City of Canton, GA
Water Pollution Control Plant
Expansion to 6 MGD

November 6, 2020

ADDENDUM NO. 3

This Addendum forms part of the "Bid Documents" and modifies or clarifies the original Bid Documents issued on October 1, 2020. Prospective Bidders shall acknowledge receipt of the total number the Addenda issued for this Project on their Sealed Bids. Failure to do so may subject the Bidder to disqualification.

3-1 SPECIFICATION 00410, BID FORM

- **DELETE** in its entirety and **REPLACE** with a new Bid Form, consisting of 14 pages, attached hereto.

3-2 SPECIFICATION 01020, ALLOWANCES

- Paragraph 1.02 G (1). **DELETE** "*as determined by the Owner and Engineer*".

3-3 SPECIFICATION 01035, MAJOR EQUIPMENT

- Paragraph 1.05 A. **DELETE** "NOT".

3-4 SPECIFICATION 01590, FIELD OFFICES

- **ADD** new Specification 01590, Field Offices, consisting of six (6) pages, attached hereto, after Specification 01562, Dust Control.

3-5 SPECIFICATION 03410, HOLLOW CORE SLAB

- **ADD** new Specification 03410, Hollow Core Slab, consisting of four (4) pages, attached hereto, after Specification 03400, Precast Concrete Utility Structures.

3-6 SPECIFICATION 11202 - SLIDE GATES

- Paragraph 3.04.A: **ADD** the following paragraph after paragraph 3.03.B:

  "3.04. SUPPLEMENTS

A. The supplements listed below, following "End of Section," are a part of this Specification:

1. Canton WPCP Slide Gate Schedule."

3-7 SUPLEMENT TO SPECIFICATION 11202

- **APPEND** attached 11202 Supplement Canton WPCP Slide Gate Schedule.

3-8 SPECIFICATION 11212, VERTICAL TURBINE PUMPS

- Paragraph 1.01.A: **ADD** *"3. Equipment included is as follows:*

  a. Reuse Pump 1 11-RP-P-1
  b. Reuse Pump 2 11-RP-P-2"

- Paragraph 2.01.B: **DELETE** "*Fairbanks Moore Pump Company*" and **REPLACE** with "*Flowserve*".
- Paragraph 2.01.C: **DELETE** in its entirety.

3-9 SPECIFICATION 11237, ULTRAVIOLET DISINFECTION EQUIPMENT

- Paragraph 2.01 B. **DELETE** "*Or approved equal*" and **REPLACE** with "*Trojan Technologies*".

3-10 SPECIFICATION 11307, CENTRIFUGAL CHOPPER PUMPS

- Paragraph 1.01.A, ADD "*Equipment included is as follows:*

  1. Scum Pump 1 5-SC-P-1
  2. Scum Pump 2 5-SC-P-2"

- Paragraph 2.04.C.1.a. **ADD** "*if required by the manufacturer*" to the end of the last sentence.
- Paragraph 2.04.C.4.a. **DELETE** "*20-year average life*" and **REPLACE** with "*L-10 bearing life of 100,000 hours minimum*"
- Paragraph 2.04.C.4.b. At the end of the paragraph, **ADD** "*Oil lubricated bearings are also acceptable*".

3-11 SPECIFICATION 11311, HORIZONTAL SELF PRIMING PUMPS

Revise Specification 11311, Self-Priming Pumps as follows:

- Paragraph 1.01.A: add "*Equipment included are as follows:*

BNR Basin 1
Anoxic IR Pump 1 5-AT1-P-1
Oxic IR Pump 1 5-AT1-P-2

BNR Basin 2
Anoxic IR Pump 1 5-AT2-P-1
Oxic IR Pump 1 5-AT2-P-2

BNR Basin 3
Anoxic IR Pump 1 *5-AT3-P-1*
Oxic IR Pump 1 *5-AT3-P-2*

BNR Basin 4
Anoxic IR Pump 1 *5-AT4-P-1*
Oxic IR Pump 1 *5-AT4-P-2"*

- Paragraph 2.01.D: **ADD** *"If required by manufacturer" before "Grouting under the bases after the equipment…"*
- Paragraph 2.03.D.2: **ADD** *"ductile iron or" after "made of".*
- Paragraph 2.03.D.3: **DELETE** *"150 PSI." and* ***REPLACE*** with *"a minimum of 75 PSI.".*
- Paragraph 2.03.E.2: **DELETE** *"65-45-12 ductile iron"* and replace with *"grey iron or ductile iron".*
- Paragraph 2.03.E.7: **ADD** "*or ductile iron"* after *"cast steel"* in the first line.

3-12 SPECIFICATION 11315, PROGRESSIVE CAVITY PUMPS

- **DELETE** in its entirety and **REPLACE** with a new Specification 11315, consisting of 10 pages, attached hereto.

3-13 SPECIFICATION 11318, GRINDER PUMP STATION

- Paragraph 1.01.A: **ADD** *"at the Administration Building"* after *"Grinder Pump Station"* in the second line.

3-14 SPECIFICATION 11321, VORTEX GRIT CHAMBER AND CYCLONE SEPARATOR

- **DELETE** in its entirety and **REPLACE** with a new Specification 11321, consisting of 10 pages, attached hereto.

3-15 **SUPPLEMENT TO SPECIFICATION 11321**

- **APPEND** attached Section 11321 Supplement 1 Smith & Loveless Grit Removal Proposal.

3-16 Specification Section 11331 - FINE SCREENS AND CONVEYOR

- **DELETE** in its entirety and **REPLACE** with a new Specification 11331, consisting of 16 pages, attached hereto.

3-17 SPECIFICATION 11353, LIQUID POLYMER FEED SYSTEM

- Paragraph 1.01.B, add *"Equipment included are as follows:*

1. RDT Polymer Skid 1 15-POLY-P-1
2. RDT Polymer Skid 2 15-POLY-P-2

3. RDT Polymer Skid 3 15-POLY-P-3
4. BFP Polymer Skid 4 15-POLY-P-4
5. BFP Polymer Skid 5 15-POLY-P-5
6. BFP Polymer Skid 6 15-POLY-P-6"

- Paragraph 1.01.C, add *"Equipment included are as follows:*

1. Polymer Recirculation Pump 1 15-POLY-RP-1
2. Polymer Recirculation Pump 2 15-POLY-RP-2"

- Paragraph 2.04.B: **DELETE** "*120 VAC*" and **REPLACE** with "*480-volt, 3 phase.*".

- Paragraph 2.07.B.2: **DELETE** in its entirety and **REPLACE** with the following new paragraph:

"2. Power: 480-volt, 3 phase, 60 hz."

3-18 SPECIFICATION 11370, SLUDGE DEWATERING SYSTEM

- Paragraph 1.01.A: Add *"Equipment included are as follows:*

1. BFP #1 15-BFP-1
2. BFP #2 15-BFP-2"

- Paragraph 2.01.B: **DELETE** " Klampress KPZ High Solids 2.0 meter Belt Filter Press" and **REPLACE** with "Alfa Laval AS-H Belt Press KPZ 200"
- Paragraph 2.06.A: **DELETE** *"C-channel, or plate frames shall not be acceptable."* from the second line.

3-19 SPECIFICATION 11371, SLUDGE DRYING EQUIPMENT

- Paragraph 3.03.A.3: **ADD** the following paragraph after paragraph 3.03.A.2

"3. Supplement 3, Sludge Dryer System Process Connections".

- **ADD** Supplement 3, attached hereto, after Supplement 2 at the end of this specification section.

3-20 SPECIFICATION 11372, ROTARY POSITIVE DISPLACEMENT BLOWERS

- **DELETE** in its entirety and **REPLACE** Specification 11372, consisting of 12 pages, attached hereto.

3-21 SUPPLEMENT TO SPECIFICATION 11372

- **APPEND** Section 11372 Supplement 1 - Aerzen Blower Proposal.

3-22 SPECIFICATION 11410, ROTARY DRUM THICKENERS

- Paragraph 2.07.D.4: **DELETE** in its entirety and **REPLACE** with the following:

  "4. Control Panel shall be provided by the RDT manufacturer and have hard wired digital and analog connections for interfacing of all the items defined in Item 2.07.C above to the plant control system. The control panel shall be fabricated for remote monitoring and control of the RDT system. Provide coordination of the control panel with the system integrator, including all interfacing relays, dry contacts, and 4-20 mA signals."

3-23 SPECIFICATION 13210, FIBERGLASS REINFORCED PLASTIC FLAT PANEL COVERS

- **ADD** new Specification 13210, Fiberglass Reinforced Plastic Flat Panel Covers, consisting of 6 pages, attached hereto, after Specification 13205, Fiberglass Reinforced Plastic Tanks.

3-24 SPECIFICATION 16220, ELECTRIC MOTORS

- **DELETE** Paragraph 2.07.1 in its entirety and **REPLACE** with the following new paragraph 2.07.1:

  "1. Motors shall be rated for continuous duty at an ambient temperature of 40-deg C, unless otherwise noted. Motors specified as high temperature rating shall be rated for continuous duty at an ambient temperature of 65-deg C."

3-25 SPECIFICATION 16900, GENERAL CONTROL REQUIREMENTS

- Replace Paragraph 1.07.E.4 in its entirety with the following:

  "4. The contractor's local place of business shall be located within a 200 miles radius of the City of Canton Wastewater Treatment Plant, Georgia".

- Replace Paragraph 1.07.E.6 in its entirety with the following:

  "6. The following system integrators have preliminary approval to provide the services of the SI as specified. These system integrators shall submit for approval the personnel working on this project as defined in Items 1.07.E.2 and 1.07.E.3 above. All other proposed system integrators shall submit a completion qualifications package as specified and shall be subject to approval".

  a. *Electric Machine Controls (EMC)*
     Trussville, AL
     www.emcinc.biz
     205.661.3998

  b. *MR Systems, Inc.*
     Norcross, GA
     https://www.mrsystems.com/
     888.564.5688

  c. *Southern Flow, Inc.*
     Alpharetta, GA

https://www.southernflowinc.com/
770.667.5169

3-26 SPECIFICATION 16960, HMI HARDWARE AND SOFTWARE

- Paragraph 2.01 G: **ADD** the following new paragraph after Paragraph 2.01.F:

  "G The basis for design of the project is Rockwell Automation software as defined above, however, other software manufacturers may have equivalent products. The system integrator may submit a substitution for the HMI software defined in this section for review and approval by the Engineer and City. This SI shall be required to demonstrate any substitutions and provide local applications of the software prior to approval. The Engineer and City have sole authority for approval of any HMI software substitution, including the right to request a credit for the difference in costs of the HMI software systems."

3-27 CONSTRUCTION DRAWINGS

- Drawing 5-M-7: 5-AT1-SG-1 to BNR Basin 4. **DELETE** "5-AT1-SG-1" and **REPLACE** with "6-AT4-SG-1". **DELETE** " 30" SLUICE GATE" and **REPLACE** with "32" SLIDE GATE".
- Drawing 5-M-7 and 5-M-8: **ADD** Note 5, "*5. COORDINATE LOCATION OF EQUIPMENT AND EQUIPMENT ANCHORS TO AVOID INTERFERENCE WITH SUMPS. SEE STRUCTURAL DRAWINGS FOR SUMP LOCATIONS AND DETAILS.*"
- Drawing 15-M-5 and 15-M-12: **ADD** Note 1, "*1. SEE SECTION 15250 PIPING INSULATION AND SECTION 16855 HEAT TRACE FOR TWAS AND SUMP PUMP PIPING REQUIREMENTS IN THE SLUDGE PUMP ROOM FROM FINISHED FLOOR TO PIPE TRENCH.*"
- **DELETE** the Drawing Sheets listed below and **REPLACE** with the Drawing Sheets attached hereto.

DRAWING NUMBER	SHEET TITLE
DC-1	Civil Standard Details
DC-14	Civil Standard Details
C-32	Proposed Civil Site Partial Plan
C-33	Proposed Civil Site Partial Plan
C-20	Proposed Overall Yard Piping Plan
C-23	Proposed Yard Piping Partial Plan
C-24	Proposed Yard Piping Partial Plan
C-25	Proposed Yard Piping Partial Plan

DRAWING NUMBER	SHEET TITLE
C-26	Proposed Yard Piping Partial Plan
S-2	Structural Notes II
4-S-3	Fine Screenings Facility Sections
7-H-2	Membrane Facility Lower HVAC Plan
7-H-3	Membrane Facility Upper HVAC Plan
7-H-4	HVAC Details and Schedules
15-H-2	Solids Handling Facility HVAC Plan
15-H-3	HVAC Details & Schedules
15-P-1	Overall Plumbing Plan
E-20	MCC-BNR One Line Diagram
E-21	MCC-BNR Layout & Schedule
E-24	MCC-DW One Line Diagram 1
E-25	MCC-DW One Line Diagram 2
E-27	MCC-DW Schedule
E-28	Panelboard Schedule 1
E-29	Panelboard Schedule 2
E-30	Panelboard Schedule 3
E-31	Power Riser Diagrams 1
E-32	Power Riser Diagrams 2
E-33	Conduit & Wire Schedule Power 1
E-34	Conduit & Wire Schedule Power 2
E-35	Conduit & Wire Schedule Power 3
E-37	Control Riser Diagrams 1
E-38	Control Riser Diagrams 2
E-39	Control Riser Diagrams 3
E-43	Control Riser Diagrams 7
E-44	Control Riser Diagrams 8
E-45	Control Riser Diagrams 9
E-47	Control Riser Diagrams 11
E-48	Conduit & Wire Schedule Control 1

DRAWING NUMBER	SHEET TITLE
E-49	Conduit & Wire Schedule Control 2
E-51	Conduit & Wire Schedule Control 4
E-52	Conduit & Wire Schedule Control 5
E-53	Conduit & Wire Schedule Control 6
E-69	Electrical Schematics 5
5-E-1	BNR Basins 1-3 Electrical Plan
6-E-1	BNR No. 4 Modifications Electrical Plan
7-E-2	Membrane Facility Upper Electrical Plan
15-E-1	Solids Handling Facility Electrical Plan
15-E-2	Solids Handling Facility Lighting Plan
5-I-4	P&ID Scum Collection System
6-I-1	P&ID Basin 4 Instrumentation
6-I-2	P&ID Basin 4 Motors
11-I-1	P&ID Was Storage & Reuse Pump Station
15-I-1	P&ID Rotary Drum Thickener
15-I-6	P&ID Sludge Conveyors
15-I-7	P&ID Thickening/Dewatering Drain Pump Station
15-I-9	P&ID Sludge Hopper
15-I-11	P&ID Dryer Feed Pumps

End of Addendum No. 3 Cover.

See Attachments

SECTION 00410

BID FORM

PROJECT IDENTIFICATION:

City of Canton, Georgia
Canton WPCP Expansion to 6 MGD

THIS BID IS SUBMITTED TO:

City of Canton, Georgia
110 Academy Street
Canton, GA 30114

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for one hundred and twenty (120) days after the day of Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of OWNER.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
   (a) BIDDER has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda receipt of all which is hereby acknowledged: (List Addenda by Addendum Number and Date)

Addendum No.	Date Received	Addendum No.	Date Received

   (b) BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work, and bidder has not relied upon any oral representations by employees or agents of Owner or Engineer.
   (c) BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
   (d) BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the

Supplementary Conditions as provided in paragraph 4.02 of the General Conditions. BIDDER acknowledges that such reports and drawings are not Contract Documents and may not be complete for BIDDER's purposes. BIDDER acknowledges that OWNER and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site.

(e) BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto.

(f) BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

(g) BIDDER is aware of the general nature of Work to be performed by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.

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

(i) BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

(j) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

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

   BIDDER acknowledges that quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents.

5. BIDDER declares that he understands that the quantities shown on the proposal are subject to adjustment by either increase or decrease, and that should the quantities of any of the items of work be increased, the undersigned proposes to do the additional work at the unit prices stated herein; and should the quantities be decreased, he also understands that payment will be made on actual quantities at the unit price bid and will make no claim for anticipated profits for any decrease in the quantities and that actual quantities will be determined upon completion of work, at which time adjustment will be made to the contract amount by direct increase or decrease.

6. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

7. Bidder has not solicited or induced any individual or entity to refrain from bidding

8. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this paragraph:

   (a) "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process

   (b) "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition

   (c) "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels

   (d) "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

9. BIDDER will complete the Work in accordance with the Contract Documents for the prices listed in the following Bid Schedule.

The remainder of this page is intentionally left blank.

BID SCHEDULE

All bid items shall include all costs for furnishing all labor, materials, equipment, supplies, allowances and all other costs including permit fees, taxes, insurance, miscellaneous costs, overhead and profit incurred for the Work, complete in place and ready for continuous service. Payment shall be in accordance with the General Conditions.

PART 1 – BASE BID

No.	Description	Quantity	Units	Unit Price (in figures)	Total Price (in figures)
1a	Canton Wastewater Treatment Plant Expansion to 6 mgd per Contract Documents including all work shown on the Drawings and as specified, exclusive of those items listed below.	1	LS	$_____	$_____
1b	Pre-selected equipment, including state sales tax: - Suez MBR system - Veolia sludge dryer -Aerzen blowers -Smith & Loveless grit removal system	1	LS	$8,650,700.00	$8,650,700.00
1c	Stormwater Monitoring Program	42	Months	$_____	$_____

Total Price Part 1 – Base Bid (Items 1a through 1c): $_____

Total Price Part 1 – Base Bid in Words: _____

_____

_____

_____

The amount of Part 1 – Base Bid shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern. In the event of a discrepancy between the unit price bid and the extension, the unit price will be deemed intended by the bidder and the extensions adjusted. In the event of a discrepancy between the sum of the extended amounts and the bid total, the sum of the extended amounts shall govern.

PART 2 – ALLOWANCE COSTS

The Bidder shall include in the Total Bid price the lump sum allowances identified below. Payment will be in accordance with the General Conditions and Division 1. Any unused balance of the allowances shall revert to the Owner upon completion of the project.

Cost Item	Description			Total Allow-ance Price (in figures)
2a	Allowance for correction of unforeseen utility conflicts and utility relocation			$50,000
2b	Allowance for Owner initiated miscellaneous work			$500,000
2c	Allowance for miscellaneous laboratory equipment			$25,000
2d	Allowance for office equipment and furnishings			$50,000
2e	Allowance for office computer equipment			$15,000
2f	Allowance for bulk chemicals for WPCP startup (3-months)			$15,000
2g	Geotechnical / Materials Testing Allowance			$150,000
2h	Utility vehicle allowance (to be provided early in project)			$20,000
2i	Site landscaping			$100,000
2j	Plant Control System Additional Hardware, Software, and Fees			$50,000
2k	Additional Electrical Equipment Required by the Power System Study and Harmonic Analysis			$75,000
2l	Demolition and restoration of existing Sludge Press Building			$50,000
	Total Allowance Cost Items 2a – 2k			**$1,100,000**

Total Allowance Cost in Words: One Million and One Hundred Thousand dollars and zero cents

PART 3 – ADDITIONAL WORK TO BASE BID

The Bidder agrees to furnish unit pricing for items listed below to establish pricing should additional work be required or directed by the Engineer or Owner. The pricing includes all labor and equipment necessary to install complete. Payment will be in accordance with the General Conditions and Division 1. Any unused balance of the unit price items shall revert to the Owner upon completion of the project.

Item	Description	Quantity	Units	Unit Price (in figures)	Total Price (in figures)
3a	Rock Excavation	100	cy	$_____	$_____
3b	Subgrade Stabilizer, #57 Stone	200	cy	$_____	$_____
3c	Subgrade Stabilizer, #3 Stone	200	cy	$_____	$_____
3d	Structural Excavation and Backfill	200	cy	$_____	$_____
3e	Class A concrete including formwork and reinforcing steel	100	cy	$_____	$_____
3f	Ductile iron pipe	4	ton	$_____	$_____
3g	Ductile iron fittings	2	ton	$_____	$_____
3h	12.5 mm Superpave Asphaltic Concrete w/Bit. Tack Coat	60	tons	$_____	$_____
3i	Type A Silt Fence	1,000	lf	$_____	$_____
3j	Type C Silt Fence	1,000	lf	$_____	$_____
3k	Temporary Grassing	1	acre	$_____	$_____
3l	Permanent Grassing	1	acre	$_____	$_____
3m	Rock Check Dams	10	ea	$_____	$_____
3n	Rock Filter Dam	5	ea	$_____	$_____
3o	Erosion Control Matting	1,000	sy	$_____	$_____
3p	Permanent Geotextile Matting	1,000	sy	$_____	$_____

Item	Description	Quantity	Units	Unit Price (in figures)	Total Price (in figures)
3q	Rip Rap Channel Stabilization	500	sy	$_____	$_____
3r	Concrete Channel Stabilization (4 inches thick)	100	sy	$_____	$_____
3s	1.5-inch Mill and Resurface	100	sy	$_____	$_____

Total Price Part 3 – Additional Work to Base Bid (Items 3a through 3s):$

_____

Total Price Part 3 – Additional Work in Words:

_____

_____

_____

_____

_____

The amount of Part 3 – Additional Work To Base Bid shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern. In the event of a discrepancy between the unit price bid and the extension, the unit price will be deemed intended by the bidder and the extensions adjusted. In the event of a discrepancy between the sum of the extended amounts and the bid total, the sum of the extended amounts shall govern.

BID SUMMARY

Part 1 Base Bid **$**

Part 2 Allowance Items **$ 1,100,000.00**

Part 3 Additional Work **$**

TOTAL PRICE: **$**

TOTAL PRICE IN WORDS:_____

_____

_____

_____

_____

PART 4 – BASE BID MAJOR EQUIPMENT ITEMS

The Total Bid in Part 1 – Base Bid shall include the costs for the circled Manufacturers/ Suppliers listed in this Major Equipment Schedule, exclusive of any Alternate Bid Items. Should a Bidder fail to indicate which manufacturer or supplier its Bid is based on, or circle more than one listed manufacturer/supplier per equipment item, the Bidder shall provide the first listed (A) manufacturer/supplier for its Bid for the amount included in the Total Bid at no increase in the Contract amount. The Contractor shall submit working drawings in accordance with the General Conditions and Section 01300 for any modifications to the Contract Drawings required due to the submittal of the base bid manufacturers/suppliers. The Bidder is aware that the Owner will award the Contract without consideration of Alternate manufacturers/suppliers.

The Major Equipment Schedule lists the base bid equipment manufacturer/supplier as applicable for major equipment items and key suppliers for the Project. The Bidder must indicate which named manufacturer/supplier it intends to provide by circling one of the manufacturers/suppliers listed.

Specification Section	Equipment Description	Manufacturer/Supplier
03420	Precast Post-Tensioned Tank	A. Dutchland B. Or approved equal
11200	Submersible Pumps	A. Flygt Corporation B. Homa
11202	Slide Gates	A. Rodney Hunt B. WACO C. Waterman
11220	Compressed Air Mixing System	A. EnviroMix B. Pulsair
11212	Vertical Turbine Pumps	A. Goulds B. Flowserve
11231	Chemical Metering Pumps	A. Guardian Equipment B. Watson Marlow
11237	Ultraviolet Disinfection Equipment	A. Wedeco B. Trojan Technologies, Inc.
11307	Centrifugal Chopper Pump	A. Vaughan B. Hayward Gordon
11311	Horizontal Self-Priming Pumps	A. Trillium Wemco B. Gorman-Rupp
11315	Progressive Cavity Pumps	A. Seepex B. Netzsch
11316	Rotary Lobe Pumps	A. Vogelsang B. Boerger

Specification Section	Equipment Description	Manufacturer/Supplier
11331	Fine Screens and Conveyor	A. Enviro-Care B. Huber
11353	Liquid Polymer Feed Systems	A. Velodyne B. Dynablend
11370	Sludge Dewatering Equipment	A. BDP B. Alfa Laval
11410	Rotary Drum Thickeners	A. Parkson B. Vulcan
11440, 11441, & 11442	Diffused Aeration Equipment	A. Sanitaire B. Environmental Dynamics Int
11500	Odor Control Equipment - Headworks	A. Pure Aire Filtration B. BioRem
11501	Odor Control Equipment – Solids Handling Facility	A. BioAir B. BioRem
11600	Biosolids Storage Hopper	A. JMS B. Spirac
11610	Shaftless Spiral Conveyors	A. Spirac B. Keller Sales C. Keystone Conveyors D. JMS
13121 & 13122	Pre-Cast Concrete Buildings Modular Precast Concrete Structures	A. Easi-Set Buildings B. Old Castle Concrete C. Concrete Modular Systems, Inc.
13204	Polyethylene Storage Tanks	A. Poly Processing B. Assmann Corporation
13205	Fiberglass Reinforced Plastic Tanks	A. Augusta Fiberglass B. ECS
16155	Low Voltage Motor Control	A. Eaton B. Square D C. Siemens
16157	Variable Frequency Drives	A. Eaton B. Square D C. Siemens
16161	Switchboard	A. Eaton B. Square D C. Siemens

Specification Section	Equipment Description	Manufacturer/Supplier
16165	Switchgear	A. Eaton B. Square D C. Siemens
16942	Control System Equipment	A. Rockwell Automation
16960	HMI System	A. Rockwell Automation

PART 5 – MAJOR EQUIPMENT MANUFACTURERS SUBSTITUTION

Any Manufacturer, including those not listed as an acceptable manufacturer, may be listed as a substitution with a deduct to the Base Bid. Only substitutions with a DEDUCTIVE quantity should be listed below.

The Bidder understands that within 30 days **after the Contract is awarded**, the Owner may, at its sole discretion, select items of any Manufacturer listed in the following substitute tabulation. If awarded the Contract, the Bidder agrees to furnish and install any substitutions for the price indicated. The BASE BID will be adjusted accordingly.

The Engineer may require detailed information to be submitted for preliminary evaluation of a substitute Manufacturer. This information could include technical and performance details of the equipment and other information deemed necessary by the Engineer and/or described in the Contract Documents.

If an offered substitution included items of equipment of any Manufacturer that may require any modification to or deviation from the Drawings, the undersigned agrees to prepare and submit detailed Drawings to the Engineer showing all modifications to structures, piping, electrical, mechanical, and instrumentation work, required to adapt the plans to the equipment selected. The Bidder further understands that the Engineer will review said detail drawings of modifications and either approve them or indicate changes necessary to comply with the project requirements. Detailed drawings that are not approved will be revised and resubmitted to the Engineer for approval. If the Engineer determines that the substitute equipment cannot be approved, the original Base Bid equipment shall be provided. The prices listed in the following tabulation are “installed” prices and take into consideration any changes that may be required to the original design.

SUBSTITUTION SUMMARY

Equipment Item	Manufacturer	DEDUCT From Base Bid ($)

10. BIDDER agrees that the Work will be substantially complete within **1,215 calendar days** after the date when the Contract Times commence to run as provided in paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions within **1,275 calendar days** after the date when the Contract Times commence to run.

    BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the time(s) specified in the Agreement.

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

    (a) Required Bid Security in the form of Bid Bond, Certified Check, Cashier's Check, or Cash. *(Strikeout inapplicable terms)*

    (b) Bidders who submit Bid Security in the form of a Certified check, Cashier's Check, or Cash are bound by the "Terms of Bid Bond" as if submitted on the attached "Bid Bond "form.

    The address of BIDDER indicated below.

    BIDDER'S NAME

    Primary Contact Person: _____

    Secondary Contact Person: _____

    Bidder's Street Address: _____

    _____

    Bidder's Mailing Address: _____

    (if different) _____

    _____

    Bidder's Phone No.: _____

    Bidder's Fax No.: _____

    e-mail address: _____

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

    THIS BID SUBMITTED on _____ , 20 _____

If BIDDER is:

An Individual

Name (typed or printed):_____

By:_____(SEAL)
(Individual's signature)

Doing business as _____

Business address: _____

_____

Phone No.:_____ FAX No.:_____

e-mail address: _____

A Partnership

Partnership Name: _____ (SEAL)

By:_____
(Signature of General Partner)

Name (typed or printed):_____

Business address: _____

_____

Phone No.:_____ FAX No.:_____

e-mail address: _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability):_____

By:_____
(Signature)

Name (typed or printed):_____

Title: _____

Attest: _____ (CORPORATE SEAL)
(Signature)

Business Address: _____

_____

Phone No.:_____ FAX No.:_____

e-mail address: _____

Date of Qualification to do business is _____

A Joint Venture

Joint Venture Name:_____ (SEAL)

By:_____
(Signature of joint venture partner)

Name (typed or printed):_____

Title: _____

Business Address: _____

_____

Phone No.:_____ FAX No.:_____

Joint Venture Name:_____ (SEAL)

By:_____
(Signature of joint venture partner)

Name (typed or printed):_____

Title: _____

Business Address: _____

_____

Phone No.:_____ FAX No.:_____

e-mail address: _____

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

SECTION 01590

FIELD OFFICES

PART 1: GENERAL

1.01 SCOPE OF WORK

A. This Section specifies the general requirements for the Engineers field offices to be located at the project site. The trailer and its contents shall not become the property or responsibility of the Owner at the end of the Project.

B. The trailer shall be ready for occupancy within 15 days after notice to proceed of construction.

PART 2: PRODUCTS

2.01 ENGINEER'S FIELD OFFICES

A. Furnish equipment specified for exclusive use by Construction Manager and up to three field Engineers and Inspectors.

B. Ownership of equipment furnished under this article will remain, unless otherwise specified, that of the contractor.

C. Equipment furnished shall be new or like new in appearance and function.

D. Interior finishes shall be to manufacturer's standard subject to approval.

E. The trailer shall be adequately wired for electricity in accordance with applicable Codes to handle the total lighting, air conditioning, heating, and other loads. The offices shall be network wired.

F. Provide all utility services, including potable water, sanitary, power, gas, telephony, and internet.

G. Air conditioning and heating combination unit must be set to maintain 78 degrees F inside during the winter with outside temperature of 20 degrees F and 72 degrees F inside during the summer with an outside temperature of 100 degrees F. provide unit with replacement air filters. Provide duct work for all office and restroom facility.

H. Awnings over windows and entrance doors are required. Provide 5 foot by 10 foot wooden stop at each door.

I. Provide janitorial services to clean trailer once per week during normal work hours. Include sweeping, mopping, floors, empty wastebaskets, and clean bathroom.

J. Provide a submittal of office layout for review. Coordinate with on-site representative and install furniture per approved layout.

K. Minimum Features:

1. 110-volt lighting and wall plugs

2. Fluorescent ceiling lights

3. Electric heating and self-contained air conditioning unit, properly sized for Project locale and conditions. Provide sample electric power to operated installed systems.

4. Provide entry stairs with a landing at floor level and handrails for two entrance doors, each complete with deadbolt, keyed the same, with six key sets provided. Provide an outside light near each entrance door

5. Exterior Doors:

a. Number: Two

b. Type: Solid core

c. Lock(s): Cylindrical

6. One window for each 100 square feet of area or fraction thereof shall be provided in each office and the conference room

7. Minimum interior height: 8 ft

L. Trailer Type Mobile Structure: One double wide, new, rigidly mounted, blocked and leveled, with wind tie downs.

M. Floor Space: minimum 1,300 square feet.

N. All-metal frame; all metal exterior, sides, and roof; and insulated double walls, floor, and roof.

O. Provide two telephone jacks and two guest computer outlets in the conference room.

P. Provide two each computer outlets and one each telephone outlet at the file Storage/Copy machine Area for networking two printers plus fax line.

Q. Provide one telephone outlet and one computer outlet in each office.

R. Provide at least one duplex 115-volt electrical receptacle on each wall of each room with a maximum spacing between receptacles not to exceed 8 feet.

S. Security guard screens on all windows.

T. Two restrooms with toilet and wash basin in separate compartment with hot and cold water and drains, coat hook and wall mounted mirror

U. Number of Private offices: Four, 10 feet by 12 feet.

V. Storage Room: Two, 6 feet by 8 feet, with door with cylindrical lock, keyed differently that exterior door locks. Provide four sets of keys.

W. Number of conference rooms: One, 10 feet by 15 feet.

X. Shelving in Storage Room: 72 linear feet, 18 inches deep.

Y. Blinds or drapes on all windows.

Z. Work Surface: One, 30 inches by 10 ft at desk height of 29 inches from floor

AA. Office Equipment – General;

1. Bottled Water service: One, with cooled capable of producing hot water and cold water
2. Paper Cup Dispenser with Cups; One
3. Paper Towel Dispenser with towels: Two: one for each bathroom
4. Desk: Four, steel, 30 inches by 60 inches with desk surface locate 29 inches from floor.
5. Desk Chair: Four. With the following characteristics:
    1) Five castor base.
    2) Adjustable height.
    3) Swivels
    4) Locking back.
    5) Adjustable seat back for height and angle.
    6) Adjustable arms
6. Golding table: Three, 36 inches by 72 inches
7. Steel Folding Chairs: Fourteen (14)
8. One bulletin board (approximately 36 inches by 48 inches) for each of the offices and conference offices
9. One white board, approximately 4-feet by 8-feet for each of the offices and conference room
10. Four-Drawer Steel File with lock: 8, legal width
11. Drawing rack with Drawings Hangers: two
12. Bookcase: Eight, 36 inches wide by 84 inches high
13. Wastepaper Basket: Eight
14. Clothes Rack: One
15. First Aid Kit: One
16. Tri-Class (ABC), Dry Chemical fire Extinguisher, 10-Pound: four
17. Duplicator (Copy Machine), dry type, self-feeding, capable of providing 11-inch by 17-inch, 8 ½ - inch by 11-inch, and 8 1/2- inch by 14-inch copies and collating multiple copies to 10, and reduction and enlargement capabilities. Copier shall copy at a rate no less than 40 copies per minute. Include maintenance service agreement for duration of contract.
18. Monitors: Two monitors per office, 21-inch LCD minimum
19. Power Supply Surge Protector: One each office rate at 15 amps minimum

BB. Computer Software, one each Latest Versions: Turn over to owner at end of Project.

1. Document Control System (most current version): Primavera Project Planner
2. Adobe Acrobat writer
3. AutoCAD (2020 version) for two unit

PART 3: EXECUTION

3.01 ENGINEER'S FIELD OFFICE

A. Make available for Engineer's use prior to start of the Work at Site and to remain on the Site for minimum of 30 days after final acceptance of the Work.

B. Locate where director by Engineer: level, block, tie down, skirt, provide stairways, and relocate when necessary and approved. Construction on proper foundations and provide proper surface drainage and connections for utility services.

C. Provide minimum 100 square feet of gravel or crushed rock base, minimum of 4 inches, at each entrance

D. Raise grade under filed office, as necessary to elevation adequate to avoid flooding

E. Provide sanitary facilities in compliance with state and local health authorities

F. Telecommunications

1. Provide 100 Mb DSL internet connection with minimum of eighth live portable computer (PC) ports
2. Provide a WIFI router that allows for WIFI connectivity throughout the Engineer's Filed Office.
3. Provide all appropriate jacks, CAT-5 patch cords, wiring, and equipment required for a complete telecommunications system.
4. Arrange and provide for telecommunications service for use during construction. Pay cost of installation, maintenance, and montlhy6 service internet connection.

G. Maintain in good repair and appearance and provide weekly cleaning services, replenishment, as required, of paper towels, paper cups, hand soap, toilet paper, firs-aid kit supplies, and bottled water.

END OF SECTION

SECTION 03410

PRESTRESSED HOLLOWCORE PLANKS

PART 1: GENERAL

1.01 DESCRIPTION

A. Work Included:

1. These specifications cover product design, manufacturing, transportation and installation of precast, prestressed, concrete, hollowcore plank, including grouting of all joints.

B. Related Sections:

1. 01300 - Submittals
2. 033000 - Cast-in-Place Concrete: Site cast concrete.
3. 051200 - Structural Steel
4. 034500 - Architectural Precast Concrete
5. 079200 - Caulking and Sealants

C. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1. 04220, Masonry Units.
2. 08100, Doors and Frames.
3. 08710, Finish Hardware.
4. 09900, Paints and Coatings.

1.02 QUALITY ASSURANCE

A. Manufacturer Qualifications: The Precast Prestressed Concrete Institute (PCI) Plant Certification Program and shall be certified in category C2.

B. The manufacturer needs to coordinate the conduit location of all utilities (electrical, piping, HVAC, etc.) location and the size and location of all building cutouts with the General Contractor. The exact size and location of all cutouts shall be determined by the Contractor based on the number and size of conduits entering the building and the scope of all other subcontractors.

C. Welder Qualifications: In accordance with AWS D1.1.

D. Codes and Standards: Comply with provision of following codes, specifications and standards, except as otherwise indicated.

1. ACI 301 “Specifications for Structural Concrete”.
2. ACI 318 “Building Code Requirements for Structural Concrete”.

3. ACI 216.1/TMS-0216 “Code Requirements for Determining Fire Resistance of Concrete and Masonry Construction Assemblies”.
4. Concrete Reinforcing Steel Institute, “Manual of Standard Practice”.
5. Precast Prestressed Concrete Institute MNL - 116, “Manual for Quality Control for Plants and Production of Precast Concrete Products”.
6. Precast Prestressed Concrete Institute MNL - 135, “Tolerance Manual for Precast and Pre-stressed Concrete Construction”.
7. Precast Prestressed Concrete Institute MNL - 120, “PCI Design Handbook”.
8. Precast Prestressed Concrete Institute MNL – 127 “ Erection Manual Standards and Guidelines for the erection of precast concrete products.”
9. Precast Prestressed Concrete Institute MNL – 124, “Design for Fire Resistance of Precast Prestressed Concrete.”
10. American Welding Society, AWS D1.1 “Structural Welding Code-Steel”, D1.4 “Structural Welding Code – Reinforcing Steel”, D1.6 “Structural Welding Code - Stainless Steel”, C5.4, “Recommended Practices for Stud Welding”.
11. ASTM Specifications – As referred to in Part 2-Products, of this Specification.

1.03 SUBMITTALS AND DESIGN

A. Shop Drawings:

1. Erection Drawings
   a. Plans locating and defining all hollowcore planks furnished by the manufacturer, with all major openings shown.
   b. Sections and details showing connections, weld plates, edge conditions and minimum support conditions of the hollowcore plank units.
   c. All dead, live and other applicable loads used in the design.
   d. Fire rating.

B. Approvals:

1. Submit 3 copies of erection drawings for approval prior to fabrication. Fabrication not to proceed prior to receipt of approved drawings.
2. Submit design calculations signed and sealed by an engineer registered in the state of Georgia for approval.

C. Product Design Criteria:

1. Loadings for design
   a. Handling and erection stresses.
   b. All dead and live loads as specified on the contract documents.
   c. All other loads specified for hollowcore plank where applicable.

2. Approximate camber and deflection values and how they may affect the project should be reviewed with the manufacturer.

3. Where indicated, provide structural precast concrete units whose fire resistance meets the prescriptive requirements of the governing code or has been calculated according to [PCI MNL 124, “Design for Fire Resistance of Precast Prestressed Concrete,”] [ACI 216.1/TMS 0216.1, “Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies,”] and is acceptable to authorities having jurisdiction. Design steel plank support headers at openings when headers are determined necessary by the manufacturer's engineer.

4. Design calculations shall be performed by an engineer, registered in Georgia, and be experienced in precast prestressed concrete design. Design calculations shall be submitted for approval.

5. Design shall be in accordance with ACI 318 and other applicable codes and standards.

6. Hollowcore planks shall be topped with 2 inch normal weight topping.

D. Tests and Reports:

1. Perform all concrete testing in accordance with PCI MNL-116 requirements.

PART 2: PRODUCTS

2.01 MATERIALS A

A. Portland Cement:

1. ASTM C150 – Type I or III.

B. Admixtures:

1. Water Reducing, Retarding, Accelerating, High-Range Water Reducing Admixtures: ASTM C494

C. Aggregates:

1. ASTM C33 or C330

D. Water:

1. Potable or free from foreign materials in amounts harmful to concrete and embedded steel.

E. Reinforcing Steel:

1. Bars: Deformed Steel: ASTM A615 – Grade 60 Deformed Low Alloy Steel: ASTM A706 2. Wire: Cold Drawn Steel: ASTM A82.

F. Prestressing Strand:

1. Uncoated, 7-Wire, Low Lax strand: ASTM A416 (including supplement) – Grade 250K or 270K.

G. Welded Studs: In accordance with AWS D1.1. H. Structural Steel Plates and Shapes: ASTM A36. I. Bearings Strips:

1. Plastic: Multi-monomer plastic strips shall be non-leaching and support construction loads with no visible overall expansion.

2.02 CONCRETE MIXES

A. 28-day compressive strength: Minimum of 5,000 psi

B. Release strength: Minimum of 3,000 psi

C. Use of calcium chloride or admixtures containing chlorides is not permitted.

2.03 FABRICATION

A. Manufacturing procedures and tolerances shall be in compliance with PCI MNL 116.

B. Openings: Opening locations will be determined by the appropriate trades and provided to the manufacturer. Manufacturer shall provide openings 12 inches square or larger and shown on the architectural and structural drawings. Small openings (less than 12 inches square) shall be drilled or cut by the respective trades after plank is grouted. Prior to field cutting, openings must be approved by the manufacturer.

C. Finishes: Bottom surface shall be a smooth steel form finish from an extrusion process, without major chips, spalls and imperfections. Top surface is a uniform screed finish. Consult the plank manufacturer for other surface finish requirements.

2.04 PRODUCT DELIVERY, STORAGE, & HANDLING

A. Delivery and Handling:

1. Hollowcore plank shall be lifted and supported during manufacturing, stockpiling, transporting and erection operations only at the lifting or supporting points designated by the manufacturer.

2. Transportation, site handling and erection shall be performed by qualified personnel with acceptable equipment and methods.

B. Storage:

1. Store all units off ground on firm, level surfaces with dunnage placed at bearing points.

2. Place stored units so that identification marks are discernible.

3. Separate stacked units by dunnage across full width of each plank.

PART 3: EXECUTION

3.01 ERECTION

A. Site Access: Erection access suitable for cranes and trucks to move unassisted from public roads to all crane working areas as required by erector, or otherwise

indicated herein, shall be provided and maintained by the general contractor. Obstructing wires shall be shielded or removed and, when applicable, snow removal and winter heat shall be provided by the general contractor.

B. Stability of the building structure during erection shall be the responsibility of others.

C. Preparation: The general contractor shall be responsible for:

1. Providing true, level, bearing surfaces on all field-placed bearing walls and other field-placed supporting members. Masonry wall bearing surfaces shall be bond beams with properly filled and cured concrete.

2. All pipes, stacks, conduits and other such items shall be stubbed off at a level lower than the bearing plane until after the plank are set. Masonry, concrete or steel should not be installed above plank-bearing surface until after the plank is in place.

D. Installation: Installation of hollowcore slab units shall be performed by a PCI Qualified Erector or have a minimum five years of experience installing precast concrete. Members shall be lifted at points determined by the manufacturer. Bearing strips shall be set where required.

E. Alignment: Members shall be properly aligned. Variations between members shall be leveled out by jacking, bolting or any other method recommended by the manufacturer.

F. The general contractor shall provide and maintain all safety barricades, rebar caps and opening covers required for plank in accordance with current industry safety standards.

G. Hollowcore plank units may be drilled or “shot” with approval from the manufacture.

3.02 GROUTING

A. Grout:

1. Cement grout: Grout shall be a mixture of not less than one-part Portland cement to three parts fine sand, and the consistency shall be such that joints can be completely filled without seepage over adjacent surfaces. The grout shall achieve a minimum 28-day compressive strength of 3,000 psi. Any grout that seeps from the joint shall be completely removed before it hardens. Typically non-shrink grout is not required.

2. Grout keys shall be filled and cured properly prior to loading the deck with building materials, equipment or field cut openings.

3. Loading the deck with building materials and equipment should be reviewed with the manufacturer.

4. Cold weather construction requirements shall apply when grouting in winter conditions.

3.03 WELDING

A. Field welding shall be done by qualified welders using equipment and materials compatible to the base material.

3.04 PATCHING

A. Patching will be acceptable providing the structural adequacy of the hollowcore unit is not impaired. Patching shall be pre-formed in accordance with the plank manufactures approved details.

3.05 CLEANING

A. Remove rubbish and debris resulting from hollowcore plank work from premises upon completion.

END OF SECTION

CANTON WPCP Expansion 6 MGD

Slide Gate Schedule

Gate Tag Number	Location	Wall Opening (width/height in inches)	Gate Width (inches)	Gate Height (inches)	Gate Invert Elevation (feet)	Operator Floor Elevation (feet)	Normal Position of the Gate	Operator Type	Design Seating Head (S)/ Unseating Head (U) (feet)
4-IFS-SG-1	Fine Screening Channels	60/48	60	48	878.50	889.00	Open	Motor	8/0
4-IFS-SG-2	Fine Screening Channels	60/48	60	48	878.50	889.00	Open	Motor	8/0
4-IFS-SG-3	Fine Screening Channels	60/48	60	48	878.50	889.00	Open	Manual	8/0
4-IFS-SG-4	Fine Screening Channels	60/48	60	48	878.50	889.00	Open	Manual	8/0
5-AT1-SG-1	BNR 1-3 Influent Channel	30/30	30	30	876.50	884.00	Open	Motor	8/0
5-AT2-SG-1	BNR 1-3 Influent Channel	30/30	30	30	876.50	884.00	Open	Motor	8/0
5-AT3-SG-1	BNR 1-3 Influent Channel	30/30	30	30	876.50	884.00	Open	Motor	8/0
6-AT4-SG-1	BNR 1-3 Influent Channel	32/32	32	32	876.33	884.00	Open	Motor	8/0
5-EAT-SG-1	BNR 1-3 Effluent Channel	30/30	30	30	879.00	882.00	Closed	Motor	8/0
7-TK1-SG-1	MBR Influent Channel	36/36	36	36	870.50	881.70	Open	Motor	12/0
7-TK2-SG-1	MBR Influent Channel	36/36	36	36	870.50	881.70	Open	Motor	12/0
7-TK3-SG-1	MBR Influent Channel	36/36	36	36	870.00	881.70	Open	Motor	12/0
7-TK4-SG-1	MBR Influent Channel	36/36	36	36	870.50	881.70	Open	Motor	12/0
10-PA-SG-1	Post Aeration Headbox	36/36	36	36	868.00	879.60	Open	Motor	8/0
10-PA-SG-2	Post Aeration Headbox	36/36	36	36	868.00	879.60	Open	Motor	8/0

Notes:

1. Gates shall be provided as specified herein and as shown on the Contract Drawings. Gate 10-UV-SG-1 is downward opening weir gate which is included in UV specifications shall be coordinated with the selected UV manufacturer.
2. Contractor to verify all elevations openings prior to ordering gates.

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SECTION 11315

PROGRESSIVE CAVITY PUMPS

PART 1: GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install complete and ready for operation and field test progressive cavity pumps as shown on the Drawings and specified herein. Equipment included are as follows:

Dewatered Sludge Pump 1	15-DS-P-1
Dewatered Sludge Pump 2	15-DS-P-2
Dryer Feed Pump 1	15-DF-P-1
Dryer Feed Pump 2	15-DF-P-2

B. Each pump shall be furnished and installed complete with a drive motor, variable frequency drive, flow absence/presence detector for pump, and gauge/switch assembly for discharge side of pump and all other appurtenances needed to meet the designed pumping conditions.

C. Contractor shall coordinate Dryer Feed Pump location and connections with the sludge hopper per Specification Section 11600 Biosolids Storage Hopper.

D. Contractor shall fabricate 304 SST chute between belt filter press discharge and inlet to the Dewatered Sludge Pumps as shown on the Drawings and per Specification Section 05500 Metal Fabrications.

E. All motors and drives shall be high torque type with a startup torque of at least 150 percent of normal operating torque.

F. All motors, controls, boxes, conduit, wiring, etc. shall be rated and approved for Class I, Division 2 hazardous locations.

1.02 RELATED WORK

A. Painting, except as specified herein, is included in Division 9.

B. Instrumentation, except as specified herein, is included in Division 13.

C. Variable frequency drive controllers are included in Division 16.

D. Electrical work, except as specified herein is included in Division 16.

1.03 SUBMITTALS

A. Submit in accordance with the Section 01300 Submittals, copies of all materials required to establish compliance with this Section. Submittals shall include at least the following:

1. Certified shop and erection drawings showing all details of construction, dimensions and anchor bolt locations.

2. Descriptive literature, bulletins, and/or catalogs of the equipment.

3. The total operational weight of the equipment including the single largest component.

4. Materials of construction for all equipment.

5. A list of the Manufacturer's recommended spare parts.

6. Complete motor data.

7. Complete control panel component and wiring schematics.

B. Test Reports to be submitted upon completion:

1. Description of test procedures and equipment.

2. Copies of all test results, as specified in Parts 2 and 3 of this Section.

C. Complete operating and maintenance instructions shall be submitted in accordance with the requirements of Section 01730 Operating And Maintenance Manual.

1.04 REFERENCE STANDARDS

A. Design, manufacturing and assembly of elements of the products herein specified shall be in accordance with the standards of the below listed organizations.

1. American National Standards Institute (ANSI)

2. American Bearing Manufacturers Association (ABMA)

3. National Electrical Manufacturers Association (NEMA)

4. American Gear manufacturers Association (AGMA)

B. Where reference is made to a standard of one of the above, or other organizations, the version of the standard in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. A single manufacturer shall furnish all the equipment specified under this Section and shall be standard units of proven ability as manufactured by a competent organization that is fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed.

B. All equipment furnished under this Section shall be new and unused and shall be the standard products of manufacturers having a successful record of manufacturing and servicing the equipment and systems specified herein for a minimum of five (5) years.

C. These Specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishing, delivery, installation, field testing and field calibration of all materials and apparatus as required. Any additional equipment necessary for the proper operation of the proposed installation not specifically mentioned in these Specifications or shown on the Drawings shall be furnished and installed at no change in Contract Price or Time.

