a. The minimum Knuckle Radius for tanks with a diameter less than or equal to 6-feet shall be 1-inch.
 - b. The minimum Knuckle Radius for tanks with a diameter greater than 6-feet shall be 1-1/2 inch.
11. Tank outlet shall be integrally molded to the tank. Outlet shall have a 4-inch diameter 150 lb. flange connection.
12. Tank identification shall be permanently embossed into tank.
 - a. Manufacturer
 - b. Date of Manufacture
 - c. Serial Number
13. Tanks shall have a minimum of 3 lifting lugs.
 - a. Lifting lugs shall be designed for lifting the tank when it is empty.
14. Tanks shall have a minimum of 4 tie-down lugs.
 - a. Design tie-down lugs in accordance with 2012 International Building Code with 2014 Georgia Amendments. Assume 100 MPH wind load. Design shall be sealed by a structural engineer registered in the state of Georgia.
 - b. Metal components shall be Type 316 stainless steel and cables shall be PVC/vinyl coated Type 316 stainless steel.
15. Manway
 - a. Provide 24-inch diameter manway.
 - b. Metal components shall be Type 316 stainless steel.
 - c. Gasket material shall be EPDM.
16. Tank color shall be natural.

2.4 TANK ACCESSORIES

A. Ladder

1. Provide fiberglass access ladder with safety cage and standing platform with handrails for each tank.
2. Standing platform shall be minimum 24" x 24" square and shall be located 48" below the top of the tank. Safety handrails around standing platform shall be supplied.
3. Ladder anchors shall not penetrate the tank wall below the maximum storage elevation.
4. Use proper chemical resistant materials when anchoring to tank dome.
5. Ladders shall be designed to OSHA standard 2206; 1910.27.
6. Ladder design shall be signed and sealed by a registered professional engineer.
7. Ladders shall be mounted in a manner that will allow for tank expansion and contraction due to temperature and loading changes.
8. Fiberglass material shall be premium grade polyester resin with flame retardant and UV inhibitor additives.
9. Color: yellow

B. Fittings

1. Each tank shall be provided with the following fittings. Refer to drawings for locations.

- a. Fill Line
 - 1) Provide 2" PVC through dome fill assembly with external fill piping and internal anti-foam elbow. External piping shall be supported without penetrating the tank wall below the maximum storage level.
 - b. Overflow
 - 1) Provide 2" PVC through dome fitting for overflow piping. External overflow piping shall be supported without penetrating the tank wall below the maximum storage level.
 - c. Tank Drain Connection
 - 1) Provide a 4" flexible connection piece that connects the integrally molded drain connection.
 - d. Vent
 - 1) Provide minimum 6" PVC "U" vent fitting with PVC or polypropylene insect screen. Provide larger vent if manufacturer design calculations indicate a larger vent is required.
 - e. Level Sensor
 - 1) Provide 4" PVC through dome fitting with flange adapter for mounting ultra-sonic level sensor.
 - f. Reverse Float Level Gauge
 - 1) Provide appropriate fittings and accessories for a reverse float level gauge on each tank. External piping shall be supported without penetrating the tank wall below the maximum storage level. All materials shall be compatible with chemical being stored.
2. Fitting shall be Schedule 80 PVC or a material that is compatible with the chemical being stored.
 3. Threads on threaded fittings shall be National Pipe Thread (NPT).
 4. Fittings shall be installed at the factory prior to application of the insulation.
 5. Gasket material shall be EPDM or a material that is compatible with the product being stored and shall be a minimum of ¼-in thick.
 6. All metal hardware, bolts, nuts, washers, etc. shall be Type 316 stainless steel.
 7. The head of the bolts for through dome fittings shall be encapsulated with polyethylene preventing fluid and vapor contact with the metal material. Encapsulated heads shall have a gasket to provide a sealing surface against the inner wall of the tank. Bolt holes shall straddle the principal centerline of the tank.
 8. Down pipes and fill pipes shall be supported at maximum 5-ft intervals. Down pipes and fill pipes shall be Schedule 80 PVC or material compatible with the chemical being stored.
9. U-Vents
 - a. Each tank must be vented for the material and flow and withdrawal rates expected. Vents should comply with OSHA 1910.106(F)(iii)(2)(IV)(9). U-vents shall be sized by the tank manufacturer and be furnished complete with insect screen.
 - b. U-vents shall be constructed of PVC or material compatible with the chemical stored.
- C. Tank Insulation and Heat Tracing
1. Tanks shall be heat traced and insulated.
 2. Heating systems shall be designed to meet the specific requirements of the tank such as tank material type, tank size, low ambient temperature, and desired maintenance temperature.