D. To assure unity of responsibility, the pump, pump accessories, motor, and variable frequency drive shall be furnished and coordinated by the pump manufacturer. The Contractor and manufacturer shall assume responsibility for the satisfactory installation and operation of the entire pumping system.

1.06 DELIVERY STORAGE AND HANDLING

A. Provide in accordance manufacturers recommendations and with Section 01600 Delivery, Storage and Handling.

B. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.

C. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing.

D. Finished iron or steel surfaces not requiring painting, such as flange faces, shall be properly protected to prevent rust, corrosion and damage.

E. Each box or package shall be properly marked to show its net weight in addition to its contents.

1.07 SPARE PARTS

A. Provide the following spare parts:

1. Any specialty tools required
2. One stator assembly
3. One rotor
4. One run dry detector or temperature sensor element
5. One set universal joint assembly
6. One set packing

1.08 WARRANTY

A. The Contractor and the Manufacturer shall warrant all equipment supplied under this Section for a period of one (1) year following Substantial Completion. Warranty period shall commence as outlined in the General Conditions and Division 1. Provide a 3-year extended warranty on rotor and stator for all four pumps.

B. Provide manufacturer’s 3-year performance guarantee on nonbridging of sludge hopper associated with the Dewatered Sludge Pumps under normal operating conditions. In the event that bridging does occur, Contractor, at his own expense, shall provide additional equipment or modify the existing equipment to eliminate the bridging problem.

C. The equipment shall be warranted to be free from defects in workmanship, design and materials. If any part of the equipment should fail during the warranty period, it shall be replaced in the machine(s) and the unit(s) restored to service at no expense to the Owner.

D. Refer to the General Conditions and Division 1 for additional warranty requirements.

PART 2: EQUIPMENT

2.01 GENERAL

A. Dewatered Sludge Pumps with Bridge Breaker

1. Number of Pumps: 2
2. Service: Dewatered Sludge
3. Solids Concentration: 16-21%
4. Maximum Flow: 30 gpm
5. Minimum Flow: 20 gpm
6. Total Dynamic Head: 405 FT
7. Maximum Pump Speed: 85 RPM
8. Motor: 20 HP/480V/3ph
9. Acceptable Manufacturers
    a. Seepex
    b. Netzsch

B. Dryer Feed Pumps

1. Number of Pumps: 2
2. Service: Dewatered Sludge
3. Solids Concentration: 16-21%
4. Maximum Flow: 10 gpm
5. Minimum Flow: 4 gpm
6. Total Dynamic Head: 580 FT
7. Maximum Pump Speed: 85 RPM
8. Motor: 30 HP/480V/3ph
9. Acceptable Manufacturers
    a. Seepex
    b. Netzsch

2.02 MATERIALS AND EQUIPMENT

A. The pumps shall be a heavy duty, positive displacement, progressive cavity pump. The pumps shall be of the compact, close-coupled design. The gear reducer shall be sized for a minimum service factor of 1.5 and designed with a thrust load capability of 150 percent of the actual thrust load.

B. Materials of construction shall be as follows:

Component	Material
Rotor	Tool Steel - Duktil Coated
Stator	Urethane or Buna
Pump Body	Alloy steel / Carbon steel
Shaft Sealing	Greased Packing

C. The bearing and suction housings of the pump shall be thick walled cast iron or fabricated steel. All cast parts will be free of sand holes, blowholes and other defects. The suction housing shall incorporate an inspection port or hatch to permit access to the suction housing interior without disconnecting piping.

D. The discharge piping connections shall be 300-lb. raised face flanges with bolt hole dimensions and spacing conforming to ANSI standards.

E. The pump rotor shall be constructed of hardened steel. Pump rotor shall have a chromium nitride coating (Duktil) with a minimum thickness of 250 μm (.010") or covered with a heavy layer of hard chrome plate at least 0.010-in thick for abrasion resistance.

F. The stator must be of double helix configuration with the molded BUNA or urethane elastomer chemically bonded to a steel tube. The stator shall be fastened to the suction housing and discharge flange with tie rods to facilitate stator removal. The stator seals shall be designed to prevent the material being pumped from contacting the stator bonding tube.

G. The gear joints must be of grease or oil lubricated crown gear type, totally enclosed and protected by a wire reinforcing elastomeric seal. Mechanical components of the joints shall be designed to operate for 10,000 hours at the manufactures published maximum speeds and pressures.

H. The drive shaft shall be directly coupled to the drive shaft.

I. The bearings will be grease lubricated, tapered roller bearing type with diverging pressure angles for maximum shaft stability. Bearings shall be designed for a minimum B-10 life of 30,000 hours under maximum operating conditions and will not require periodic relubrication.

J. The stuffing box shall be equipped with a split packing gland and split Teflon lantern ring to permit repacking of the pump without removing the bearings or drive shaft components. Fittings will be provided for grease lubrication of the packing.

K. Each pump unit shall be supplied with a silicone-filled isolation ring with a dual mounted gauge and single point pressure switch. The pressure ranges for the switch and gauge shall be selected specifically for each specified service. The isolation ring shall be mounted between ANSI flanges, be sized according to the discharge pipe as shown on the plans and be constructed with a carbon steel body and fittings with a Buna sleeve. The switch shall be SPDT, NEMA 4.

L. Each pump shall be equipped with a presence/absence fluid detector in the form of a stator temperature sensor or equivalent run dry detection sensor. A controller shall also be provided and shall be installed by the contractor in the motor control center. The controller shall activate a shutdown and alarm sequence if a run dry alarm or the stator temperature reaches the adjustable limit on the controller. The controller shall include a manual local and remote reset function.

M. The suction casing for the Dewatered Sludge Pumps shall be fabricated from corrosion resistant steel plate and include a rectangular flanged opening for connection to Contractor-provided hopper. Casing material shall be compatible with the 316 SST hopper. The suction casing shall incorporate a conical “extension tube” between the hopper opening and the rotor and stator. A single helix ribbon auger or equivalent bridge breaker shall run the entire length of the suction casing. The ribbon auger shall turn concentrically in the hopper.

N. The hopper for the Dewatered Sludge Pumps shall be equipped with a level element. The element shall be an ultrasonic level element or laser level elements. The pump manufacturer shall incorporate the level element into the design of the suction hopper. The level element(s) shall be utilized for control of the pump speed through the manufacturer’s pump control system.

O. The suction casing for the Dryer Feed Pumps shall be fabricated from corrosion resistant steel plate with a flanged rectangular opening for connection to Contractor-provided sludge hopper.

2.03 ELECTRICAL CONTROLS

A. The Dryer Feed Pumps shall be interlocked with the Dryer Control Panel.

B. Provide NEMA 4X rated 316 SST panels for the Dewatered Sludge Pumps.

1. At a minimum, provide the following operator controls on the panel front at each panel provided:

    a. Handswitch, Hand/Off/Auto

    b. Handswitch, Emergency Stop/Alarm Rest

    c. Potentiometer, Speed Adjust

2. Provide the following indicators on the panel front of each panel:

    a. Cake level high indicating light, amber lens.

    b. Pump discharge pressure high indicating light, amber lens.

    c. Pump temperature high indicating light, amber lens.

    d. Pump speed indicator, which shall be digital and rated NEMA 4X.

    e. Level indicator, which shall be digital and rated NEMA 4X.

3. For each motor, furnish an elapsed time meter on the panel front at each panel. Elapsed time meter shall be digital and rated NEMA 4X.

C. The Variable Frequency Drive (VFD) for the pumps shall be supplied and installed by the Contractor.

D. Power Requirement: 460 volts, 3-phase.

E. External Interfaces:

1. Accept the following discrete inputs at each panel; (can’t read this) and Emergency Stop Alarm.

2. Provide the following discrete outputs from each panel:

a. In Automatic mode status, two signals per panel.

b. Pump ON status, two signals per panel.

c. High discharge pressure alarm, two signals per panel.

d. Cake high level alarm, two signals per panel.

e. High motor temperature alarm, two signals per panel.

F. Functional Requirements:

1. The Dewatered Sludge Pump motor shall respond to an AC adjustable frequency controller located in each panel.

2. Provide Hand/Off/Auto control of the pump:

a. In Hand:

1) Normally run the pump continuously

2) Adjust speed using the potentiometer on the panel front

b. In Auto:

1) Pump responds to a controller to maintain hopper level within normal operating range. Controller both starts and stops the pump and adjusts its speed to maintain hopper level.

2) Disable the pump on the following conditions. Provide manual reset:

a) Rising high cake level.

b) BFP Emergency Stop.

c. In either Hand or Auto: Disable the pump on either rising high temperature or high discharge pressure. Provide manual reset.

3. Provide logic to maintain all alarm and fail condition indication and (can't read) outputs as well as common FAIL contact output(s) until they are manually reset by pressing the RESET pushbutton.

G. Special requirements:

1. UL Listing Mark for Enclosures: Mark stating "Listed Enclosed Industrial Control Panel" per UL508A.

2. Within each panel, provide surge suppressors on the income power 480-volt 3-phase power. Also provide surge suppressors on the stepped-down 120-volt ac power.

3. Panel stainless steel enclosures shall be finished to a No. 7 polished finish(?), not brushed.

4. Furnish each NEMA 4X panel with an internal 3-point latch and Type (?) stainless steel handle able to be padlocked.

5. Furnish vendor's standard level controller and temperature sensor.

6. Furnish an Adjustable Frequency Drive (AFD) with each panel. AFD shall be the high torque start type, with a startup torque or at least 150 percent of

normal operating torque. Program AFD to start at 150 percent torque and then reduce to required torque.

a. The vendor shall coordinate with the Process Instrumentation and Control (PICS) Supplier so that the belt filter press and its support equipment, specifically the Dewatered Solids pumps, are seamlessly monitored and controlled by the plant control system. At a minimum, such coordination includes, but is not limited to:Joint functional testing and performance testing with the PICS Supplier as described under Part 3, Execution.

PART 3: EXECUTION

A. INSTALLATION

1. Installation shall be in strict accordance with the Manufacturer's instructions and recommendations and the approved shop drawings in the locations shown on the Drawings.

2. Level by means of steel wedges (steel plates and steel shims). Wedge taper not greater than 1/ inch per foot. Use double wedges to provide a level bearing surface for the pump and driver base. Accomplish wedging so that there is no change of level or springing of the baseplate when the anchor bolts are tightened.

3. The Contractor shall furnish all required oil and grease for initial operation, if required, in accordance with the Manufacturer's recommendations.

4. Anchor bolts shall be provided by the Contractor and shall be sized and set in accordance with the Manufacturer's recommendations.

5. Upon completion of each pump application, the Manufacturer shall inspect the installation and submit a certificate stating that the installation of the equipment is satisfactory, that the equipment is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

3.02 INSPECTION AND TESTING

A. General

1. The manufacturer shall furnish the services of a factory Service Technician who shall have complete knowledge of proper operation and maintenance to inspect the final installation and supervise the test run of the equipment. The Manufacturer shall include in his price, a minimum of eight (8) hours of a Service Technician’s time per pump.

2. Field tests shall not be conducted until such time that the entire installation is complete and ready for testing.

3. In the event that the equipment does not meet the Final Acceptance Test, the Contractor shall, at his own expense, make such changes and adjustments in the equipment that he deems necessary and shall conduct further tests until the Engineer indicates full satisfaction and written certification is received thereof.

B. Pumps

1. After all pumps have been completely installed, and working under the direction of the Contractor, conduct in the presence of the Engineer such tests as are necessary to indicate that pumps conform to the Specifications. Field tests shall include all pumps included under this Section. The Contractor shall supply all electric power, water or wastewater, labor, equipment and incidentals required to complete the field tests.

2. Performance Test:

    a. In accordance with the Hydraulic Institute Standards.

    b. Field Test: Test and demonstrate that the pump systems perform as intended. Test the control system. Demonstrate each function. Participate in a witnessed joint performance test with the PICS supplier.

3. The Final Acceptance Test shall demonstrate that all items of these Specifications have been met by the equipment as installed and shall include, but not be limited to, the following tests:

    a. That all units have been properly installed and are in correct alignment.

    b. That the units operate without overheating or overloading any parts and without objectionable vibration.

    c. That there are no mechanical defects in any of the parts.

    d. That the pumps can deliver the specified pressure and flow.

    e. That the pump sensors and controls perform satisfactorily as to sequence control, correct start and stop elevations, and proper level alarm functions.

    f. The plant control system and variable frequency drive operates the pumps in manual and automatic mode including all interlocks. The pump speed shall be verified throughout the range of the pump to verify operation. All minimum and maximum speed parameters for the pump shall be coordinated and implemented with the VFD, control system, and system integrator prior to acceptance.

4. If the pump performance does not meet the Specifications, corrective measures shall be taken or pumps shall be removed and replaced with pumps that satisfy the conditions specified. A 24-hour-operating period of the pumps will be required before acceptance.

C. Motors

1. The Contractor shall check all motors for correct clearance and alignment and for correct lubrication in accordance with Manufacturer's instructions. The Contractor shall check direction of rotation of all motors and reverse connections if necessary.

3.03 MANUFACTURER’S FIELD SERVICES

A. All manufacturers’ field services shall be provided and performed in accordance with Sections 01400 Quality Control and 01640 Manufacturer’s Services.

B. Manufacturer’s Representative: Present at site or classroom designated by Owner, for minimum person-days listed below, travel time excluded:

1. 2 person-days for installation assistance and inspection
2. 2 person-days for functional and performance testing, including, but not limited to, verification of correct rotation, verification of proper alignment, and vibration testing
3. 2 person-days for facility startup
4. 1 person-day for training of Owner's personnel

END OF SECTION

SECTION 11321

VORTEX GRIT CHAMBER

PART 1: GENERAL

1.01 WORK INCLUDED

A. This section covers the work necessary to furnish and install, complete, all necessary equipment and appurtenances for the new grit chamber equipment, cyclone grit separator, including paddle apparatus, drive, fluidizer vanes, grit well cover plate, flow control baffles, grit pump, grit concentrator, and controls.

B. To ensure compatibility and complete system integration, all pieces of equipment for the grit removal system (e.g., grit pump, grit concentrator) shall be manufactured to match existing grit system components.

C. The existing grit system control panel will be removed and replaced with a terminal cabinet to be provided by the grit manufacturer. All existing wiring will be extended to the new grit system control panel. The new panel shall provide operation, control and monitoring of both the existing grit system and the new grit system. The new PLC in the control panel shall communicate via Ethernet to the plant control system for monitoring and control.

1.02 REFERENCES

A. Reference Standards: Comply as a minimum with applicable provisions and recommendations of the following:

1. NEC, National Electric Code.
2. NEMA, Standards of National Electrical Manufacturers Association.
3. IEEE, Institute of Electrical and Electronic Engineers.
4. AFBMA, Anti-Friction Bearing Manufacturers Association.
5. ANSI, American National Standards Institute.
6. SSPC, Steel Structures Painting Council.
7. ASTM, American Society for Testing and Materials.

1.03 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 1300 SUBMITTALS. Shop drawings shall include but not be limited to the following components.

1. Make, model, weight, and horsepower of each equipment assembly.

B. Detailed Structural, Mechanical, and Electrical Drawings showing the equipment fabrication and interface with other items. Include dimensions, size, details of anchorages and of connections to other work, and weights of associated equipment.

C. External utility requirements such as air, water, power, drain, etc., for each component.

D. Motor nameplate data, in accordance with NEMA MGI, motor manufacturer, and any motor modifications.

E. Power and control wiring diagrams, including terminals and numbers.

F. Control panel layout drawings and control schematics.

G. Information on factory-applied coating system(s). See Section 09900, PAINTING for specified requirements.

H. Electrical and instrumentation submittals in accordance with Section 13400, PROCESS INSTRUMENTATION AND CONTROL SYSTEMS.

1.04 QUALITY ASSURANCE

A. All materials used shall be new, of high grade and of properties best suited to the Work required.

B. Contractor shall retain overall responsibility for equipment coordination, installation, testing and operation.

1. Manufacturer shall have operational grit chamber with minimum 4 MGD capacity at their facility and upon request from the engineer, the operational unit may be witnessed by the engineer and/or representative of their choice. Hands on demonstration and training with operational grit chamber shall be completed prior to delivery.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver equipment to site under provisions of Section 01600 DELIVERY, STORAGE AND HANDLING.

B. Store all equipment off the ground in enclosed shelter.

1.06 GUARANTEE

A. Manufacturer shall furnish to the Owner a written warranty against workmanship and material for 1 year under normal use and service. Warranty shall be in printed form and previously published as the manufacturers' Standard Warranty for similar units.

PART 2: PRODUCTS

2.01 GENERAL

A. Furnish and install the vortex grit removal equipment and appurtenances in accordance with these specifications and as shown on the Drawings.

2.02 MANUFACTURER

A. Smith & Loveless, Inc.

B. Or Engineer approved equal.

2.03 OPERATIONAL CHARACTERISTICS

A. Design each grit chamber for following hydraulic conditions.

1. Maximum Flow While Maintaining Below Removal Efficiency: 12 MGD

B. Construct suitable for extremely humid installation and splash resistant.

C. Limit head loss through grit chamber to 19 in. or less at peak flow.

D. Grit removal from screened raw wastewater.

Grit Size	Removal % (by Weight)
Down to 140-mesh particle size	95

E. Wearing parts readily accessible for inspection, repairs, and replacement.

F. Replacement parts easily duplicated and attainable.

G. No moving parts subject to wear or stoppage below water surface.

H. No bends or elbows on underwater or inaccessible grit piping.

I. Provide drives, lubrication, and support equipment bearings accessible from operating floor level.

J. No loss of grit removal efficiency for flows with inlet velocity less than 3.5 ft/s.

K. Provide inlet ramp to enhance Coanda effect and direct grit downward to separation chamber.

L. Grit removal system to fit in grit tank shown on Drawings.

1. Inlet and outlet to be separated by flow control baffle and chamber travel path to be 360°.

2. Storage hopper to have 60° sloped bottom with a maximum diameter of 3’-0” and a minimum depth of 5’-6”.

3. Upper chamber floor to be flat. Units with sloped floor shall not be allowed.

2.04 GRIT CHAMBER EQUIPMENT

A. Paddles

1. Adjustable grit scouring intensity.

2. Four blades.

3. Material: 316 stainless steel.

4. Provide organic separation in main chamber.

B. Propeller Drive Tube:

1. Driven by large, totally enclosed spur gear and turntable bearing.

2. Dia: 10-3/4 in. minimum.

3. Material: 316 stainless steel.

C. Grit Fluidizer

1. Bolted to propeller drive tube.
2. Within 6" of pump suction inlet.
3. Helical configuration.
4. Material: 316 stainless steel.
5. Provides mechanical fluidization of lower hopper.
6. Units that require fluidizing water shall not be acceptable.

D. Propeller Drive Unit (Gear Motor and Gear Head):

1. Motor:
   a. Helical gear type.
   b. 0.75 hp, 230/460 v, 3-ph, 60 Hz. (explosion proof) (TEFC)
   c. Steel housing and frame.
   d. Service Factor: 2.0 or greater on reducer, 1.15 on motor.
2. Gears:
   a. Alloy steel, heat treated, and hardened.
   b. Teeth: Hobbed and flame hardened.
   c. Helical Gears: Oil lubricated.
   d. Spur Tooth Bull Gear: Large, driven by pinion mounted on output shaft of helical gear motor, enclosed in heavy cast iron case.
   e. Spur Gear Pinion: Cut from heat-treated steel.
   f. Bull Gear: Rotate with minimum 21-in. diameter turntable bearing.
   g. Service Factor for Pinion and Bull Gear: 5 or greater at standard operating speeds.
3. Bull Gear Box:
   a. Specifically designed for this service.
   b. Provide opening for propeller drive table.
   c. Seal with air bell at bottom opening around drive tube.
   d. Provide bolted flanged connection at top for grit pump suction.
4. General Requirements:
   a. Maximum Drive Output Speed: 21 rpm.
   b. Suitable for continuous (24 hrs/day year round) service.
   c. Bearings shall have minimum B-10 bearing life of 50,000 hrs., except 21” diameter turntable bearing which shall have minimum B-10 life of 20 years.

E. Grit well cover plates

1. Maximum 3" opening between cover plate and propeller drive tube.
2. Two-piece with lifting loops.
3. Stationary, not part of rotating assembly.
4. Material: 316 stainless steel.

F. Flow Control Baffle:

1. Fabricate to dimensions as shown on Drawings.
2. No additional downstream flow control device shall be allowed to keep inlet channel velocity between 3.5 ft/s and 1.6 ft/s at flows from peak flow down to 10% of peak flow.
3. Material: 316 stainless steel.

2.05 GRIT PUMP

A. Pump:

1. Centrifugal, vertical configuration.
2. Close-coupled.
3. Recessed Ni-Hard impeller.
4. Construction: Ni-hard especially designed for use of mechanical seals (and vacuum priming).
5. Size: 4” suction, 4” discharge.
6. Capable of passing 4” sphere.
7. Capacity: 250 GPM at 37.2 ft. TDH.
8. One piece motor adapter/backhead.
9. Self priming pump not allowed.

B. Motor:

1. 10 HP, 1800 RPM, 230/460 Volt, 3 phase, 60 hertz (explosion-proof) (TEFC).
2. Minimum 1-7/8" shaft diameter.
3. Solid stainless steel shaft through mechanical seal.
4. 6" maximum lower bearing to impeller distance.
5. Class F insulation, Class B temperature rise, 1.15, unless explosion-proof or VFD duty then 1.0 service factor.

C. Lifting Stanchion

1. A stanchion with lifting arm shall be provided to lift the Grit Pump for disassembly.

2. The lifting arm shall have a hook over the center of the motor to support a hoist provided by the Owner. Installation shall be as detailed in the contract drawings.

3. The lifter shall be designed for a 1,000 lbs. (454 kg) lifting load.

2.06 CENTRIFUGAL GRIT CONCENTRATOR

A. Mount grit concentrator on grit dewatering screw as recommended by manufacturer.

B. Size, capacity, and range of operation shall be compatible with total grit removal system as described herein.

C. Operates on same principle and flow patterns as grit chamber.

D. Purpose: Remove water and organics from mixture of grit, water, and organics (pumped by grit pump) prior to grit dewatering screw, thereby minimizing hydraulic load.

E. Flow Pattern:

1. Pumped flow enters tangentially through side.

2. Grit and small volume of water exit out bottom into hopper of dewatering screw.

3. Organic material and rest of water exit out top to drain.

4. Minimum 93% removal of influent water and 95% removal influent organics.

5. Less than 5% putrescible material in recovered grit from underflow.

F. Material: Minimum 1/2" Ni-Hard, high nickel iron coated with minimum 6 mil dry film thickness epoxy resin.

G. No moving parts; operates totally on hydraulic principles.

H. Mechanisms that require internal liners shall not be allowed.

2.07 ELECTRICAL CONTROLS FOR AUTOMATIC OPERATION

A. Panel

1. NEMA 4X Stainless steel.

2. Removable access cover.

B. Circuit Breakers

1. Thermal magnetic.

2. Include on following circuits:

a. Motor control.

b. Auxiliary circuits.

C. Starters

1. Magnetic across the line with overload coils.
2. Include for following motors:
    a. Paddle drive.
    b. Grit pump.
    c. Grit washer.

D. Control Devices

1. Dedicated PLC to provide control function to properly operate grit system.
    a. Control the operation of grit pump and priming system
    b. Control the operation of grit washer through various cycles (air infusion, wash water, drain solenoid, level detectors, screw operation).
    c. Control the operation of the existing grit system.
    d. Provide necessary output signals, interlock, timing functions.
    e. 20k-Hz high speed counter and 6K-word non-volatile memory
    f. Use RSLogix programming software.
    g. 14 inputs and 10 outputs and built in RS-232-C port for external interfacing.
    h. Real-time clock module shall control scheduling.
2. Human Machine Interface (HMI) to provide operator input to and visual output from the controller.
    a. NEMA 4 rated display mounted through front of panel.
    b. 5.7” graphic interface with DSTN 256-color Liquid Crystal Display
    c. Backlighting and resistive-type touch screen, with audible feedback on touch for data input and programming.
    d. “Sleep” feature to prolong screen life.
    e. Provide aluminum hood to shade HMI display from direct sunlight.
    f. Powered by 24v DC from dedicated 650ma regulated power supply.
3. Power supply:
    a. 120v AC supply powering 24v DC unit
    b. Filtered to reduce transient spikes and noise going to PLC and HMI.
    c. Single phase active tracking filter, series connected for high frequency noise and transient protection.
    d. Surge capacity of 45,000 amps, with transient protection in all modes (line to neutral, line to ground, and neutral to ground).
    e. Typically reduced to + or – 2.0 volts.

2.08 LOCAL CONTROL STATIONS

A. Panel

1. NEMA 7
2. Include Hand-Off-Automatic switch and E-stop push button
3. Include for the following:
    a. Paddle drive
    b. Grit pump
    c. Grit Washer

2.09 VACUUM PRIMING

A. Panel
    1. NEMA 4X Stainless steel.
    2. Mounted on paddle drive unit.

B. Panel Mounted Devices
    1. Vacuum Pump:
        a. Corrosion resistant internal components.
        b. Sized to prime pump and piping in less than 60 seconds.
    2. Air Compressor:
        a. Oil-less

C. Priming System
    1. Consists of vacuum pump, vacuum control solenoid valve, prime level sensing probe, and float operated check valve.
    2. Positive lubrication of mechanical seal.
    3. Minimum passageway equivalent to 2-1/2" opening.
    4. Prime from low-pressure area of pump.

D. Pinch Valve
    1. On pump discharge line.
    2. In vertical piping.
    3. 4" diameter.
    4. Pneumatically controlled.

2.10 SHOP PAINTING

A. Surface Preparation
    1. All structural steel surfaces shot blasted with steel grit.
    2. Weld splatter and surface roughness removed by grinding.
    3. Comply with SSPC-SP6 specifications.

B. Coating

1. Single 3-mil dry film thickness of red oxide primer, factory applied.

2. Stainless, aluminum, other corrosion resistant surfaces shall not be coated.

3. Auxiliary components (grit pump, gear motor, etc.) furnished with original Manufacturer's coating.

2.11 SPARES

A. Pump

1. Spare mechanical seal and volute gasket

2. Pinch valve sleeve

3. Solenoid valve and dome

PART 3: EXECUTION

3.01 INSTALLATION

A. Installation of the equipment shall be in complete accordance with the manufacturer's instructions and recommendations, and the reviewed shop drawings.

3.02 FIELD QUALITY CONTROL

A. Functional Test:

1. Alignment: Prior to facility startup, test complete assembly for proper rotation, proper alignment and connection.

B. Performance Test:

1. Perform under actual or approved simulated operating conditions.

2. Test for a continuous 3-hour period without malfunctions.

3. Perform with the ENGINEER present.

4. Upon completion of test, record information listed on sample test log.

5. Adjust, realign, or modify units and retest in accordance with the Hydraulic Institute Standards, if necessary.

6. Verify communications and system operation with the plant control system through the Ethernet communications. Coordinate the database with the system integrator for the project.

3.03 MANUFACTURER'S SERVICES

A. Manufacturer's Representative: Present at site or classroom designated by Owner, for minimum person-days listed below, travel time excluded:

1. 1 person-day for installation assistance and inspections

2. 1 person-day for functional and performance testing and completion of Manufacturer's Certificate of Proper Installation.

3. ½ person-day for facility startup

4. ½ person-day for post-start-up training of Owner's personnel

B. See Section 1640 MANUFACTURER'S SERVICES and Section 01650 FACILITY START-UP AND TESTING.

END OF SECTION

Smith & Loveless, Inc.
14040 Santa Fe Trail Drive
Lenexa, Kansas 66215
913/888-5201

Name and Address:

Quotation Date: 11/19/2020
Inquiry Number: 30052
Engineer: Atkins Global
Job Location: Canton, GA

Smith & Loveless, Inc., having an office at 14040 Santa Fe Trail Drive, Lenexa, Kansas 66215 (hereinafter referred to as "Seller"), hereby agrees to sell to the buyer designated below (hereinafter referred to as "Buyer"), the following equipment subject to all of the provisions set forth in this Sales Agreement. ***The Sales Representative is not an agent or employee of Seller and is not authorized to enter into any agreement on Seller's behalf or bind Seller in any way*.**

Section 11321: Vortex Grit Chamber

ONE Smith & Loveless Model 12.0B **PISTA 360® GRIT CHAMBER SYSTEM™** mechanism suitable for installation in a concrete structure 12'-0" diameter x 6'-6" deep with a concentric 3'-0" diameter x 6'-8" deep grit well and concrete bridge – concrete structure by others.

The **PISTA 360® GRIT CHAMBER**™ mechanism shall include a helical gear reducer driven by 1.0 HP, 3 phase, 60 hertz, 230-460 volts, TEFC, drive motor, spur gear final drive head, air bell, propeller, drive tube, **PISTA® GRIT FLUIDIZER™, V-FORCE BAFFLE™**, removable grit well cover plates and accessories as described herein. All wetted parts shall be constructed of 316 stainless steel.

ONE Model 4B2H top-mounted **PISTA TURBO® GRIT PUMP™** capable of delivering 250 GPM @ 37.2' TDH driven by 10 HP, 1760 RPM, TEFC motor. A 4-inch Pinch valve to be installed in the discharge pipe and lifting stanchion for grit pump disassembly are included.

ONE Vacuum priming panel in a NEMA 4X-316 stainless steel enclosure.

ONE **PISTA®** Grit Concentrator to be mounted over the existing screw conveyor. A dual mounting bracket will be included.

ONE Electrical panel in a NEMA 4X-316 stainless steel enclosure with MicroLogix 1400 PLC control and a 7" HMI. The electrical panel will have starters, breakers for new motors controls to handle two (2) PISTA drive motors, two (2) grit pump motors and one existing (1) screw conveyor motor.

ONE Local panel in a NEMA 7 enclosure with an On-Off selector switch and E-Stop push button for PISTA drive motor.

TWO Local panel each a NEMA 7 enclosure with an On-Auto-Off selector switch and E-Stop push button for grit pump and an existing screw conveyor motor.

Spare parts:

One (1) mechanical seal and volute gasket

One (1) Pinch valve sleeve

One (1) solenoid valve and dome

CORROSION PROTECTION:

All fabricated steel components, with the exception of stainless steel, shall be commercial blasted and coated by the Manufacturer with one 6-mil DFT coat of **VERSAPOX®** epoxy prior to shipment. All motors and gearboxes shall be furnished with the original manufacturer's coating.

Approximate weight of each **PISTA®** Grit Chamber: 2,500 lbs.
Approximate weight of the Grit Pump: 750 lbs.

The equipment will be shipped in major pieces as follows:

Gear head/gear motor assembly
Propeller drive tube
Propeller mounting ring and blades – 2 pieces
Grit well cover plate – 2 pieces
PISTA® Grit pump – 1 piece
Pinch valve – 1 piece
PISTA® Grit Concentrator – 1 piece
Lifting stanchion – 1 piece
Main electrical controls – 1 piece
Vacuum priming controls – 1 piece
Local controls – 3 pieces

Warranty: 45 months from start-up does not exceed 51 months from date of shipment that equipment will be free from defects in materials and workmanship. Does not include labor.

NOT INCLUDED:
Screw Conveyor
Vacuum panel for the existing grit pump
Field assembly/erection or installation
Interconnecting piping, wiring and conduit
Field paint or painting
Lubricants
Anchorage or anchor bolts
Field testing if required
Performance Testing and/or Grit Removal Efficiency Testing
Grouting
PLC Program Copy (if applicable)

Smith & Loveless, Inc. will provide one electronic copy of the O&M on CD in PDF format and four hard copies of the O&M. Additional copies can be provided for $50 per copy.

PRICE, SUBMITTAL DATA & DELIVERY:

$ 168,730

F.O.B. factory plus any taxes, which may apply. Truck/Rail freight allowed to the job site, rail siding or nearest unloading area-unloading to be by Buyer. Due to the spike in gas prices, which is beyond the control of Smith & Loveless at the time of our quotation/bid, a fuel surcharge may need to be assessed at time of shipment.

Due to wide fluctuations and increases in the price of stainless and carbon steel components we are experiencing in very short time frames, the sales price of the equipment quoted herein is subject to an escalation in price. Escalation shall be based upon the increase in the Producer Price Index, U.S. Department of Labor, Bureau of Labor Statistics-Group: Machinery and Equipment: Special Industry Machinery and Equipment, Series Id-WPU116 (the "Index"). The escalation shall be calculated based upon the percentage increase of the monthly index between 12 months after the date of this quotation

and the date of shipment of the equipment (i.e. the index for the month of the shipment minus the index for the 12th month after quotation divided by the index for the 12th month after quotation, multiplied by the quoted price). Note there is approximately 2-4 month delay in the publishing and finalizing of these indexes by the Federal Government. Therefore, the escalation will be calculated at the time the index for both months has been published and finalized.

Pricing is firm for 12 months from date quoted.

Five (5) days supervision of initial operation, start-up and post start-up over two (2) trips are included. If additional days are required, Seller will furnish a factory-trained supervisor for $925 per day including travel time plus actual travel expenses.

With continuing approval of the Smith & Loveless Credit Department, payments terms are 100% Net 30 days from date of shipment, or at time of start-up, whichever occurs first.

Seller to send Submittal Data for approval 6-8 weeks after receipt of complete details at Seller's factory.

Manufacturing completion is estimated 18-20 weeks after receipt in Seller's office of approved Submittal Data and/or after all notations or comments have been clarified, approved and inserted into the manufacturing documents by the Seller. Variations in the time Submittal Data is returned to Seller and/or Submittal Data marked approved but which contain contingencies or variations may impact the completion time of the equipment.

ADDITIONAL TERMS AND CONDITIONS

1. GENERAL A. Buyer's execution of this Agreement constitutes Buyer's offer to purchase, on the terms and conditions set forth herein, the equipment described in this agreement, and such offer is irrevocable for thirty (30) days after Buyer executes and delivers to Seller this Agreement together with all necessary engineering data and information. Prices are firm for sixty (60) days after the bid date provided a firm order is received at the factory within that time period and provided approved Submittal Data is received at the factory within forty-five (45) days from the date submittals are forwarded from the factory. In the event firm orders and Submittal Data are not received by Seller within the times set forth above, then price and delivery estimates may change due to changes in the costs of material and labor and/or factory capacity at the time when the firm orders or approved Submittal Data is received by Seller. Seller reserves the right to amend this Sales Agreement if not signed and returned within sixty (60) days from the quotation date. In the event we are unable to ship within estimated period for reasons beyond our control, including a request by the Buyer to defer shipment, the prices are subject to adjustment to those prevailing at the time of shipment, but will not exceed 1-1/2% per month.
B. THIS AGREEMENT IS NOT BINDING ON SELLER UNLESS SIGNED ON SELLER'S BEHALF BY AN OFFICER OR MANAGER OF SELLER.
C. This Agreement constitutes the entire contract between the parties with respect to said equipment (any prior agreement, representation, covenant or warranty, written or oral, being superseded hereby) and may not be amended or modified except by a written instrument duly executed by both parties, the provisions of any purchase order or other document submitted by or on behalf of Buyer to the contrary notwithstanding.
D. All notices hereunder are to be in writing and mailed postage prepaid to the party being notified at the address indicated in this agreement or at such other address as may be designated in writing.
E. Remedies provided for herein are cumulative and are in addition to all other remedies as may be available at law or in equity.
F. This Agreement is governed by and subject to the laws of the State of Kansas and the Buyer by executing this agreement agrees to submit to the Jurisdiction of the State of Kansas and the venue for any disputes between the parties will be in the District Court of Johnson County, Kansas, or the Federal District Court of Kansas.

2. NOTICE TO PROCEED- Return to Seller of approved Submittal Data or notification to Seller that the submission of submittals will be waived, constitutes notice to Seller to proceed with manufacture. In the event Seller does not receive approved Submittal Data within forty-five (45) days after Seller's submission of submittal data for approval, then Seller reserves the right to amend price and delivery of the equipment being sold. Final approved Submittal Data means approval by Buyer (or Buyer's representative) of Seller's Submittal Data and/or after all notations or comments have been clarified, approved and inserted into Seller's manufacturing documents at which point Sellers estimated completion schedule commences. Variations in the time Submittal Data is returned to Seller and/or Submittal Data marked approved but which contain contingencies or variations may impact the completion time of the equipment. Seller agrees to furnish only the equipment included in Seller's quotation and/or as described and modified in the Submittal Data. Approval of the Submittal Data constitutes acceptance of the equipment in the configuration described therein. If Seller is directed to change the scope of the equipment after notice to proceed to manufacture, then Seller reserves the right to amend the price and delivery of the equipment.

3. EXCUSED PERFORMANCE- Seller is not liable for any failure or delay in performance hereof, with respect to delivery or otherwise, if such failure or delay is due to any cause beyond Seller's control including, but not limited to, any Act of God, war, civil disturbance, riot, labor difficulty, factory capacity, fire, other casualty, accident or supplier's failure or inability to perform.

4. CREDIT APPROVAL- The credit terms specified herein are subject to Seller's continuing approval of Buyer's credit and if, in Seller's sole judgment, Buyer's credit or financial standing is impaired as to cause Seller to deem itself insecure, Seller may withdraw the extension of credit and require other payment terms.

5. PAYMENT- Subject only to any credit terms, which Seller may extend, the total purchase price hereunder is due at such time, within or after the estimated shipment period specified herein, as said equipment is ready to be shipped. Buyer shall pay in full all invoices within the time for payment specified therein and Buyer's payment obligation is in no way dependent or contingent upon Buyer's receipt of payment from any other party. Any balance owed by Buyer for thirty (30) days or more after the same becomes due is subject to a 2% per month delinquency charge until paid. In addition to all other amounts due hereunder, Buyer shall reimburse Seller in full for all damages, costs and expenses, including reasonable attorneys' fees, which Seller may incur with respect to Buyer's breach of this Sales Agreement or the collection of past due amounts from Buyer. If Buyer is in default under this or any other agreement with Seller, Seller may, at its option, defer performance hereunder until such default is cured.

6. SECURITY INTEREST- Until all amounts due hereunder have been paid in full, Seller has a security interest in said equipment and has all rights of a secured party under the Uniform Commercial Code including, without limitation, the right to take possession of said equipment without legal process and the right to require Buyer to assemble said equipment and make it available to Seller at a place reasonably convenient to both parties. At Seller's request, Buyer shall execute any financing statement or statements submitted by Seller in order that Seller's security interest in said equipment may be perfected.

7. WARRANTY & LIABILITY- Seller warrants only that said equipment is free from defects in materials and workmanship as set forth in Seller's standard Certificate of Warranty furnished to Buyer at the time of final shipment. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR DESIGN AND WHICH ARE EXPRESSLY DISCLAIMED BY SELLER. Seller's sole responsibility with respect to any equipment which proves to be defective as to materials or workmanship is either to replace or to repair the same as is set forth in said Certificate of Warranty. Unless authorized in writing by Seller, Seller is not responsible for any charge or expense incurred for the modification, servicing or adjusting of said equipment after the same has been delivered to Buyer. Seller is not liable in association with its warranty or in any other capacity for any consequential, incidental or liquidated damages, late fees/damages or penalties.

8. CLAIM PERIOD- Buyer shall immediately inspect said equipment upon receipt thereof and immediately notify the carrier of any damage, shortage or other nonconformance. Seller is not obligated to consider any claim for damages, shortages or non-conformance unless notified by Buyer within ten (10) days after Buyer's receipt of said equipment.

9. CANCELLATION- Should Buyer cancel this agreement without Seller's prior written consent, Seller may, at its option, recover from Buyer a cancellation charge of not less than 20% of the purchase price hereunder. This cancellation charge is intended to compensate Seller for difficult-to-calculate economic losses, including but not limited to, material and labor costs, as well as loss of anticipated profits suffered due to cancellation.

10. SEVERABILITY – If any provision or provisions of this Agreement shall be held to be invalid, illegal, unenforceable or in conflict with the law of any jurisdiction, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

11. STORAGE- If at such time, within or after the estimated shipment period specified herein, as Seller notifies Buyer that said equipment is ready to be shipped Buyer requests a delay in shipment, Seller may, at its option, agree to store said equipment for a period of time determined by Seller, provided that such agreement will not affect Buyer's obligation to pay in full all invoices as they become due, and provided further that for each month, or portion thereof, said equipment is so stored by Seller, Buyer shall pay to Seller as a storage fee an amount equal to 2% of the purchase price.

12. DRAWINGS, ILLUSTRATIONS AND MANUALS- Catalog and proposal drawings, bulletins, and other accompanying literature are solely for purpose of general style, arrangement and approximate dimensions. Seller may make any changes Seller deems necessary or desirable. Submittal for approval, if required, will be made after receipt of complete information from Buyer. Unless otherwise specified at the time of quotation, six sets will be furnished. Additional sets are at $25.00 per set. Installation, maintenance and operation manuals will be furnished in the number of copies specified at the time of quotation. If none specified, four will be provided at no added cost, with additional copies at $50.00 each.

13. PERMITS, LICENSES- Buyer at its sole cost and expense shall obtain all building or other permits or licenses with respect to the installation and operation of said equipment required by any federal, state or local governmental body.

14. PATENT INDEMNIFICATION- Seller shall, at its own expense, defend any suit instituted against Buyer, based on any claim that equipment furnished hereunder infringes any Letters Patent of the United States, and Seller shall pay any damages assessed against Buyer in any such suit, provided that Buyer, upon service of process upon Buyer, gives to Seller notice in writing of the institution of such suit, and permits Seller, through counsel chosen by Seller, to defend the same, and gives Seller all information in Buyer's possession and reasonable assistance and authority to enable Seller so to do. Seller shall have no liability or obligation to Buyer for patent infringement resulting from compliance by Seller with written instructions or specifications of Buyer concerning the structure, operation, material, or method of making equipment furnished hereunder.

Agreed to this _____day of _____, _____

_____
Buyer

By_____
Print Name

By_____
Authorized Signature

_____
Address

Is this purchase tax exempt? **Yes____ No____**

Agreed to this _____day of _____, _____
at Lenexa, KS.

SMITH & LOVELESS, INC.

By _____
Authorized Signature

Prepared by _____
Sales Representative

If **YES**, attach Sales Tax Exemption Certificate. Failure to provide tax exempt certificate prior to shipment will result in Buyer being responsible for all applicable taxes. **NOTE: The Sales Representative is not an agent or employee of Seller and is not authorized to enter into any agreement on Seller's behalf or to bind Seller in any way.**

SECTION 11331

FINE SCREENS AND CONVEYOR

PART 1: GENERAL

1.01 SCOPE OF WORK

A. Work covered in this Section includes furnishing two (2) fully automatic, self-cleaning, channel mounted rotating drum screens, and associated screenings conveyor for wastewater applications and associated controls. Equipment shall be installed as shown on the plans, as specified herein, as recommended by the supplier and in compliance with all local, state and federal codes and regulations. Equipment included are as follows:

Fine Screen #1	4-FS-1
Fine Screen #2	4-FS-2
Screening Conveyor	4–FS-C-1

B. The entire in-channel, rotating drum screen shall be designed, coordinated and supplied by one manufacturer.

C. Conveyor shall be provided by screen manufacturer.

1.02 RELATED WORK

A. Section: 01300 SUBMITTALS: General submission requirements included in Division 1.

B. Section: 09900 PAINTING, except as specified herein, is included in Division 9.

C. Section: 11314 HORIZONTAL CENTRIFUGAL PUMPS included in Division 11.

D. Section: 16900 General Control Requirements.

E. Electrical work, except as specified herein is included in Division 16.

1.03 SUBMITTALS

A. The Manufacturer shall furnish submittals in accordance with Specification Section 01300 SUBMITTALS.

B. Submittals shall contain the following technical information:

1. Manufacturer’s layout drawing and electrical schematic drawings.
2. Motor performance data and features.
3. Gear reducer data including service, efficiency, torque rating and materials of construction.
4. Equipment information:
    a. Brochures and other descriptive literature.
    b. Ancillary item(s) data sheets.

C. Operation & Maintenance Manuals

1. Equipment Operating instructions
2. Equipment weights and lifting instructions.
3. Installation instructions
4. Maintenance schedules
5. Recommended lubricants
6. Recommended spare parts including wear items.
7. Long-term and short-term storage instructions.

1.04 REFERENCE STANDARDS

A. The rotating drum screen and motor controllers shall, as applicable, meet the requirements of the following industry standards:

1. AISI (American Iron and Steel Institute)
2. ABMA (American Bearing Manufacturers Association)
3. AGMA (American Gear Manufacturers Association)
4. NEMA (National Electrical Manufacturer's Association)
5. NFPA (National Fire Protection Association)
6. ASTM (American Society for Testing and Materials)
7. WSC (American Welding Society Code)
8. ASME (American Society of Mechanical Engineers)
9. NEC (National Electrical Code)
10. UL (Underwriters Laboratory Standards)

1.05 QUALITY ASSURANCE

A. A single manufacturer shall furnish all the equipment specified under this Section and shall be standard units of proven ability as manufactured by a competent organization that is fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The equipment shall be designed, constructed and installed in accordance with the best practice and methods, and shall operate satisfactorily when installed.

B. All equipment furnished under this Section shall be new and unused.

C. The Rotating Drum Screen shall be shipped to the site fully assembled. Some ancillary components may be removed in order to prevent damage during shipment.

D. The manufacturer shall test-run the fully assembled Screen in the factory before shipment.

E. A certificate of the shop run test shall be supplied showing the result of screenings capture ratio (SCR) test.

F. The Contractor and manufacturer shall assume responsibility for the satisfactory installation and operation of the Fine Screens System.

1.06 DELIVERY STORAGE AND HANDLING

A. Provide in accordance manufacturers recommendations and with Section 01600 Delivery, Storage and Handling.

B. All parts shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation.

C. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing.

D. Finished iron or steel surfaces not requiring painting, such as flange faces, shall be properly protected to prevent rust, corrosion and damage.

E. Each box or package shall be properly marked to show its net weight in addition to its contents.

1.07 WARRANTY

A. All equipment shall be covered against manufacturing defects in materials and workmanship during normal use and service for a period of one (1) year from date of start up as long as periodic maintenance procedures are followed and performed. Items specifically not covered by the one year warranty are consumable wear parts as identified in the O&M manual.

1.08 SPARE PARTS

A. One (1) Solenoid valve rebuild kit.

B. One (1) Ball valve rebuild kit for each size provided.

C. One (1) set of low-pressure spray nozzles

D. One (1) complete set of Drum Support Rollers

E. Three (3) Drum Seal Gaskets

F. Three (3) Spiral Brush segments.

G. Three (3) Drum Cleaner brushes.

PART 2: EQUIPMENT

2.01 ACCEPTABLE MANUFACTURERS

A. SAVI Flo-Drum Rotating Drum Screen, Model VSA 3000/1, shall be as supplied by Enviro-Care, Inc.

B. Huber.

2.02 FINE SCREENS

A. Performance Requirements

Conditions	Unit
Number of screens	2
Influent Type	Raw Sewage
Influent Solids Concentration (mg/l)	450
Peak flow per screen (mgd)	14
Downstream Water Level (at peak flow) (in)	36
Max Headloss (at peak flow) (in)	25
Perforation Size (mm)	1
Channel recess width (ft)	10.0
Influent & Effluent channel width (ft)	5
Channel depth (ft)	10.5
Screenings discharge height from channel top (ft)	5
Minimum Screenings Capture Ratio (SCR) Certified	92%

B. Utility Requirements/Environmental Conditions

Conditions	Unit
Spray Wash Water – Low Pressure (gpm/psi)	113/72
Power Supply (V/P/Hz)	460/3/60
Screen Installation Location	Outdoor
Control Panel Location	Outdoor

C. Design Requirements

1. General

a. Equipment provided shall be fully automatic, self-cleaning, perforated plate rotating drum screen(s). Screen(s) will be provided with an angle-of-inclination of 35° from horizontal.

b. Each rotating drum screen unit shall be provided with a rotating screen basket, basket cleaning spray bar(s), basket cleaning brush, concentric screw conveyor with integral screenings washing, dewatering and screenings compaction zone with single motor drive system.

c. Under any flow condition up to the maximum flow condition, the average maximum flow through velocity of 3.3 ft/sec shall not be exceeded. The drum screen shall be designed to minimize solid deposition in the channel.

d. The screen(s) shall be designed so that there are no metal on metal wearing surfaces in the screening, transport and compaction/dewatering zones of the screen. The spiral shall be supported between the gearbox and the bottom bearing and shall not rely on the anti-rotation bars for support. Units requiring wear liners or wear bars shall not be accepted.

e. The in-channel rotating drum screen equipment shall produce dewatered screenings capable of passing the EPA Paint Filter Test as described in method 9095 of EPA publication SW-486.

f. The rotating drum screen shall be capable of presenting a clean filtration surface to the oncoming liquid stream at all times during operation.

2. All moving wetted parts, all wetted parts on which moving parts ride, all perforated drum components shall be 304L stainless steel unless otherwise noted.

3. Drum Screen Basket

a. The Drum Screen Basket shall be designed and built to withstand the maximum possible static hydraulic forces exerted on the screen by the liquid flow. Structural and functional parts shall be sized to prevent deflections or vibrations that may impair the screening, conveying, washing and compacting operations.

b. The drum screen basket shall be of a cylindrical shape with perforations around the entire basket.

c. The drum screen basket shall be perforated plate with maximum openings of 1 mm. Bar screens, wire mesh or wedge wire will not be acceptable screen media.

d. The top end ring and the bottom drive ring inclusive of support arm(s) shall each be made from a single plate from stainless steel. Units which use multiple pieces for each end and that are welded or otherwise affixed shall not be accepted.

e. Units with a drum screen basket diameter of 3000 mm and above shall be provided with dual lower support arms.

f. A support arm hub shall be welded directly to the support arm(s). The hub shall be machined complete with keyway from a single piece of stainless steel. The hub shall be sized to support the drum screen basket without deflection or distortion.

g. The drum screen basket shall have shaped lifting vanes to retain loose solids during rotation and lift them up and into the screw auger trough. Helical shaped vanes which can tumble screenings rather than lift screenings shall not be accepted.

h. A one piece stainless steel seal plate shall be provided to direct water flow into the circular drum screen basket in the channel. The seal plate shall be sufficient to prevent bypassing of flow around the screen basket at the maximum screen hydraulic capacity.

i. The drum screen basket shall be provided with a triple face seal system, incorporating an internal brush in order to minimize bypassing of hair and other fine particles, one HDPE seal creating a labyrinth through a ring welded on the drum screen, and an external rubber seal pressing on the external part of the drum ring preventing laminar bypass. Any unit which does not incorporate this design will not be accepted.

j. The upper portion of the drum screen basket shall have a brush seal to prevent screenings from being carried into the channel from splashing inside the drum.

k. The drum screen basket and screw conveyor shall be fixed to the same shaft and driven by a common drive.

l. The drum screen basket shall be supported by the drive end with a reinforced support arm and by nylon rollers at the opposite end. Each of the rollers shall use two ball bearing assemblies mounted to the stainless steel shaft. The rollers and bearings shall require no lubrication. A preload adjustment system shall be included for the rollers. Screens using wear shoes or glides to guide or support the basket shall not be accepted.

4. Drum Screen Basket Cleaning Brush and Low-Pressure Spray Bar

a. The rotating drum screen basket assembly shall be cleaned by a stainless steel spray bar with stainless steel spray nozzles and a stainless steel backed polypropylene brush. The drum screen basket shall continuously rotate in one direction during the cleaning cycle and pass through the topmost portion where it is cleaned by the spray bar and brush.

b. The drum screen basket shall incorporate a brush and spray wash located above the basket to remove solids from the screening basket and direct them into the concentric screw conveyor trough as the basket rotates.

c. Under certain operating conditions a second spray bar may be added either in conjunction with the existing spray bar or offset to the side of the drum screen basket to minimize water entering the screw conveyor trough.

d. Units with a drum screen basket diameter of 3000 mm and above shall utilize a double spray bar with a staggered nozzle pattern.

e. The cleaning brush shall be mounted on a holding device which keeps the brush in constant contact with the screen basket and can be adjusted to compensate for brush wear.

f. The drum screen basket shall have a stainless steel backed brush attached to sweep materials from the edge of the screw conveyor trough.

5. Screenings Conveyor and Dewatering Zone

a. The transport tube shall be provided with anti-rotation bars bolted from the outside along the longitudinal axis. The screenings screw conveyor shall not be dependent on the anti-rotation bars for support during normal operation.

b. The screenings shafted transport/dewatering screw shall be constructed from type 304L stainless steel.

c. The screen basket rollers and screenings collection hopper shall be attached to the screenings transport tube by a basket support flange. The drive assembly shall be attached via a drive support flange welded to the upper end of the screenings transport tube. The basket shall be mounted to the unit with a solid support arm hub at the lower end of the basket. The support arm hub shall be bolted directly to the concentric screw shaft.

d. The screenings shafted transport screw shall have a brush mounted on it for the length of the screenings inlet/drainage hopper.

e. The concentric transport/dewatering screw shall be designed to transport and dewater the screened material. The unit shall be provided with screw flights of constant pitch approaching the compaction zone in order to prevent clogging in the compaction zone. Designs incorporating a decreasing pitch screw will not be accepted.

f. The screenings screw conveyor shall be supported by a sealed, self-lubricating lower bronze bushing. The shaft in contact with the bushing shall be protected by chrome a plated sleeve. The lower bushing shall be designed such that it does not take any thrust load from the screw conveyor. Designs requiring bearings of any type or externally lubricated bushing(s) or water injection into the housing shall not be accepted.

g. The lower bearing shall have a 10-year or 55,000 hours of bearing life. Bearings unable to meet this service life will not be accepted.

h. The stainless steel lower bearing shaft and arm(s) shall be designed to minimize material wrapping around the shaft. A stainless steel seal plate shall be provided to mate between the stationary lower bearing support and the rotating arm(s) to prevent material intrusion into the bearing seals.

i. The compaction zone shall be integral to the screenings screw conveyor and compaction tube. The compaction zone shall be designed to form a screenings plug and return water released from the screened material back to the channel through circular holes that are machined into the screenings compaction tube.

j. The screw conveyor shall transport the screenings to the compaction/ dewatering chamber. After compaction and dewatering, the screenings shall be discharged with the aid of a serrated blade.

k. The compaction zone housing shall be fabricated entirely of 304L stainless steel. The lower body shall be a welded construction with a minimum of 10mm end plates for maximum torsion resistance. The bottom of the compaction zone shall be curved to promote maximum cleaning and minimum depositing of materials. Units utilizing a fiberglass reinforced compaction zone housing will not be accepted.

l. The compaction zone shall be furnished with a latched, hinged access cover with a gasket. The access cover shall incorporate a safety interlock switch in order to prevent operation of the unit with the access cover open. Units which require the use of any tools to gain access to the compaction zone will not be accepted.

6. Spray Wash System

a. The spray wash system shall utilize a local spray wash water booster pump. The pump shall be horizontal centrifugal to provide 113 gpm @ 72 psi; reference Specification Section 11312 – Horizontal End Suction Pumps.

b. The low-pressure automatic spray wash systems for the screen shall be furnished with automatic controlled valves.

c. Spray wash systems shall be constructed of 304 stainless steel piping and fittings, flexible rubber reinforced hoses and 316 stainless steel spray nozzles. Spray wash system shall operate only when the screen basket is rotating.

d. The low-pressure lower wash system shall be located over the rotating basket which utilizes spray bars with adequate spray nozzles to ensure a consistent spray pattern over the entire length of the basket. For maximum wash water flow rate and pressure the spray bar will be controlled with an

electric actuated full port stainless steel ball valve. Full port ball valve shall have a maximum Cv rating of 60.

e. A screenings spray wash system shall be located in the lower section of the transport tube to break up and return organic materials to the flow stream and to ensure maximum screenings washing.

f. A compaction zone wash system shall be provided which periodically cleans the compaction and dewatering zone via a stainless steel wash header located in the uppermost end of the compaction/dewatering chamber. The header shall be designed to completely wash the full surface of the transport tube drainage area. Wash water to the compaction zone will be controlled with a brass body solenoid valve.

g. The electric actuated full port stainless steel ball valve shall be 120V AC rated and operated via the programmable controller and/or manually.

h. The solenoid valve shall be 120V AC rated and operated via the programmable controller and/or manually.

7. Screen Drum Channel Covers.

a. The rotating drum screen units shall be provided with covers from Aluminum.

b. Covers shall be 3/16 inch thick with ¼-inch-thick supporting struts/angles.

c. Cover mounting flange shall be from a ¼-thick x 4-x-4-inch angle.

d. Covers shall be rectangular with sloped sides access cover panels.

e. A total of four (4) access cover panels shall be provided. Each access cover panel shall be provided with two (2) stainless steels hinges with a stainless-steel lifting handle.

f. Provide lifting eyes at the four corners of the cover to allow for complete removal of the channel cover.

g. Top of cover shall be provided with a 6-inch bolt hole pattern odor control vent connection.

D. Fine Screens Drive Unit

1. Drive unit shall be rigidly supported so that there is no visible “wobble” movement under any operating condition.

2. Basket and transport screw shall be driven by a shaft mounted geared motor.

3. The gear reducer shall be bolted to a machined flange welded to the upper end of the transport tube.

4. Gear reducer shall be a helical gear type as manufactured by NORD or approved equal. Provide a cast iron frame; design in accordance with AGMA recommendations for wastewater service.

5. Gear reducer shall be driven by a 5 HP, TEFC, 480v, 3ph, 60hz motors.

6. Chain drives, belt drives, hydraulic drives or designs incorporating a separate upper bearing for the transport screw will not be accepted.

2.03 SCREENING CONVEYOR

A. General

1. The conveyor will accept solids with a dry weight not less than 8% solids at the screenings inlet. The shaftless spiral screw will convey the solids to the discharge point.

B. Performance Requirements

1. Number of Units: One (1)
2. Inlet Solids Capacity (maximum): 250 CFH
3. Angle of Inclination: 0 - 5 degrees
4. Trough Length: 31 ft
5. Inlets: Two
6. Outlets: One

C. Design Requirements

1. Materials: The materials used in the fabrication of the spiral conveyor furnished under this section shall conform to the following:
2. Trough: 3/16-inch thick 304 stainless steel
3. Spiral: Micro Alloy steel with a minimum thickness of 3/4 inch and depth of 2.5 inch.
4. Wear liners: 1/2-inch thick UHMW
5. Covers: 304 stainless steel with neoprene gaskets
6. Inlet Hoppers and Discharge Chutes: 304 stainless steel
7. Support Legs: 304 stainless steel
8. Bolts, nuts and washers: 304 stainless steel
9. Anchors: 304 stainless steel

D. Trough Assembly

1. The trough assembly shall consist of a U-trough, wear liner, inlet area, and trough cover.
2. The U-trough shall be constructed from material per Paragraph 2.04.
3. The wear liner will support the spiral throughout the trough length and be constructed of 3/8-inch thick UHMW. Wear liners shall be provided in 4 foot maximum lengths and held in place by clips for ease of replacement.
4. Hold down angles from 304 stainless steel shall be provided on both sides of the trough assembly to control excessive vertical movement of the spiral flights. Hold downs shall not interrupt material transportation.

5. The screenings inlet area will be minimum 12 inches wide by 24 inches long. Inlet hopper to mate up with screen discharge chute. Inlet hopper shall have a minimum incline of 60 degrees from horizontal.

6. Except for the inlet area, the trough will be supplied with covers. Trough covers will be provided with neoprene gaskets and constructed from minimum 14 ga thick type 304 stainless steel and bolted to the flanges of the U-trough.

E. Shaftless Spiral Screw

1. The spiral screw shall be single stage formed in sections from one continuous flat bar. The minimum thickness and height for the spiral shall be 3/4-inch x 2.5 inches.

2. Spiral flights shall have full penetration welds at all splice connections. Spiral flights shall be welded to a 4-inch pipe with flanged disc end for connection to the end drive shaft.

F. Inlet Hopper

1. The inlet hopper shall be designed to accept discharge screenings from the screen discharge chute. The hopper shall directly interface with the filter screen discharge with no solids or water bypass.

2. The inlet hopper shall be fabricated from minimum 12-gauge type 304 stainless steel.

G. Screenings Conveyor Drive Assembly

1. Gear reducer shall be a helical gear type with hollow input shaft. The unit will be provided with a cast iron frame and be designed in accordance with AGMA recommendations for Class II service based on the horsepower required to operate the conveyor.

2. The motor shall be TEFC, 5 HP, TEFC, 460 Volt, 3 phase, 60 Hz. The motor shall be NEMA design code B and be direct coupled to the reducer.

3. The conveyor shall be supplied with a drive shaft seal box at the drive end.

2.04 SCREENING CONVEYOR ELECTRICAL CONTROLS AND DEVICES

A. Control Panel: A 480-volt primary control panel shall be provided with a type 316 stainless steel NEMA 4X enclosure. Panel shall be suitable for wall mounting.

B. All controls necessary for the fully automatic operation of the screen shall be provided by the manufacturer.

C. The electrical control system shall provide for automatic control of the screen via a high liquid level using ultrasonic level transducers in conjunction with an adjustable time clock. The screen shall operate at a high liquid level or a pre-determined time sequence to provide variable time between cleaning operations. The level sensing device shall be provided as part of the control system.

D. The rotating drum screen control system shall incorporate a programmable relay/(programmable logic controller and integral operator interface) which can change the cleaning characteristics of the screen and spray wash systems.

E. Each control panel shall include the following items:

F. One (1) NEMA 4X type 316 stainless steel wall mount main control panel suitable for 480/3/60 electrical supply. Control panel shall contain the following control devices for operation of the drum screen.

1. Main fused disconnect with through door interlock handle.
2. Control transformer 480/120.
3. Branch circuit protection.
4. Screen drive motor VFD.
5. Emergency stop pushbutton.
6. HOA switch for each motor.
7. Open – Close – Auto switch for screen wash water electric actuated ball valve.
8. Open – Close – Auto switch for compaction zone wash water solenoid valve.
9. Hour meter for each motor.
10. Run indicating lights.
11. Alarm lights indicating overcurrent and starter overload.
12. Alarm reset pushbutton.
13. Allen Bradley MicrolLogix 1400 programmable control relay for screen and compactor control logic functions.
14. Allen Bradley PanelView 800.
15. Ethernet switch – unmanaged.
16. Run and alarm auxiliary contacts.
17. Flashing alarm light and alarm horn with silencer-reset button.
18. UL Label.

G. Safety Microswitch: 120 volt safety interlock switch shall be factory mounted to the compaction/discharge zone access door. Interlock switch shall prevent operation of the screen while the doors is open. Switch housing shall be rated for NEMA4X.

H. Electric Actuated Ball Valve: Provide one (1) electric actuated full port 316 stainless steel ball valves to control flow to the low-pressure basket spray wash assembly. Each full port ball valve shall be 2-piece body, threaded ends, cast body from CF8M, 316 stainless steel, ball and stem from 316 stainless steel, and RTFE seats. Each valve shall be controlled by a NEMA 4x electric actuator with a housing from cast aluminum with thermally bonded polyester power coating, stainless steel output shaft, stainless steel fasteners, 115 volt, single phase, 60 Hz, two SPDT limit switches, and visual indication on valve position. Electric actuator shall be suitable for area classification.

I. Solenoid Valves: Provide one (1) solenoid valve to control flow to the compaction zone spray wash assembly. Each valve shall have a stainless steel body. Each

valve shall be 120 volt, single phase, 60 Hz. Valves shall be suitable for area classification.

J. Each screen provided with one (1) Local control station complete with –

1. Local/Remote switch.

2. Screen drive Hand-Off-Auto selector switch.

3. Drum low pressure spray wash water control valve Open-Close-Auto selector switch.

4. Compaction zone spray wash water control valve Open-Close-Auto selector switch.

5. Emergency Stop pushbutton.

K. Ultrasonic Level Controller: A 120V dual point controller shall be provided in a windowed NEMA 4X polycarbonate enclosure suitable for wall mounting, to receive and interpret a 4-20mA scaled signal from an upstream and downstream transducer. The controller shall have 6 internal relays and provide an LCD display and handheld programmer for use interface.

L. Ultrasonic Level Transducer: Two (2) ultrasonic level transducers shall be provided with type 316 stainless steel mounting brackets and expansion anchors. Each sensor shall have an ETFE housing with an integral sensor to provide compensation for acoustic variations due to temperature. Each sensor shall have a range of 1-33 ft and be supplied with a 16 ft integral cable. Sensor shall be suitable for installation in a Class 1, Division 1, Group D area.

M. Outdoor Weather Protection:

1. Screenings transport tube shall be insulated with thermal insulation of mineral wool, riveted stainless steel protective covers and a heat tracing system for outdoor weather protection of the: screenings transport tube, compaction, dewatering zone, and all spray wash piping and valves.

2. Heat tracing shall be suitable for operation to a minimum temperature of -13°F.

3. Bulkhead adapters allowing easy access shall be provided where wash water supply and electrical conduit penetrates the screen cover.

N. Operation, Monitoring, and Control

1. Screen Hand Operation: Screen to run continuously.

2. Screen Automatic Operation: Operation of the rotating drum screen basket and spray bar(s) shall be automatically initiated at a preset high liquid level. Screen to cycle based on the level sensor.

3. Basket Zone Low-Pressure Spray Wash/Screening Wash System Hand Operation: Spray wash shall run continuously.

4. Basket Zone Low-Pressure Spray Wash/Screening Wash System Automatic Operation: Spray wash shall run when the spiral assembly is rotating in forward operation and also have the capability to sequence on and off as conditions warrant.

5. Compaction Zone Spray Wash Hand Operation: Spray wash shall run continuously.

6. Compaction Zone Spray Wash Automatic Operation: An intermittent cleaning cycle of the drum screen basket shall be initiated by the upstream water level as required. All open spaces of the drum screen basket shall be positively cleaned via brush bristles and spray wash system.

7. Fault Conditions:

   a. Momentary motor over current shall trip the current monitor, stop the drive motor, and illuminate the alarm indicating light. Reset shall be manual on the outside of the control panel.

   b. Excessive motor current shall trip the starter overload relays, stop the drive motor, and illuminate the alarm indicating light. Overload relays shall be reset manually on the inside of the control panel.

   c. Spray Wash Booster Pump failed to run.

2.05 SCREENING CONVEYOR ELECTRICAL CONTROLS AND DEVICES

A. Electrical: In addition to the drive motor, the equipment supplier shall furnish all electrical items specifically called for in this specification section. The contractor shall supply all other electrical items, and interconnecting wiring of proper size, including all conduit and supports required to place the equipment into service.

1. The 480-volt primary control panel shall be provided in a NEMA 4X type 304 stainless steel enclosure suitable for wall mounting with the following components to provide proper operation of the conveyor unit:

   a. Main disconnect with through door interlock handle.

   b. Step down control transformer.

   c. Branch circuit protection.

   d. Drive motor starter.

   e. Emergency stop pushbutton.

   f. HOA switch.

   g. Hour meter for motor.

   h. Run and Off indicating lights.

   i. Alarm light indicating over current, and starter overload.

   j. Alarm reset pushbutton.

   k. Timers and relays to provide necessary control logic and monitor equipment mounted electrical devices.

   l. Run and alarm auxiliary contacts for use by the customer.

B. Local Emergency Stop Pushbutton: A local emergency stop pushbutton station will be provided in a NEMA 4x enclosure for field mounting at the unit.

C. Emergency Stop Pull Cord: An emergency stop system consisting of pull cord switch(es) actuated by a cable system running the full length of the conveyor or by activating e-stop directly at the controller. Cable shall be orange colored, plastic

covered stainless steel aircraft cable. Support eyes shall be fitted as need along length of conveyor from 304 stainless steel. The switch shall be manually set after actuation and shall provide visual indication of operation. Switch shall be single-pole, double-throw output contact. Switch shall be normally closed and shall open when pull cord switch is actuated. Emergency stop system shall be rated for area classification.

D. Sequence of Operation

1. Hand Operation: When the shaftless conveyor selector switch is in the Hand position, the conveyor spiral will run continuously. Turning the shaftless conveyor selector switch to Off will stop the unit.

2. Automatic Operation: When the shaftless conveyor selector switch is in the Auto position, the spiral will cycle on and off on demand from a remote contact closure from the Fine Screenings control panel system. An off delay timer shall control the end of the conveyor operational sequence.

3. EMERGENCY STOP: The unit can be deactivated at any time by pressing either the control panel mounted or unit mounted Emergency Stop push buttons.

4. FAULT CONDITIONS: Motor overload condition will stop the motor and illuminate the fault light.

PART 3: EXECUTION

3.01 PREPARATION

A. Each rotary perforated plate screen shall be supplied complete with supports suitable for mounting as shown on the contract drawings. Supports shall be shop fabricated from 304L stainless steel shapes and plates. Supports shall be assembled and fitted to the screen prior to shipment.

B. The contractor shall furnish all anchor bolts of ample size and strength required to securely anchor each item of equipment. Contractor shall place equipment on the foundations, ensure that it is leveled, shimmed, bolted down and grouted with a non-shrinking grout.

C. The mounting points of the channel shall be level and parallel and of proper size.

3.02 INSTALLATION

A. Installation shall be in strict accordance with the Manufacturer's instructions and recommendations and the approved shop drawings in the locations shown on the Drawings.

B. The Contractor shall furnish all required oil and grease for initial operation, if required, in accordance with the Manufacturer's recommendations. Anchor bolts shall be set in accordance with the Manufacturer's recommendations.

C. The manufacturer shall coordinate with the contractor for installation of all conduit, wire, terminations, mounting hardware, and equipment not provided as part of the manufacturers equipment. The contractor is responsible to provide all material and work required for a complete system. Refer to Division 16 in the contract documents.

D. Upon completion of each pump application, the Manufacturer shall inspect the installation and submit a certificate stating that the installation of the equipment is satisfactory, that the equipment is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

E. Coordinate with the system integrator for communications through the Ethernet system. Provide database for monitoring and control of point in the plant control system.

3.03 FUNCTIONAL TESTING

A. Prior to startup, inspect all equipment to ensure proper alignment, proper operation, proper connection, and satisfactory operation of all equipment.

B. Functional Testing shall demonstrate that the fine screens, conveyor and ancillary equipment are operating as specified.

C. Verification of electrical power and control panel operation, including interfacing between the equipment and with the plant SCADA system, shall be included in Functional Testing.

D. If In the opinion of the Engineer, the system is operating as intended, Performance Testing may begin. If the system is determined to not be in compliance or is not operating as specified, the Contractor shall make all necessary improvements at no additional cost to the Owner.

3.04 MANUFACTURER'S SERVICES

A. All manufacturers' field services shall be provided and performed in accordance with Sections 01400 Quality Control and 01640 Manufacturer's Services.

B. Manufacturer's Representative: Present at site or classroom designated by Owner, for minimum person-days listed below, travel time excluded:

1. 2 person-days for installation assistance and inspection

2. 1 person-day for functional and performance testing, including, but not limited to, verification of proper alignment, proper rotation, and panel operation

3. 2 person-days for facility startup

4. 1 person-day for training of Owner's personnel

END OF SECTION

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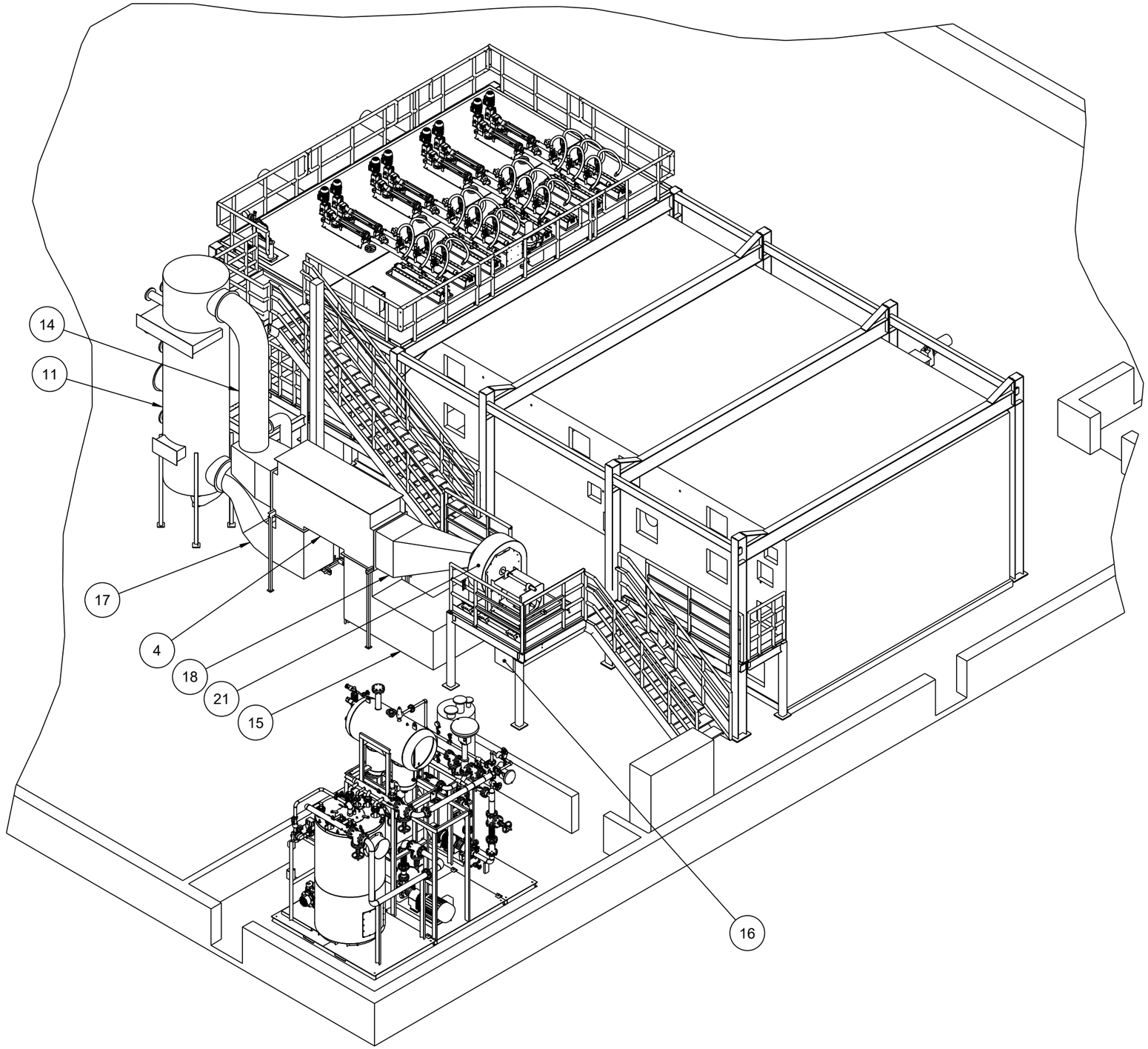
SECTION 11371 SUPPLEMENT 3
Sludge Dryer Process Connections

Veolia Water Technologies

Contact Information

Sudhakar Viswanathan
National Sales Manager - Biosolids & Bioenergy, Kruger
(919) 653-4596
sudhakar.viswanathan@veolia.com

NOTES:
1. ANY REFERENCE TO "CONTRACTOR", "INSTALLATION CONTRACTOR", "ENGINEER", "CONSULTING ENGINEER", OR "BY OTHERS" INDICATES NOT BY KRUGER.
2. ANY CONCRETE THICKNESSES SHOWN ARE ESTIMATED AND ARE SHOWN FOR REFERENCE ONLY. ACTUAL CONCRETE THICKNESSES AND FOOTINGS TO BE DETERMINED BY ENGINEER, NOT BY KRUGER.
3. ALL DUCT/PIPE SUPPORTS TO BE SUPPLIED AND INSTALLED BY INSTALLATION CONTRACTOR. DUCT/PIPE SUPPORTS DESIGNED BY OTHERS. PIPE SUPPORTS SHALL BE PLACED SO THAT LOADS AND FORCES WILL NOT BE TRANSFERRED TO ANY KRUGER EQUIPMENT.
4. FLEXIBLE DUCT CONNECTIONS TO BE SUPPLIED, DESIGNED AND INSTALLED BY OTHERS.
5.UNLESS OTHERWISE NOTED, ALL PIPING AND FITTINGS SUPPLIED AND INSTALLED BY INSTALLATION CONTRACTOR. ALL PIPING AND FITTINGS TO BE INSTALLED AND FIELD ADJUSTED, AS REQUIRED, ON SITE BY THE INSTALLATION CONTRACTOR BASED ON ACTUAL FIELD DIMENSIONS AND MEASUREMENTS. ALL GASKETS TO BE SUPPLIED BY INSTALLATION CONTRACTOR.
6. UNLESS OTHERWISE STATED IN CONTRACT DOCUMENTS, ALL FASTENERS, ANCHOR BOLTS, AND ANCHOR APPURTENANCES FOR PIPING AND EQUIPMENT TO BE SUPPLIED BY INSTALLATION CONTRACTOR. KRUGER RECOMMENDS THAT ALL ANCHOR BOLTS SHOWN SHALL UTILIZE HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM PER ICC ESR-3187.
7. APPLY ANTI-SEIZE TO ALL STAINLESS STEEL FASTENERS.
8. BUILDING DESIGN AND MATERIAL SELECTION BY OTHERS. BUILDING SHOWN IS CONCEPTUAL ONLY. MINIMUM SPACE REQUIREMENTS ARE AS SHOWN.
9. KRUGER RECOMMENDS BUILDING BE ERECTED PRIOR TO EQUIPMENT ARRIVAL. ACCOMODATIONS MUST BE MADE BY OTHERS FOR INSTALLING DRYER, BINS, THERMAL FLUID HEATINGS SKIDS, AND OTHER LARGE EQUIPMENT INTO THE BUILDING.
10. EQUIPMENT MUST BE PROTECTED AT ALL TIMES WHILE ON SITE. DAMAGE AFTER ARRIVAL IS RESPONSIBILITY OF OTHERS.
11. SEE SUBMITTAL INFORMATION AND O&Ms FOR VENDOR SPECIFIC INFORMATION.
12. GROUT PADS SHOWN FOR REFERENCE ONLY. REFER TO CONTRACT DOCUMENTS FOR ACTUAL EQUIPMENT PAD DESIGN.
13. REFERENCE VENDOR SUBMITTALS FOR ADDITIONAL EQUIPMENT ASSEMBLY DETAILS.
14. KRUGER RECOMMENDS LOCATING ALL EQUIPMENT BEFORE ANCHORING TO ENSURE PROPER ALIGNMENT.
15. ALL HARDWARE REQUIRED FOR ANCHORING EQUIPMENT AND CONNECTING KRUGER PROVIDED EQUIPMENT TO CONTRACTOR PROVIDED EQUIPMENT IS BY OTHERS. KRUGER HARDWARE CALLOUTS ARE FOR REFERENCE ONLY AND ARE NOT A COMPLETE HARDWARE BILL OF MATERIAL.
16. FINAL LOCATIONS OF ALL CONNECTIONS ARE TO BE SITE VERIFIED BY THE INSTALLATION CONTRACTOR.
17. NOT ALL CONTRACTOR CONNECTIONS ARE DETAILED. REFER TO CONTRACT DOCUMENTS FOR COMPLETE INSTALLATION REQUIREMENTS.



REV	DESCRIPTION	DRAWN	APPR	DATE
	2319055 A.6 Released 2319055 A.6 Released			
A	PRELIMINARY RELEASE	SRW	HJH	08.20.20

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BIOCON
MECHANICAL, PLAN, SECTIONS & PROCESS CONNECTIONS, 8312-I DRYER

5700110005
CANTON, GA

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DRAWING NUMBER: 2319055
PROJECT NUMBER: 5700110005
PROJECT NAME: CANTON, GA

MD BILL OF MATERIALS

ITEM	QTY	DRAWING NO.	DESCRIPTION	MATERIAL
1	1	2079324	ASSY, DRYER, 8312-I	SEE BOM
2	1	-	ASSY, EXTRACTION SCREW	SEE MFG SHT
3	24	1858448	ASSY, HOSE, DEPOSITOR, 1 1/4" X 4' 8"LG	SEE BOM
4	1	-	ASSY, HTX, AIR-AIR, HEATER/COOLER	SEE_MFG_SHT
5	1	1585390	ASSY, INSTALLATION, SLUDGE DEPOSITORS, SD8318-I	SEE BOM
6	1	-	ASSY, INSULATION AND SUPPORTS, 8312-I	SEE BOM
7	1	2082086	ASSY, PLATFORM, DOSING, DRYER SIDE	SEE BOM
8	1	2082283	ASSY, PLATFORM, DOSING, PUMP SIDE	SEE BOM
9	1	-	ASSY, PLATFORM, LOWER ACCESS PLATFORM, 8312-I	SEE_MFG_SHT
10	2	-	ASSY, REDUCER, SLUDGE SUPPLY (BY OTHERS)	SEE BOM
11	1	-	CONDENSER, VIRON#VVS-54-SST-6.2-84-B-0-0-0-0-0	SEE MFG SHT
12	1	-	CONTROL PANEL, 90"H X 72"W X 24"D	SEE_MFG_SHT
13	2	-	CYLINDER, NITROGEN (NOT BY KRUGER)	SEE_MFG_SHT
14	1	-	DUCT, CONDENSER TO PRE-HEATER (NOT BY KRUGER)	SEE_CONT_DOCS
15	1	-	DUCT, DRYER TO CONDENSER (NOT BY KRUGER)	SEE_CONT_DOCS
16	1	-	DUCT, DRYER TO FANS (NOT BY KRUGER)	SEE_CONT_DOCS
17	1	-	DUCT, PRE-COOLER TO CONDENSER (NOT BY KRUGER)	SEE_CONT_DOCS
18	1	-	DUCT, PRE-HEATER TO DAT FAN (NOT BY KRUGER)	SEE_CONT_DOCS
19	1	-	DUCT, VACUUM FAN TO VENT (NOT BY KRUGER)	SEE_CONT_DOCS
20	1	-	DUCT, VACUUM, COOL AIR (NOT BY KRUGER)	SEE_CONT_DOCS
21	1	-	FAN, DAT, TWIN CITY#BF564886-TYPE919	SEE MFG SHT
22	1	-	FAN, VACUUM, TWIN CITY#BF564886-TYPE909	SEE MFG SHT
23	1		SKID, HEATING, THERMOL OIL	SEE_MFG_SHT
24	1	-	TANK, CATCHMENT, 200 GAL	SEE_MFG_SHT
25	1	-	VALVE, ROTARY, ACS#CI 10X10	SEE MFG SHT

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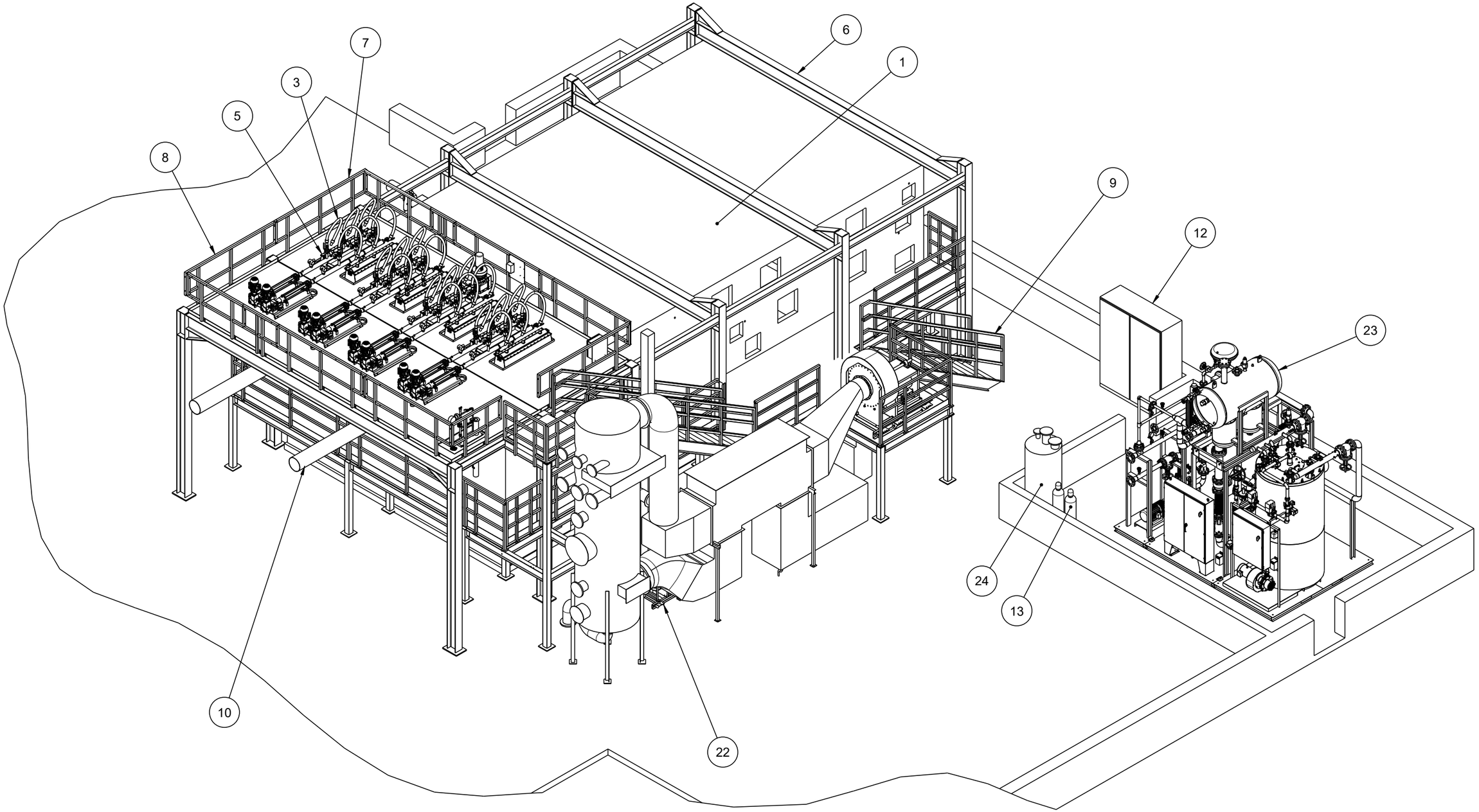

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CANTON, GA

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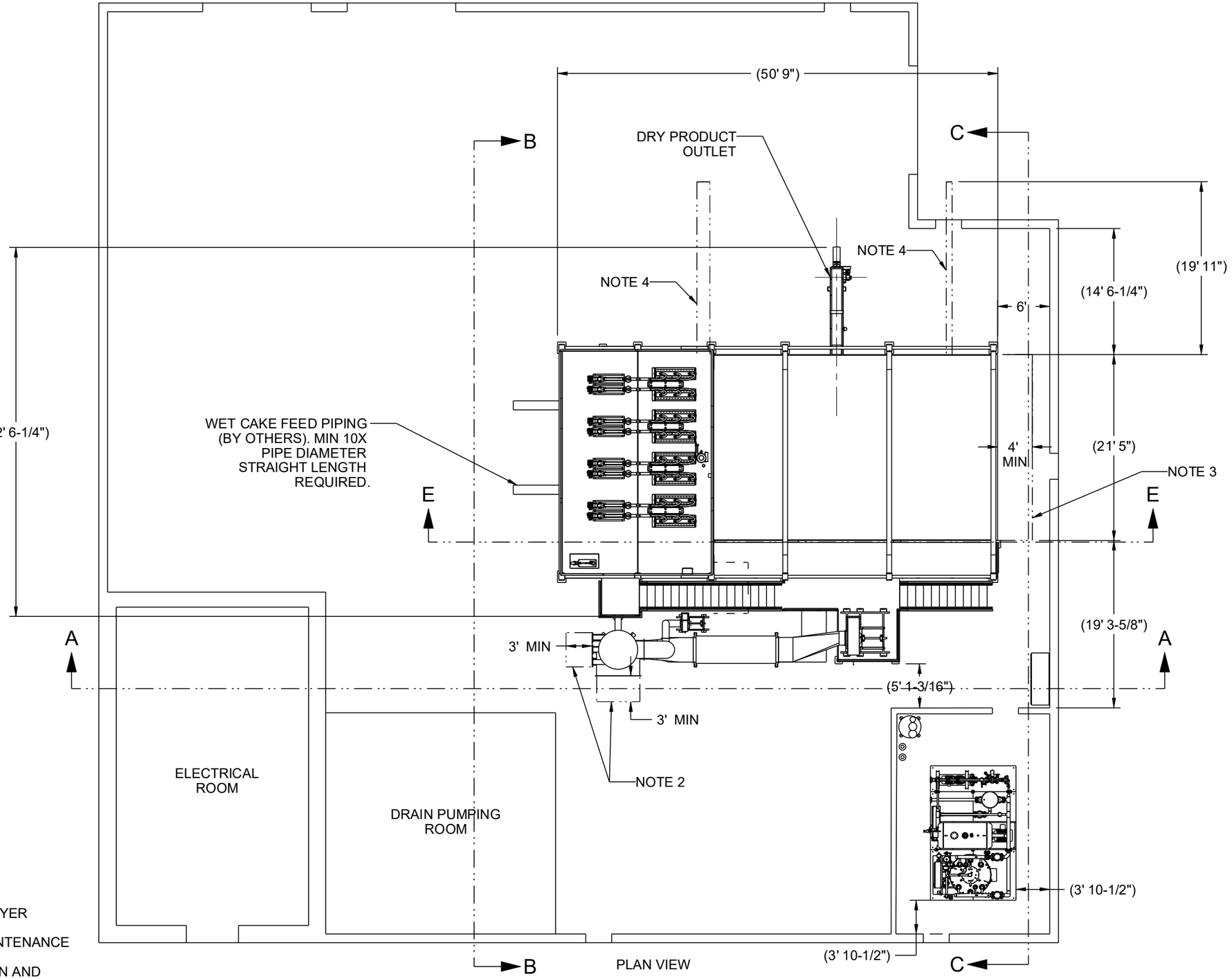
PLANT NORTH



PLAN VIEW

NOTES;
1. TYPICAL MINIMUM OF 3' CLEARANCE IS REQUIRED AROUND DRYER CABINET & EQUIPMENT UNLESS OTHERWISE NOTED.
2. REFER TO CONDENSER MANUFACTURER'S DRAWING FOR MAINTENANCE ACCESS CLEARANCES.
3. THIS END OF DRYER TO BE LEFT OPEN FOR BELT INSTALLATION AND ACCESS. NO CONDUIT OR OTHER OBSTRUCTIONS CAN BE INSTALLED IN THIS AREA.
4. AREA FOR HEAT EXCHANGER REMOVAL IF NEEDED.

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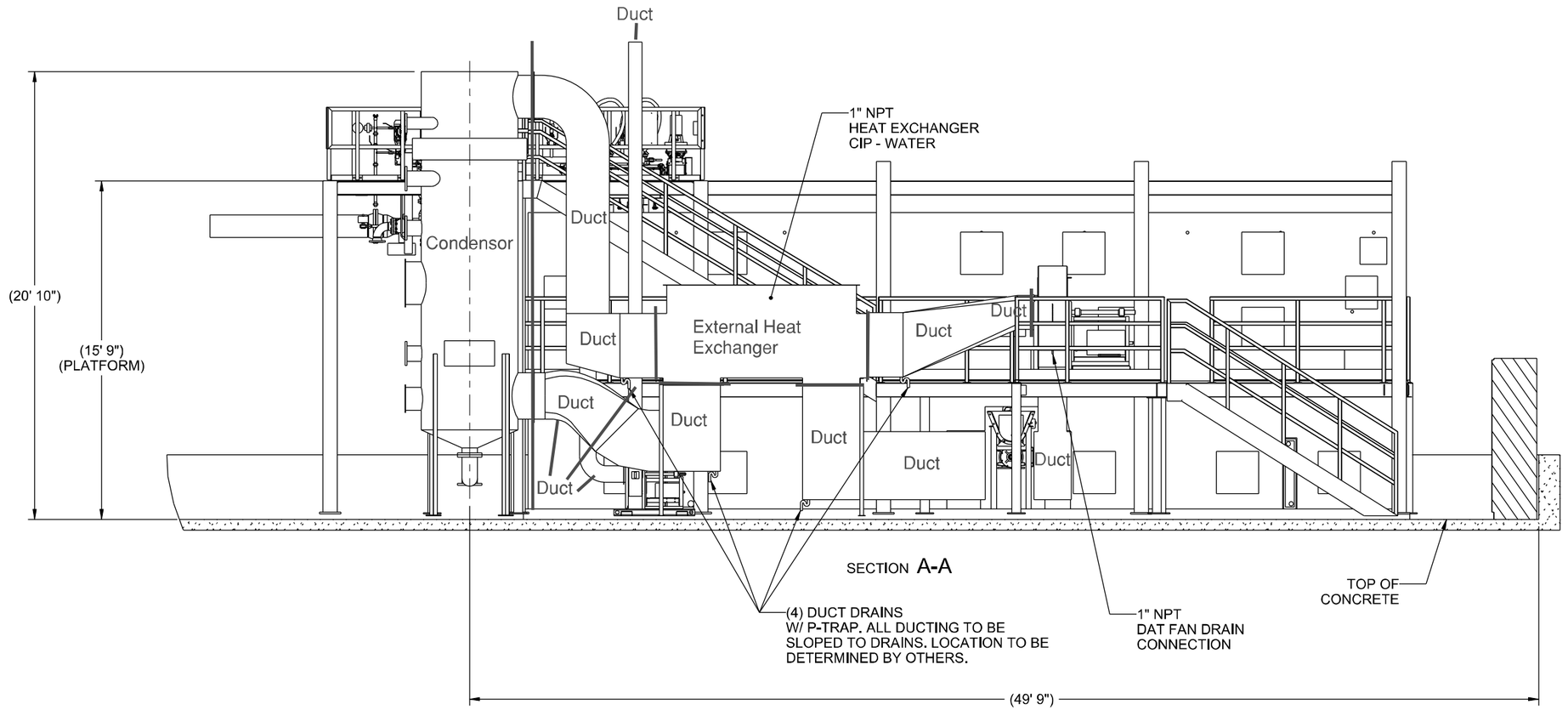

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CONNECTIONS, 8312-I DRYER

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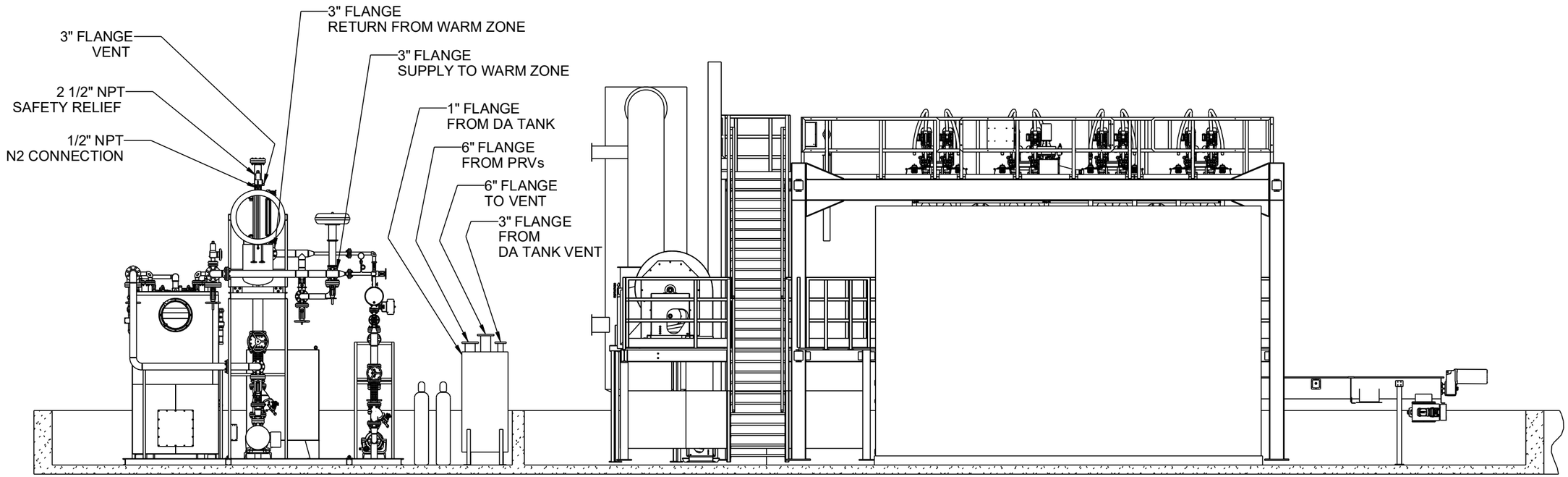

SECTION C-C

NOTES;
1. NOTE MINIMUM OF 18" CLEARANCE AROUND THERMAL OIL SKID, EXCEPT IN FRONT OF CONTROL PANEL WHERE 3' IS REQUIRED FOR ACCESS.
2. TWO (2) WALL LOUVERS ARE REQUIRED IN THERMAL FLUID SKID ROOM. TWO (2) 13 SQ FT LOUVERS ARE REQUIRED. ONE (1) SHALL BE LOCATED 2' ABOVE THE FLOOR AND THE SECOND WILL BE LOCATED AT LEAST 6' FROM THE FLOOR.
3.MAX ALLOWED TEMPERATURE IN THE THERMAL OIL ROOM IS 120°F.
4. REFER TO VENDOR SUBMITTALS FOR SIZES AND LOCATIONS OF CONNECTIONS ON THE THERMAL OIL SKID.
5. PIPING CONNECTIONS FROM DA TANK TO CATCHMENT TANK AND NITROGEN TANKS TO THE DA TANK ARE BY OTHERS.
6.THE DA TANK AND CATCHMENT TANK REQUIRE VENTS. VENTS TO BE ROUTED OUTDOORS AND TURNED DOWNWARD TO PREVENT THEM FROM FILLING WITH PERCIPITATION.
7. PRESSURE RELIEF VALVES TO BE PIPED FROM HEATER SKID AND DA TANK OVER TO CATCHMENT TANK BY OTHERS.
8. STACK CONNECTION AND NATURAL GAS CONNECTION BY OTHERS.