3. Heat tracing shall have a minimum delta-T of 60 °F.
4. Heating system components shall be NEMA 4 rated and factory pre-wired for 120 VAC.
5. Provide a control panel to monitor and operate the heat tracing system. The panel shall receive a single 120 volts, AC, 1-phase supply to operate the system as required. Provide all necessary components for a complete and fully functional system.
6. Insulation shall be polyurethane foam with a density of 2.0 - 3.0 lb/ft³ with an "R" value of 8.33/in.
7. The foam shall be applied with a nominal thickness of 2" to all external tank surfaces except the tank bottom shell.
8. Insulation shall be coated with a mastic material to protect the insulation from the outside environment.
9. Coating color shall be white.

D. Tank Labels

1. Labels identifying the chemical stored in the tank and the hazard rating.

2.5 FACTORY TESTING

A. Material Testing

1. Perform gel and low temperature impact tests in accordance with ASTM D1998 on condition samples cut from each polyethylene chemical storage tank.
2. Degree of Crosslinking
 - a. Use Method C of ASTM D1998-Section 11.4 to determine the ortho-xylene insoluble fraction of cross-linked polyethylene gel test. Samples shall test at no less than 60 percent.

B. Tank Testing

1. Dimensions
 - a. Take exterior dimensions with the tank empty, in the vertical position. Outside diameter tolerance, including out-of-roundness, shall be per ASTM D1998. Fitting placement tolerance shall be +/- 1/2-in vertical and +/- 1 degree radial.
2. Visual
 - a. Inspect for foreign inclusions, air bubbles, pimples, crazing, cracking, and delamination.
3. Hydrostatic test
 - a. Following fabrication, the vertical, flat bottom tanks, including inlet and outlet fittings, shall be hydraulically tested with water by filling to the top sidewall for a minimum of 1/2 an hour and inspecting for leaks. Following successful testing, the vertical tank shall be emptied and cleaned prior to shipment.
4. Prior to shipping tanks, provide engineer with a certified statement from the tank manufacturer that each tank has passed these inspections.

3 EXECUTION

3.1 INSTALLATION

- A. High density cross-linked polyethylene tanks shall be installed in accordance with the Manufacturer's requirements to produce a finished product that is clean and demonstrates true craftsmanship.
- B. Contactor shall install six (6) layers of felt paper between the tank and the slab. Felt paper shall be trimmed to the diameter of the tank.
- C. All electrical conduits shall be routed above the top of the containment wall.

- D. Manufacturer shall allow for a minimum of one (1) trip to the project site to assist the contractor with the installation of the equipment. If additional trips are required, they shall be the responsibility of the Contractor and there shall be no additional cost to the Owner.

3.2 STARTUP AND TESTING

- A. High density cross-linked polyethylene tanks shall be field tested after installation to demonstrate proper operation to the satisfaction of the Engineer. Field tests shall be conducted by the Manufacturer or his Authorized Representative. All tests shall be performed in the presence of the Engineer. Test results shall be in printed form and signed by the Manufacturer or his Representative and supplied to the Owner.
- B. Manufacturer shall allow for a minimum of one (1) trip to the project site for startup and testing of the equipment. If additional trips are required, they shall be the responsibility of the Contractor and there shall be no additional cost to the Owner.

3.3 CERTIFICATION

- A. A manufacturer's representative that is qualified in the particular equipment requirements shall fully inspect and certify the equipment installation. Written certifications shall be provided that state the equipment is installed properly, is operating within the design parameters, and will be warranted as required by the specifications.

3.4 TRAINING

- A. Training shall be conducted in accordance with Section 01790, Demonstration and Training.
- B. The manufacturer shall conduct two (2) training classes for the Owner's personnel. The training classes shall be conducted on two consecutive days.
- C. Training classes shall not be conducted concurrently with startup and testing; therefore, manufacturer shall allow for one (1) additional trip to the project site.
- D. Training classes shall not be conducted until the manufacturer has certified that the equipment is properly installed and operational.
- E. Training classes shall be scheduled with the Owner a minimum of one (1) week prior to conducting the class.

3.5 ACCEPTANCE

- A. Acceptance of equipment will not be made until all equipment has been installed and tested, the manufacturer has certified the installation, the manufacturer has conducted the required training classes, final operation and maintenance manuals have been submitted to the engineer, and all spare parts have been turned over to the Owner.

** END OF SECTION **