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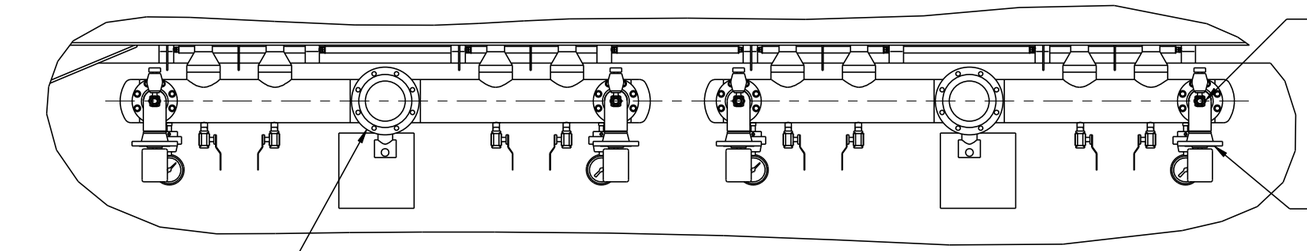

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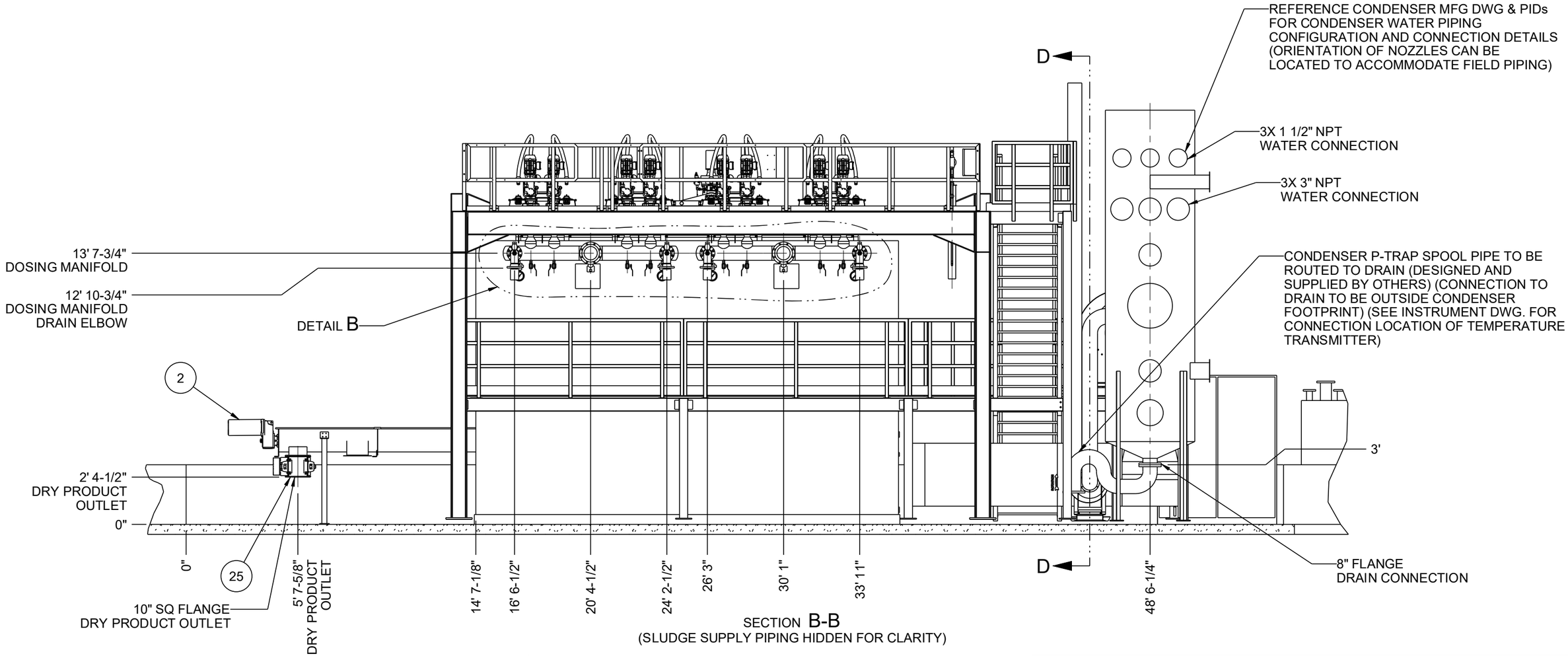

SECTION B-B
(SLUDGE SUPPLY PIPING HIDDEN FOR CLARITY)

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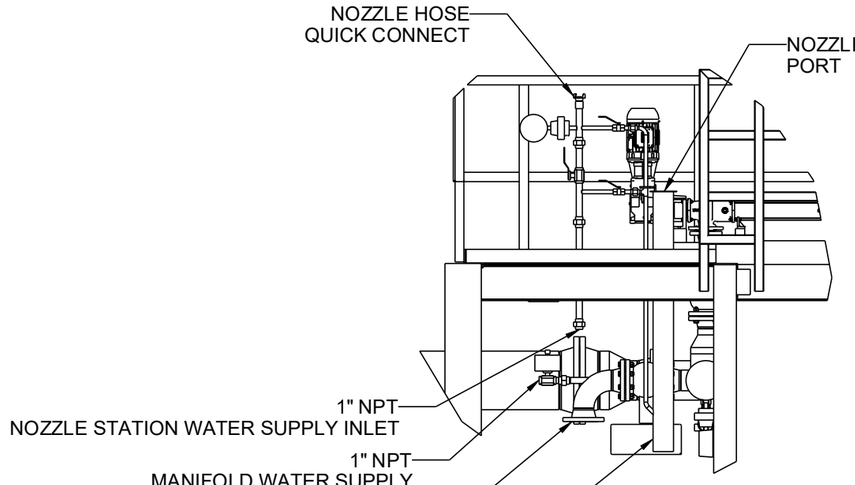

DETAIL D
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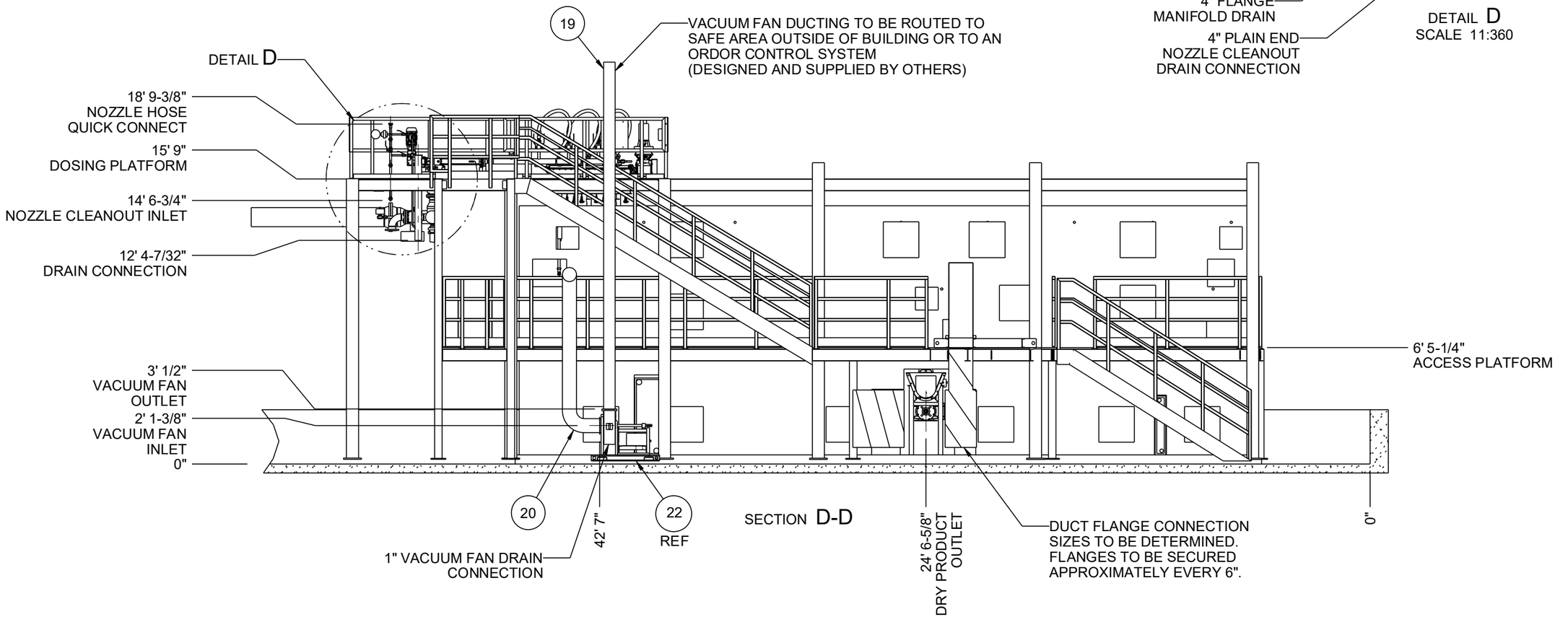

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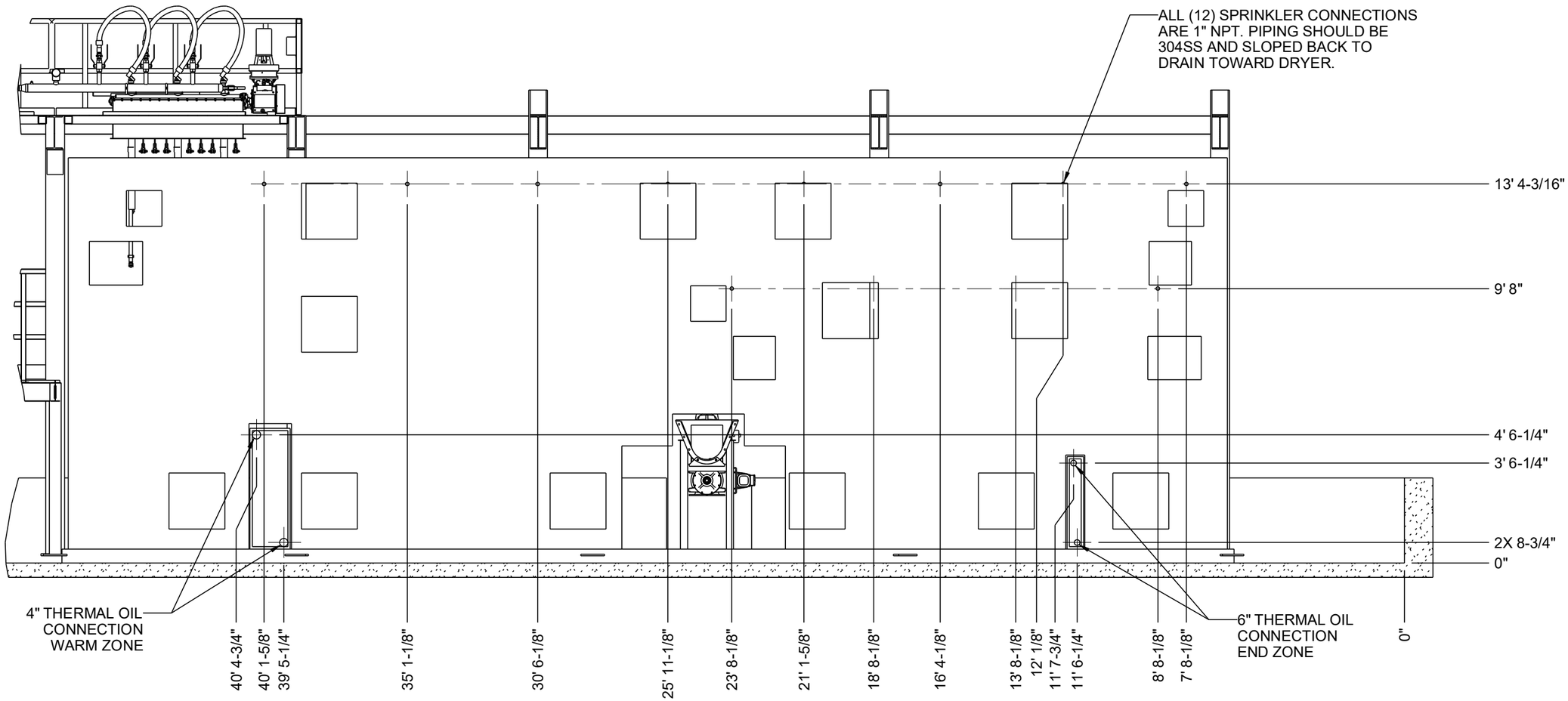

SECTION E-E

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SECTION 11372

ROTARY POSITIVE DISPLACEMENT BLOWERS

PART 1: GENERAL

1.01 SCOPE

A. The City of Canton has prenegotiated scope and price with Aerzen USA Corporation (Supplier) for equipment associated with eleven (11) new rotary positive displacement blowers and appurtenances as defined in this specification section and in the attached Supplement: Supplement 1, Aerzen Blower Proposal (Proposal). CONTRACTOR'S responsibilities are defined herein. The scope of supply applies to equipment with the following tag numbers:

BNR Blower 1	5-A-BL-1
BNR Blower 2	5-A-BL-2
BNR Blower 3	5-A-BL-3
BNR Blower 4	5-A-BL-4
BNR Blower 5	5-A-BL-5
UVPA Aeration Blower 1	10-A-BL-1
UVPA Aeration Blower 2	10-A-BL-2
UVPA Aeration Blower 3	10-A-BL-3
Aerobic Digester Blower 1	12-AD-BL-1
Aerobic Digester Blower 2	12-AD-BL-2
Aerobic Digester Blower 3	12-AD-BL-3.

B. OWNER's preselection and prenegotiation shall in no way be construed to otherwise change, in any material way, CONTRACTOR's responsibilities under the terms and conditions of this Contract.

C. The prenegotiated scope includes, but is not limited to, manufacturing and furnishing equipment and materials, delivering to the jobsite, providing various documentation, and providing services, as specified herein. The CONTRACTOR shall coordinate with the Supplier regarding details of Supplier's scope.

D. CONTRACTOR's responsibilities shall include, but are not limited to, procurement, unloading/receipt at the jobsite, storage, handling, installation, testing, coordination, and startup.

E. Supplier shall provide blowers, motors, enclosures, variable frequency drives (VFDs), control panels, inlet filter/silencers, discharge silencers, and other accessories as specified herein and provided in the attached Proposal. CONTRACTOR shall provide all piping, valves, wiring, and hardware not supplied by Supplier.

F. CONTRACTOR shall provide installation and startup services, including electrical and control systems.

1.02 RELATED WORK

A. Valves shall be as specified in Section 15100 Valves and Appurtenances.

B. Insulation shall be as specified in Section 15250 Piping Insulation.

C. Instrumentation work, except as otherwise specified herein, is included in Division 13.

D. Electrical work, except as otherwise specified herein, is included in Division 16.

1.03 SUBMITTALS

A. General: Provide Shop Drawings, samples, administrative, quality controls, and contract closeout submittals in accordance with the requirements of Section 01300 Submittals, Section 01640 Manufacturer's Services, Section 01730, Operation And Maintenance Data, and as listed below.

1. Certified general arrangement drawings showing materials, details of construction, dimensions and connections.

2. Complete Blower Performance Data including:

a. RPM

b. Capacity – scfm (standard cubic feet per minute) and icfm (inlet cubic feet per minute)

c. Discharge pressure

d. dB(A) noise pressure level

e. Maximum gear tip speed and rotor tip speed (fpm)

f. HP required at rated capacity and pressure

g. Rated maximum pressure rise of blowers

3. List of recommended spare parts broken down into regularly replaced parts and parts required for long term operation (more than 2 years).

4. Description data, including catalog cutsheets, for valves, flexible connectors, and pressure and temperature gauges.

5. Performance Curves

6. Motor drawings and operating characteristics

7. Declaration of Conformity, per Machinery Directive 2006/42/EC, Annex II, No.1 A.

8. All control panel drawings, wiring diagrams, motor controls, variable frequency drives, and other electrical related drawings.

B. Submit operation and maintenance manuals for all equipment included under this Section in accordance with Section 01730.

C. Submit Manufacturer's Certificate of Proper Installation per Section 01400.

1.04 QUALITY ASSURANCE

A. Qualifications

1. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall operate satisfactorily when installed as shown on the Drawings.

2. The blower(s) shall be covered by a warranty for 24 months from date of commissioning, or a maximum of 30 months from date of shipment as noted in the Proposal.

3. The performance data and manufacturing methods shall achieve a Declaration of Conformity, per Machinery Directive 2006/42/EC, Annex II, No.1 A.

1.05 DELIVERY, STORAGE AND HANDLING

A. Preparation for Shipment and Delivery: Refer to Section 01600 Delivery, Storage and Handling

B. The CONTRACTOR shall be responsible for unloading all equipment at the jobsite. Follow the Supplier's storage and handling instructions.

C. All equipment shall be completely factory assembled, skid mounted, crated and delivered to protect against damage during shipment.

D. All exposed flanges shall be covered and sealed with shrink-wrap to prevent the entrance of moisture. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion.

E. Factory assembled parts and components shall not be dismantled for shipment unless permission is received in writing from the Contractor.

F. Finished surfaces of all exposed flanges shall be protected by wooden blank flanges, strongly built and securely bolted thereto.

G. Finished iron or steel surfaces not painted shall be properly protected to prevent rust and corrosion. No shipment shall be made until approved by the Contractor in writing.

1.06 MAINTENANCE

A. Spare Parts

1. Supplier shall provide spare parts for each blower package as specified in the attached Proposal.

2. Spare parts shall be properly bound and labeled for easy identification without opening the packaging and suitably protected for long term storage in a humid environment.

PART 2: PRODUCTS

2.01 DESIGN CRITERIA

A. See attached Proposal for blower performance criteria.

B. Blower Package Performance shall conform to ISO 1217 with a tolerance of +/- 5% on volume flow and +/- 5% on package horsepower. The Supplier must provide data for purchased machine.

C. Sound data shall be from an ISO 2151 method of measurement, in an ISO 3745 qualified test facility. Sound data shall be compliant with a Declaration of Conformity assessment standard.

2.02 GENERAL

A. No special foundations shall be required. The blower packages will be installed directly on a concrete slab without grouting the base frame. There shall only be 4 easily accessible anchor points.

B. Factory Testing:

1. Each blower stage shall be factory tested in accordance with ISO 1217 performance test to verify flow and brake horsepower at blower maximum conditions.

2. The acceptance criteria are +5% tolerance on power and –5% tolerance on flow regardless of the size of the machine.

2.03 BLOWER COMPONENTS

A. Blower Casing

1. The blower casing shall be of one-piece construction, with separate sideplates that are bolted and pinned to the housing.

2. Materials shall be close-grained cast iron ASTM A48 suitably ribbed to prevent distortion under the specified operating conditions.

3. Minimum blower casing pressure rating shall be 36 psig.

4. Inlet and outlet shall be flanged connections.

5. The casing shall incorporate a proven means of pulsation cancellation which achieves 90% of better reduction in vibration. Systems without a means of pulsation cancellation shall not be accepted.

6. The vibration level as measured at the blower casing, in the X/Y planes of the bearings, shall not exceed ½ "/ sec RMS (root mean square) when operating at the specified maximum operating pressure and speed in the actual blower package.

B. Rotors:

1. Each rotor shall be of the "stiff" design with first lateral critical speed at least 120% of the maximum allowable operating speed.

2. The rotors shall be of the straight, three-lobe type, and shall operate without rubbing or liquid seals or lubrication.

3. Rotor/shaft shall be drop forged in one single piece of AISI 1043 carbon steel or equivalent. Cast, hollow rotors shall be capped, dust tight. Open rotors are not acceptable.

4. The rotors shall be statically and dynamically balanced per ISO1940/ANSI S2.19 G6.3.

C. Bearings:

1. Each rotor/shaft shall be supported by anti-friction bearings, and fixed to control the axial location of the rotor/shaft in the unit.

2. Regardless of theoretical bearing life calculations, the bearings shall be sized for a minimum expected life of 5 years between overhauls. Calculated bearing life shall be submitted, based on specified operating conditions.

D. Timing Gears:

1. The rotors shall be timed by a pair of single helical AGMA 12 quality gears with hardened and ground teeth; minimum AGMA service factor of 1.70. Spur cut gears are unacceptable

2. Gears shall be mounted on the shafts with a tapered interference fit, and secured by a locknut. Pinned gears are unacceptable.

E. Seals:

1. Seal shall be designed to prevent lubricant from leaking into the air stream as well as to prevent oil from leaking out of the machine.

2. Four rotary piston ring shaft seals, an oil slinger and an O-ring seal shall be provided at the point where the shaft passes through the side plates.

3. Further provision shall be made to vent the rotor side of the oil seal to atmosphere to eliminate any possible carry-over of lubricant into the air stream.

F. Lubrication:

1. The timing gears and the bearings shall be splash lubricated. Grease lubrication shall be not acceptable.

2. Provide a recessed Oil Sight Glass on each oil sump.

G. Painting:

1. Painting shall be per supplier's standard meeting the following criteria:

a. Except for machined sealing and machined mounting surfaces, the package shall be painted dark blue.

b. Aluminum, stainless steel, and brass shall not be painted.

c. The supplied motor shall not be over sprayed and will be supplied with the motor manufacturer's standard protection and paint color.

d. Painted Cast Iron and Carbon Steel shall be Alkyd Resin Primer and Final coat with a total dry film thickness of 70μm. Surface preparation SSPC10 or better.

e. Sound enclosure shall be powder-coated polyester base total dry film thickness 80μm.

f. Galvanized components shall only be painted with appropriate surface preparation.

H. Inlet Filter / Silencer:

1. Each package shall be supplied with one combination inlet filter silencer.

2. The inlet filter silencer shall be mounted directly to the inlet flange of the blower.

3. The filter media efficiency must meet the requirements of ASHRAE 52.2 MERV7 50-70% @3-10 microns corresponding to EN779 G4.

4. The silencer portion shall be located upstream of the inlet filter.

5. Filter and silencer performance losses shall be included in the blower performance calculation.

6. The filter element shall be designed to trap dirt on the inside so that upon changing, dirt does not fall into the machinery. Filters where dirt accumulates on the external surface of the filter will not be permitted.

I. Base Frame / Discharge Silencer:

1. Each package shall be supplied with one combination base frame / discharge silencer.

2. The silencer shall be a chamber type design for maximum sound attenuation and shall not use fibrous or absorption materials of any kind. Internal absorption material has been shown to degrade and internally foul diffusers, and will not be permitted.

3. The silencer shall be fabricated of a single shell of pressure vessel quality steel with continuous welds.

4. The silencer shall be subject to a pressure test for tightness and strength at a minimum of 1.65 times the maximum blower operating pressure.

5. The silencer shall have a machined inlet connection where the discharge flange of the blower stage bolts directly to, with no intermediary pieces.

6. Discharge silencer performance losses shall be included by the Supplier in the blower performance calculation.

7. The base frame shall be constructed from welded carbon steel or cast iron that shall be designed to maintain alignment of the blower internal components and the drive during operation.

8. The base frame shall be designed to resist distortion while being installed on vibration isolating mounts.

9. Supplier shall provide a stainless steel grounding lug fully welded to the base.

J. Pressure Safety Valve:

1. Each package shall be supplied with a single pressure safety valve on the discharge side of the blower mounted downstream of the discharge silencer and upstream of the check valve.

2. The safety valve shall be set to protect the blower from exceeding its maximum pressure rating and shall be sized to pass 100% of the design flow.

3. The safety valve shall be field adjustable, spring loaded, and have a certificate of conformity to PED.

4. The pressure relief valve shall be housed by the sound enclosure and shall relieve into a segmented section of the sound enclosure. Weighted relief valves inside in the enclosure are not permitted.

K. Vibration Isolators

1. Each package shall be supplied with vibration isolating feet with a minimum efficiency of 80%.

2. Supplier shall be responsible for attenuating noise and vibration in the blower package such that no special installation base shall be required, nor shall any additional measures be required to reduce vibrations from the blower package being transmitted to the base or the piping.

L. Flexible Connectors:

1. Each package shall be connected to the plant piping via flexible connector(s) located downstream of the discharge silencer.

2. Flexible connectors shall prevent the transmission of noise and vibrations from the blower package into the piping.

3. Flexible discharge connectors shall be Proco Style 240, Type EE, EPDM, with a standard ANSI flange discharge connection, rated for 300 °F at 20 psig.

M. Acoustical Sound Enclosure:

1. Each package shall be supplied with a sound enclosure covering the entire blower package.

2. The enclosure shall provide suitable protection for outdoor installation under the specified site conditions (wind load and snow load).

3. The enclosure shall be designed so as to be able to install them side-by-side with all maintenance done from the front or back of the package.

4. Details shall be as follows:

a. Panels shall be made of galvanized steel sheet, powder coated in a light reflecting, blue color per RAL 5001. The skid shall be of the same color.

b. Sound enclosure acoustic material shall comply with UL 94 - HF1 for fire-retardant, self-extinguishing, non-dripping materials.

c. The enclosure and the blower package shall both be mounted on a skid / oil-drip pan designed for meeting environment protection standards and for easy transportation and installation.

d. A grounding strap shall be installed between the blower base and the package skid to bypass any vibration isolating mounts.

e. Quick release panels, each less than 50 lb (as mandated by MSHA) must provide easy and quick access for routine maintenance of the blower and the package components.

f. Enclosure Cooling Fan:

1) A high efficiency blower shaft driven or electric driven ventilation fan shall provide ventilation and cooling integral to the sound enclosure.

2) Cooling fan shall be sized for sufficient heat removal from the sound enclosure, even when the blower is operated with a VFD.

g. Electrical components, instrumentation and instrument connections shall not be mounted or interface with moving panels of the sound enclosure.

h. Both blower oil sumps shall be piped to a common fill and drain, located at the front of the package for easy maintenance. An oil level indicator shall be mounted on the outside of the enclosure, which gives an accurate oil level indication while the blower is in operation. All oil lines to be hydraulic hose with fittings. No plastic tubing with compression fittings are allowed.

2.04 ELECTRIC MOTOR

A. Each package shall be supplied with a WEG (or approved equal) manufactured TEFC motor that shall operate on 460 Volts, 3 Phase, 60 Hertz current, 1800 RPM. The packages for the post aeration blowers shall have 3600 RPM motors.

1. Torque NEMA B
2. Temperature Rise Class B
3. Dust tight enclosures (Severe Duty)
4. Class F inverter rated insulation with Class H applied varnish
5. 3:1 constant torque
6. All cast iron construction, including frame, end bells, conduit box and fan cover
7. NPT threaded and gasketed F3 top mounted conduit box
8. Copper windings
9. Re-greasable bearings, positive pressure lubrication system with automatic drawn plugs – pressure compensated (Frame sizes 254T and larger).
10. All frame sizes shall be NEMA standard, suitable for overhung belt drive and with the conduit box location on top of the motor. IEC frame motors shall not be allowed.
11. The motor shall be mounted on a pivoting base to provide automatic tensioning of the belts.
12. The motor nominal rating after any corrections for ambient conditions shall be 10% above the maximum operating bHp.
13. The motor shall have a 1.15 service factor.
14. Motor windings shall be supplied with a normally closed thermostat, one per phase, wired in series to form a fail-safe motor protection circuit for the external fault circuit of the motor controller.
15. Supplier shall be responsible for coordinating the starting torque requirement of the blower and the motor.

B. V-Belt Drive

1. Each package shall be supplied with a V-belt drive that shall be of the high capacity type, oil and heat resistant. Drive shall be designed for a minimum service factor of 1.4 times operating power (bHp), or 1.1 times the motor nameplate Hp, whichever is larger to allow a minimum of 1.4-service factor based on the maximum blower bHp.

2. Belt tensioning shall be automatic without the use of any devices or interaction on the part of the operator. Neither slide rails nor load-adjusting springs shall be used.

3. Sheaves shall be dynamically balanced regardless of the operating speed.

C. Belt Guard:

1. The belt drive shall be guarded in compliance with OSHA regulations.

2. Portions of the guard shall be easily removable allowing for belt inspection and replacement.

3. Guard material shall be perforated carbon steel.

D. Each blower shall receive its initial oil filling at the factory, the synthetic oil shall be rated for a minimum of 16,000 hrs.

E. Variable Frequency Drive (VFD)

1. Each blower package shall include a factory mounted, 6-pulse, constant torque, variable frequency drive.

2. Drive shall operate on 460 VAC, 3 phase, 60 hertz power and shall be integrated with the local blower permissive switches.

3. The drive shall include the following features and accessories:

   a. VFD shall be mounted in the blower enclosure as one package suitable for outdoor installation.

   b. Rotary fused disconnect

   c. Method to minimize power line harmonics while providing a near unity power factor.

   d. Input surge protection to withstand surges of 2.3 times line voltage for 1.5 msec.

   e. Modbus TCP Ethernet communication over CAT5 cable

   f. Minimum 100kA SCCR safety rating

   g. Local control panel for start/stop, speed control, and auto/manual operation.

4. The VFD shall have the following local indicators with local reset:

   a. E-Stop

   b. Motor Over Temp

   c. Blower Over Temp

   d. Motor Speed

2.05 INSTRUMENTATION

A. Each package shall be supplied with the following instrumentation:

1. Inlet Vacuum Gauge (4” Gauges)
    a. Aerzen or Wika standard gauge with 4” dial and scale from 0 to –40 inches of water column.
    b. Gauge to function as a filter maintenance indicator.
2. Inlet Vacuum Switch
    a. Ashcroft Model B4-64-B-XFS-XBP
    b. Type 400 pressure switch in NEMA 4X enclosure
    c. DUAL general purpose 15A, 110-480V switches (2) SPDT snap-acting, NOT independently adjustable
    d. Buna-N Actuator Seal
    e. Factory set (-20 inches H2O, decreasing)
    f. Mounting bracket
    g. Operating range of -30 to +30-inches H2O
3. Discharge Pressure Switch
    a. Ashcroft Model B4-64-V-XRN-15 PSI
    b. Type 400 pressure switch in NEMA 4X enclosure
    c. DUAL general purpose 15A, 110-480V switches (2) SPDT snap-acting, NOT independently adjustable
    d. Viton Actuator Seal
    e. Internal range scale and operating range of 0 to 15 psig
4. Discharge Pressure Gauge (4” Gauges)
    a. Aerzen model 32-0053-02 or Winters with 4” dial and scale from 0 to 20 psig.
    b. The pressure gauge shall have a stainless steel case and be glycerin-filled for pulsation dampening.
    c. A pulsation snubber shall be provided.
5. Discharge Temperature Gauge / Switch (4” Gauges)
    a. Aerzen or Winters standard gauge with 4” dial and scale from 32°F to 572°F
    b. NEMA 4 enclosure, 5A @ 250volt, SA 28 SPDT microswitch
    c. UL & CSA approved.

PART 3: EXECUTION

3.01 INSTALLATION

A. Contractor shall facilitate a coordination conference call with the Supplier and the Engineer to review the integration and installation requirements of the equipment after the Submittal documentation has been approved and prior to installation of the equipment.

B. The Contractor shall unload, store and install the blowers in accordance with the Supplier's written instructions.

C. The Contractor shall make all electrical and process connections to the blower package prior to the arrival of the Supplier's representative.

D. The Contractor shall complete and return the Supplier's installation check list prior to having a Supplier's representative come onsite.

E. Assist the Supplier with process startup activities.

F. Provide and install piping, pipe supports, expansion joints, valves, and miscellaneous hardware as shown in the Construction Documents and as required to connect to and support Supplier's equipment.

G. Provide condensate drains with P-traps at all low points on ductwork.

H. Provide and install all piping insulation and jackets as required in Specification Section 15250 PIPING INSULATION.

I. Representatives of the Supplier shall verify and adjust blower and motor alignment.

J. Installation of all control panels and instrumentation provided by the Supplier in compliance with Division 16.

K. Supply and install all electrical power, control wiring and conduit to each blower, including wire, cable trays, cable, junction boxes, fittings, disconnects, conduit, etc. in compliance with Division 16.

3.02 FIELD TESTING

A. CONTRACTOR is responsible for coordinating site visits and installation support with the Supplier.

B. After installation of all equipment has been completed and as soon as conditions permit, the Supplier shall provide the number of trips as shown in Supplement 1 to verify the installation and conduct an acceptance test under actual operating conditions.

1. The Supplier shall perform a physical check of the blower installation, perform safety checks, power up the equipment and perform functional testing.

2. The functional test shall consist of operation of each blower with vibration, temperature, and pressure readings as well as motor amp readings taken and recorded at 60-minute intervals. Refer to the Required Field Testing Table below.

3. Installed noise measurements shall be taken to compare the installed noise values with the factory free field ISO 2151 measurements.

4. The Supplier shall provide operations and maintenance training to the plant personnel. The training shall consist of classroom training using the Operation and Maintenance Manual for reference and hands on training at the blower package. Refer to the Required Field Testing Table below.

C. If required, Contractor shall make any changes, at his own expense, to the installation that may be necessary to assure satisfactory operation. Contractor shall be held liable for changes needed in the installation.

D. The cost of any supplemental field support required of the Supplier beyond the Proposal shall be at the expense of the Contractor.

E. Supplier shall provide a written field test / start up report after completion of testing.

F. Supplier shall provide functional testing of VFD for local and remote operation. Verify communications with system integrator and plant control system for automatic control and monitoring via the plant control system. Provide all VFD parameters to system integrator.

3.03 SUPPLEMENTS

A. The supplements listed below are part of this Specification.

1. Supplement 1, Aerzen Blower Proposal

END OF SECTION

Supplement 1 – Aerzen Blower Proposal

AERZEN USA CORPORATION
108 Independence Way
Coatesville, PA 19320
Tel. (610) 380-0244 ♦ Fax. (610) 380-0278

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AERZEN Reference Number: E05-59193 5-Nov-20
Re: Canton, GA WWTP

To: ALL BIDDING CONTRACTORS	***AERZEN*** Proposal Prepared By: Name - Justin Haag email - justin.haag@aerzen.com phone - (484) 784-6764
AERZEN Representative Info: Name - Clint Curl of The TDH Company e-mail - ccurl@tdhco.com phone - (770) 509-1808	***AERZEN*** Regional Manager: Name - Aaron Groover e-mail - aaron.groover@aerzen.com phone - (470) 867-3638

Thank you for the opportunity to bid this project for Eleven (11) Positive Displacement Blower Packages.

The Aerzen Blower Package Performance and Scope of Supply is in compliance with the specification, however standard Aerzen components are offered. Aerzen meets or exceeds the requirements for flow range, power, and noise levels.

This scope of supply does NOT include the following items: MCC Starter, External Controls, Isolation Valves, Anchor Bolts and Installation Hardware.

Instrumentation as specified below, is part of this scope of supply.

BNR Basins 1-3 Blowers **Model: GM 150S**

Performance Data:		**Design**	**Min**
Intake volume, handled at intake condition	icfm	3,968	1,432
Volume handled at normal condition	scfm	3,432	1,239
Relative humidity	Φ	90%	90%
Intake pressure (abs.)	psia	14.22	14.22
Pressure difference	psig	10.80	10.18
Intake temperature	°F	100	100
Discharge temperature	°F	241	268
Main rotor speed	rpm	1,457	657
Motor Speed	rpm	1,780	803
Power consumption at coupling	bHp	235.6	95.1
Motor Rating	HP	**300**	
Tolerance on flow & power	± 5 %		
Sound pressure level w/ enclosure	dB(A)	85	

*Measured in free field at 3ft. distance from the outline of the unit
*does not include system piping noise (tol. ± 2 dB(A)).

Weights & Dimensions:

Discharge connection	EPDM ANSI	12"
Blower pkg weight	lbs.	11,071
Envelope dim.*	L x W x H in.	113 x 83 x 92
Cooling Fan	shaft driven	shaft driven
AERtronic	kW	0.2

* non binding dimensions includes, inlet filter silencer, relief valve, check valve, and flex connector

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BNR Basins 1-3 Blowers **GM 150S**

Aerzen Generation 5 Delta Blower Package consists of the following components, assembled in our factory.

- Aerzen Rotary Lobe Blower GM Series
- base frame with integrated reactive type silencer
- hinged motor support as automatic belt tensioning device
- set of vibration isolating mounts
- intake filter-silencer
- narrow V-belt drive with guard
- spring loaded pressure relief valve
- discharge manifold with externally accessible integrated check valve
- flexible connector with clamps for schedule 40 pipe, discharge

Scope of Supply

3 compact blower package as listed above
3 motor 300 HP, 4-pole, NEMA, TEFC, 460 V / 60 Hz, prm-eff, 449T, T-Stat, Insulated Bearing, AEGIS ring
3 sound enclosure with integral shaft driven cooling fan
3 set of sensors (P1, P2, & T2) w/AERtronic Control (460 VAC, 5 Amp), Ethernet IP, E-Stop, HMI cover, NEMA 4X enclosure
3 300 HP VFD, outdoor rated, package mounted
1 Spare VFD components

Factory Services

3 Simplified ISO-1217, Annex B test report(s)
1 submittal data, hard copy
1 O&M manual, hard copy
3 factory set PRV to 15.2 psig

Onsite Manufacturer Services

3 trip(s), 6 day(s) total installation inspection, startup, & training
additional mfg services beyond what is listed herein and/or resulting from delays will be invoiced separately

Spare Parts

3 air filter, 3 belt set, 2 Delta Lube 5-Gal,

Freight & Packaging

1 freight to jobsite
3 domestic packaging

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Pricing: DAP Jobsite
Terms: This offer is subject to Aerzen Standard Terms and Conditions (A2-001-USA January 2009)
*This quote is valid for 12 months from the date of quotation.
Submittals: 4 weeks after receipt of Purchase Order
Delivery: presently approx. 4 months upon technical release by customer
Payment: 20% upon receipt of approved submittal, 75% upon shipment Net 30 and 5% retention not to exceed 180 days from shipment.
Warranty: 24 months after start up or 30 months after delivery, which ever comes first on Aerzen package*
*Maintenance must be performed per the Instruction Manual using Aerzen spare parts.
*Equipment not manufactured by Aerzen will carry the manufacturer's standard warranty.

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AERZEN Reference Number: E05-59193 5-Nov-20
Re: Canton, GA WWTP

To: ALL BIDDING CONTRACTORS	***AERZEN*** Proposal Prepared By: Name - Justin Haag email - justin.haag@aerzen.com phone - (484) 784-6764
AERZEN Representative Info: Name - Clint Curl of The TDH Company e-mail - ccurl@tdhco.com phone - (770) 509-1808	***AERZEN*** Regional Manager: Name - Aaron Groover e-mail - aaron.groover@aerzen.com phone - (470) 867-3638

This scope of supply does NOT include the following items: MCC Starter, External Controls, Isolation Valves, Anchor Bolts and Installation Hardware.

Instrumentation as specified below, is part of this scope of supply.

BNR Basin 4 Blower **Model: GM 150S**

Performance Data:		**Design**	**Min**
Intake volume, handled at intake condition	icfm	4,676	1,635
Volume handled at normal condition	scfm	4,045	1,415
Relative humidity	Φ	90%	90%
Intake pressure (abs.)	psia	14.22	14.22
Pressure difference	psig	9.02	8.04
Intake temperature	°F	100	100
Discharge temperature	°F	214	223
Main rotor speed	rpm	1,661	554
Motor Speed	rpm	1,780	594
Power consumption at coupling	bHp	233.3	70.9
Motor Rating	HP	**300**	
Tolerance on flow & power		± 5 %	
Sound pressure level w/ enclosure	dB(A)	82	

*Measured in free field at 3ft. distance from the outline of the unit
*does not include system piping noise (tol. ± 2 dB(A)).

Weights & Dimensions:

Discharge connection	EPDM ANSI	12"
Blower pkg weight	lbs.	11,071
Envelope dim.*	L x W x H in.	113 x 83 x 92
Cooling Fan	shaft driven	shaft driven
AERtronic	kW	0.2

* non binding dimensions includes, inlet filter silencer, relief valve, check valve, and flex connector

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BNR Basin 4 Blower **GM 150S**

Aerzen Generation 5 Delta Blower Package consists of the following components, assembled in our factory.

- Aerzen Rotary Lobe Blower GM Series
- base frame with integrated reactive type silencer
- hinged motor support as automatic belt tensioning device
- set of vibration isolating mounts
- intake filter-silencer
- narrow V-belt drive with guard
- spring loaded pressure relief valve
- discharge manifold with externally accessible integrated check valve
- flexible connector with clamps for schedule 40 pipe, discharge

Scope of Supply

1 compact blower package as listed above
1 motor 300 HP, 4-pole, NEMA, TEFC, 460 V / 60 Hz, prm-eff, 449T, T-Stat, Insulated Bearing, AEGIS ring
1 sound enclosure with integral shaft driven cooling fan
1 set of sensors (P1, P2, & T2) w/AERtronic Control (460 VAC, 5 Amp), Ethernet IP, E-Stop, HMI cover, NEMA 4X enclosure
1 300 HP VFD, outdoor rated, package mounted
1 Spare VFD components

Factory Services

1 Simplified ISO-1217, Annex B test report(s)
1 submittal data, hard copy
1 O&M manual, hard copy
1 factory set PRV to 10.9 psig

Onsite Manufacturer Services

1 trip(s), 2 day(s) total installation inspection, startup, & training
additional mfg services beyond what is listed herein and/or resulting from delays will be invoiced separately

Spare Parts

1 air filter, 1 belt set, 4 Delta Lube 1-Gal,

Freight & Packaging

1 freight to jobsite
1 domestic packaging

Confidential & Proprietary - this document shall not be distributed to anyone other than the intended recipients.

Pricing: **DAP Jobsite**
Terms: **This offer is subject to Aerzen Standard Terms and Conditions (A2-001-USA January 2009)**
*This quote is valid for 12 months from the date of quotation.
Submittals: **4 weeks after receipt of Purchase Order**
Delivery: **presently approx. 4 months upon technical release by customer**
Payment: 20% upon receipt of approved submittal, 75% upon shipment Net 30 and 5% retention not to exceed 180 days from shipment.
Warranty: **24 months after start up or 30 months after delivery, which ever comes first on Aerzen package***
*Maintenance must be performed per the Instruction Manual using Aerzen spare parts.
*Equipment not manufactured by Aerzen will carry the manufacturer's standard warranty.

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AERZEN Representative Info: Name - Clint Curl of The TDH Company e-mail - ccurl@tdhco.com phone - (770) 509-1808	***AERZEN*** Regional Manager: Name - Aaron Groover e-mail - aaron.groover@aerzen.com phone - (470) 867-3638

This scope of supply does NOT include the following items: MCC Starter, External Controls, Isolation Valves, Anchor Bolts and Installation Hardware.

Instrumentation as specified below, is part of this scope of supply.

BNR Backup Blower **Model:** **GM 150S**

Performance Data:		**Design**	**Min**
Intake volume, handled at intake condition	icfm	4,674	1,522
Volume handled at normal condition	scfm	4,043	1,316
Relative humidity	Φ	90%	90%
Intake pressure (abs.)	psia	14.22	14.22
Pressure difference	psig	10.80	10.80
Intake temperature	°F	100	100
Discharge temperature	°F	238	275
Main rotor speed	rpm	1,679	689
Motor Speed	rpm	1,785	732
Power consumption at coupling	bHp	277.9	105.8
Motor Rating	HP	**350**	
Tolerance on flow & power	± 5 %		
Sound pressure level w/ enclosure	dB(A)	83	

*Measured in free field at 3ft. distance from the outline of the unit
*does not include system piping noise (tol. ± 2 dB(A)).

Weights & Dimensions:

Discharge connection	EPDM ANSI	12"
Blower pkg weight	lbs.	11,365
Envelope dim.*	L x W x H in.	113 x 83 x 92
Cooling Fan	shaft driven	shaft driven
AERtronic	kW	0.2

* non binding dimensions includes, inlet filter silencer, relief valve, check valve, and flex connector

AERZEN USA CORPORATION
108 Independence Way
Coatesville, PA 19320
Tel. (610) 380-0244 ♦ Fax. (610) 380-0278

BNR Backup Blower **GM 150S**

Aerzen Generation 5 Delta Blower Package consists of the following components, assembled in our factory.

- Aerzen Rotary Lobe Blower GM Series
- base frame with integrated reactive type silencer
- hinged motor support as automatic belt tensioning device
- set of vibration isolating mounts
- intake filter-silencer
- narrow V-belt drive with guard
- spring loaded pressure relief valve
- discharge manifold with externally accessible integrated check valve
- flexible connector with clamps for schedule 40 pipe, discharge

Scope of Supply

1 compact blower package as listed above
1 motor 350 HP, 4-pole, NEMA, TEFC, 460 V / 60 Hz, prm-eff, 449T, T-Stat, Insulated Bearing, AEGIS ring
1 sound enclosure with integral shaft driven cooling fan
1 set of sensors (P1, P2, & T2) w/AERtronic Control (460 VAC, 5 Amp), Ethernet IP, E-Stop, HMI cover, NEMA 4X enclosure
1 350 HP VFD, outdoor rated, package mounted
1 Spare VFD components

Factory Services

1 Simplified ISO-1217, Annex B test report(s)
1 submittal data, hard copy
1 O&M manual, hard copy
1 factory set PRV to 15.2 psig

Onsite Manufacturer Services

1 trip(s), 2 day(s) total installation inspection, startup, & training
additional mfg services beyond what is listed herein and/or resulting from delays will be invoiced separately

Spare Parts

1 air filter, 1 belt set, 4 Delta Lube 1-Gal,

Freight & Packaging

1 freight to jobsite
1 domestic packaging

Confidential & Proprietary - this document shall not be distributed to anyone other than the intended recipients.

Pricing: DAP Jobsite
Terms: This offer is subject to Aerzen Standard Terms and Conditions (A2-001-USA January 2009)
*This quote is valid for 12 months from the date of quotation.
Submittals: 4 weeks after receipt of Purchase Order
Delivery: presently approx. 4 months upon technical release by customer
Payment: 20% upon receipt of approved submittal, 75% upon shipment Net 30 and 5% retention not to exceed 180 days from shipment.
Warranty: 24 months after start up or 30 months after delivery, which ever comes first on Aerzen package*
*Maintenance must be performed per the Instruction Manual using Aerzen spare parts.
*Equipment not manufactured by Aerzen will carry the manufacturer's standard warranty.

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AERZEN Reference Number: E05-59193 5-Nov-20
Re: Canton, GA WWTP

To: ALL BIDDING CONTRACTORS	***AERZEN*** Proposal Prepared By: Name - Justin Haag email - justin.haag@aerzen.com phone - (484) 784-6764
AERZEN Representative Info: Name - Clint Curl of The TDH Company e-mail - ccurl@tdhco.com phone - (770) 509-1808	***AERZEN*** Regional Manager: Name - Aaron Groover e-mail - aaron.groover@aerzen.com phone - (470) 867-3638

This scope of supply does NOT include the following items: MCC Starter, External Controls, Isolation Valves, Anchor Bolts and Installation Hardware.

Instrumentation as specified below, is part of this scope of supply.

Post Aeration Blowers **Model: GM 7L**

Performance Data:		**Design**	**Min**
Intake volume, handled at intake condition	icfm	214	62
Volume handled at normal condition	scfm	185	53
Relative humidity	Φ	90%	90%
Intake pressure (abs.)	psia	14.22	14.22
Pressure difference	psig	7.55	7.55
Intake temperature	°F	100	100
Discharge temperature	°F	211	275
Main rotor speed	rpm	3,851	1,752
Motor Speed	rpm	3,530	1,606
Power consumption at coupling	bHp	10.3	4.2
Motor Rating	HP	**15**	
Tolerance on flow & power	± 5 %		
Sound pressure level w/o enclosure	dB(A)	89	
Sound pressure level w/ enclosure	dB(A)	73	

*Measured in free field at 3ft. distance from the outline of the unit
*does not include system piping noise (tol. ± 2 dB(A)).

Weights & Dimensions:

Discharge connection	EPDM ANSI	4"
Blower pkg weight	lbs.	931
Envelope dim.*	L x W x H in.	45 x 37 x 51
Cooling Fan	shaft driven	shaft driven
AERtronic	kW	0.2

* non binding dimensions includes, inlet filter silencer, relief valve, check valve, and flex connector

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Post Aeration Blowers **GM 7L**

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- base frame with integrated reactive type silencer
- hinged motor support as automatic belt tensioning device
- set of vibration isolating mounts
- intake filter-silencer
- narrow V-belt drive with guard
- spring loaded pressure relief valve
- discharge manifold with externally accessible integrated check valve
- flexible connector with clamps for schedule 40 pipe, discharge

Scope of Supply

3 compact blower package as listed above
3 motor 15 HP, 2-pole, NEMA, TEFC, 208-230/460 V / 60 Hz, prm-eff, 254T, T-Stat, AEGIS ring
3 sound enclosure with integral shaft driven cooling fan
3 set of sensors (P1, P2, & T2) w/AERtronic Control (460 VAC, 5 Amp), Ethernet IP, E-Stop, HMI cover, NEMA 4X enclosure
3 15 HP VFD, outdoor rated, package mounted
1 Spare VFD components

Factory Services

3 Simplified ISO-1217, Annex B test report(s)
1 submittal data, hard copy
1 O&M manual, hard copy
3 factory set PRV to 10.9 psig

Onsite Manufacturer Services

1 trip(s), 3 day(s) total installation inspection, startup & testing
additional mfg services beyond what is listed herein and/or resulting from delays will be invoiced separately

Spare Parts

3 air filter, 3 belt set, 1 Delta Lube 1-Gal,

Freight & Packaging

1 freight to jobsite
3 domestic packaging

Confidential & Proprietary - this document shall not be distributed to anyone other than the intended recipients.

Pricing: DAP Jobsite
Terms: This offer is subject to Aerzen Standard Terms and Conditions (A2-001-USA January 2009)
*This quote is valid for 12 months from the date of quotation.
Submittals: 4 weeks after receipt of Purchase Order
Delivery: presently approx. 4 months upon technical release by customer
Payment: 20% upon receipt of approved submittal, 75% upon shipment Net 30 and 5% retention not to exceed 180 days from shipment.
Warranty: 24 months after start up or 30 months after delivery, which ever comes first on Aerzen package*
*Maintenance must be performed per the Instruction Manual using Aerzen spare parts.
*Equipment not manufactured by Aerzen will carry the manufacturer's standard warranty.

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AERZEN Reference Number: E05-59193 5-Nov-20
Re: Canton, GA WWTP

To: ALL BIDDING CONTRACTORS	***AERZEN*** Proposal Prepared By: Name - Justin Haag email - justin.haag@aerzen.com phone - (484) 784-6764
AERZEN Representative Info: Name - Clint Curl of The TDH Company e-mail - ccurl@tdhco.com phone - (770) 509-1808	***AERZEN*** Regional Manager: Name - Aaron Groover e-mail - aaron.groover@aerzen.com phone - (470) 867-3638

This scope of supply does NOT include the following items: MCC Starter, External Controls, Isolation Valves, Anchor Bolts and Installation Hardware.

Instrumentation as specified below, is part of this scope of supply.

Aerobic Digester Blowers **Model: GM 150S**

Performance Data:		**Design**	**Min**
Intake volume, handled at intake condition	icfm	5,226	1,376
Volume handled at normal condition	scfm	4,520	1,190
Relative humidity	Φ	90%	90%
Intake pressure (abs.)	psia	14.22	14.22
Pressure difference	psig	7.30	7.30
Intake temperature	°F	100	100
Discharge temperature	°F	190	215
Main rotor speed	rpm	1,815	606
Motor Speed	rpm	1,780	594
Power consumption at coupling	bHp	217.5	63.3
Motor Rating	HP	**250**	
Tolerance on flow & power		± 5 %	
Sound pressure level w/o enclosure	dB(A)	108	
Sound pressure level w/ enclosure	dB(A)	84	

*Measured in free field at 3ft. distance from the outline of the unit
*does not include system piping noise (tol. ± 2 dB(A)).

Weights & Dimensions:

Discharge connection	EPDM ANSI	12"
Blower pkg weight	lbs.	10,769
Envelope dim.*	L x W x H in.	113 x 83 x 92
Cooling Fan	shaft driven	shaft driven
AERtronic	kW	0.2

* non binding dimensions includes, inlet filter silencer, relief valve, check valve, and flex connector

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Aerobic Digester Blowers **GM 150S**

Aerzen Generation 5 Delta Blower Package consists of the following components, assembled in our factory.

- Aerzen Rotary Lobe Blower GM Series
- base frame with integrated reactive type silencer
- hinged motor support as automatic belt tensioning device
- set of vibration isolating mounts
- intake filter-silencer
- narrow V-belt drive with guard
- spring loaded pressure relief valve
- discharge manifold with externally accessible integrated check valve
- flexible connector with clamps for schedule 40 pipe, discharge

Scope of Supply

3 compact blower package as listed above
3 motor 250 HP, 4-pole, NEMA, TEFC, 460 V / 60 Hz, prm-eff, 449T, T-Stat, Insulated Bearing, AEGIS ring
3 sound enclosure with integral shaft driven cooling fan
3 set of sensors (P1, P2, & T2) w/AERtronic Control (460 VAC, 5 Amp), Ethernet IP, E-Stop, HMI cover, NEMA 4X enclosure
3 250 HP VFD, outdoor rated, package mounted
1 Spare VFD components

Factory Services

3 Simplified ISO-1217, Annex B test report(s)
1 submittal data, hard copy
1 O&M manual, hard copy
3 factory set PRV to 10.9 psig

Onsite Manufacturer Services

2 trip(s), 5 day(s) total installation inspection, startup & testing
additional mfg services beyond what is listed herein and/or resulting from delays will be invoiced separately

Spare Parts

3 air filter, 3 belt set, 2 Delta Lube 5-Gal,

Freight & Packaging

1 freight to jobsite
3 domestic packaging

Confidential & Proprietary - this document shall not be distributed to anyone other than the intended recipients.

Pricing: DAP Jobsite
Terms: This offer is subject to Aerzen Standard Terms and Conditions (A2-001-USA January 2009)
*This quote is valid for 12 months from the date of quotation.
Submittals: 4 weeks after receipt of Purchase Order
Delivery: presently approx. 4 months upon technical release by customer
Payment: 20% upon receipt of approved submittal, 75% upon shipment Net 30 and 5% retention not to exceed 180 days from shipment.
Warranty: 24 months after start up or 30 months after delivery, which ever comes first on Aerzen package*
*Maintenance must be performed per the Instruction Manual using Aerzen spare parts.
*Equipment not manufactured by Aerzen will carry the manufacturer's standard warranty.

Total Package Price: $1,806,100.00

SECTION 13210

FIBERGLASS REINFORCED PLASTIC FLAT TANK COVERS

PART 1: GENERAL

1.01 WORK INCLUDED

A. This Section covers the work necessary to furnish and install, complete, the fiberglass reinforced plastic (FRP) flat tank covers for the membrane tanks. Contractor shall furnish and install all FRP tank cover deck panels, structural supports, flashing and trim, fasteners and anchors, gaskets, and accessories.

1.02 REFERNCES

A. The following is a list of standards which may be referenced in this Section:

1. American Society for Testing and Materials (ASTM):
    a. D638, Standard Test Method for Tensile Properties of Plastics.
    b. D790, Standard Test Method for Flexural Properties of Plastics.
    c. D695, Standard Test Method for Compressive Strength of Plastics.
    d. E84, Standard Test Method for Surface Burning Characteristics of Plastics.

1.03 GENERAL

A. See Conditions of the Contract which contain information and requirements that apply to the work specified herein and which are mandatory for this Project.

1.04 SUBMITTALS

A. Comply with Section 01300 Submittals. Include the following information:

1. Include manufacturer’s product information.
    a. Bill of materials
    b. Layout drawings including layouts
    c. Connection and framing details
    d. Fastener types and spacing.
2. Manufacturer’s installation instructions.

B. Submit compliance certificates for specified tests in accordance with Section 01400 Quality Control.

C. Submit manufacturer’s certificates in accordance with the Sections 01300 Submittals and Section 01400 Quality Control.

1.05 QUALITY ASSURANCE

A. Contractor shall be responsible for verifying all field dimensions for development of manufacturer’s drawings.

B. Contractor shall review and confirm in writing the approval of manufacturer's drawings.

C. The supplier of the tank cover system must be the manufacturer and fabricator of the fiberglass components utilized on this pre-engineered tank cover system. The supplier and manufacturer of the fiberglass components shall take full responsibility for the products, materials and design. In addition, a certification letter from the manufacturer identified to be the material source shall state that the manufacturer takes full responsibility for the design and use of the products specified. No split responsibility of the product manufacturing, fabrication, design or quality of the fiberglass components purchased by the contractor from a manufacturer shall be acceptable, implied or expressed, with regard to the tank cover system provided on this project.

D. Within the last five years, tank cover manufacturer shall have completed a minimum of fifteen (15) projects of similar type as those required in this scope.

E. System supplier shall be ISO9001 certified and shall manufacture and fabricate all FRP components in their own facility.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store the equipment in accordance with Section 01600.

B. Protect from deterioration or damage.

1.07 WARRANTY

A. Provide manufacturer's certificate(s) of warranty for material defects and workmanship for Two (2) years following date of shipment.

PART 2: PRODUCTS

2.01 GENERAL

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired only. Products of other manufacturers will be considered in accordance with the General Conditions.

2.02 MANUFACTURERS

A. Enduro Composites, Inc.; Houston, TX

1. XL3 Tank Cover System

B. Or equal

2.03 DESIGN CONDITIONS

A. Design Loads shall comply with local codes with combined loads determined by Allowable Stress Method.

Live or Snow: 25 psf

Wind Uplift: 25 psf

Dead Load: 25 psf

1. Deck panels: Individual unit weight plus other materials attached to and supported by deck panels.

2. Structure: Cover structure weight plus other material attached to and supported by cover structure.

B. Design Limits

1. Dead + Live or Snow Load: Limit = L/180 (min); Factor of Safety = 2.5

2. Wind Uplift less Dead Load: Deflection Limit = L/60; Factor of Safety = 1.88

3. Personnel Load: Cover shall be capable of supporting a 300 lb. concentrated load over a 2.5 SF area located at mid-span maximum deflection of 5/8" or L/D of 180. Compliance shall be demonstrated by full-scale testing with certification by an independent, registered P.E.

C. Air Leakage

1. Air leakage shall not exceed .3 CFM/SF at negative pressure of 0.2 Inches of water column for a 5-minute duration per testing conducted by a certified agency.

D. Cover Panel Removability:

1. Each cover panel shall be removable without having to remove any adjacent cover panels.

2. Each cover panel shall be removable vertically and without cutting of a cover component.

3. The Covers shall be ganged together to allow removal of a complete cover system over each membrane Cassette. Covers that are not ganged together are not acceptable.

4. Covers must include the support structure for lifting the panels together, including; supports and eyebolts.

5. Covers shall be Flush mounted into 3" x 3" block-outs provided in the precast concrete.

2.04 MATERIALS

A. Fiberglass reinforced plastic (FRP) structural components including cover panels, beams, and framing shall be manufactured by pultrusion process. Contact molded, hand-laid up or filament wound fiberglass materials are not acceptable as structural components.

B. Tank Cover Panels:

1. Resin type for FRP tank cover decking shall be UV stabilized isophthalic polyester. Orthothalic (general purpose) polyester is not acceptable.

2. Glass fiber reinforcements shall be 50% (min) of the material weight.

3. Materials shall be fire retardant and have a flame spread rating of 25 or less per ASTM E84.

4. Materials shall exhibit these physical properties at a minimum:
    a. Tensile Strength 30,000 psi ASTM D638
    b. Flexural Strength 30,000 psi ASTM D790
    c. Flexural Modulus 1,690,000 psi ASTM D790
    d. Compressive Strength 30,000 psi ASTM D695
    e. Izod Impact (notched) 25 ASTM D256
    f. Water Absorption 0.25% ASTM D570
5. Cover panels shall be sealed at side-laps with EPDM gasket. Side-lap gaskets shall be factory installed and oriented vertically so they are compressed when the locking channel is placed into position.
6. Covers that do not interlock via a locking channel are not acceptable. Covers that require a spline are not acceptable.
7. Covers that have not been tested for Air infiltration are not acceptable.
8. The top of the tank cover decking shall be flat with factory applied, non-skid, and UV resistant surface.
9. Color of deck panels shall be standard gray.

C. Access Hatches:

1. Access hatches (as shown and detailed on plan drawings) shall be raised with one-leaf hatch door and fabricated from pultruded fiberglass components.
2. Access hatches and framing shall fit inside a single deck panel so individual deck panels with hatches can be removed without affecting adjacent panels. Standard sizes include 22” x 30”, 22” x 36”, 22” x 48” dimensions.
3. Underside of raised hatch lids shall be sealed with factory installed, 3/8” diameter neoprene bulb gasket. Perimeter hatch curb shall be sealed to decking surface with adhesive sealant.
4. Hatches shall have a stainless steel gas piston hold open device. Gas piston shall be designed to aid in the opening of the hatch and hold open the hatch once locked in place.
5. Hatch lids shall have factory applied non-skid, UV resistant surface with plastic or stainless steel lift handles.
6. View port hatches, if indicated on the drawing, shall be 12-inches square or less.
7. Hatch openings shall be factory cut in cover decking panel by manufacturer.

D. FRP Structural Framing:

1. Resin type for FRP beams and framing members shall be vinyl ester.
2. Glass fiber reinforcements shall be 50% (min) of the material weight.

3. Structural components shall be fire retardant and have a flame spread rating of 25 or less per ASTM E84.

4. All connections shall be made with metallic angles or plates (the use of FRP for making connections shall not be allowed) attached to FRP beams or fastening connections shall be 316 Stainless Steel.

E. Sampling View Ports:

1. View ports shall be raised with one-leaf hatch door and fabricated from pultruded fiberglass components.

2. Standard sizes are 8” x 8” or 12” x 12”.

F. Flush Mounting Cover:

1. Ledger angle shall be FRP or stainless steel

a. If FRP ledger angle is used a safety factor of 6 should be used in determining the size of the angle.

b. If stainless steel angle is used it should be 0.25” minimum thickness and 304 stainless steel.

G. Flashing and Trim:

1. Fiberglass flashing shall be isophthalic polyester with dimensions and profile as shown on the drawings.

2. Non-radius end flashing shall be factory attached to individual deck panels.

3. Flashing with a radius or at the perimeter of a circular tank shall be a separate part and field attached by the installing contractor.

4. Slide gate flashings (if indicated on drawings) shall be aluminum brush type.

H. Air Vents and Connections (if indicated on drawings):

1. FRP gooseneck ventilation piping (if indicated on the drawings) shall be provided by cover manufacturer.

2. FRP stub-vent connections with a blind flange (if indicated on the drawings) shall be provided by cover manufacturer. Connections shall extend at least 6-inches from top of tank cover deck.

I. Pipe Penetrations:

1. Existing or new pipe penetrations shall be retrofitted by contractor to penetrate cover at a 90° angle.

2. Pipe penetrations shall be flashed in the field with a Sealtite retrofit, zipper type, pipe flashing or equal as provided by cover manufacturer.

J. Hardware:

1. Fasteners, anchorage, hinges, and other structural accessories located on the underside of the cover shall be 316 stainless steel.

2. Perimeter flashing anchors, concrete anchors, or other hardware not exposed to the inside environment of the tank shall be 304 stainless steel.

3. Fasteners to attach tank cover decking to structural supports shall be 316 stainless steel.

K. Gaskets and Sealants:

1. All panel side-laps and perimeter conditions shall be gasketed.

2. Gaskets under flashing with a radius and at perimeter of circular tanks shall be installed by the contractor.

3. Adhesive sealant shall be applied by contractor at various locations as required by manufacturer for odor containment.

PART 3: EXECUTION

3.01 INSTALLATION

A. Before placing and attaching components, the erector must confirm alignment and location of bearing plates, surfaces, brackets, saddles, etc. All bearing surfaces must be clean and free of debris.

B. Before placing secondary framing members or deck, the erector must check the alignment and location of supports.

C. Erection shall proceed according to sequence shown on the approved drawings.

D. If applicable, contractor shall install structural members, beam seats or ledger angles in locations shown on the approved drawings. Contractor shall assemble trusses as required.

E. Position FRP tank cover beams (if applicable) in locations, as shown on the manufacturer's drawings. Field modifications (cuts, copes, holes, etc.) other than work shown on the drawings are not allowed without the manufacturer's written consent.

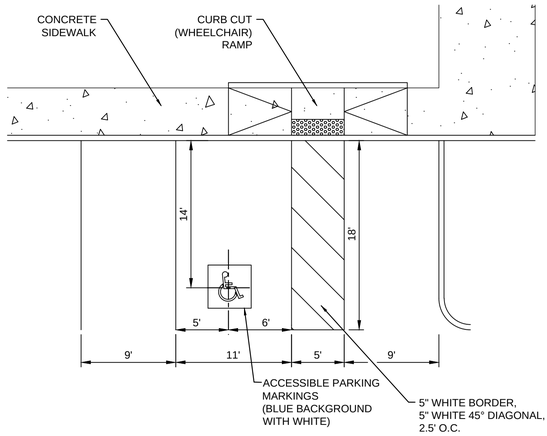
F. Anchor FRP beams and adjust tank cover components into final position with proper bearing and alignment at joints, laps, and supports before fastening. Refer to manufacturer's installation instructions for proper fastener selection, fastener location, driving techniques, and pertinent information for fastening equipment.

G. Starting at the end shown on the manufacturer's drawings, position and place cover deck panels in locations as shown. Field modifications (cuts, copes, holes, etc.) other than work shown on the drawings are not allowed without the manufacturer's written consent.

H. Fasten or anchor FRP cover deck panels into location as shown on the drawings.

I. Place and attach flashing as shown on the drawings.

END OF SECTION



ACCESSIBLE PARKING LAYOUT

NTS

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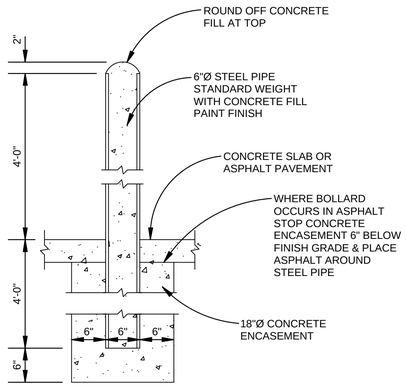
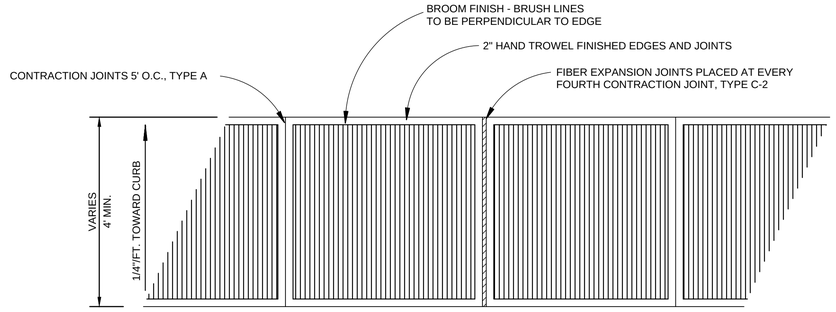


STEEL PIPE BOLLARD

NTS

106



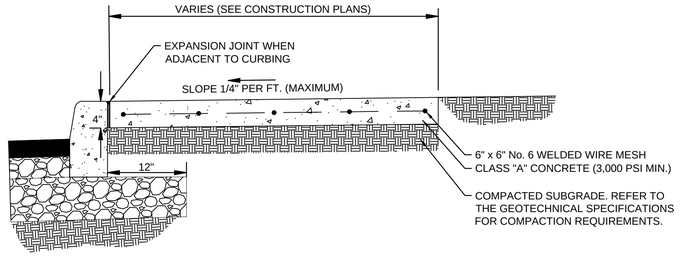
NOTE: PROPOSED SIDEWALK SHALL BE 4" THICK

THE CONSTRUCTION AND MATERIALS OF CONCRETE SIDEWALK SHALL MEET THE REQUIREMENTS OF SPECIFICATIONS SECTION 441 OF THE " DEPARTMENT OF TRANSPORTION, STATE OF GEORGIA, STANDAR SPECIFICATIONS, CONSTRUCTION OF ROADS AND BRIDGES, 2001 EDITION."

CONCRETE WALK - BROOM FINISH

NTS

105



TYPICAL SECTION - SIDEWALK

NTS

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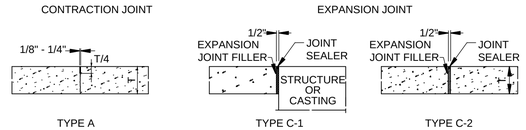

TRANSVERSE CONTRACTION OR LONGITUDINAL JOINT, SAWED OR PREFORMED

CONCRETE PAVEMENT NOTES:

1. CONCRETE SPECIFICATION SHALL MEET THE REQUIREMENTS OF SECTION 430 FOR CONCRETE PAVING JOBS OF 50,000 SQ YDS OR LESS OF THE GA DEPT. OF TRANSPORTATION, STANDARD SPECIFICATIONS, CONSTRUCTION OF ROADS AND BRIDGES, 2001, AND THE SUPPLEMENT IN EFFECT AT THE TIME OF BID OPENING. EXCEPTIONS ARE NOTED IN NOTES BELOW.
2. MAXIMUM JOINT SPACING SHALL BE 17 FEET. JOINTS SHALL BE FORMED AS TO PROVIDE SLABS THAT ARE AS NEAR TO SQUARE AS PRACTICALLY POSSIBLE.
3. CONCRETE SHALL BE 4000 PSI @ 26 DAYS. AIR ENTRAINMENT SHALL BE 5.0% WITH A FIELD TOLERANCE OF 1.5%±.
4. EXPANSION JOINTS ARE TO BE INSTALLED BETWEEN POURED CONCRETE AND ANY IMMOVABLE OBJECT. IMMOVABLE OBJECTS INCLUDE, BUT ARE NOT LIMITED TO: BUILDING SLABS, FOOTINGS, RETAINING WALLS & DRAINAGE STRUCTURES.
5. EXPANSION JOINTS ARE TO BE INSTALLED PERPENDICULAR TO BUILDING AT A MAXIMUM SPACING OF 60'.
6. CRACKING CONTROL JOINTS ARE TO BE INSTALLED PERPENDICLUAR TO BUILDING AT A MAXIMUM SPACING OF 20'
7. AN EXPANSION JOINT MAY BE USED IN PLACE IN PLACE OF A CRACKING CONTROL JOINT, MUST BE INSTALLED AT THE CRACKING CONTROL JOINT INTERVAL.
8. EXPANSION JOINTS ARE TO BE INSTALLED AT A MAXIMUM SPACING OF 60' IN 2 DIRECTIONS.

CONCRETE JOINTS

NTS

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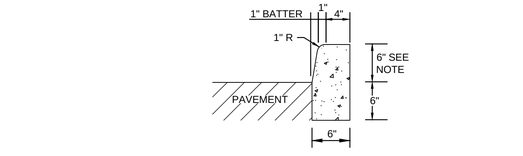

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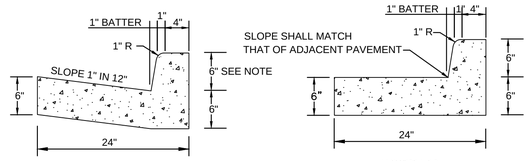


TYPE A

TYPE B
SPILL TYPE

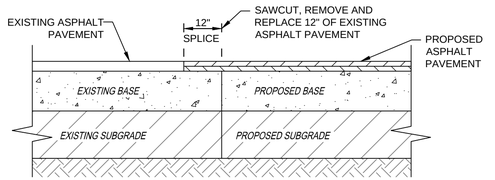
NOTES:

1. WHERE SQUARE BACK CURB TO BE USED. 6" SQUARE BACK CURB UNLESS OTHERWISE NOTED.
2. **SEE CONCRETE JOINT DETAIL #103.**

SQUARE BACK CURB AND GUTTER DETAIL

NTS

102



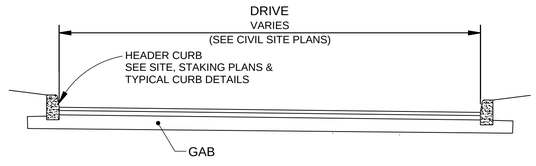
NOTES:

1. PROVIDE ASPHALT SPLICE AT ALL TRANSITIONS BETWEEN NEW AND EXISTING PAVEMENT SECTIONS.
2. ASPHALT MILL AND OVERLAY DEPTH VARIES (1.5" TO 2.5")
3. CONTRACTOR SHALL INSTALL TACK COAT TO THE EXISTING PAVEMENT AND VERTICAL EDGE CREATED BY SAWCUT PRIOR TO INSTALLATION OF PROPOSED ASPHALT

ASPHALT PAVEMENT SPLICE

NTS

101



NOTES:

- PAVEMENT SECTIONS TAKEN FROM PREVIOUS PLANS TITLED "CANTON WRF IMPROVEMENTS" (SHEET NO. C-12), PREPARED BY ESI, LAST DATED SEPTEMBER 2014.
- NO PAVEMENT DESIGN WAS PERFORMED BY ATKINS FOR THE CURRENT PROJECT.
- CONTRACTOR TO VERIFY AND MATCH EXISTING PAVEMENT SECTIONS.

ASPHALT PAVEMENT

NTS

100

GEORGIA REGISTERED No. 21971 PROFESSIONAL ENGINEER — 10/29/2020

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS
196 JOE CANNON DRIVE
HARTWELL, GEORGIA
(443) 249-3111

CERTIFICATE OF AUTHORIZATION #PEC000802 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

		REVISION	DATE
3		ADDENDUM No. 3	10/30/20
2			
1			

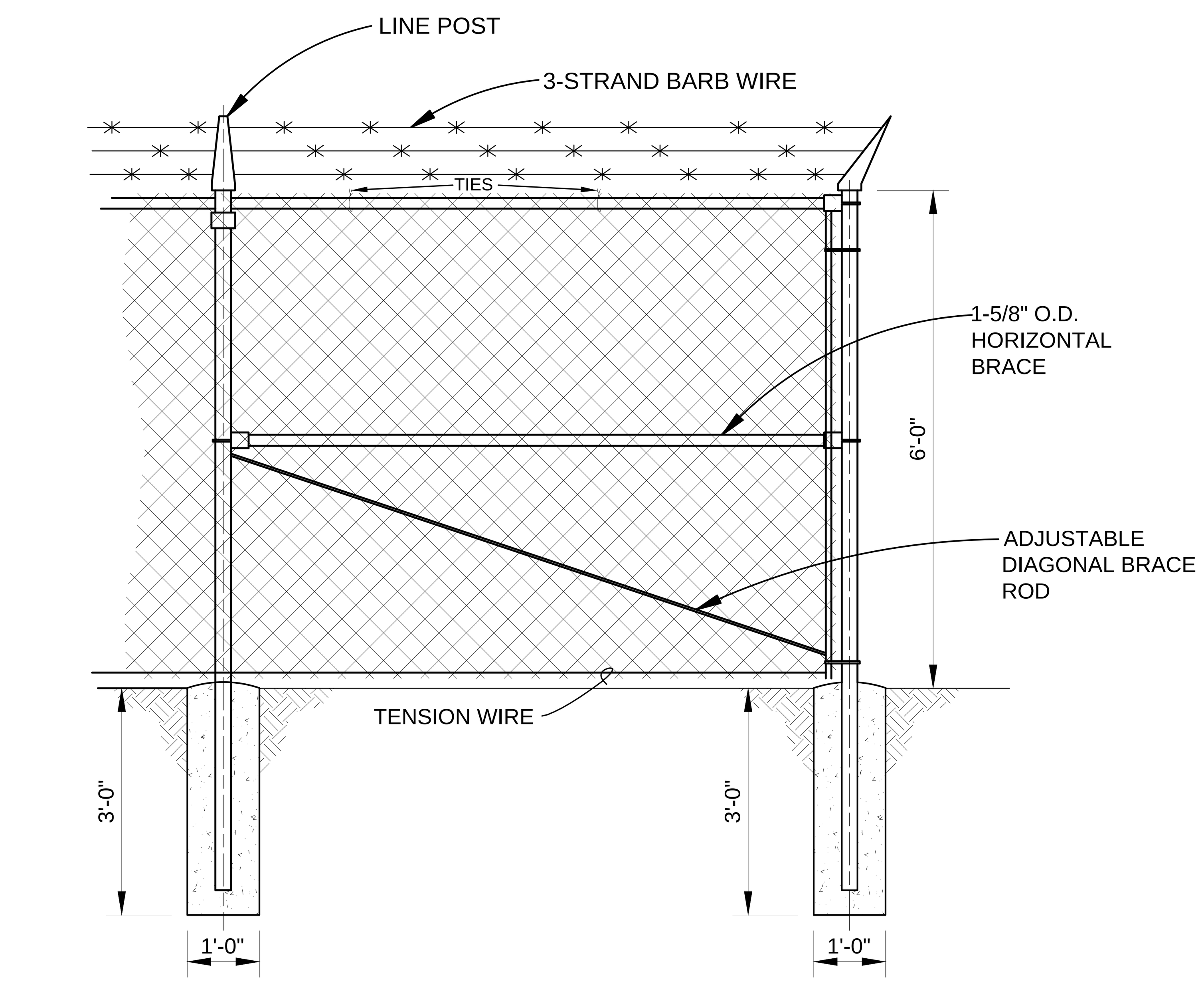
PROJ. NO.: 100061831
DESIGNED BY: JMR
DRAWN BY: RAR
CHECKED BY: RM
APPROVED BY: GNK
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CIVIL
STANDARD DETAILS

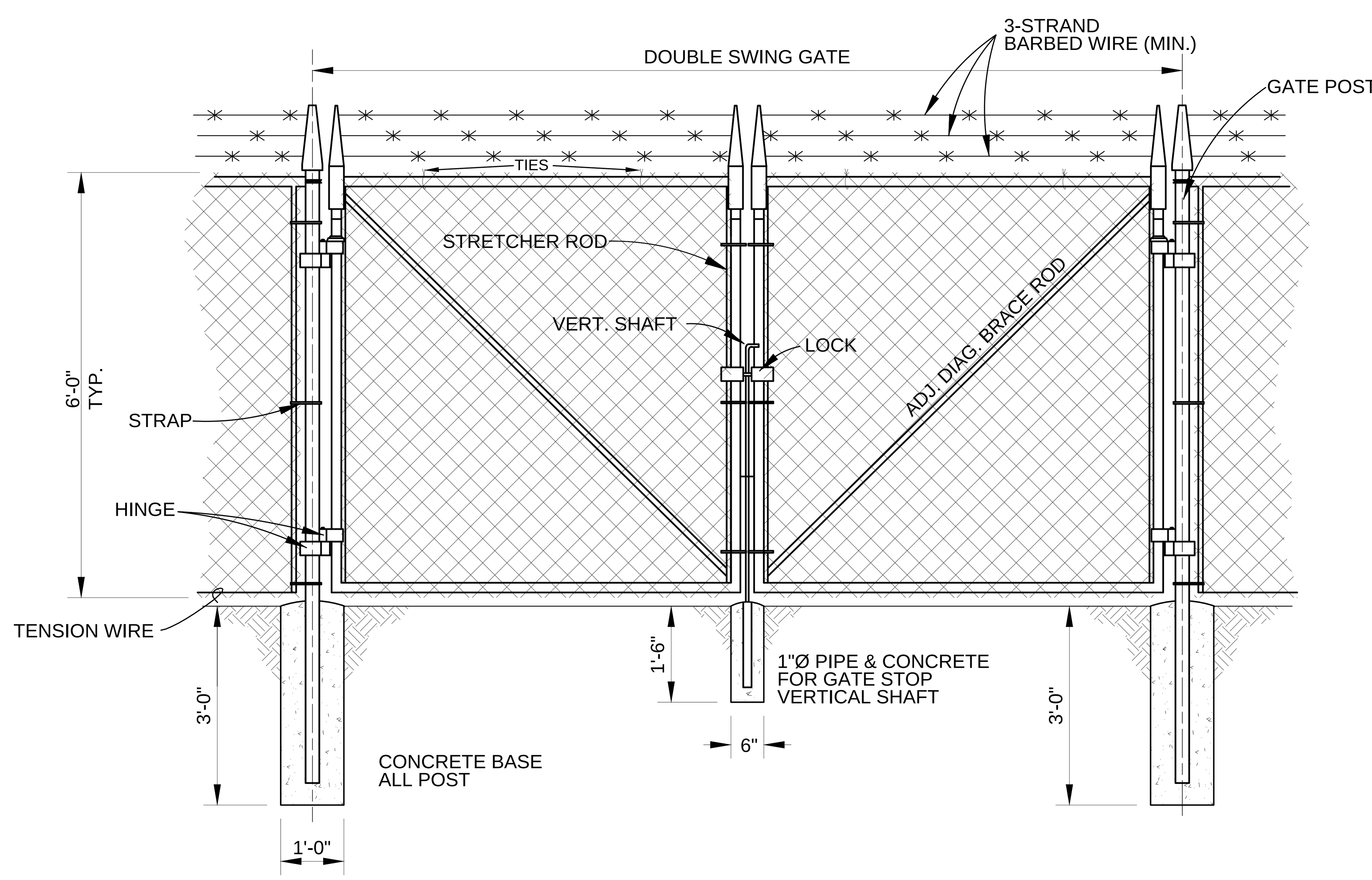
SHEET NO.
DC-1

File Name: C:\PW_WORK\ATKNAGA01\SMO8864\DM5359141\DC-01.DWG|Tab:DC-1|Plotted: October 29, 2020 1:48pm



VINYL COATED FENCE DETAIL

NTS



VINYL COATED GATE DETAIL

NTS

ATKINS
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HARTWELL ENGINEERING, INC.
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CERTIFICATE OF AUTHORIZATION # PEF000902 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
3	ADDENDUM No. 3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: JMR
DRAWN BY: RAR
CHECKED BY: RM
APPROVED BY: GNK
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CIVIL
STANDARD DETAILS

SHEET NO.
DC-14

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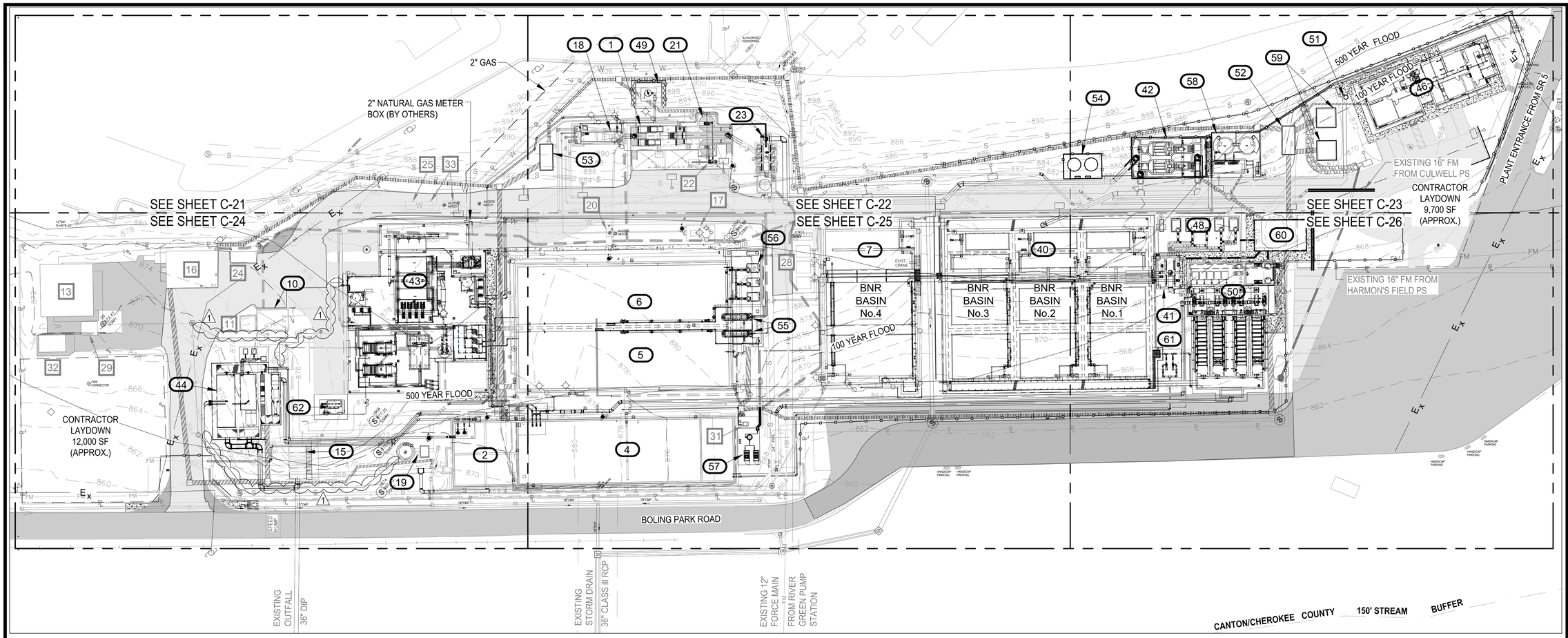

PROPOSED OVERALL YARD PIPING PLAN

SCALE: 1"=40'

LEGEND:
(EXISTING STRUCTURES/EQUIPMENT)

1. HEADWORKS
2. EQUALIZATION BASIN
4. SBR No.1
5. SBR No.2
6. SBR No.3
7. SBR No.4
8. MAGNESIUM HYDROXIDE SYSTEM
10. CHEMICAL BUILDING
11. SODIUM HYPOCHLORITE SYSTEM
12. POLYALUMINUM CHLORIDE SYSTEM
13. SLUDGE PRESS BUILDING
14. DYNASAND FILTER
15. CASCADE AERATOR

CONTINUED
(EXISTING STRUCTURES/EQUIPMENT)

16. OFFICE/ADMINISTRATION BUILDING
17. INFLUENT PUMP STATION
18. INFLUENT METERING FLUME
19. PLANT DRAIN PUMP STATION PS-1
20. FLOW METER VAULT
21. GRIT CHAMBERS
22. GRIT CLASSIFIER
23. SBR SPLITTER BOX
24. EMERGENCY GENERATOR
25. WATER METER
27. UV SYSTEM AND PARSHALL FLUME
28. SBR No.4 BLOWERS
29. SLUDGE VAULT

CONTINUED
(EXISTING STRUCTURES/EQUIPMENT)

30. ALUM TANK
31. POST EQUALIZATION BASIN BLOWERS
32. SLUDGE LOADING STATION
33. BACKFLOW PREVENTER
35. REUSE WATER METER VAULT
36. REUSE VALVE VAULT

LEGEND:
(MODIFIED/REPURPOSED STRUCTURES/EQUIPMENT)

1. HEADWORKS
2. REUSE WATER WETWELL (FORMER POST EQUALIZATION BASIN)
4. WAS STORAGE (FORMER SBR No.1)
5. AEROBIC DIGESTER (FORMER SBR No. 2)
6. AEROBIC DIGESTER (FORMER SBR No. 3)
7. BNR BASIN No. 4 (FORMER SBR No. 4)
10. CHEMICAL BUILDING MODIFICATIONS
15. CASCADE AERATOR
18. INFLUENT FLUME MODIFICATIONS
19. PLANT DRAIN PUMP STATION PS-1 MODIFICATIONS
21. GRIT CHAMBER MODIFICATIONS
23. SBR SPLITTER BOX MODIFICATIONS

LEGEND:
(PROPOSED STRUCTURES/EQUIPMENT)

40. BNR BASINS No.1, No.2, No.3
41. RAS SPLITTER BOX
42. FINE SCREENINGS FACILITY
43. SOLIDS HANDLING FACILITY
44. UVPA FACILITY (UV AND POST AERATION)
45. NOT USED
46. ADMINISTRATION / CONTROL BUILDING
47. UVPA AERATION BLOWERS
48. AERATION BASIN BLOWERS
49. ODOR CONTROL / HEADWORKS
50. MEMBRANE FACILITY
51. RS SUMP FOR ADMINISTRATION BUILDING
52. ELECTRICAL SWITCHGEAR-MAIN

CONTINUED
(PROPOSED STRUCTURES/EQUIPMENT - *CONTINUED*)

53. ELECTRICAL SWITCHGEAR-OC
54. MAGNESIUM HYDROXIDE SYSTEM
55. ROTARY DRUM THICKENER
56. AEROBIC DIGESTER BLOWERS
57. COMPRESSED AIR MIXING SYSTEM
58. ALUM FEED FACILITY
59. ELECTRICAL TRANSFORMER PAD
60. BNR / MBR ELECTRICAL BUILDING
61. SCUM PUMPING SYSTEM
62. ODOR CONTROL / SOLIDS HANDLING FACILITY

EXISTING SITE/SYMBOLS LEGEND

- ACCESS HATCH
- STORM DRAIN MANHOLE
- SANITARY MANHOLE
- CATCH BASIN
- JUNCTION BOX
- PIPE RISER
- YARD INLET
- DROP INLET
- CLEANOUT
- YARD HYDRANT
- LIGHT POLE
- POWER POLE
- BURIED ELECTRICAL
- ELECTRICAL
- ELECTRIC BOX/CONTROL BOX
- ELECTRIC METER
- WATER VALVE
- SPIGOT
- TEMPORARY SURVEY CONTROL POINT
- SIGN

0 40 80 120
SCALE: 1" = 40'

GEORGIA REGISTERED No. 042364 PROFESSIONAL ENGINEER HECTOR H. CABRERA
9/28/2020

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1600 RiverEdge Parkway, NW, Suite 700
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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS
196 LOG CANOE CIRCLE
STEVENSVILLE, MD 21666
(443) 249-3111

CERTIFICATE OF AUTHORIZATION #PEF000802 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: YP
DRAWN BY: JN
CHECKED BY: HC
APPROVED BY: HC
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

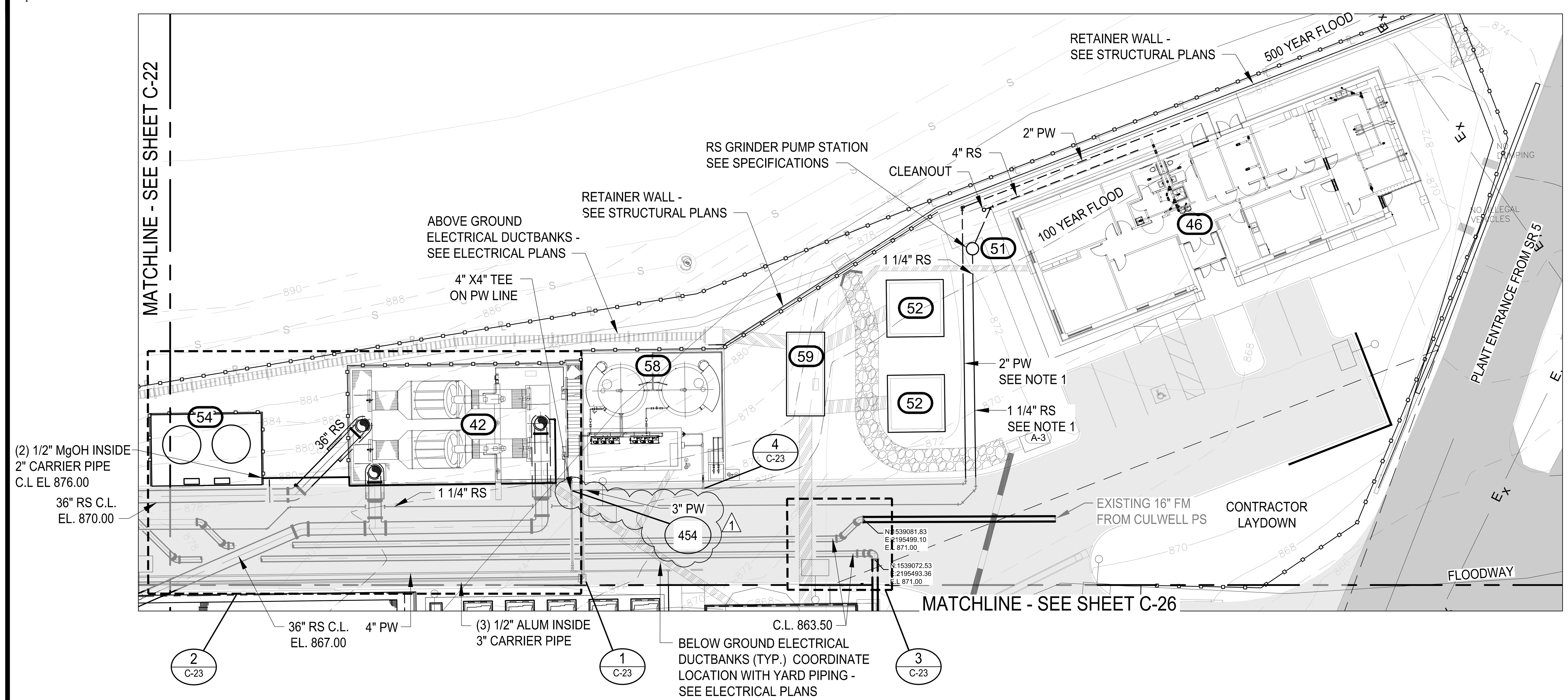
PROPOSED OVERALL YARD PIPING PLAN

SHEET NO.
C-20

File Name: C:\PW_WORK\ATKNAGA01\WEMM7492\DMS35899\Q200 - C-20, 21, 22, 23, 24, 25, 26.DWG Tab: C-20 Plotted: October 30, 2020 9:02am

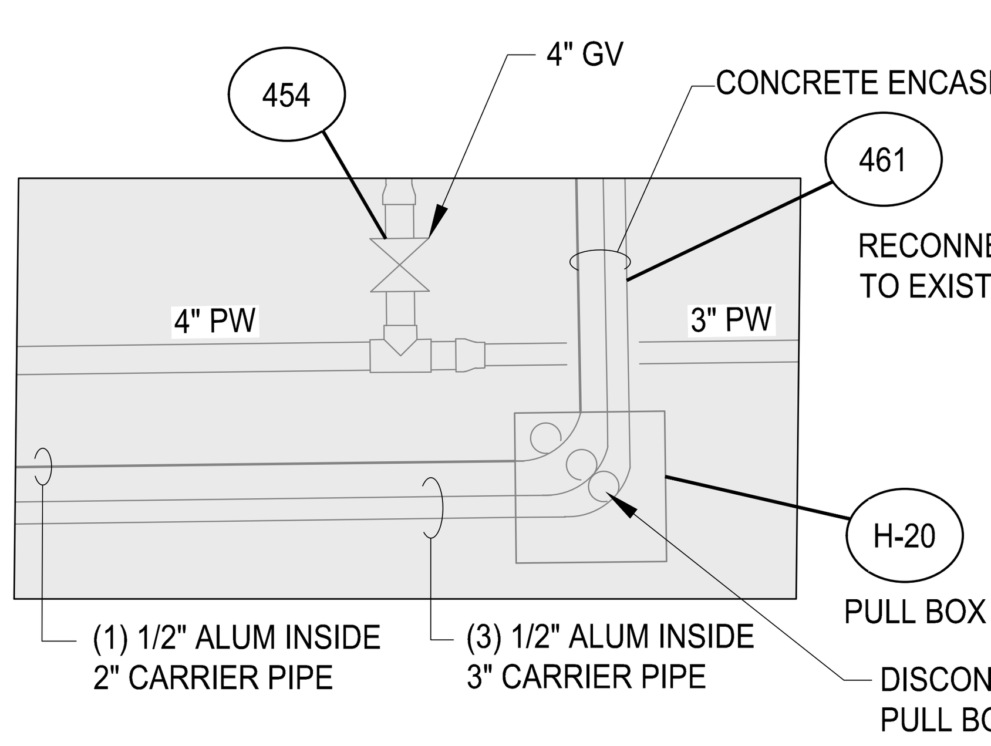
GENERAL NOTES:
1. FOR AND ADDITIONAL INFORMATION AND IDENTIFICATION OF EXISTING, REPURPOSED, MODIFIED, AND PROPOSED STRUCTURES AND EQUIPMENT SEE SHEET C-20.
2. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF EXISTING STRUCTURES, PIPELINES, ELECTRICAL DUCT BANKS AND CONDUIT.
3. REMOVE ALL ABANDONED PIPE EXPOSED OR UNCOVERED DURING CONSTRUCTION ACTIVITIES.
4. HEAT TRACE AND INSULATE PIPING PER SPECIFICATION SECTION 15250.
5. CONTRACTOR TO COORDINATE WITH ENGINEER ON BURIED PIPING WITH LESS THAN 3 FEET OF COVER.

NOTES:
1. CONCRETE ENCASE PIPING LESS THAN 4" DIAMETER IN ROADWAY PER STANDARD DETAIL 461.
2. MAGNESIUM HYDROXIDE SYSTEM PROVIDED BY THE CITY OF CANTON.

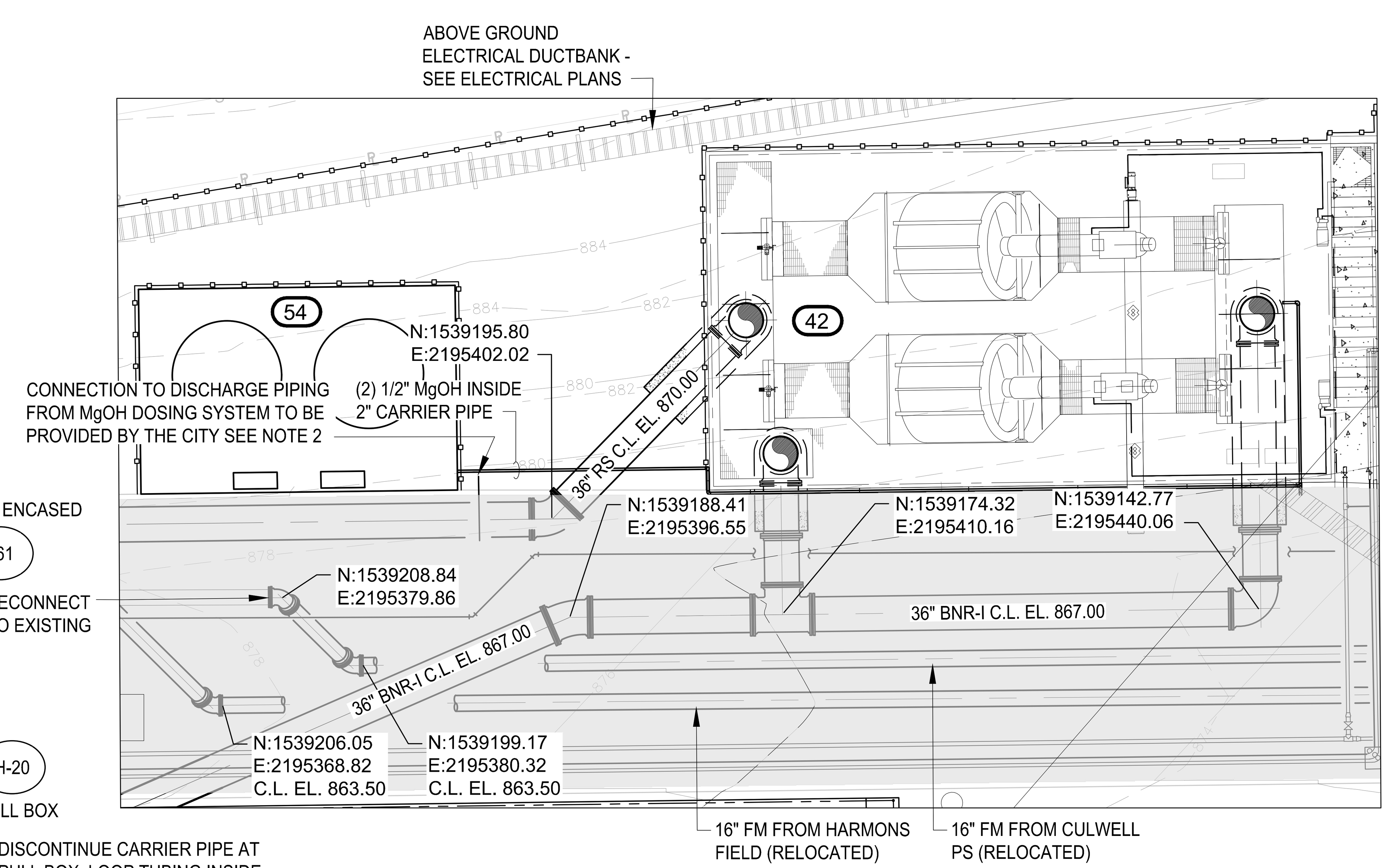


PROPOSED YARD PIPING PARTIAL PLAN

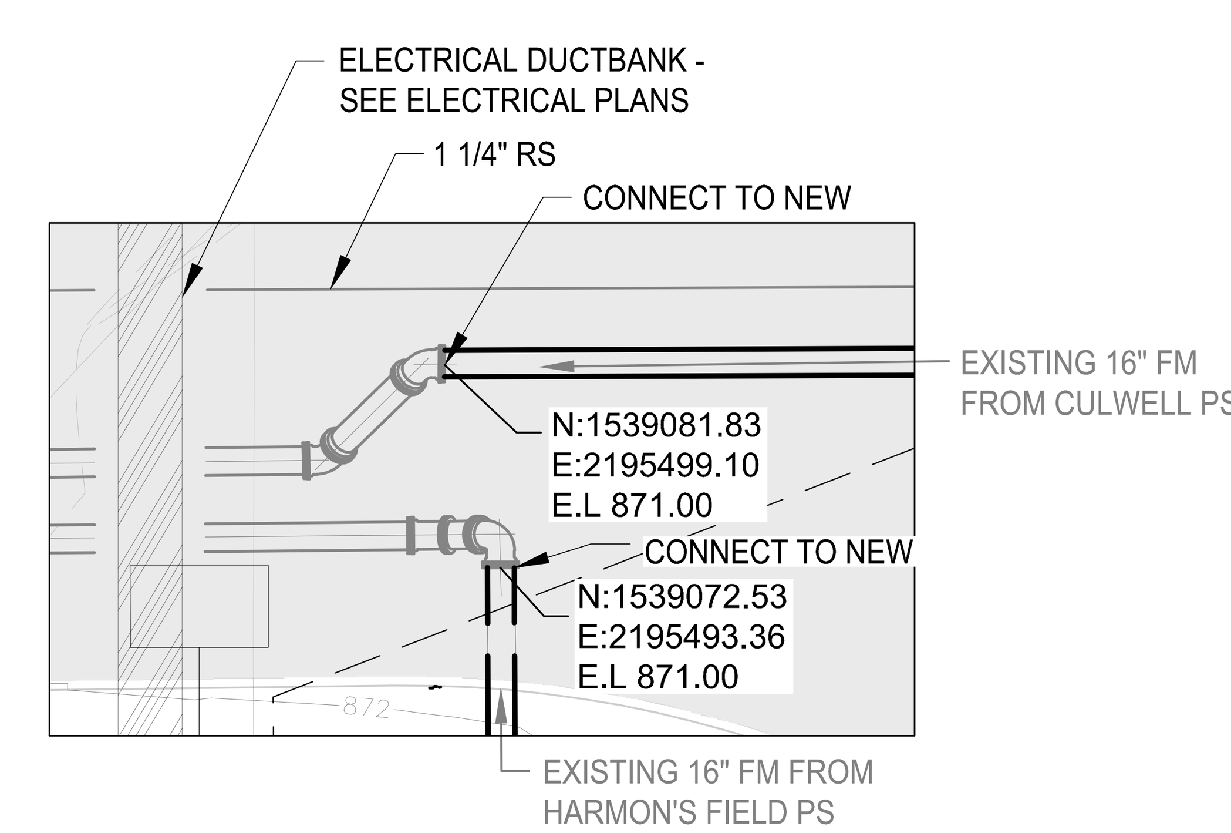
SCALE: 1"=20'



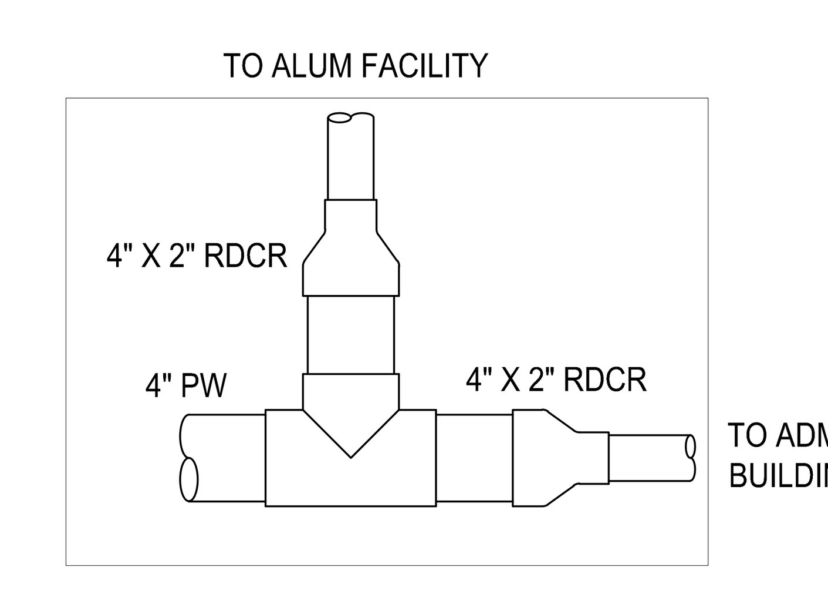
DETAIL 1 C-23
SCALE: NTS



DETAIL 2 C-23
SCALE: 1"=10'-0"



DETAIL 3 C-23
SCALE: 1"=10'-0"



DETAIL 4 C-23
SCALE: NTS

GEORGIA REGISTERED No. 042364 PROFESSIONAL ENGINEER HECTOR M. CASABLANCA 9/28/2020

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HARTWELL ENGINEERING, INC. ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF000902 EXPIRATION DATE 06/30/2022 ATKINS NORTH AMERICA INC.

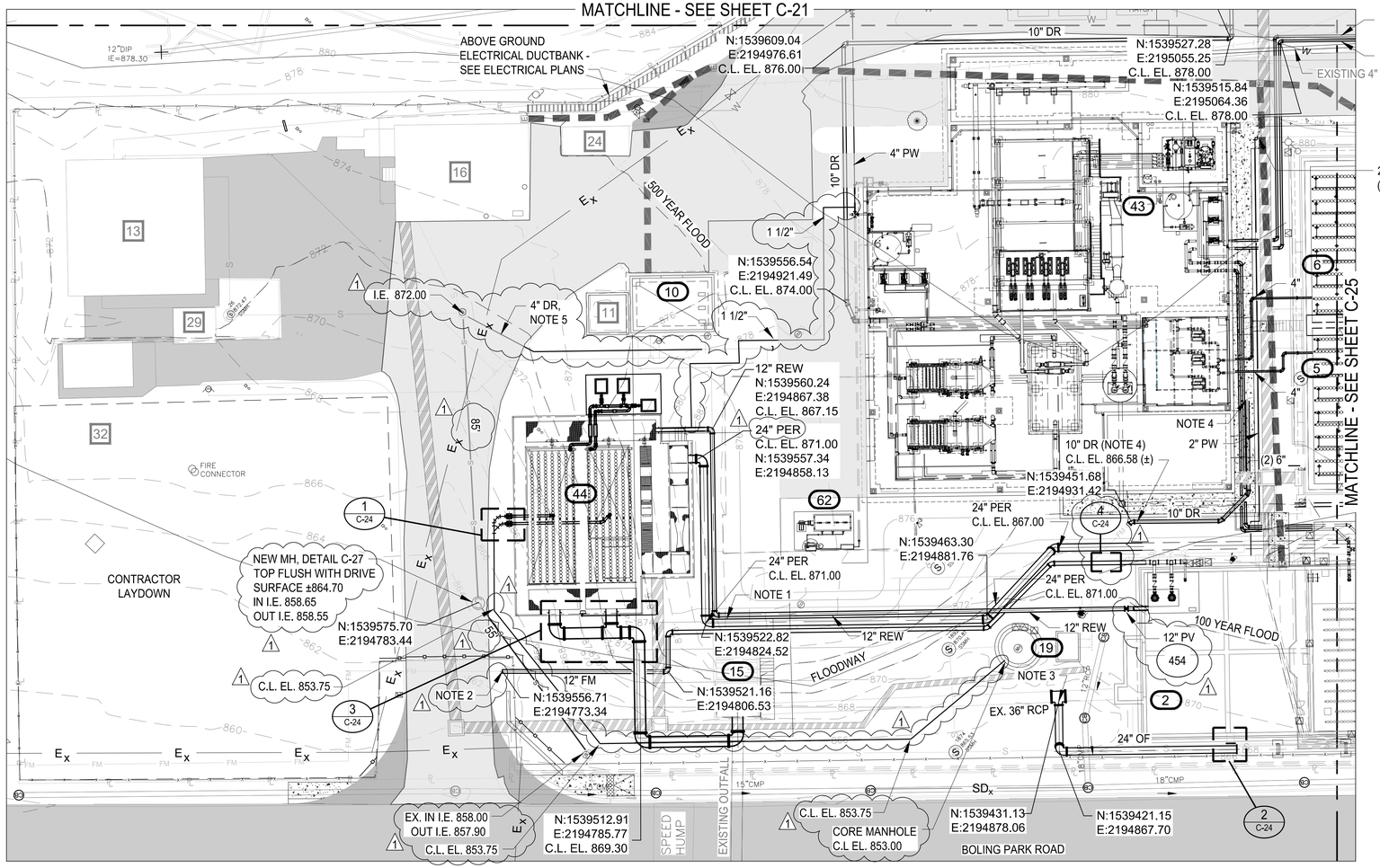
	REVISION	DATE
3	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: YP
DRAWN BY: JN
CHECKED BY: HC
APPROVED BY: HC
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PROPOSED YARD PIPING PARTIAL PLAN

SHEET NO.
C-23



PROPOSED YARD PIPING PARTIAL PLAN

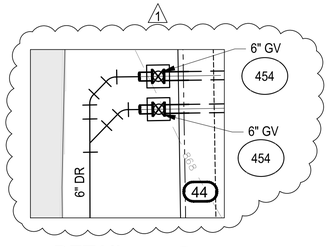
SCALE: 1"=20'

GENERAL NOTES:

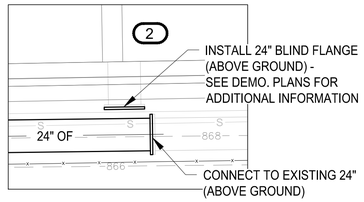
1. FOR ADDITIONAL INFORMATION AND IDENTIFICATION OF EXISTING, REPURPOSED, MODIFIED, AND PROPOSED STRUCTURES AND EQUIPMENT SEE SHEET C-20.
2. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF EXISTING STRUCTURES, PIPELINES, ELECTRICAL DUCT BANKS AND CONDUIT.
3. REMOVE ALL ABANDONED PIPE EXPOSED OR UNCOVERED DURING CONSTRUCTION ACTIVITIES.
4. HEAT TRACE AND INSULATE PIPING PER SPECIFICATION SECTION 15250.
5. CONTRACTOR TO COORDINATE WITH ENGINEER ON BURIED PIPING WITH LESS THAN 3 FEET OF COVER.

NOTES:

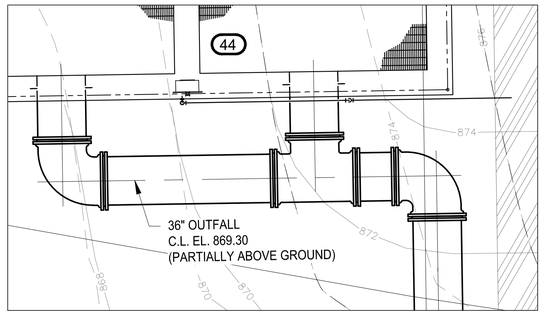
1. BORE 24" PER UNDER EXISTING STRUCTURE.
2. ELEVATION OF EXISTING 12" REW TO BE VERIFIED IN THE FIELD.
3. (1) CUT IN NEW 36" X 24" DUCTILE IRON TEE. CONNECT NEW 24" PIPE. PROVIDE FITTINGS AS REQUIRED TO RESTRAIN CONNECTIONS.
4. CONNECT TO 10" FROM EXISTING PLANT DRAIN PUMP STATION. SEE DEMO. PLANS FOR ADDITIONAL INFORMATION.
5. REROUTE EXISTING 4" DRAIN FROM CHEMICAL BUILDING TO EXISTING SANITARY MANHOLE. ELEVATION AT CHEMICAL BUILDING +/- 874.0



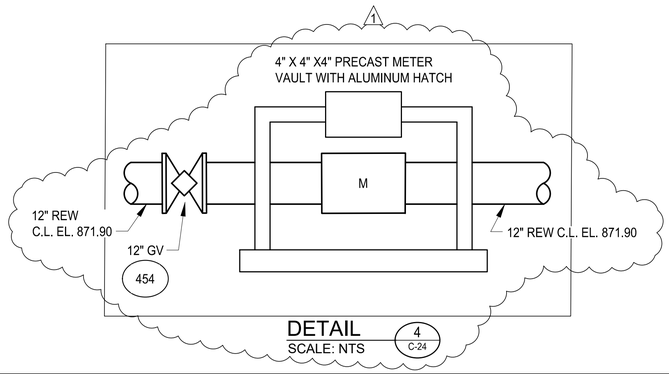
DETAIL 1 C-24
SCALE: 1"=5'



DETAIL 2 C-24
SCALE: 1"=5'



DETAIL 3 C-24
SCALE: 1"=5'



DETAIL 4 C-24
SCALE: NTS

GEORGIA REGISTERED No. 042364 PROFESSIONAL ENGINEER HECTOR H. CABRERA
9/28/2020

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HARTWELL ENGINEERING, INC.
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(443) 249-3111

CERTIFICATE OF AUTHORIZATION #PEF000802 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.		
	REVISION	DATE
1	ADDENDUM No.3	10/30/20
2		

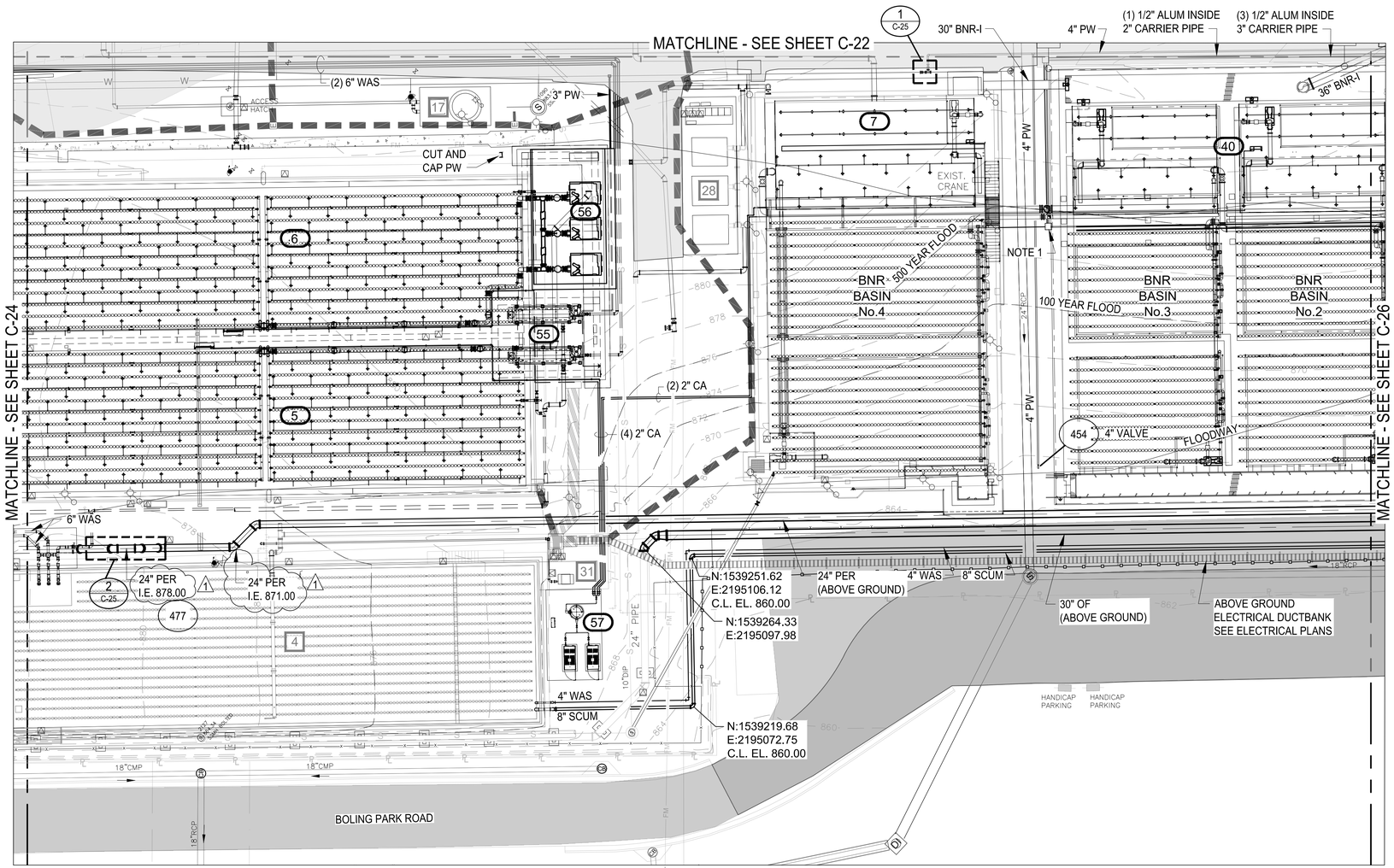
PROJ. NO.: 100061831
DESIGNED BY: YP
DRAWN BY: JN
CHECKED BY: HC
APPROVED BY: HC
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

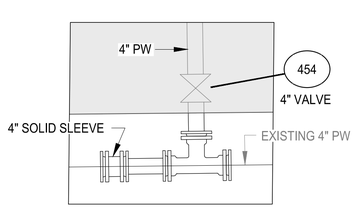
PROPOSED YARD PIPING PARTIAL PLAN

SHEET NO.
C-24

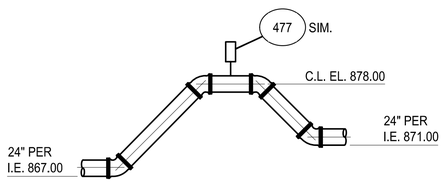
File Name: C:\PW_WORK\ATKNAGA01\IEWM7492\DMS358899\0200 - C-20, 21, 22, 23, 24, 25, 26.DWG[Tab:C-24]Plotted: October 30, 2020 9:42am



PROPOSED YARD PIPING PARTIAL PLAN
SCALE: 1"=20'



DETAIL 1 C-25
SCALE: NTS



DETAIL 2 C-25
SCALE: NTS
(LOOKING NORTHEAST)

GENERAL NOTES:
1. FOR AND ADDITIONAL INFORMATION AND IDENTIFICATION OF EXISTING, REPURPOSED, MODIFIED, AND PROPOSED STRUCTURES AND EQUIPMENT SEE SHEET C-20.
2. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF EXISTING STRUCTURES, PIPELINES, ELECTRICAL DUCT BANKS AND CONDUIT.
3. REMOVE ALL ABANDONED PIPE EXPOSED OR UNCOVERED DURING CONSTRUCTION ACTIVITIES.
4. HEAT TRACE AND INSULATE PIPING PER SPECIFICATION SECTION 15250.
5. CONTRACTOR TO COORDINATE WITH ENGINEER ON BURIED PIPING WITH LESS THAN 3 FEET OF COVER.

NOTES:
1. H-20 PULL BOX FOR ALUM LINES SIMILAR TO DETAIL 1 ON C-23.
2. 30" OF - CONNECT TO EXISTING SBR No.4 24" EFFLUENT PIPE.

GEORGIA REGISTERED No. 042364 PROFESSIONAL ENGINEER HECTOR M. CARRILANCA
9/28/2020

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HARTWELL ENGINEERING, INC.
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(443) 249-3111

CERTIFICATE OF AUTHORIZATION #PEF000802 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: YP
DRAWN BY: JN
CHECKED BY: HC
APPROVED BY: HC
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

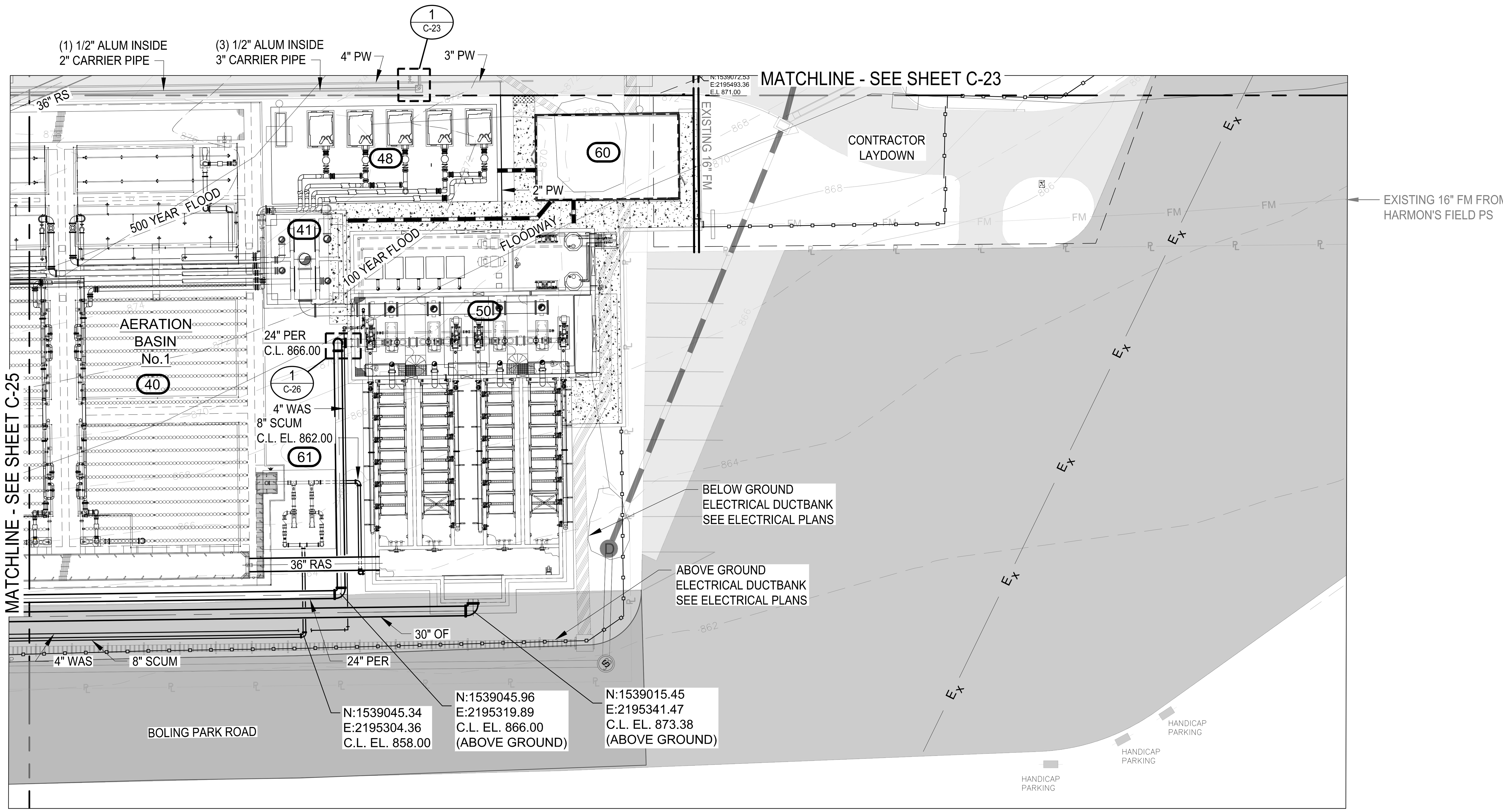
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PROPOSED YARD PIPING PARTIAL PLAN

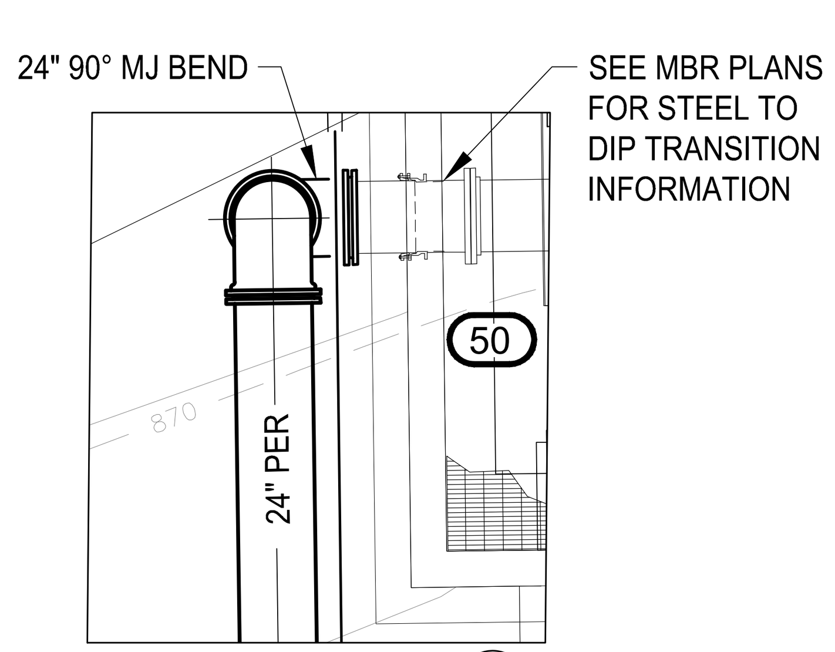
SHEET NO.
C-25

File Name: C:\PW_WORK\ATKNAGA01\WENM7492\DMS35899\0200 - C-20, 21, 22, 23, 24, 25, 26.DWG|Tab:C-25|Plotted: October 30, 2020 10:08am

GENERAL NOTES:
1. FOR ADDITIONAL INFORMATION AND IDENTIFICATION OF EXISTING, REPURPOSED, MODIFIED, AND PROPOSED STRUCTURES AND EQUIPMENT SEE SHEET C-20.
2. CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF EXISTING STRUCTURES, PIPELINES, ELECTRICAL DUCT BANKS AND CONDUIT.
3. REMOVE ALL ABANDONED PIPE EXPOSED OR UNCOVERED DURING CONSTRUCTION ACTIVITIES.
4. HEAT TRACE AND INSULATE PIPING PER SPECIFICATION SECTION 15250.
5. CONTRACTOR TO COORDINATE WITH ENGINEER ON BURIED PIPING WITH LESS THAN 3 FEET OF COVER.



PROPOSED YARD PIPING PARTIAL PLAN
SCALE: 1"=20'



DETAIL 1/C-26
SCALE: NTS

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 042364 HECTOR M. CASABLANCA 9/28/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF000902 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

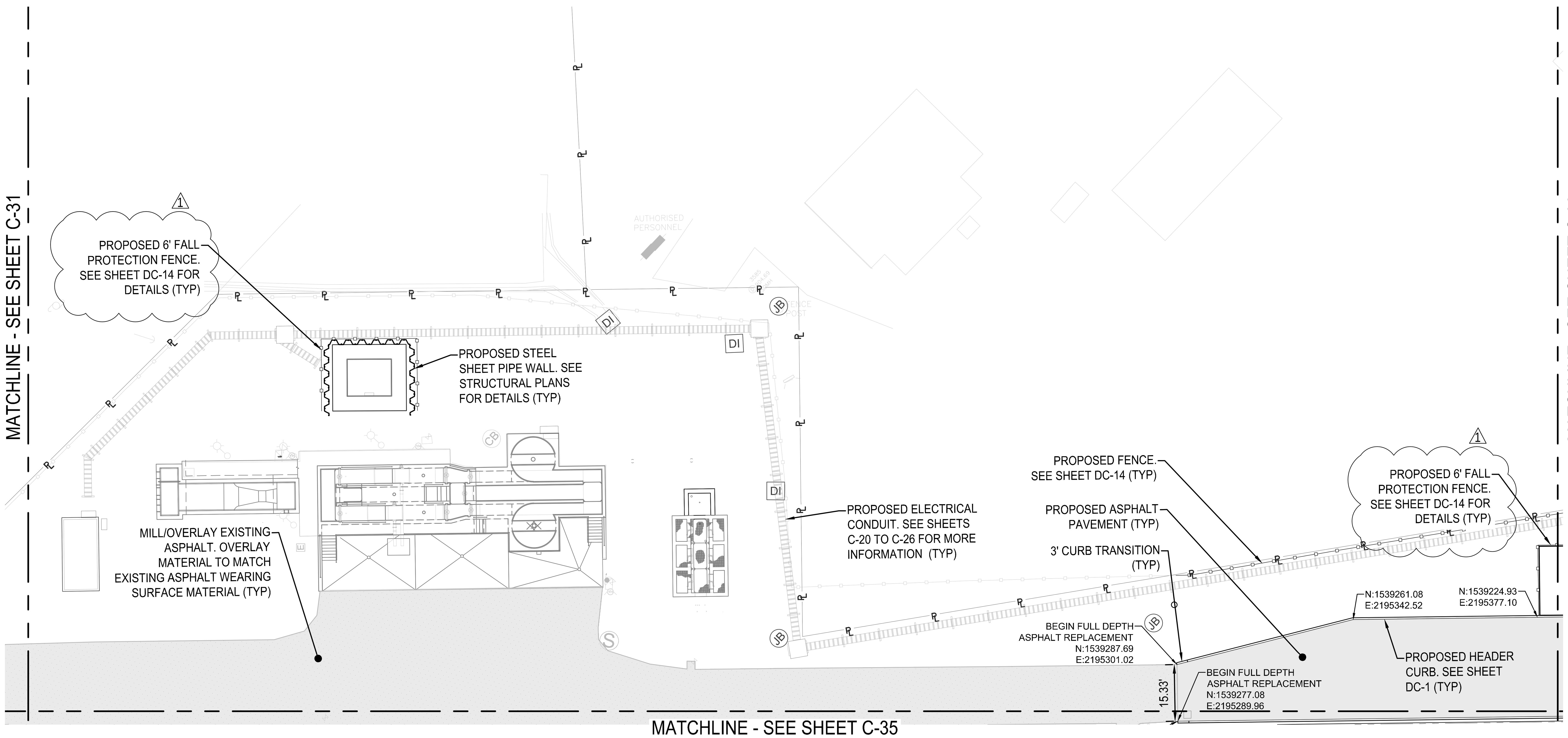
PROJ. NO.: 100061831
DESIGNED BY: YP
DRAWN BY: JN
CHECKED BY: HC
APPROVED BY: HC
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PROPOSED YARD PIPING PARTIAL PLAN

SHEET NO.
C-26

File Name: C:\PW_WORK\ATKNAGA01\NEWM7492\DMS35899\0200 - C-20, 21, 22, 23, 24, 25, 26.DWG|Tab: C-26|Plotted: October 30, 2020 10:17am



PROPOSED CIVIL SITE PARTIAL PLAN
SCALE: 1"=20'"

EXISTING SITE/SYMBOLS LEGEND

- ACCESS HATCH
- STORM DRAIN MANHOLE
- SANITARY MANHOLE
- CATCH BASIN
- JUNCTION BOX
- PIPE RISER
- YARD INLET
- DROP INLET
- CLEANOUT
- YARD HYDRANT
- LIGHT POLE
- POWER POLE
- BURIED ELECTRICAL
- ELECTRICAL
- ELECTRIC BOX/CONTROL BOX
- ELECTRIC METER
- WATER VALVE
- SPIGOT
- TEMPORARY SURVEY CONTROL POINT
- SIGN

PROPOSED SITE PLAN LEGEND

- PROPERTY LINE
- PROPOSED WALL
- PROPOSED CONSTRUCTION
- PROPOSED CURB
- PROPOSED ASPHALT PAVEMENT
- PROPOSED ASPHALT MILL/OVERLAY
- EXISTING AREA TO BE RESTORED W/ SOD
- PROPOSED CONCRETE PAVEMENT
- PROPOSED RIP RAP
- DETECTABLE WARNING
- PROPOSED PARKING COUNT
- ACCESSIBLE PARKING
- FLOODWAY
- 100 YEAR FLOOD (EXISTING)
- 500 YEAR FLOOD (EXISTING)
- 100 YEAR FLOOD (PROPOSED)
- 500 YEAR FLOOD (PROPOSED)
- PROPOSED ABOVEGROUND ELECTRICAL CONDUIT
- PROPOSED FENCE

GENERAL SITE PLAN NOTES:

1. ALL DIMENSIONS ARE THE THE EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
2. ALL RADII ARE 3 FOOT UNLESS NOTED OTHERWISE.
3. SEE STRUCTURAL PLANS FOR MORE DETAILED INFORMATION RELATED TO RETAINING WALLS, WALL WITH HANDRAILS AND STAIRS SHOWN ON THIS PLAN.
4. ALL DISTURBED AREAS NOT SHOWN AS PAVEMENT, LANDSCAPING, OR OTHER IMPROVEMENTS SHALL BE GRASSED. ALL DISTURBED AREAS SHALL BE GRASSED, FERTILIZED, MULCHED AND MAINTAINED UNTIL A PERMANENT VEGETATIVE COVER IS ESTABLISHED. NEW SOD SHALL MATCH THE SURROUNDING EXISTING SOD.
5. THE COLOR AND SIZE OF ALL PAVEMENT MARKINGS SHALL SHALL BE IN ACCORDANCE WITH GDOT STANDARDS, UNLESS NOTED OTHERWISE.
6. CAUTION SHOULD BE EXERCISED IN THE INSTALLATION OF POST MOUNTED SIGNS IN ORDER TO PREVENT POSSIBLE DAMAGE TO BURIED UTILITIES. GROUND PENETRATING RADAR (GPR) IS ACCEPTABLE AND RECOMMENDED.
7. EXISTING ASPHALT WHERE INDICATED TO BE MILLED WILL BE MILLED WITH A VARIABLE DEPTH OF 1.5" TO 2.5" AND OVERLAID WITH THE SAME ASPHALT MATERIAL AND THICKNESS REMOVED.
8. ALL ELECTRICAL CONDUITS, STAIRS AND BUILDINGS ARE SHOWN FOR REFERENCE ONLY. SEE SHEETS C-20 TO C-26 FOR MORE INFORMATION.

0 20 40 60
SCALE: 1" = 20'

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
Atlanta Ga 30328
P: 770-933-0280

HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF003902 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No. 3	10/30/20

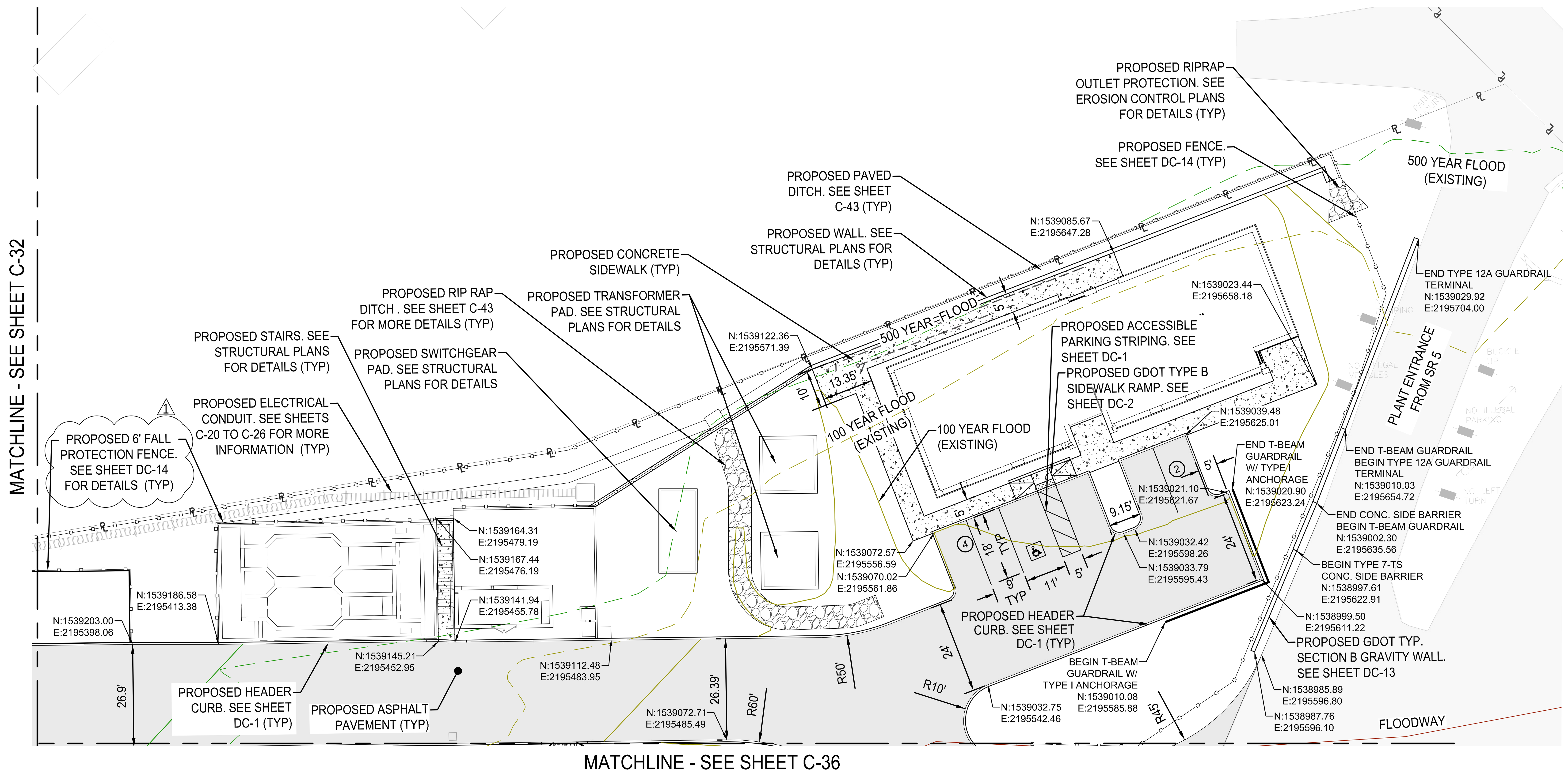
PROJ. NO.: 100061831
DESIGNED BY: JMR
DRAWN BY: JWS
CHECKED BY: RM
APPROVED BY: GNK
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PROPOSED CIVIL SITE PARTIAL PLAN

SHEET NO.
C-32

File Name: C:\PW_WORK\ATKNAGA01\SIM08864\DMS35899\0200 - C-30, 31, 32, 33, 34, 35, 36.DWG|Tab:C-32|Plotted: October 29, 2020 1:47pm



PROPOSED CIVIL SITE PARTIAL PLAN

SCALE: 1"=20'

EXISTING SITE/SYMBOLS LEGEND

- ACCESS HATCH
- STORM DRAIN MANHOLE
- SANITARY MANHOLE
- CATCH BASIN
- JUNCTION BOX
- PIPE RISER
- YARD INLET
- DROP INLET
- CLEANOUT
- YARD HYDRANT
- LIGHT POLE
- POWER POLE
- BURIED ELECTRICAL
- ELECTRICAL
- ELECTRIC BOX/CONTROL BOX
- ELECTRIC METER
- WATER VALVE
- SPIGOT
- TEMPORARY SURVEY CONTROL POINT
- SIGN

PROPOSED SITE PLAN LEGEND

- PROPERTY LINE
- PROPOSED WALL
- PROPOSED CONSTRUCTION
- PROPOSED CURB
- PROPOSED ASPHALT PAVEMENT
- PROPOSED ASPHALT MILL/OVERLAY
- EXISTING AREA TO BE RESTORED W/ SOD
- PROPOSED CONCRETE PAVEMENT
- PROPOSED RIP RAP
- DETECTABLE WARNING
- PROPOSED PARKING COUNT
- ACCESSIBLE PARKING
- FLOODWAY
- 100 YEAR FLOOD (EXISTING)
- 500 YEAR FLOOD (EXISTING)
- 100 YEAR FLOOD (PROPOSED)
- 500 YEAR FLOOD (PROPOSED)
- PROPOSED ABOVEGROUND ELECTRICAL CONDUIT
- PROPOSED FENCE

GENERAL SITE PLAN NOTES:

1. ALL DIMENSIONS ARE THE THE EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.
2. ALL RADII ARE 3 FOOT UNLESS NOTED OTHERWISE.
3. SEE STRUCTURAL PLANS FOR MORE DETAILED INFORMATION RELATED TO RETAINING WALLS, WALL WITH HANDRAILS AND STAIRS SHOWN ON THIS PLAN.
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8. ALL ELECTRICAL CONDUITS, STAIRS AND BUILDINGS ARE SHOWN FOR REFERENCE ONLY. SEE SHEETS C-20 TO C-26 FOR MORE INFORMATION.

0 20 40 60

SCALE: 1" = 20'

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF000932 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No. 3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: JMR
DRAWN BY: JWS
CHECKED BY: RM
APPROVED BY: GNK
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PROPOSED CIVIL SITE PARTIAL PLAN

SHEET NO.
C-33

File Name: C:\PW_WORK\ATKNAGA01\SIM08864\DMS35899\0200 – C-30, 31, 32, 33, 34, 35, 36.DWG|Tab: C-33|Plotted: October 29, 2020 1:47pm

STRUCTURAL NOTES

STEEL JOISTS:

SJ.1 PROVIDE JOISTS DESIGNED IN CONFORMANCE WITH THE STEEL JOIST INSTITUTE. JOISTS SHALL BE LABELED "APPROVED BY THE STEEL JOIST INSTITUTE".

SJ.2 PROVIDE MINIMUM JOIST BEARING OF 4" ON MASONRY AND 3" ON STEEL BEAMS. JOIST BEARING TO PROJECT 1" MINIMUM BEYOND THE SUPPORTING STEEL BEAM WEB UNLESS OTHERWISE INDICATED.

SJ.3 WELD JOIST END BEARINGS TO STEEL BEAMS. BOLT JOIST ENDS TO COLUMNS AT TOP AND BOTTOM CHORDS.

SJ.4 PROVIDE JOIST END ANCHORS WHEN BEARING ON MASONRY WALLS.

SJ.5 PROVIDE JOIST BRIDGING OF SIZE AND SPACING IN CONFORMANCE WITH THE STEEL JOIST INSTITUTE UNLESS OTHERWISE INDICATED.

SJ.6 ANCHOR END JOISTS TO WALLS OR BEAMS AT TOP AND BOTTOM CHORDS WITH LATERAL ANCHORS AT ENDS OF BRIDGING LINES.

SJ.7 PROVIDE BOTTOM CHORD CEILING EXTENSIONS WHEN AND FOR JOIST BOLTED TO COLUMNS.

SJ.8 JOIST SHALL BE DESIGNED TO RESIST A 1.5 KIP VERTICAL DEAD LOAD AT EACH PANEL POINT ALONG SPAN LENGTH. OTHER LOADS AS NOTED ON DRAWINGS SHALL BE INCORPORATED IN DESIGN.

ALUMINUM:

A.1 STRUCTURAL ALUMINUM TO CONFORM TO ALLOY 6061-T6. DETAIL AND FABRICATE IN CONFORMANCE WITH THE LATEST ASCE SPECIFICATIONS FOR STRUCTURES OF ALUMINUM.

A.2 FIELD WELDING OF STRUCTURAL MEMBERS IS NOT PERMITTED UNLESS SPECIFICALLY INDICATED.

A.3 SHOP CONNECTIONS MAY BE BOLTED OR WELDED UNLESS THE CONNECTION METHOD IS INDICATED.

A.4 SIMPLY SUPPORTED BEAM-TO-COLUMN AND BEAM-TO-BEAM CONNECTIONS SHALL BE MADE WITH DOUBLE ANGLES IN CONFORMANCE WITH THE AISC MANUAL UNLESS OTHERWISE INDICATED.

A.5 DETAIL BRACING MEMBERS TO AVOID ECCENTRIC CONNECTIONS AND FOR DRAWING THE BRACING MEMBERS TOGETHER.

A.6 PROVIDE TEMPORARY BRACING AND STAYS DURING STEEL ERECTION TO RESIST VERTICAL AND LATERAL LOADS UNTIL MEMBERS ARE PERMANENTLY FASTENED AND FLOORS AND ROOF'S COMPLETED.

A.7 PAINT ALUMINUM IN CONTACT WITH CONCRETE WITH ASPHALTIC PAINT IN CONFORMANCE WITH THE SPECIFICATIONS.

A.8 PROVIDE DISSIMILAR METAL PROTECTION AT BOLT LOCATIONS AND OTHER LOCATIONS WHERE DISSIMILAR METALS ARE IN CONTACT. PROTECT WITH A MINIMUM 4-MIL DRY THICKNESS COAT OF ZINC CHROMATE PRIMER ON THE ALUMINUM SURFACES AND A MINIMUM 2-MIL DRY THICKNESS COAT OF ALL-METAL PRIMER FOLLOWED BY ONE COAT OF MINIMUM 3-MIL DRY THICKNESS ALUMINUM PAINT TO THE DISSIMILAR METAL.

METAL DECK:

MD.1 PROVIDE HOT-DIP GALVANIZED METAL DECK AS INDICATED OR SPECIFIED.

MD.2 DO NOT EXCEED A FIBER STRESS IN BENDING OF 20,000 POUNDS PER SQUARE INCH UNDER DEAD AND LIVE LOADINGS.

MD.3 USE WELDING WASHERS AT ALL WELDMENTS.

MD.4 WELD DECK AT ALL SUPPORTS WITH 3/4-INCH DIAMETER PUDDLE WELDS, SPACED NOT MORE THAT 6-INCH CENTERS, OR A MINIMUM OF THREE WELDS PER WIDTH OF UNIT. PENETRATE ALL LAYERS OF DECK MATERIAL WITH WELD MATERIAL AT END LAPS.

MD.5 #12 TEK SCREWS AT SIDE LAPS OF ADJACENT UNITS BETWEEN SUPPORTS AT INTERVALS NOT MORE THAN 24-INCH CENTERS UNLESS NOTED OTHERWISE. 3

MD.6 MAKE ADDITIONAL WELDMENTS AS INDICATED OR SPECIFIED, OR AS INDICATED ON ENGINEER APPROVED MANUFACTURER'S SHOP DRAWINGS.

CODES:

1. "INTERNATIONAL BUILDING CODE" (IBC) 2018
2. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), "STEEL CONSTRUCTION MANUAL" FIFTEENTH EDITION
3. AMERICAN CONCRETE INSTITUTE (ACI-318-14) "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE."
4. AMERICAN CONCRETE INSTITUTE (ACI-350-06) "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES."
5.
6. AMERICAN CONCRETE INSTITUTE (TMS 402-13/ACI530-13/ASCE 5-13) "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES."
7. AMERICAN SOCIETY OF CIVIL ENGINEERING, (ASCE 7-16) "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES."

DESIGN LOADS:

1.	ROOF	50 PSF
2.	STORAGE AREAS	250 PSF
3.	ELECTRICAL EQUIPMENT ROOMS	250 PSF*
4.	MECHANICAL AND PROCESS EQUIPMENT ROOMS	300 PSF
5.	GENERAL PURPOSE AREAS	150 PSF
6.	STAIRS AND WALKWAY	150 PSF
7.	TRUCK LOADINGS HS20-44 AASHTO	

*OR ACTUAL EQUIPMENT WEIGHT PLUS 50 PSF IF GREATER

SEISMIC LOADS:

1.	OCCUPANCY CATEGORY	III
2.	IMPORTANT FACTOR	1.25
3.	SITE CLASS	D
4.	MAPPED SPECTRAL ACCELERATION PARAMETERS	S_S=0.263 S_1=0.095

WIND LOADS:

1.	BASIC WIND SPEED	112 MPH
2.	OCCUPANCY CATEGORY	III
3.	IMPORTANT FACTOR	1.0
4.	EXPOSURE CATEGORY	B

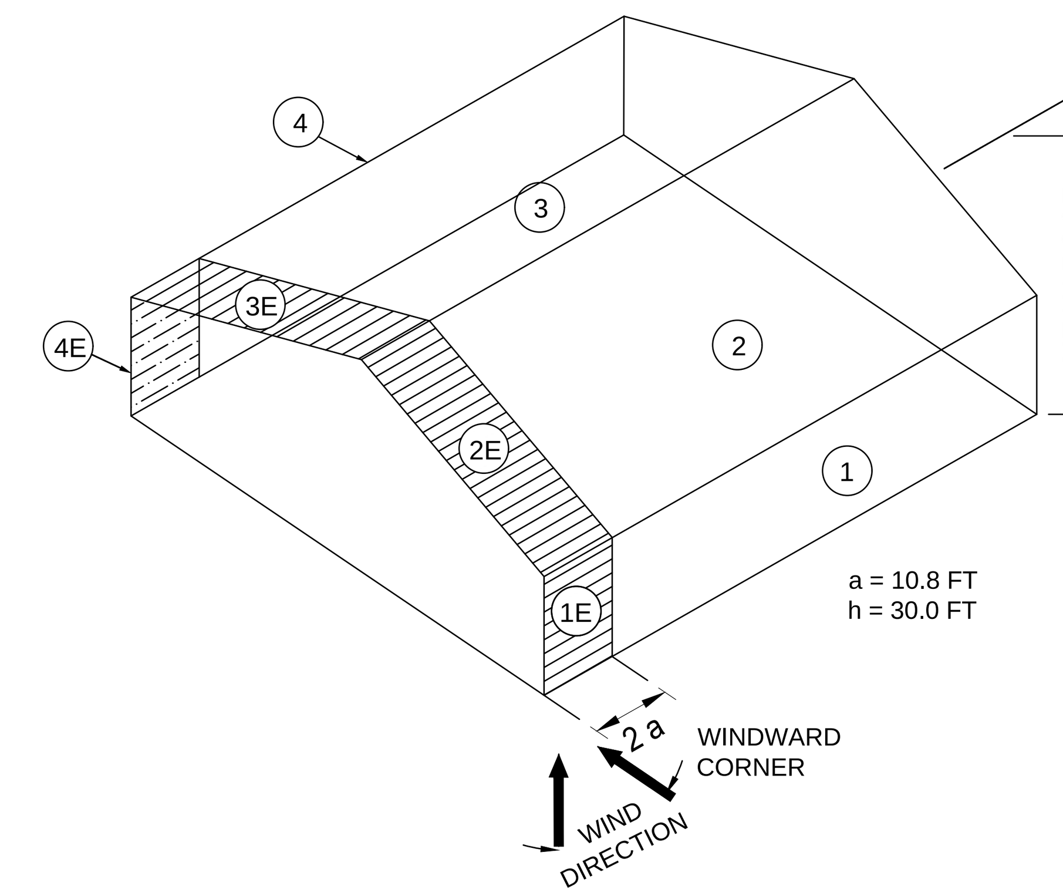
SNOW LOADS:

1.	GROUND SNOW LOAD	5 PSF
2.	IMPORTANT FACTOR	1.1
3.	OCCPANCY CATEGORY	III

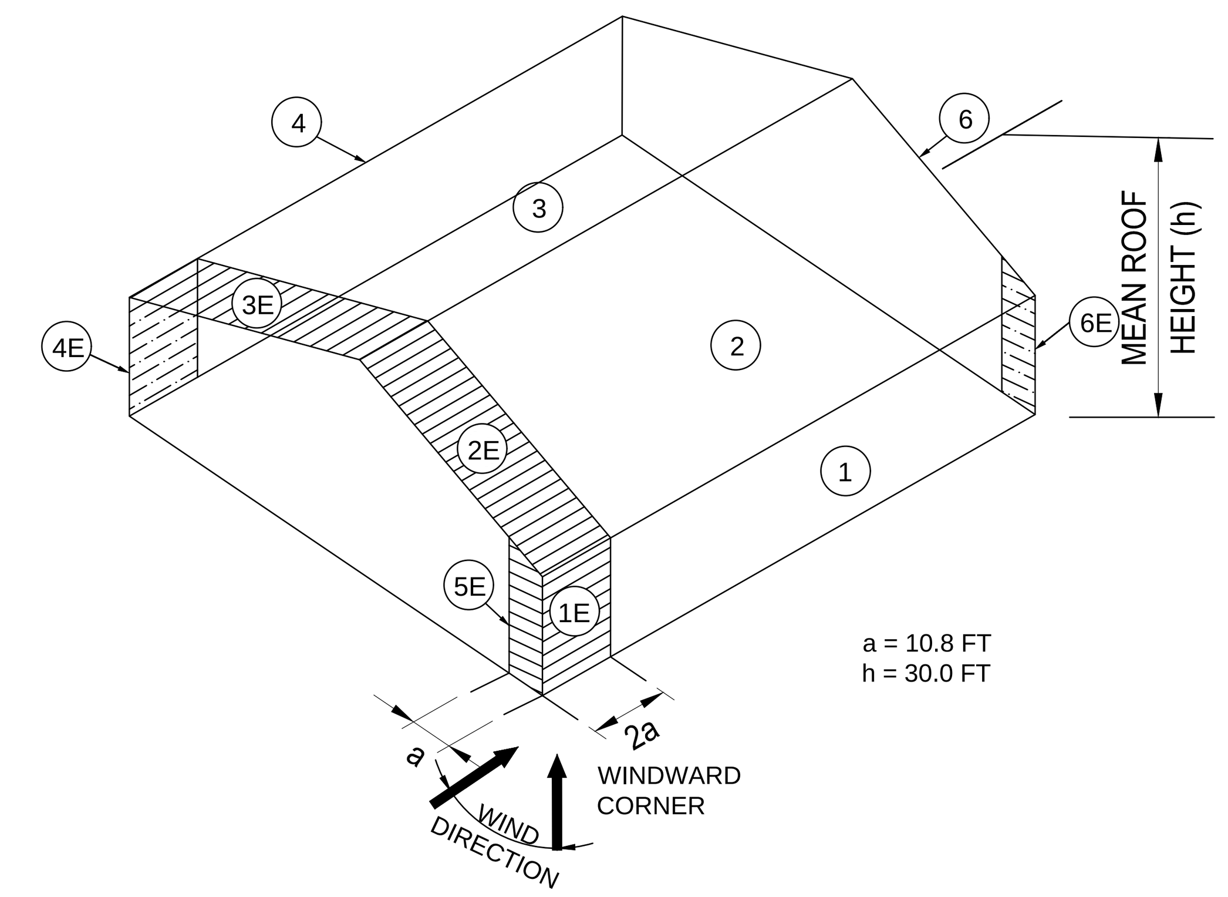
3

BUILDING WIND PRESSURE SUMMARY (AS PER ASCE 7-16)

BUILDING	RISK CATEGORY	EXPOSURE CATEGORY	ULTIMATE WIND SPEED	MEAN HEIGHT	SURFACE	CASE A		CASE B	
						WINDWARD (PSF)	LEEWARD (PSF)	WINDWARD (PSF)	LEEWARD (PSF)
SOLIDS CONTROL BUILDING	III	B	145 MPH	30 FT	1	18.0	6.8	-8.4	-19.5
					2	-15.8	-27.0	-15.8	-27.0
					3	-5.9	-17.1	-5.9	-17.1
					4	-3.4	-14.6	-8.4	-19.5
					5	-	-	18.0	6.8
					6	-	-	-3.4	-14.6
					1E	24.5	13.3	-9.3	-20.5
					2E	-27.6	-38.8	-27.6	-38.8
					3E	-10.9	-22.0	-10.9	-22.0
					4E	-7.8	-18.9	-9.3	-20.5
					5E	-	-	24.5	13.3
					6E	-	-	-7.8	-18.9



1 WIND ZONES LOAD CASE A



2 WIND ZONES LOAD CASE B

GEORGIA REGISTERED No. PE27030 PROFESSIONAL ENGINEER

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
Atlanta,Ga 30328
P: 770-933-0280

HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF003002 EXPIRATION DATE 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
3	ADDENDUM No.3	10/30/20

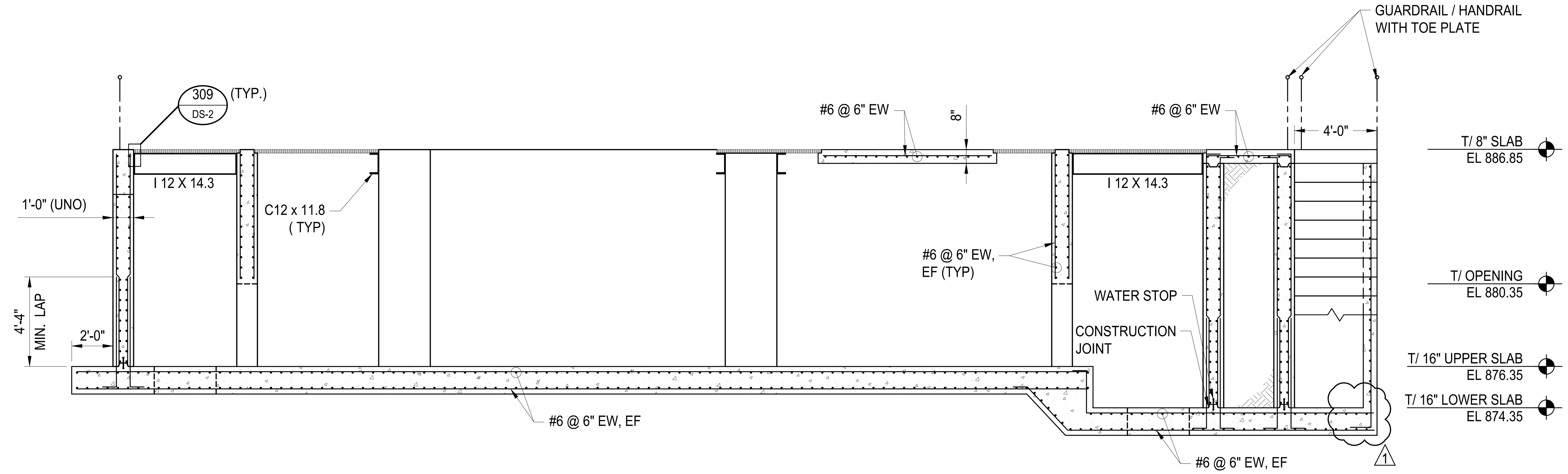
PROJ. NO.: 100061831
DESIGNED BY: DLC
DRAWN BY: -
CHECKED BY: DMM/JLS
APPROVED BY: HC
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

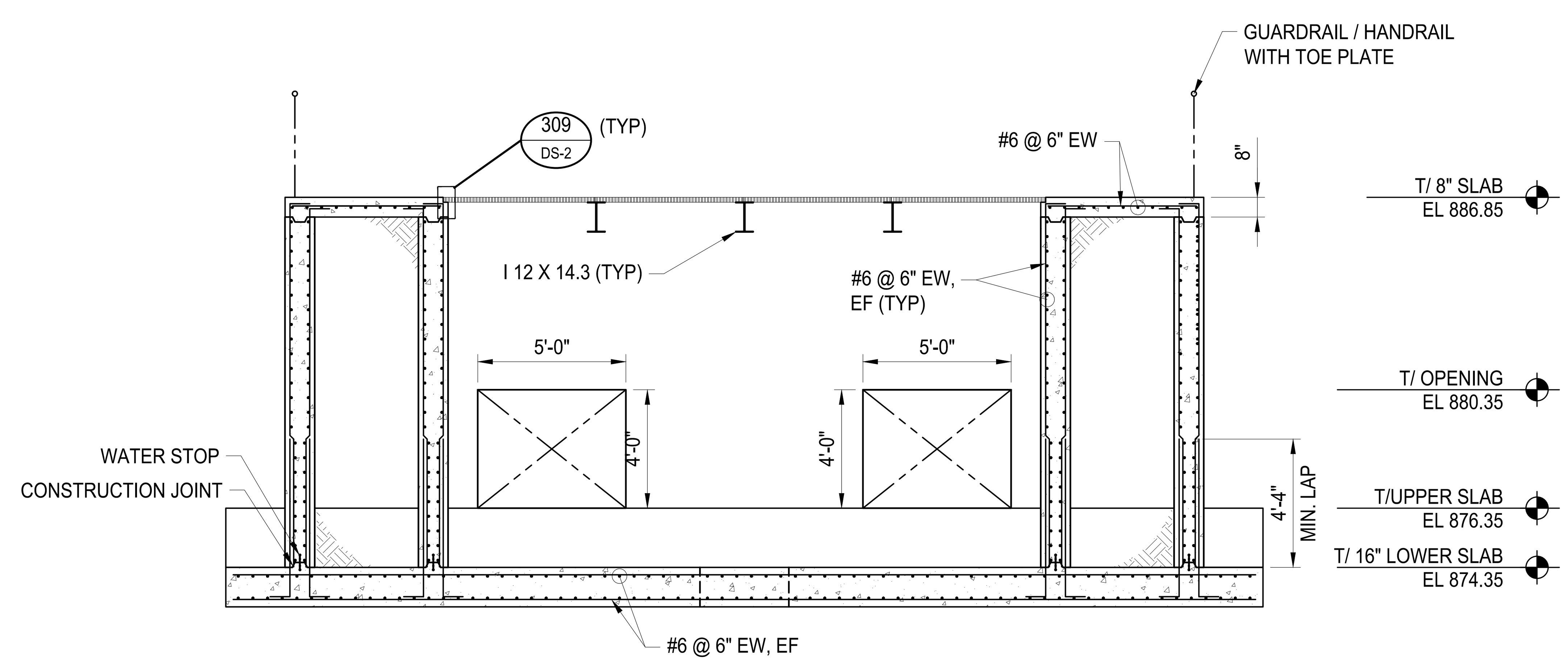
STRUCTURAL NOTES II

SHEET NO.
S-2

File Name: C:\PW_WORK\ATKNAGA01\STEW2100\DMS35902\0500.02 -- S-2.DWG|Tab:S-2|Plotted: October 30, 2020 2:44pm



SECTION (A / 4-S-1)
SCALE :



SECTION (B / 4-S-1)
SCALE :

GEORGIA REGISTERED No. PE27030 PROFESSIONAL ENGINEER

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
Atlanta,Ga 30328
P: 770-933-0280

HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF000902 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: DLC
DRAWN BY: -
CHECKED BY: DMM/JLS
APPROVED BY: HC
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

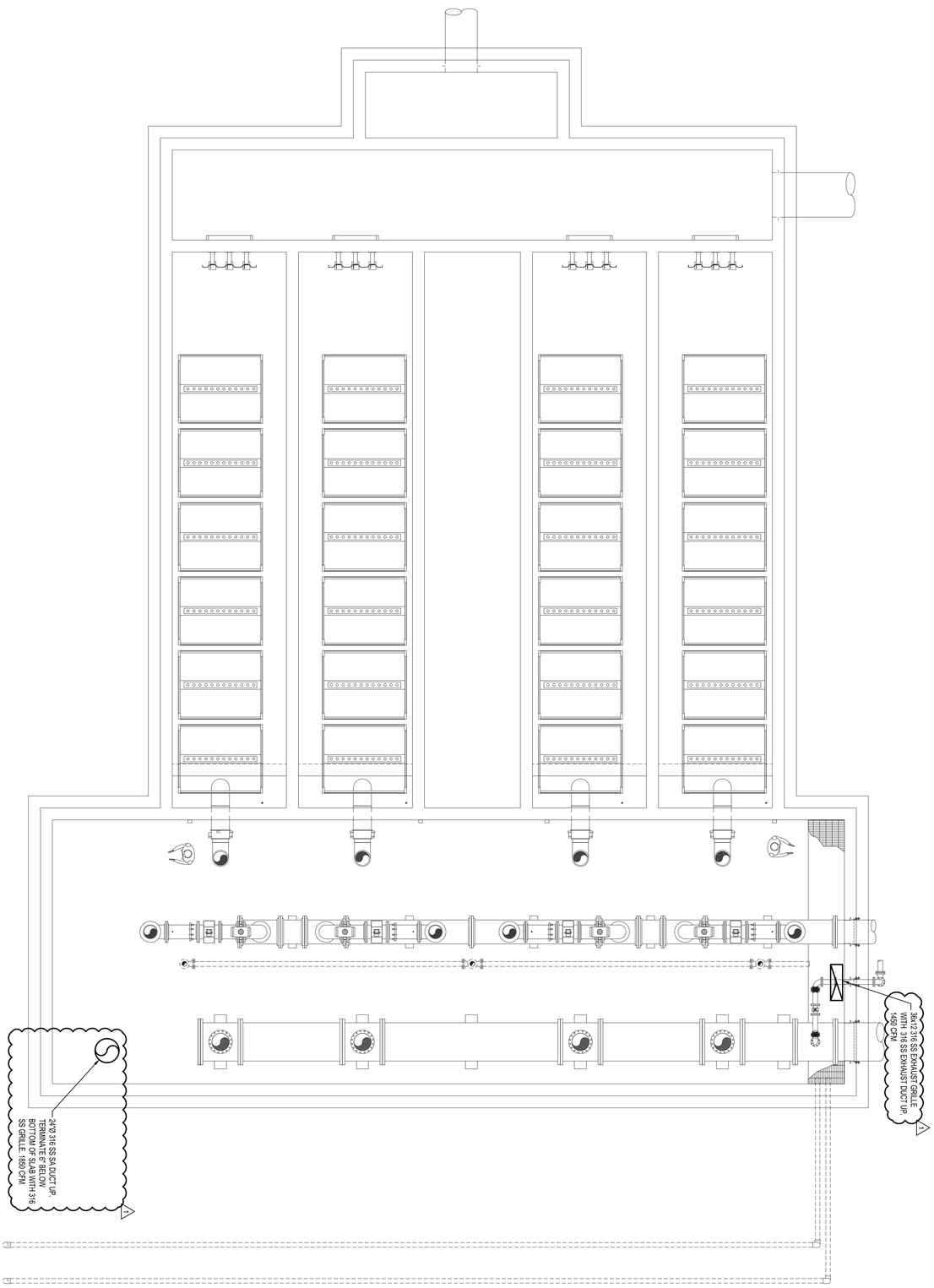
FINE SCREENINGS FACILITY PLAN
SECTIONS

SHEET NO.
4-S-3

File Name: C:\PW_WORK\ATKNAGA01\STEW2100\DMS35902\0504.03 - 04-S-3.DWG|Tab: 4-S-3|Plotted: October 30, 2020 2:44pm

LOWER HVAC PLAN

SCALE: 3/16"=1'-0"



CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

MEMBRANE FACILITY
LOWER HVAC PLAN

SHEET NO. 7-H-2

PROJ. NO.:	100061831
DESIGNED BY:	DLG
DRAWN BY:	JN
CHECKED BY:	---
APPROVED BY:	---
DATE:	SEPTEMBER 2020
SCALE:	AS SHOWN

CERTIFICATE OF AUTHORIZATION # PEF000902 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No. 3	10/30/2020

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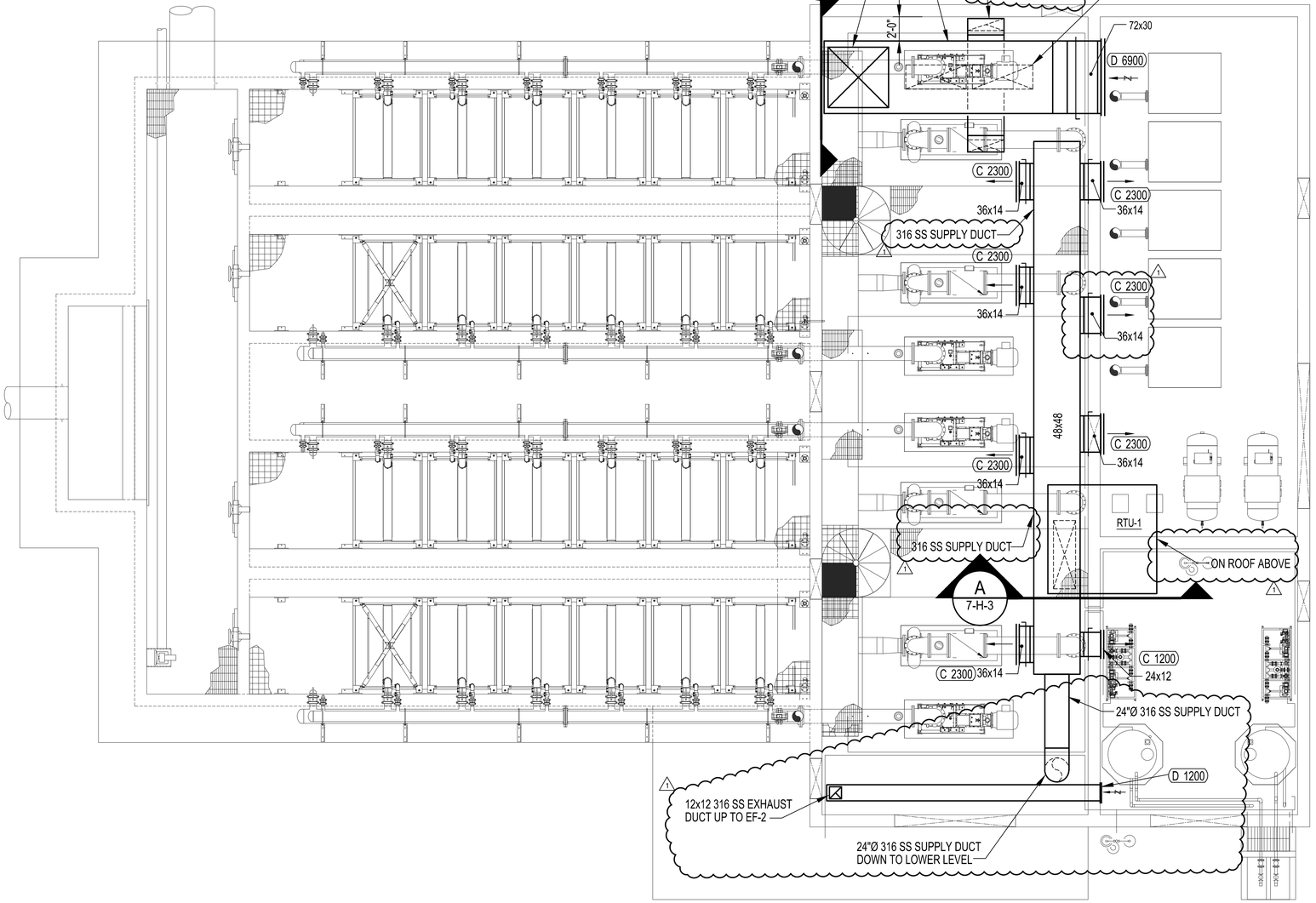
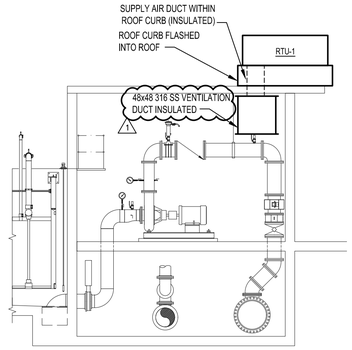
HARTWELL ENGINEERING, INC.
ENGINEERS ● INTEGRATORS
198 LOG CANOE CIRCLE
STEVENSVILLE, MARYLAND
(443) 249-3111

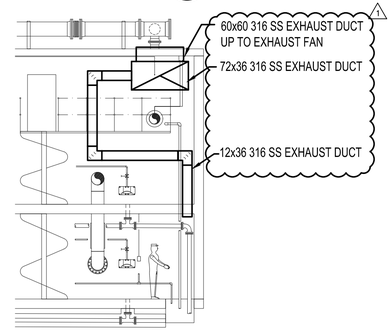
GEORGIA



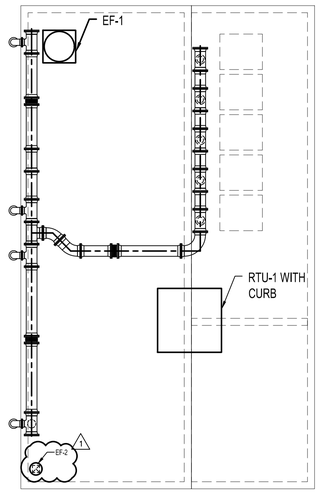
UPPER HVAC PLAN
SCALE: 3/16"=1'-0"



SECTION
SCALE: 1/8"=1'-0"
A
7-H-3



SECTION
SCALE: 1/8"=1'-0"
B
7-H-3



ROOF PLAN AT MBR GALLERY
SCALE: 3/32"=1'-0"

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 27595
10/30/2020

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
Atlanta, Ga 30328
P: 770-933-0280

HARTWELL ENGINEERING, INC.
ENGINEERS ● INTEGRATORS
195 LOG CANOE CIRCLE
STEVENSVILLE, MD 21666
(443) 249-3111

CERTIFICATE OF AUTHORIZATION # PEF000992 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.		
	REVISION	DATE
1	ADDENDUM No. 3	10/30/2020

PROJ. NO.: 100061831	
DESIGNED BY:	DLH
DRAWN BY:	REP
CHECKED BY:	---
APPROVED BY:	---
DATE:	SEPTEMBER 2020
SCALE:	AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

MEMBRANE FACILITY
UPPER HVAC PLAN

SHEET NO.
7-H-3

File Name: C:\PW_WORK\ATKNAGA01\PATR3381\DMS35906\07-H-3.DWG Tab: 7-H-3 Plotted: October 30, 2020 10:59am

GAS FIRED MAKE-UP AIR UNIT SCHEDULE

MARK	SERVICE	TOTAL AIR (CFM)	OUTSIDE AIR (CFM)	FAN DATA				INDIRECT GAS FIRED CAPACITY				ELECTRICAL DATA			BASIC OF DESIGN MFR./MODEL NO.
				ESP (IN WG)	TSP (IN WG)	BHP	MOTOR HP	INPUT (MBH)	OUTPUT (MBH)	EAT (°F)	LAT (°F)	VOLTAGE	MCA	MOP	
RTU-1	MBR BUILDING	19,500	19,500	1.25	2.0	20	25	1062	850	20	55	460	34	40	REZNOR HPCDH-85

NOTES

1. MERV 8 AND MERV 13 FILTERS.
2. INLET LOUVER.
3. MOTORIZED INLET DAMPER.

FAN SCHEDULE

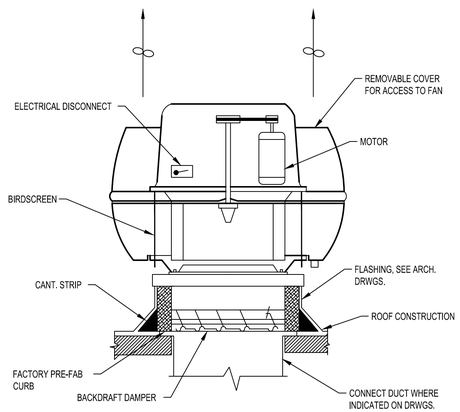
MARK	LOCATION	AREA SERVED	MODEL	DRIVE TYPE	CFM	TOTAL EXTERNAL SP	FAN RPM	BHP	HP	V/C/P	SONES (INLET)	NOTES
EF-1	Canton GA	MDR Building	RBK-36	Belt	17,975	1.250	1,000		15	460/60/3		1,2,3,4,5,7
EF-2	Canton GA	MDR Building	RBK-15	Belt	1,200	0.75	1300		0.5	120/60/1		1,3,4,5,7

NOTES

1. VIBRATION ISOLATION.
2. SOLID STATE SPEED CONTROL, FACTORY MOUNTED.
3. ROOF CURB, 12 INCH, INSULATED, SLOPED TO MATCH ROOF SLOPE.
4. DISCONNECT SWITCH, FACTORY MOUNTED.
5. BIRDSCREEN.
6. BACKDRAFT DAMPER, GRAVITY OPERATED.
7. BACKDRAFT DAMPER, MOTORIZED.

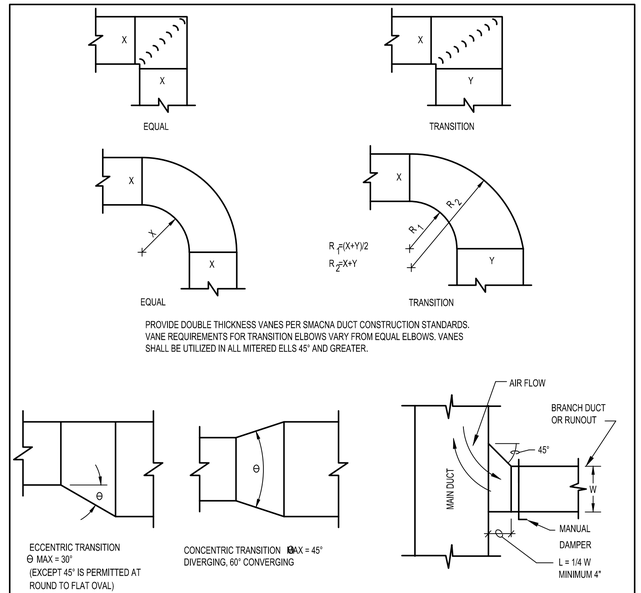
AIR DISTRIBUTION SCHEDULE

MARK	CFM	NECK SIZE	DESCRIPTION
C	AS INDICATED ON PLANS	AS INDICATED ON PLANS	SUPPLY SIDEWALL DIFFUSER BASIS OF DESIGN: TITUS 271FL COLOR: WHITE MATERIAL: 316 SS OPPOSED BLADE DAMPERS: NO SINGLE DEFLECTION 3/4" SPACING
D	AS INDICATED ON PLANS	AS INDICATED ON PLANS	RETURN/EXHAUST SIDEWALL GRILLE BASIS OF DESIGN: TITUS 56FL COLOR: WHITE MATERIAL: 316 SS OPPOSED BLADE DAMPERS: NO 0° FIXED DEFLECTION 3/4" SPACING



ROOF UPBLAST EXHAUST FAN
No Scale

1



LOW VELOCITY BRANCH DUCT, ELBOWS & TRANSITIONS
No Scale

2

GEORGIA REGISTERED No. 27588 PROFESSIONAL ENGINEER
10/30/2020

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
Atlanta, Ga 30328
P: 770-933-0280

HARTWELL ENGINEERING, INC.
ENGINEERS ● INTEGRATORS
195 LOG CANOE CIRCLE
STEVENSVILLE, MD 21666
(443) 249-3111

CERTIFICATE OF AUTHORIZATION # PEF003992 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	DATE	REVISION
1	10/30/2020	ADDENDUM No. 3

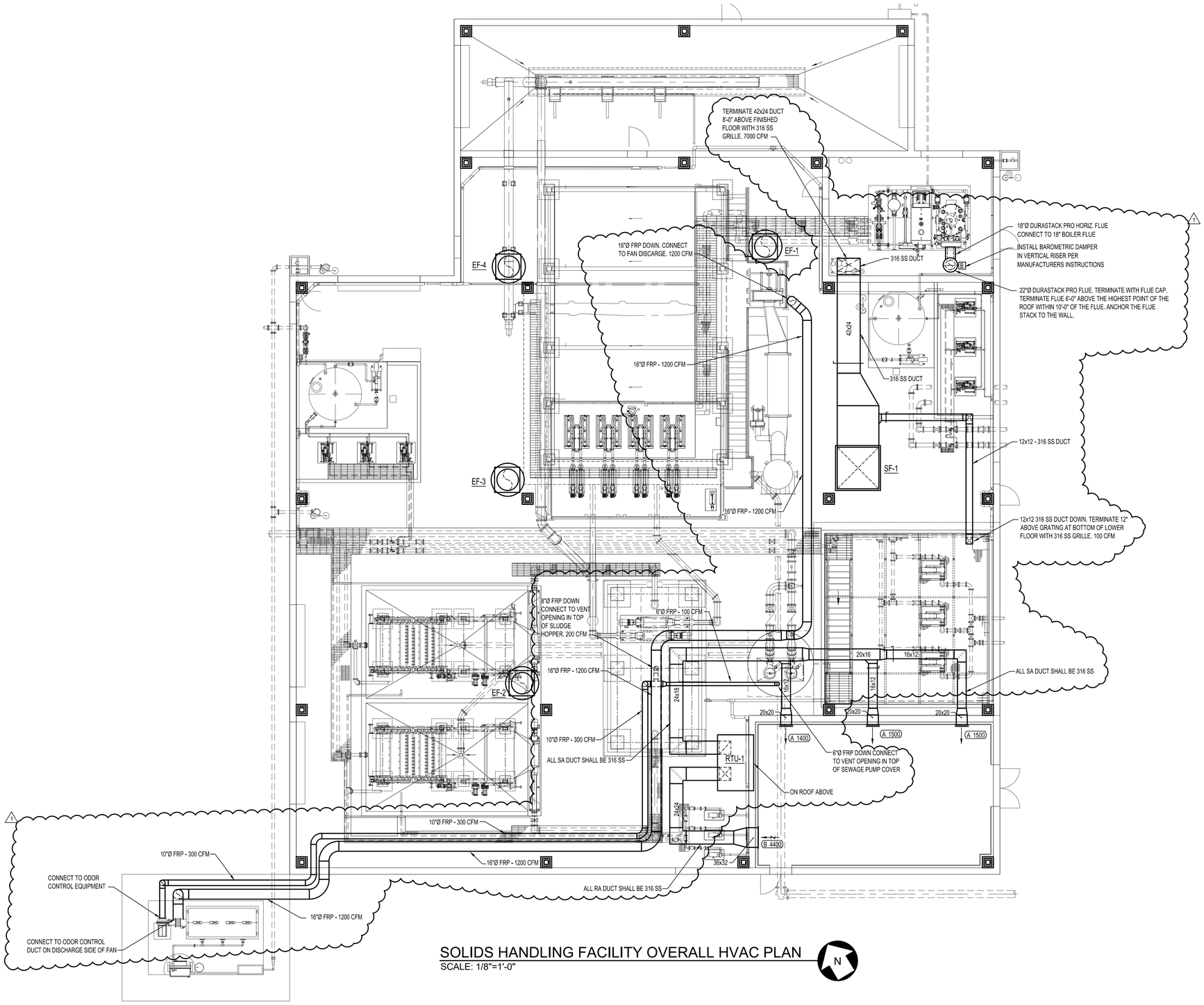
PROJ. NO.: 100061831
DESIGNED BY: DLH
DRAWN BY: REP
CHECKED BY: ---
APPROVED BY: ---
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

HVAC DETAILS AND SCHEDULES

SHEET NO.
7-H-4

File Name: C:\PW_WORK\ATKNAGA01\PATR3381\DMS35906\07-H-4.DWG|Tab:7-H-4|Plotted: October 30, 2020 11:00am



SOLIDS HANDLING FACILITY OVERALL HVAC PLAN

SCALE: 1/8"=1'-0"

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 27598 THOMAS J. PARKER
10/30/2020

ATKINS
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P: 770-933-0280

HARTWELL ENGINEERING, INC.
ENGINEERS ● INTEGRATORS
195 LOG CANOE CIRCLE
STEVENSVILLE, MARYLAND
(443) 249-3111

CERTIFICATE OF AUTHORIZATION # PEF000902 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
1	ADDENDUM No. 3	10/30/2020

PROJ. NO.: 100061831
DESIGNED BY: DLH
DRAWN BY: REP
CHECKED BY: ---
APPROVED BY: ---
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

SOLIDS HANDLING FACILITY OVERALL HVAC PLAN

SHEET NO.
15-H-2

File Name: C:\PW_WORK\ATRNAGA01\PATR3381\DMS359061\15-H-2 SOLID HANDLING FACILITY OVERALL HVAC PLAN.DWG|Tab:15-H-2|Plotted: October 30, 2020 11:02am

FAN SCHEDULE

TAG	LOCATION	AREA SERVED	MODEL	DRIVE TYPE	CFM	TOTAL EXTERNAL SP	FAN RPM	BHP	HP	V/C/P	SONES (INLET)	NOTES
EF-1	Canton GA	Solids Building	MK Plastics Model RBK-30	Belt	9,000	0.750	900	3.89	5	460/60/3	19.3	1, 3, 4, 5, 6, 8
EF-2	Canton GA	Solids Building	MK Plastics Model RBK-30	Belt	9,000	0.750	900	3.89	5	460/60/3	19.3	1, 3, 4, 5, 6, 8
EF-3	Canton GA	Solids Building	MK Plastics Model RBK-30	Belt	9,000	0.750	900	3.89	5	460/60/3	19.3	1, 3, 4, 5, 6, 8
EF-4	Canton GA	Solids Building	MK Plastics Model RBK-30	Belt	9,000	0.750	900	3.89	5	460/60/3	19.3	1, 3, 4, 5, 6, 8
SF-1	Canton GA	Solids Building	Greenheck Model LSF-24	Belt	8,000	1.600	946	3.05	5	460/60/3	21	1, 2, 3, 4, 5, 7

NOTES
1. VIBRATION ISOLATION .
2. SOLID STATE SPEED CONTROL, FACTORY MOUNTED.
3. ROOF CURB, 12 INCH, INSULATED, SLOPED TO MATCH ROOF SLOPE.
4. DISCONNECT SWITCH, FACTORY MOUNTED.
5. BIRDSCREEN.
6. BACKDRAFT DAMPER, GRAVITY OPERATED.
7. BACKDRAFT DAMPER, MOTORIZED.
8. SHIEVE FAN AND MOTOR AS REQUIRED TO ATTAIN OPERATING AIR VOLUME.

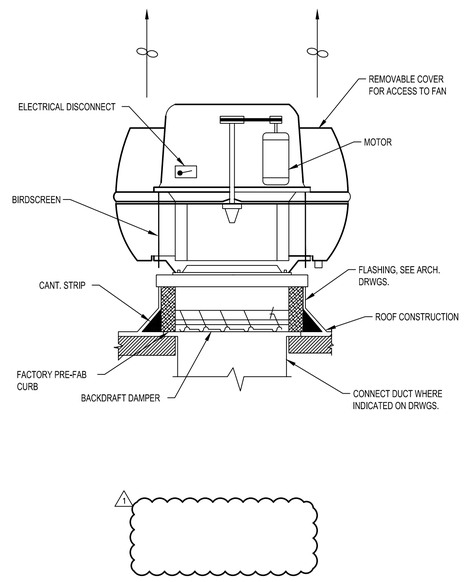
AIR DISTRIBUTION SCHEDULE

MARK	CFM	NECK SIZE	DESCRIPTION
C	AS INDICATED ON PLANS	AS INDICATED ON PLANS	SUPPLY SIDEWALL DIFFUSER BASIS OF DESIGN: TITUS 271FL COLOR: WHITE MATERIAL: 316 SS OPPOSED BLADE DAMPERS: NO SINGLE DEFLECTION 3/4" SPACING
D	AS INDICATED ON PLANS	AS INDICATED ON PLANS	RETURN/EXHAUST SIDEWALL GRILLE BASIS OF DESIGN: TITUS 56FL COLOR: WHITE MATERIAL: 316 SS OPPOSED BLADE DAMPERS: NO 0° FIXED DEFLECTION 3/4" SPACING

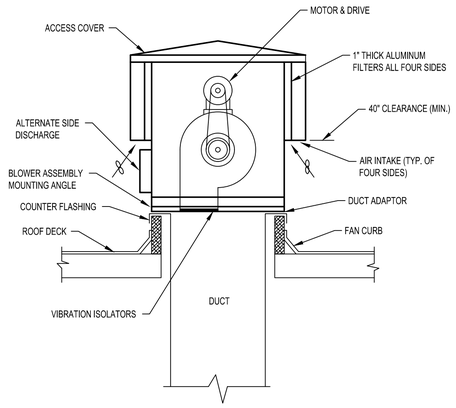
3-10 Ton R-410A PKGD Unitary Cooling Rooftop Schedule

Unit Tags	Quantity	Fan Performance		Cooling Coil Performance					Cooling Energy Efficiency		Electrical Data					
		CFM	ESP	Gross Cooling Capacity	EAT DB	EAT WB	LAT DB	LAT WB	EER	IEER	Voltage/ Phase	MCA	MOCP	Weight	Model Number	Notes
		cfm	in H2O	MBh	F	F	F	F				A	A	lb		
RTU-1	1	4400	1.5	99.84	76.3	59.4	57.13	51.7	12.4	14.7	480/3	22	25	1675	THC120F4*0***0A**1B000CA01000000000000	1, 2, 3, 4, 5, 6, 7, 8

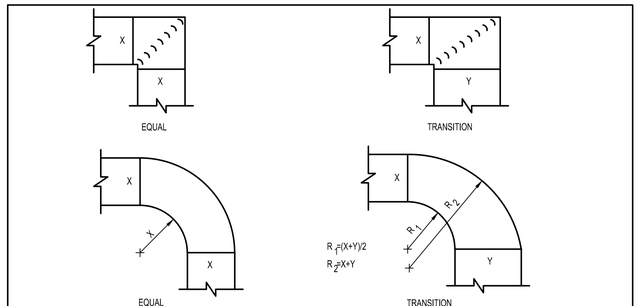
NOTES
1. UNIT TO BE TRANE PACKAGED ROOFTOP UNIT WITH MODEL, SIZE, AND CONFIGURATION AS INDICATED IN SCHEDULE AND ON DRAWINGS.
2. PROVIDE FACTORY-MOUNTED DDC UNIT CONTROLLER.
3. PROVIDE WITH ZONE TEMPERATURE SENSOR.
4. PROVIDE STAINLESS STEEL DRAIN PAN.
5. PROVIDE HAIL GUARDS.
6. PROVIDE FACTORY-INSTALLED DISCONNECT SWITCH, PHASE MONITOR, AND 120V SERVICE OUTLET.
7. PROVIDE RETURN AND SUPPLY AIR SMOKE DETECTORS.
8. PROVIDE WITH ROOF CURB.



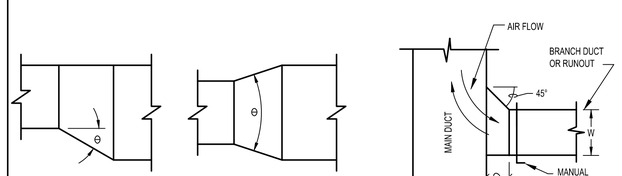
ROOF UPBLAST EXHAUST FAN
No Scale
1



ROOFTOP SUPPLY FAN
No Scale
2



PROVIDE DOUBLE THICKNESS VANES PER SMACNA DUCT CONSTRUCTION STANDARDS. VANE REQUIREMENTS FOR TRANSITION ELBOWS VARY FROM EQUAL ELBOWS. VANES SHALL BE UTILIZED IN ALL MITERED ELLS 45° AND GREATER.



LOW VELOCITY BRANCH DUCT, ELBOWS & TRANSITIONS
No Scale
3

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10/30/2020

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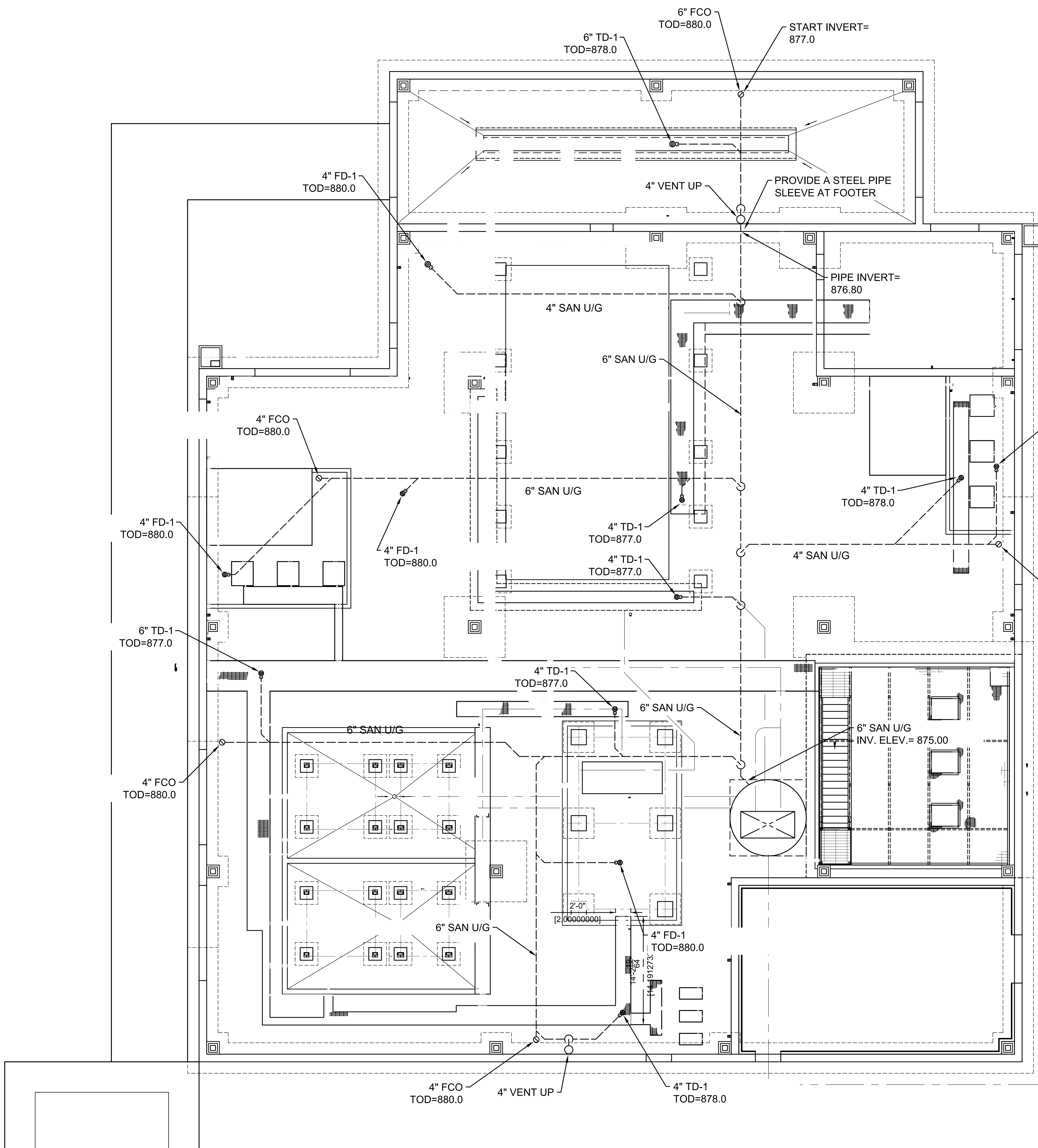
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

HVAC DETAILS AND SCHEDULES

SHEET NO.
15-H-3

File Name: C:\PW_WORK\ATKNAGA01\PATR3381\DM5359061\15-H-3 HVAC DETAILS AND SCHEDULES.DWG|Tab:15-H-3|Plotted: October 30, 2020 11:03am



SOLID HANDLING FACILITY OVERALL PLUMBING PLAN
SCALE: 1/8"=1'-0"

PLUMBING LEGEND

——W—— (dashed)	WASTE PIPING BELOW GRADE	ABV	ABOVE
——W——	WASTE PIPING ABOVE GRADE	AFF	ABOVE FINISHED FLOOR
——V——	VENT PIPING	BEL	BELOW
	PIPING TURNING DOWN	BFF	BELOW FINISHED FLOOR
	TEE - DOWN, BRANCH OUT OF BOTTOM	BFG	BELOW FINISHED GRADE
	PIPING TURNING UP	DN	DOWN
FD	FLOOR DRAIN AND TRAP (TYPE AS NOTED)	FCO	FLOOR CLEANOUT
		FD	FLOOR DRAIN
		FT	FEET
		IE	INVERT ELEVATION
		MIN.	MINIMUM
		SAN	SANITARY
		V	VENT
		VTR	VENT THRU ROOF

PLUMBING FIXTURE SCHEDULE

FD-1 FLOOR DRAIN (REGULAR)

GALVANIZED COATED CAST IRON BODY, MEMBRANE CLAMP AND ADJUSTABLE TYPE "B" NICKEL BRONZE STRAINER, 6" ROUND TOP, TAPPED FOR TRAP PRIMER CONNECTION.

ZURN - ZN-415-B-P-G

TD-1 TRENCH DRAIN

CAST IRON BODY, SEEPAGE PAN, MEMBRANE CLAMP AND FRAME FOR 9" ROUND HEAVY DUTY NICKEL BRONZE SLOTTED GRATE WITH SEDIMENT BUCKET

DRAIN - ZURN - ZN-508-Y

GENERAL NOTES

1. THE PLUMBING INSTALLATION SHALL COMPLY WITH THE GEORGIA PLUMBING CODE, 2018 EDITION.
2. REFERENCE THE SPECIFICATIONS FOR MATERIAL AND EQUIPMENT INSTALLATION STANDARDS.
3. PIPE ROUTING SHOWN IS SCHEMATIC AND IS NOT INTENDED TO INDICATE EXACT ROUTING. CONTRACTOR SHALL PROVIDE ADDITIONAL OFFSETS AND FITTINGS REQUIRED FOR PROPER INSTALLATION AND TO MAINTAIN CLEARANCES. VERIFY STRUCTURAL, MECHANICAL AND ELECTRICAL INSTALLATIONS AND OTHER POTENTIAL OBSTRUCTIONS AND ROUTE PIPING TO AVOID INTERFERENCES. NOTIFY THE CONTRACTING OFFICER'S REPRESENTATIVE OF ANY CONFLICTS PRIOR TO START OF WORK.
4. PROVIDE OFFSETS AND FITTINGS AND MAKE CONNECTION TO EXISTING PIPING.
5. CONCEAL PIPING ABOVE CEILINGS, WITHIN WALLS OR CHASES EXCEPT IN MECHANICAL ROOMS, CRAWL SPACE OR AS SPECIFICALLY NOTED.
6. SLEEVE AND/OR FIRESTOP PENETRATIONS THROUGH RATED WALLS, CEILINGS, AND FLOORS WITH U/L LISTED ASSEMBLIES. FIRESTOP ASSEMBLIES SHALL BE EQUAL TO, OR EXCEED THE RATING OF THE WALL, CEILING OR FLOOR. SEE ARCHITECTURAL DRAWINGS FOR FINAL FINISHES.
7. PROVIDE SANITARY WASTE, VENT, DOMESTIC WATER, ETC. ROUGH-IN AND MAKE FINAL CONNECTIONS (TO INCLUDE PROVIDING ALL NECESSARY RELATED STOPS, VALVES, TRAPS, ETC. AND MAKE READY FOR USE) TO EQUIPMENT, WHETHER FURNISHED BY THIS CONTRACTOR OR FURNISHED BY OTHERS.
8. SEE ARCHITECTURAL DRAWINGS FOR FIXTURE LOCATIONS AND MOUNTING HEIGHTS.
9. PROVIDE CLEANOUTS IN ACCORDANCE WITH THE GEORGIA PLUMBING CODE, 2018 EDITION. INSTALL CLEANOUT WITH COVER FLUSH TO FINISH SURFACE.

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10-30-20

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CERTIFICATE OF AUTHORIZATION # PEF000902 EXPIRATION DATE: 06/30/2022 ATKINS NORTH AMERICA INC.

	REVISION	DATE
3	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: JRM
DRAWN BY: DGT
CHECKED BY: DLH
APPROVED BY: ---
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

SOLID HANDLING FACILITY
OVERALL PLUMBING PLAN

SHEET NO.
15-P-1

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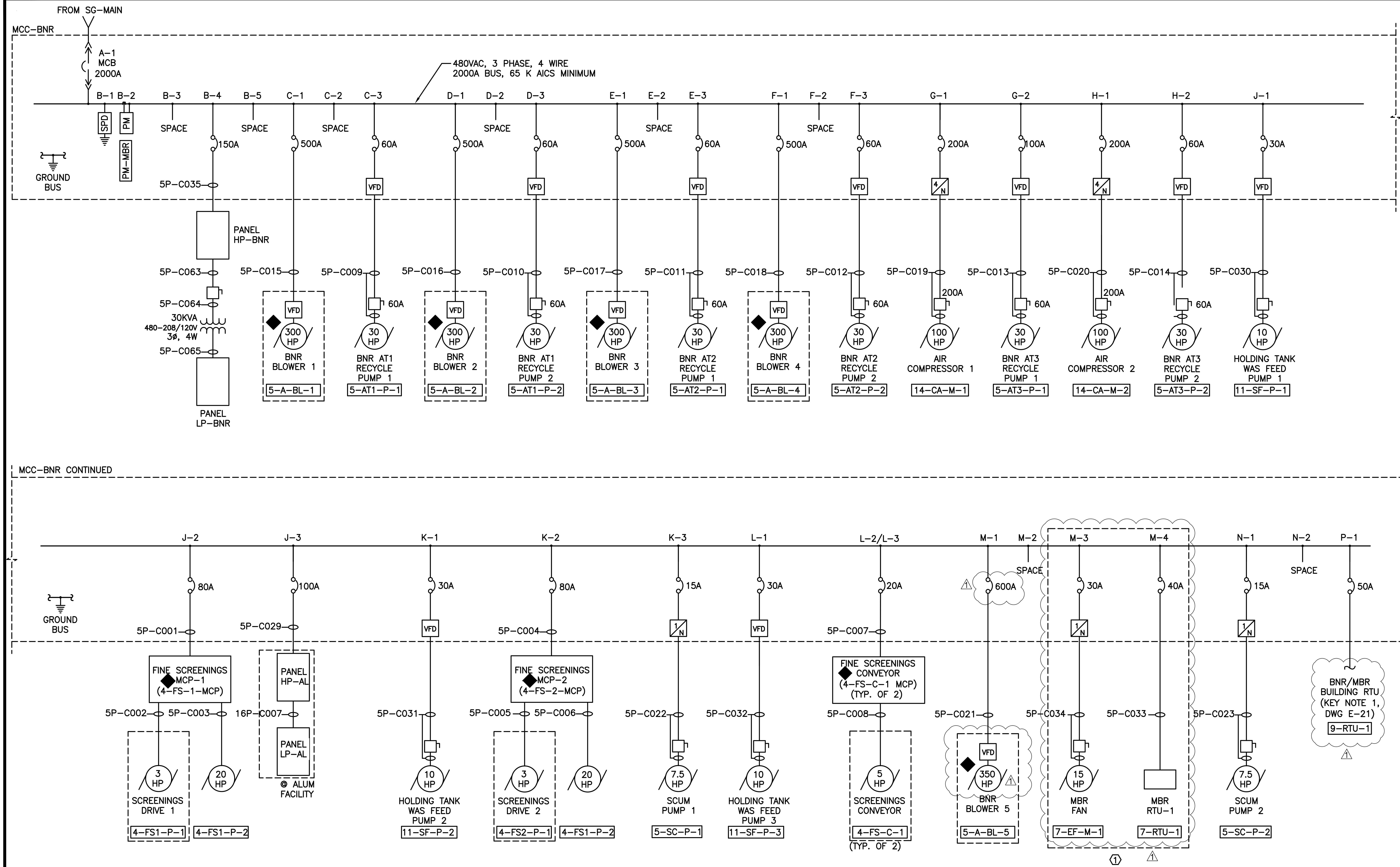

ONE-LINE DIAGRAM

KEY NOTES:

(1) REFER TO HVAC DRAWINGS.

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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	REVISION	DATE
3	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

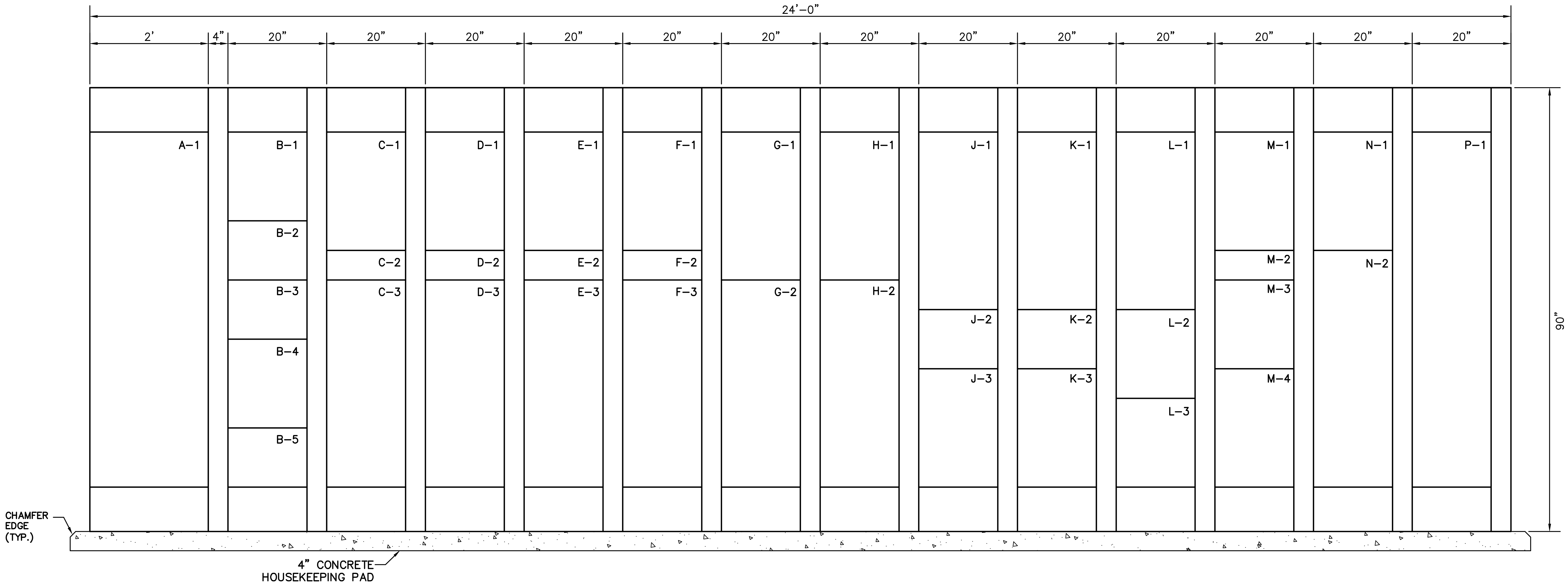
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

MCC-BNR ONE-LINE DIAGRAM

SHEET NO.

E-20

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-20.DWG|Tab: E-20|Plotted: October 30, 2020 11:27am



MCC-BNR LAYOUT

SCALE: 1" = 1'-0"

MCC-BNR SCHEDULE 2000A BUS, 65K AICS 480/277 VOLTS, 3-PHASE, 4-WIRE			
UNIT	NAME PLATE	UNIT	NAME PLATE
A-1	MCC-BNR MAIN CIRCUIT BREAKER	G-2	BNR AT3 RECYCLE PUMP 1 (5-AT3-P-1)
B-1	SURGE PROTECTION DEVICE	H-1	AIR COMPRESSOR 2 (5-AC-M-2)
B-2	POWER MONITOR	H-2	BNR AT3 RECYCLE PUMP 2 (5-AT3-P-2)
B-3	SPACE	J-1	HOLDING TANK WAS FEED PUMP 1 (11-SF-P-1)
B-4	PANEL HP-BNR	J-2	FINE SCREENINGS 1 (4-FS-1) CB
B-5	SPACE	J-3	PANEL HP-AL
C-1	BNR BLOWER 1 (5-A-BL-1)	K-1	HOLDING TANK WAS FEED PUMP 2 (11-SF-P-2)
C-2	SPACE	K-2	FINE SCREENINGS 2 (4-FS-2) CB
C-3	BNR AT1 RECYCLE PUMP 1 (5-AT1-P-1)	K-3	SCUM PUMP 1 (5-SC-P-1)
D-1	BNR BLOWER 2 (5-A-BL-2)	L-1	HOLDING TANK WAS FEED PUMP 3 (11-SF-P-3)
D-2	SPACE	L-2	FINE SCREENINGS CONVEYOR (4-FS-C-1)
D-3	BNR AT1 RECYCLE PUMP 2 (5-AT1-P-2)	L-3	FINE SCREENINGS CONVEYOR (4-FS-C-2)
E-1	BNR BLOWER 3 (5-A-BL-3)	M-1	BNR BLOWER 5 (5-A-BL-5)
E-2	SPACE	M-2	SPACE
E-3	BNR AT2 RECYCLE PUMP 1 (5-AT2-P-1)	M-3	MBR EXHAUST FAN 1 (7-EF-M-1)
F-1	BNR BLOWER 4 (5-A-BL-4)	M-4	MBR RTU-1 (7-RTU-1) 3
F-2	SPACE	N-1	SCUM PUMP 2 (5-SC-P-2)
F-3	BNR AT2 RECYCLE PUMP 2 (5-AT2-P-2)	N-2	SPACE
G-1	AIR COMPRESSOR 1 (5-AC-M-1)	P-1	BNR/MBR BUILDING RTU-1 UNIT (1) 3

KEY NOTES:

(1) 50 AMP 3P C/B IS ESTIMATED SIZE. COORDINATE WITH UNIT PROVIDED. PROVIDE CONDUIT, CONDUCTORS AND FUSED DISCONNECTS FOR SPLIT SYSTEM, PER NEC.

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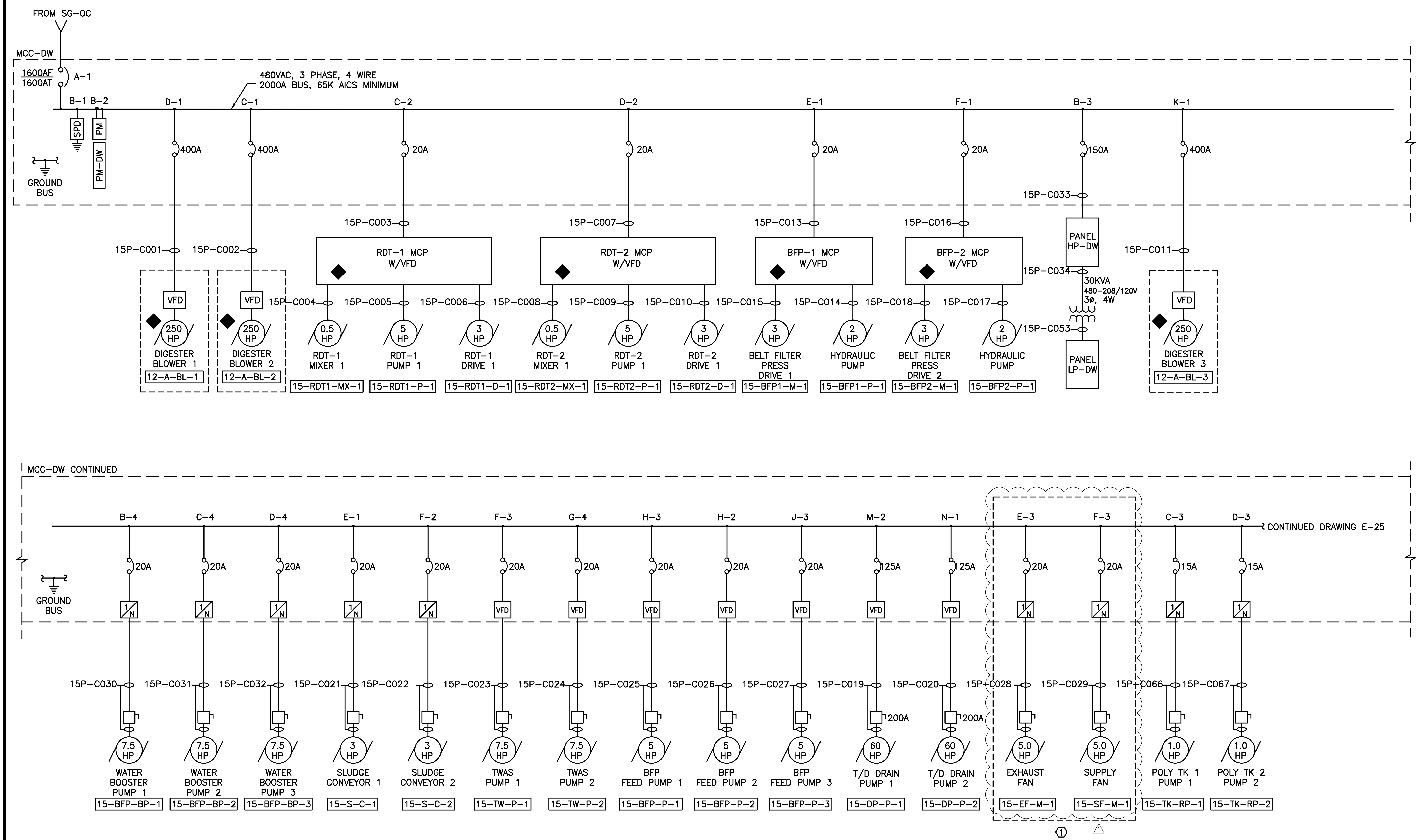
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

MCC-BNR
LAYOUT & SCHEDULE

SHEET NO.
E-21

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-21.DWG|Tab: E-21|Plotted: October 30, 2020 11:27am



ONE-LINE DIAGRAM

KEY NOTES:

3 1 EXHAUST FAN (TYP. OF 4) REFER TO HVAC DRAWINGS. PROVIDE QUANTITY AND RATING AS REQUIRED. INSTALL IN SPARE SECTIONS.

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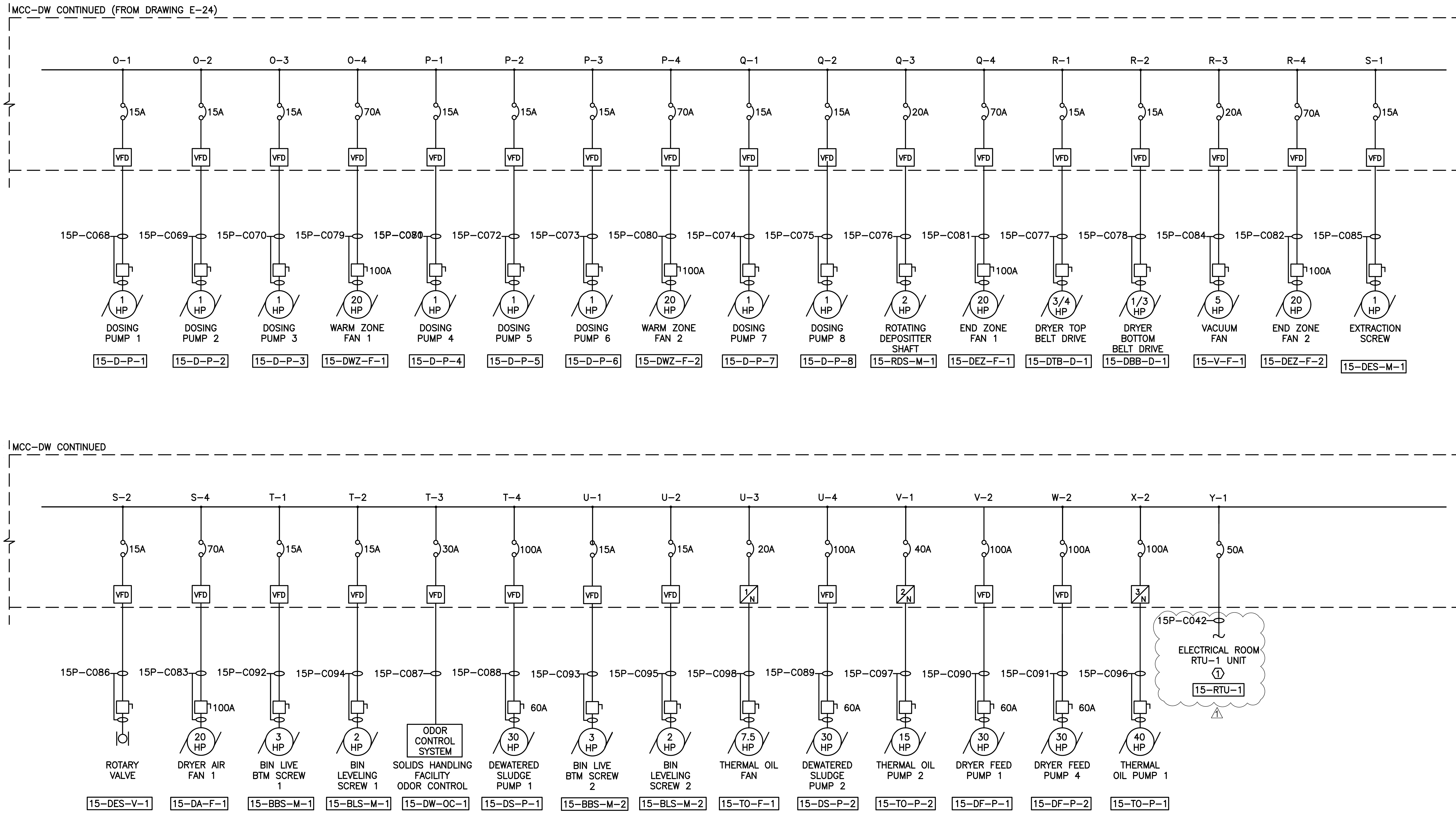
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

MCC-DW
ONE-LINE DIAGRAM

SHEET NO.
E-24

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 - E-24.DWG|Tab: E-24|Plotted: October 30, 2020 11:27am



KEY NOTES:

1. COORDINATE WITH UNIT PROVIDED. PROVIDE CONDUIT, CONDUCTORS AND FUSED DISCONNECTS FOR SPLIT SYSTEM, PER NEC.

ONE-LINE DIAGRAM

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

MCC-DW
ONE-LINE DIAGRAM 2

SHEET NO.
E-25

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-25.DWG|Tab: E-25|Plotted: October 30, 2020 11:27am

MCC-DW SCHEDULE

1000A BUS, 65K AICS

480/277 VOLTS, 3-PHASE, 4-WIRE

UNIT	NAME PLATE	UNIT	NAME PLATE	UNIT	NAME PLATE
A-1	MAIN CIRCUIT BREAKER	G-2	SPACE	Q-2	DOSING PUMP 8 (15-D-P-8)
B-1	POWER MONITOR	G-3	SPACE	Q-3	ROTATING DEPOSITTER SHAFT (15-RDS-M-1)
B-2	SURGE PROTECTION DEVICE	G-4	TWAS PUMP 2 (15-TW-P-2)	Q-4	END ZONE FAN 1 (15-DEZ-F-1)
B-3	PANEL HP-DW BREAKER	H-1	SPACE	R-1	DRYER TOP BELT DRIVE (15-DTB-D-1)
B-4	15-BFP-BP-1	H-2	BFP FEED PUMP 2 (15-BFP-P-2)	R-2	DRYER BOTTOM BELT DRIVE (15-DBB-D-1)
B-5	SPACE	H-3	BFP FEED PUMP 1 (15-BFP-P-1)	R-3	VACUUM FAN 1 (15-V-F-1)
C-1	DIGESTER BLOWER 1 (12-A-BL-1)	J-1	SPACE	R-4	END ZONE FAN 2 (15-DEZ-F-2)
C-2	RDT-1 MCP	J-2	SPACE	S-1	EXTRACTION SCREW (15-DES-M-1)
C-3	15-TK-RP-1	J-3	SPACE	S-2	ROTARY VALVE (15-DES-V-1)
C-4	15-BFP-BP-2	J-4	BFP FEED PUMP 3 (15-BFP-P-3)	S-3	SPACE
C-5	SPACE	K-1	DIGESTER BLOWER 3 (12-A-BL-3)	S-4	DRYER AIR FAN 1 (15-DA-F-1)
D-1	DIGESTER BLOWER 2 (12-A-BL-2)	K-2	SPACE	T-1	BIN LIVE BTM SCREW 1 (15-BBS-M-1)
D-2	RDT-2 MCP	L-1	SPACE	T-2	BIN LEVELING SCREW 1 (15-BLS-M-1)
D-3	15-TK-RP-2	L-2	SPACE	T-3	ODOR CONTROL SYSTEM (15-DW-OC-1)
D-4	15-BFP-BP-3	M-1	SPACE	T-4	HIGH SOLIDS CAKE PUMP 1 (15-HSC-P-1)
D-5	SPACE	M-2	TD DRAIN PUMP 1 (15-DP-P-1)	U-1	BIN LIVE BTM SCREW 2
E-1	BFP-1 MCP	N-1	SPACE	U-2	BIN LEVELING SCREW 2
E-2	SLUDGE CONVEYOR 1 (15-SG-C-1)	N-2	TD DRAIN PUMP 2 (15-DP-P-2)	U-3	THERMAL OIL FAN (15-TO-F-1)
E-3	EXHAUST FAN 1 (15-EF-M-1)	O-1	DOSING PUMP 1 (15-D-P-1)	U-4	HIGH SOLIDS CAKE PUMP 2 (15-HSC-P-2)
E-4	EXHAUST FAN 2 (15-EF-M-2)	O-2	DOSING PUMP 2 (15-D-P-2)	V-1	THERMAL OIL PUMP 2 (15-HSC-P-2)
E-5	EXHAUST FAN 3 (15-EF-M-3)	O-3	DOSING PUMP 3 (15-D-P-3)	V-2	HIGH SOLIDS CAKE PUMP 3 (15-HSC-P-3)
E-6	EXHAUST FAN 4 (15-EF-M-4)	O-4	WARM ZONE FAN 1 (15-DWZ-F-1)	W-1	SPACE
F-1	BFP-2 MCP	P-1	DOSING PUMP 4 (15-D-P-4)	W-2	HIGH SOLIDS CAKE PUMP 4 (15-HSC-P-4)
F-2	SLUDGE CONVEYOR 2 (15-SG-C-2)	P-2	DOSING PUMP 5 (15-D-P-5)	X-1	SPACE
F-3	SUPPLY FAN (15-SF-M-1)	P-3	DOSING PUMP 6 (15-D-P-6)	X-2	THERMAL OIL PUMP 1 (15-HSC-P-1)
F-4	TWAS PUMP 1 (15-TW-P-1)	P-4	WARM ZONE FAN 2 (15-DWZ-F-2)	Y-1	ELECTRICAL ROOM A/C UNIT (15-RTU-1) (1)
G-1	SPACE	Q-1	DOSING PUMP 7 (15-D-P-7)	Y-2	SPACE
				Z-1	SPACE

KEY NOTES:

(1) SEE KEY NOTE 1, DRAWING E-25.

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

MCC-DW SCHEDULE

SHEET NO.
E-27

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-27.DWG|Tab: E-27|Plotted: October 30, 2020 11:27am

PANEL HP-UV

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
400A MAIN CIRCUIT BREAKER

FEED FROM: MCC-A LOCATION: UVPA FACILITY

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	3	100	40	UV CHANNEL & EQUIPMENT	10-UV-CH-1
2	3	100	90	PANEL LP-UV (30 KVA POWER ZONE)	
3	-	-	-	UV CHANNEL & EQUIPMENT	
4	-	-	-	PANEL LP-UV (30 KVA POWER ZONE)	
5	-	-	-	UV CHANNEL & EQUIPMENT	
6	-	-	-	PANEL LP-UV (30 KVA POWER ZONE)	
7	3	100	30	UVPA AERATION BLOWER 1	10-PA-BL-1
8	3	100	30	UVPA AERATION BLOWER 2	10-PA-BL-2
9	-	-	-	UVPA AERATION BLOWER 1	
10	-	-	-	UVPA AERATION BLOWER 2	
11	-	-	-	UVPA AERATION BLOWER 1	
12	-	-	-	UVPA AERATION BLOWER 2	
13	3	100	30	UVPA AERATION BLOWER 3	10-PA-BL-3
14	-	-	-	UV EFF SLIDE GATE 1	10-UV-SG-1
15	-	-	-	UVPA AERATION BLOWER 3	
16	-	-	-	UV EFF SLIDE GATE 1	
17	-	-	-	UVPA AERATION BLOWER 3	
18	-	-	-	UV EFF SLIDE GATE 1	
19	3	100	30	PA-TK1 SLUICE GATE 1	10-PA-SG-1
20	3	100	30	PA-TK1 SLUICE GATE 2	10-PA-SG-2
21	-	-	-	PA-TK1 SLUICE GATE 1	
22	-	-	-	PA-TK1 SLUICE GATE 2	
23	-	-	-	PA-TK1 SLUICE GATE 1	
24	-	-	-	PA-TK1 SLUICE GATE 2	
25	3	100	20	GATE OPERATOR	
26	3	100	30	SPARE	
27	-	-	-	GATE OPERATOR	
28	-	-	-	SPARE	
29	-	-	-	GATE OPERATOR	
30	-	-	-	SPARE	
31					
32					
33-42					

PANEL LP-UV

208/120V, 3 PHASE, 4 WIRES, 24 CKTS (POWER ZONE)
100A MAIN CIRCUIT BREAKER

FEED FROM: HP-UV LOCATION: UVPA FACILITY

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	15	UV INFLUENT FLOW	10-IUV-F-1
2	1	100	15	PA TANK 1 DO	10-PA-DO-1
3	1	100	15	PA TANK 2 DO	10-PA-DO-1
4	1	100	15	PA SAMPLER	10-PA-SP-1
5	1	100	20	PLC UVPA	
6	1	100	20	ELECTRICAL ROOM LIGHTING	
7	1	100	20	OUTDOOR LIGHTING	
8	1	100	20	ELECTRICAL ROOM RECEPTACLES	
9	1	100	20	HEAT TRACE	
10	1	100	20	SPARE	
11	1	100	20	SPARE	
12	1	100	20	SPARE	
13	1	100	20	SPARE	
14	1	100	20	SPARE	
15	1	100	20	PA DROP BOX TURBIDITY	10-PA-TURB-1
16	1	100	20	OUTDOOR RECEPTACLES	
17					
18					
19					
20					
21					
22					
23					
24					

PANEL HP-DW

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
150A MAIN CIRCUIT BREAKER
SECTION 1 OF 2

FEED FROM: MCC-DW LOCATION: SOLIDS HANDLING BUILDING

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	3	100	15	RDT POLYMER PUMP 1	16-POLY-P-1
2	3	100	50	PANEL LP-DW (30 KVA XFMR)	
3	-	-	-	RDT POLYMER PUMP 1	
4	-	-	-	PANEL LP-DW (30 KVA XFMR)	
5	-	-	-	RDT POLYMER PUMP 1	
6	-	-	-	PANEL LP-DW (30 KVA XFMR)	
7	3	100	15	RDT POLYMER PUMP 2	16-POLY-P-2
8	3	100	15	RDT POLYMER PUMP 3	16-POLY-P-3
9	-	-	-	RDT POLYMER PUMP 2	
10	-	-	-	RDT POLYMER PUMP 3	
11	-	-	-	RDT POLYMER PUMP 2	
12	-	-	-	RDT POLYMER PUMP 3	
13	3	100	15	BFP POLYMER PUMP 4	16-POLY-P-4
14	3	100	15	BFP POLYMER PUMP 5	16-POLY-P-5
15	-	-	-	BFP POLYMER PUMP 4	
16	-	-	-	BFP POLYMER PUMP 5	
17	-	-	-	BFP POLYMER PUMP 4	
18	-	-	-	BFP POLYMER PUMP 5	
19	3	100	15	BFP POLYMER PUMP 6	16-POLY-P-6
20	3	100	15	BFP-1 VALVE	15-BFP-V-1
21	-	-	-	BFP POLYMER PUMP 6	
22	-	-	-	BFP-1 VALVE	
23	-	-	-	BFP POLYMER PUMP 6	
24	-	-	-	BFP-1 VALVE	
25	3	100	15	BFP-2 VALVE	15-BFP-V-2
26	3	100	15	BFP WATER VALVE 1	15-BFP-V-3
27	-	-	-	BFP-2 VALVE	
28	-	-	-	BFP WATER VALVE 1	
29	-	-	-	BFP-2 VALVE	
30	-	-	-	BFP WATER VALVE 1	
31	3	100	15	BFP WATER VALVE 2	15-BFP-V-4
32					
33	-	-	-	BFP WATER VALVE 2	
34					
35	-	-	-	BFP WATER VALVE 2	
36-42					

PANEL HP-DW

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
150A MAIN CIRCUIT BREAKER
SECTION 2 OF 2

FEED FROM: MCC-DW LOCATION: SOLIDS HANDLING BUILDING

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	3	100	15	SLUDGE CONVEYOR VALVE 1	15-SC-V-1
2	3	100	15	SLUDGE CONVEYOR VALVE 2	15-SC-V-2
3	-	-	-	SLUDGE CONVEYOR VALVE 1	
4	-	-	-	SLUDGE CONVEYOR VALVE 2	
5	-	-	-	SLUDGE CONVEYOR VALVE 1	
6	-	-	-	SLUDGE CONVEYOR VALVE 2	
7	3	100	15	SLUDGE CONVEYOR VALVE 3	15-SC-V-3
8	3	100	15	RDT POLYMER RECYCLE PUMP 1	15-POLY-RP-1
9	-	-	-	SLUDGE CONVEYOR VALVE 3	
10	-	-	-	RDT POLYMER RECYCLE PUMP 1	
11	-	-	-	SLUDGE CONVEYOR VALVE 3	
12	-	-	-	RDT POLYMER RECYCLE PUMP 1	
13	3	100	15	BFP POLYMER RECYCLE PUMP 2	15-POLY-RP-1
14	3	100	15	DEWATERING SLUDGE 1 VALVE 1	15-DS1-V-1
15	-	-	-	BFP POLYMER RECYCLE PUMP 2	
16	-	-	-	DEWATERING SLUDGE 1 VALVE 1	
17	-	-	-	BFP POLYMER RECYCLE PUMP 2	
18	-	-	-	DEWATERING SLUDGE 1 VALVE 1	
19	3	100	15	DEWATERING SLUDGE 1 VALVE 2	15-DS1-V-2
20	3	100	15	DEWATERING SLUDGE 2 VALVE 1	15-DS2-V-1
21	-	-	-	DEWATERING SLUDGE 1 VALVE 2	
22	-	-	-	DEWATERING SLUDGE 2 VALVE 1	
23	-	-	-	DEWATERING SLUDGE 1 VALVE 2	
24	-	-	-	DEWATERING SLUDGE 2 VALVE 1	
25	3	100	15	DEWATERING SLUDGE 1 VALVE 2	15-DS2-V-2
26	3	100	15	PW VALVE	15-PW-M-1
27	-	-	-	DEWATERING SLUDGE 1 VALVE 2	
28	-	-	-	PW VALVE	
29	-	-	-	DEWATERING SLUDGE 1 VALVE 2	
30	-	-	-	PW VALVE	
31	3	100	20	SPARE	
32	3	100	20	SPARE	
33	-	-	-	SPARE	
34	-	-	-	SPARE	
35	-	-	-	SPARE	
36	-	-	-	SPARE	
37					
38					
39					
40					
41					
42					

PANEL LP-DW

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
200A MAIN CIRCUIT BREAKER

FEED FROM: HP-DW 30KVA XFMR LOCATION: SOLIDS HANDLING BUILDING

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	ELECTRICAL ROOM RECEPTACLES	
2	1	100	20	SLUDGE HOPPER MCP	15-HOPPER-MCP
3	1	100	15	SPARE	
4	1	100	15	POLYMER TK 1 LEVEL XMTR &TK LCP	15-POLY-L-1
5	1	100	15	POLYMER TK 2 LEVEL XMTR &TK LCP	15-POLY-L-2
6	1	100	15	BFP FLOW METER 1	15-BFP-F-1
7	1	100	15	BFP FLOW METER 2	15-BFP-F-2
8	1	100	15	T/D DRAIN FLOW METER	15-DP-F-1
9	1	100	15	DW GAS MONITOR MCP	15-DW-GM MCP
10	1	100	20	PLC-DW	PLC-DW
11	1	100	20	ELECTRICAL ROOM LIGHTING	
12	1	100	20	TRUCK LOADING AREA LIGHTING	
13	1	100	20	HEAT TRACE	
14	1	100	20	HEAT TRACE	
15	1	100	15	NPW CONDENSER FLOW	15-NPW-F-1
16	1	100	15	CONDENSER 'HI' LEVEL	15-COND-LS-1
17	1	100	20	DRYER MCP	15-DRYER-MCP
18	1	100	20	SUMP PUMP	15-DW-SP-1
19	1	100	20	TRUCK LOADING AREA RECEPTACLES	
20	1	100	20	TERMINAL OIL SYSTEM ROOM RECEPTACLE	
21	1	100	20	OUTDOOR LIGHTING	
22	1	100	20	TERMINAL OIL SYSTEM ROOM LIGHTING	
23	1	100	20	SLUDGE PUMP ROOM LIGHTING	
24	1	100	20	SLUDGE AREA LIGHTING	
25	1	100	20	SLUDGE AREA LIGHTING	
26	1	100	20	SLUDGE AREA RECEPTACLES	
27	1	100	20	SLUDGE AREA RECEPTACLES	
28	1	100	20	OUTDOOR RECEPTACLES	
29	1	100	20	SPARE	
30	1	100	20	SPARE	
31	1	100	20	SPARE	
32	1	100	20	SPARE	
33-42					

NOTES:

1. REFER TO PANELBOARD NOTES DRAWING E-29.

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
Atlanta Ga 30328
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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION #PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
3	ADDENDUM No.3	10/30/20

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DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PANELBOARD SCHEDULE 1

SHEET NO.
E-28

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-28.DWG|Tab: E-28|Plotted: October 30, 2020 11:28am

PANEL HP-BNR1

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
150A MAIN CIRCUIT BREAKER
SECTION 1 OF 2

FEED FROM: MCC-BNR — LOCATION: BNR ELECTRICAL ROOM

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	3	100	15	AT1 OX-1 AIR VALVE 1	5-AT1-V-1
2	3	100	50	PANEL LP-BNR (30 KVA XFMR)	
3	-	-	-	AT1 OX-1 AIR VALVE 1	
4	-	-	-	PANEL LP-BNR (30 KVA XFMR)	
5	-	-	-	AT1 OX-1 AIR VALVE 1	
6	-	-	-	PANEL LP-BNR (30 KVA XFMR)	
7	3	100	15	AT1 OX-1 AIR VALVE 2	5-AT1-V-2
8	3	100	15	AT1 OX-2 AIR VALVE 3	5-AT1-V-3
9	-	-	-	AT1 OX-1 AIR VALVE 2	
10	-	-	-	AT1 OX-2 AIR VALVE 3	
11	-	-	-	AT1 OX-1 AIR VALVE 2	
12	-	-	-	AT1 OX-2 AIR VALVE 3	
13	3	100	15	AT1 OX-2 AIR VALVE 4	5-AT1-V-4
14	3	100	15	SPARE	
15	-	-	-	AT1 OX-2 AIR VALVE 4	
16	-	-	-	SPARE	
17	-	-	-	AT1 OX-2 AIR VALVE 4	
18	-	-	-	SPARE	
19	3	100	15	SPARE	
20	3	100	15	SPARE	
21	-	-	-	SPARE	
22	-	-	-	SPARE	
23	-	-	-	SPARE	
24	-	-	-	SPARE	
25	3	100	15	AT2 OX-1 AIR VALVE 1	5-AT2-V-1
26	3	100	15	AT2 OX-1 AIR VALVE 2	5-AT2-V-2
27	-	-	-	AT2 OX-1 AIR VALVE 1	
28	-	-	-	AT2 OX-1 AIR VALVE 2	
29	-	-	-	AT2 OX-1 AIR VALVE 1	
30	-	-	-	AT2 OX-1 AIR VALVE 2	
31	3	100	15	AT2 OX-2 AIR VALVE 3	5-AT2-V-3
32	3	100	15	AT2 OX-2 AIR VALVE 4	5-AT2-V-4
33	-	-	-	AT2 OX-2 AIR VALVE 3	
34	-	-	-	AT2 OX-2 AIR VALVE 4	
35	-	-	-	AT2 OX-2 AIR VALVE 3	
36	-	-	-	AT2 OX-2 AIR VALVE 4	
37	3	100	20	SPARE	
38	3	100	20	SPARE	
39	-	-	-	SPARE	
40	-	-	-	SPARE	
41	-	-	-	SPARE	
42	-	-	-	SPARE	

PANEL HP-BNR2

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
150A MAIN CIRCUIT BREAKER
SECTION 2 OF 2

FEED FROM: MCC-BNR — LOCATION: BNR ELECTRICAL ROOM

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	SITE LIGHTS	
2	3	100	15	AT3 OX-1 AIR VALVE 1	5-AT3-V-1
3	1	-	20	SITE LIGHTS	
4	-	-	-	AT3 OX-1 AIR VALVE 1	
5	1	-	20	SITE LIGHTS	
6	-	-	-	AT3 OX-1 AIR VALVE 1	
7	3	100	15	AT3 OX-1 AIR VALVE 2	5-AT3-V-2
8	3	100	15	AT3 OX-2 AIR VALVE 3	5-AT3-V-3
9	-	-	-	AT3 OX-1 AIR VALVE 2	
10	-	-	-	AT3 OX-2 AIR VALVE 3	
11	-	-	-	AT3 OX-1 AIR VALVE 2	
12	-	-	-	AT3 OX-2 AIR VALVE 3	
13	3	100	15	AT3 OX-2 AIR VALVE 4	5-AT3-V-4
14	3	100	15	SPARE	
15	-	-	-	AT3 OX-2 AIR VALVE 4	
16	-	-	-	SPARE	
17	-	-	-	AT3 OX-2 AIR VALVE 4	
18	-	-	-	SPARE	
19	3	100	15	SPARE	
20	3	100	20	GATE OPERATOR	
21	-	-	-	SPARE	
22	-	-	-	GATE OPERATOR	
23	-	-	-	SPARE	
24	-	-	-	GATE OPERATOR	
25	3	100	15	SCUM PW VALVE	5-SCUM-V-1
26	3	100	15	SPARE	
27	-	-	-	SCUM PW VALVE	
28	-	-	-	SPARE	
29	-	-	-	SCUM PW VALVE	
30	-	-	-	SPARE	
31	3	100	15	FINE INF. SCREEN SLUICE GATE 1	4-IFS-SG-1
32	3	100	15	FINE INF. SCREEN SLUICE GATE 2	4-IFS-SG-2
33	-	-	-	FINE INF. SCREEN SLUICE GATE 1	
34	-	-	-	FINE INF. SCREEN SLUICE GATE 2	
35	-	-	-	FINE INF. SCREEN SLUICE GATE 1	
36	-	-	-	FINE INF. SCREEN SLUICE GATE 2	
37	3	100	15	EFF. CHANNEL SLUICE GATE 1	5-EAT-SG-1
38	3	100	15	INF. CHANNEL SLUICE GATE 1	5-IAT-SG-1
39	-	-	-	EFF. CHANNEL SLUICE GATE 1	
40	-	-	-	INF. CHANNEL SLUICE GATE 1	
41	-	-	-	EFF. CHANNEL SLUICE GATE 1	
42	-	-	-	INF. CHANNEL SLUICE GATE 1	

PANEL LP-BNR

208/120V, 3 PHASE, 4 WIRES, 42 CKTS
100A MAIN CIRCUIT BREAKER

FEED FROM: HP-DW 30KVA XFMR — LOCATION: BNR ELECTRICAL ROOM

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	LIGHTING INTERIOR	
2	1	100	20	RECEPTACLE INTERIOR	
3	1	100	15	AT1 DO-1 & 2 XMTR	5-AT1-DO-1&2
4	1	100	15	AT1 ORP 1 XMTR	5-AT1-ORP-1
5	1	100	15	AT1 DO 3 & 4 XMTR	5-AT1-DO-3&4
6	1	100	20	MBR MCP	7-MBR-MCP
7	1	100	20	BASIN 1 LIGHTING	
8	1	100	20	BASIN 2 LIGHTING	
9	1	100	15	BASIN 3 LIGHTING	
10	1	100	15	AT1 RECYCLE FLOW METER 5	5-AT1-F-5
11	1	100	15	AT1 RECYCLE FLOW METER 6	5-AT1-F-6
12	1	100	15	SPARE	
13	1	100	15	AT2 DO-1 & 2 XMTR	5-AT2-DO-1&2
14	1	100	15	AT2 ORP 1 XMTR	5-AT2-ORP-1
15	1	100	15	AT2 DO 3 & 4 XMTR	5-AT2-DO-3&4
16	1	100	20	FINE SCREENINGS LIGHTING	
17	1	100	20	FINE SCREENINGS RECEPTACLES	
18	1	100	20	BASIN RECEPTACLES	
19	1	100	20	BASIN RECEPTACLES	
20	1	100	15	AT2 RECYCLE FLOW METER 5	5-AT2-F-5
21	1	100	15	AT2 RECYCLE FLOW METER 6	5-AT2-F-6
22	1	100	15	SPARE	
23	1	100	15	AT3 DO-1 & 2	5-AT3-DO-1&2
24	1	100	15	AT3 ORP 1 XMTR	5-AT3-ORP-1
25	1	100	15	AT3 DO 3 & 4 XMTR	5-AT3-DO-3&4
26	1	100	20	HEAT TRACE	
27	1	100	20	HEAT TRACE	
28	1	100	20	HEAT TRACE	
29	1	100	20	14-CA-VM-1	
30	1	100	15	AT3 RECYCLE FLOW METER 5	5-AT3-F-5
31	1	100	15	AT3 RECYCLE FLOW METER 6	5-AT3-F-6
32	1	100	20	PLC-BNR	
33	1	100	30	PLC-BNR1	
34	1	100	30	RIO-BNR2	
35-42	1	100	20	SPARE	

PANEL LP-OC

208/120V, 3 PHASE, 4 WIRES, 12 CKTS (POWER ZONE)
100A MAIN CIRCUIT BREAKER

FEED FROM: SG-OC — LOCATION: SG-OC

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	LIGHTING	
2	1	100	20	RECEPTACLE	
3	1	100	20	SG-OC CONTROLS	
4	1	100	20	PLC-OC (WITH SWITCHBOARD)	
5	1	100	20	PLC-IH	
6	1	100	20	HEAT TRACE	22-SB-HT-1
7	1	100	20	HEAT TRACE	22-SB-HT-2
8	1	100	20	SPARE	
9	1	100	20	SPARE	
10	1	100	20	SPARE	
11	1	100	20	SPARE	
12	1	100	20	SPARE	

(1) PANEL HP-MBR

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
150A MAIN CIRCUIT BREAKER

FEED FROM: MCC-MBR — LOCATION: MBR FACILITY

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	3	100	60	MBR CIP SYSTEM	7-CIP-S-1
2	3	100	50	PANEL LP-MBR (30 KVA XFMR)	MBR-XFMR
3	-	-	-	MBR CIP SYSTEM	
4	-	-	-	PANEL LP-MBR (30 KVA XFMR)	
5	-	-	-	MBR CIP SYSTEM	
6	-	-	-	PANEL LP-MBR (30 KVA XFMR)	
7	3	100	20	SPARE	
8	3	100	15	MBR COMPRESSOR MCP	
9	-	-	-	SPARE	
10	-	-	-	MBR COMPRESSOR	
11	-	-	-	SPARE	
12	-	-	-	MBR COMPRESSOR	
13	3	100	15	MBR DYER	7-DRYER
14	3	100	20	SPARE	
15	-	-	-	MBR DYER	
16	-	-	-	SPARE	
17	-	-	-	MBR DYER	
18	-	-	-	SPARE	
19	3	100	20	SPARE	
20	3	100	20	SPARE	
21	-	-	-	SPARE	
22	-	-	-	SPARE	
23	-	-	-	SPARE	
24	-	-	-	SPARE	
25					
26					
27					
28					
29-42					

(1) PANEL LP-MBR

208/120V, 3 PHASE, 4 WIRES, 30 CKTS
50A MAIN CIRCUIT BREAKER

FEED FROM: HP-MBR 30KVA XFMR — LOCATION: MBR FACILITY

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	BLOWER ROOM LIGHTING	
2	1	100	20	BLOWER ROOM RECEPTACLES	
3	1	100	20	MBR SYSTEM CONTROLS	
4	1	100	20	7-MBR-RIO-1	
5	1	100	20	7-MBR-RIO-2	
6	1	100	15	7-MBR-RIO-3	
7	1	100	15	7-MBR-RIO-4	
8	1	100	20	MBR MAIN CONTROL PANEL	MBR MCP
9	1	100	20	HEAT TRACE	
10	1	100	20	SUMP PUMP	
11	1	100	20	PIPE GALLERY LIGHTING	
12	1	100	20	PIPE GALLERY RECEPTACLES	
13	1	100	20	PUMP ROOM LIGHTING	
14	1	100	20	PUMP ROOM RECEPTACLES	
15	1	100	20	CHEMICAL ROOM LIGHTING	
16	1	100	20	CHEMICAL ROOM RECEPTACLES	
17	1	100	20	OUTDOOR LIGHTING	
18	1	100	20	HEAT TRACE	
19	1	100	20	HEAT TRACE	
20	1	100	20	MBR BUILDING EXHAUST FAN EF-2	7-EF-M-2
21	1	100	20	SPARE	
22	1	100	20	SPARE	
23	1	100	20	SPARE	
24	1	100	20	SPARE	
25	1	100	20	SPARE	
26	-	-	-		
27	-	-	-		
28	-	-	-		
29	-	-	-		
30	-	-	-		

KEY NOTES:

(1) PANELS SHALL BE INSTALLED IN NEMA 4X SST ENCLOSURES. FOR EXTERIOR, WET, OR CORROSIVE LOCATIONS.

(2) LP–MSG PROVIDED WITH SWITCHGEAR PROVIDE CIRCUITS SHOWN FOR EXTERIOR OF GEAR. ALL EQUIPMENT PROVIDED WITH GEAR TO BE POWERED.

(3) GRINDER PUMP STATION IS ADJACENT TO ADMINISTRATION BUILDING. PROVIDE 1"/(3)–#8+#10GND TO PUMP STATION.

(4) PROVIDE 1"/(3)–#12+#12GND TO GATE OPERATOR AT SOUTH AND EAST FENCE GATES. REFER TO RISER DIAGRAM DWG I–9.

NOTES:

1. LIGHTING WIRES/CONDUITS ARE NOT SHOWN ON WIRE/CONDUIT SCHEDULE. AS A MINIMUM PROVIDE (2)–#10+#10GND FOR LIGHTING CIRCUITS. LIGHTING WIRE SIZE AND CONDUIT SHALL BE SET BY NEC WITH VOLTAGE DROP AND POWER CONSUMPTION.
2. PROVIDE ¾c/(3)–#12+#12GND FOR EACH 20AMP (OR LESS) 3 PHASE CIRCUIT FROM PANELBOARDS TO EQUIPMENT. PROVIDE ¾c/(2)–#12+#12GND FOR EACH 20 AMP (OR LESS) 1 PHASE CIRCUIT FROM PANELBOARD TO EQUIPMENT, UNLESS DEFINED OTHERWISE IN CONDUIT AND WIRE SCHEDULE.
3. FOR OUTDOOR POLE LIGHTS PROVIDE RECEPTACLES AT THE POLE LIGHTS ON SEPARATE CIRCUIT FROM THE LIGHTS. PROVIDE ¾" CONDUIT WITH (4)#12+#12EGC FOR OUTDOOR POLE LIGHT AND RECEPTACLE CIRCUITS.
4. ALL CIRCUIT BREAKERS FEEDING HEAT TRACE SHALL BE GFCI.
5. FOR NEMA 4X EXTERIOR MOUNTED RIO OR PLC CABINETS PROVIDE 30 AMP CIRCUIT BREAKER WITH ¾"(2)–#10+#10EGC.

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION #PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
4	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PANELBOARD SCHEDULE 2

SHEET NO.
E-29

PANEL HP-AL

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
100A MAIN CIRCUIT BREAKER
FEED FROM: MCC-BNR — LOCATION: ALUM FACILITY

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	3	100	15	ALUM PUMP 1	16-AL-P-1
2	3	100	40	PANEL LP-AL (15 KVA XFMR)	
3	-	-	-	ALUM PUMP 1	
4	-	-	-	PANEL AL (15 KVA XFMR)	
5	-	-	-	ALUM PUMP 1	
6	-	-	-	PANEL AL (15 KVA XFMR)	
7	3	100	15	ALUM PUMP 2	16-AL-P-2
8	3	100	15	ALUM PUMP 3	16-AL-P-3
9	-	-	-	ALUM PUMP 2	
10	-	-	-	ALUM PUMP 3	
11	-	-	-	ALUM PUMP 2	
12	-	-	-	ALUM PUMP 3	
13	3	100	15	ALUM PUMP 4	16-AL-P-4
14	3	100	15	ALUM PUMP 5	16-AL-P-5
15	-	-	-	ALUM PUMP 4	
16	-	-	-	ALUM PUMP 5	
17	-	-	-	ALUM PUMP 4	
18	-	-	-	ALUM PUMP 5	
19	3	100	15	ALUM PUMP 6	16-AL-P-6
20	3	100	15	SPARE	
21	-	-	-	ALUM PUMP 6	
22	-	-	-	SPARE	
23	-	-	-	ALUM PUMP 6	
24	-	-	-	SPARE	
25					
26					
27					
28					
29-42					

PANEL LP-AL

208/120V, 3 PHASE, 4 WIRES, 12 CKTS (POWER ZONE)
60A MAIN CIRCUIT BREAKER
FEED FROM: MCC-BNR — LOCATION: ALUM FACILITY

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	TANK 1 & 2 LEVEL TRANSMITTERS & LCP	17-AL-L-1 & 2
2	1	100	20	BUILDING LIGHTING	
3	1	100	20	BUILDING RECEPTACLES	
4	1	100	20	OUTDOOR LIGHTING	
5	1	100	20	ALUM TK 1 HEATER	17-TK-EH-1
6	1	100	20	TANK LEVEL LCP1 & LCP2	
7	1	100	25	ALUM HEAT TRACE	17-AL-HT-1
8	1	100	20	OUTDOOR RECEPTACLES	
9	1	100	20	ALUM TK 2 HEATER	17-TK-EH-2
10					
11	1	100	25	ALUM HEAT TRACE	17-AL-HT-2
12					

EXISTING PANEL LP-H

208/120V, 3 PHASE, 4 WIRES, 30CKTS
60A MAIN CIRCUIT BREAKER
FEED FROM: EX MCC-H & 10KVA XFMR — LOCATION: EX MCC-H

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	EX GFI @ P.F.	
2	1	100	20	EX FIT 120	
3	1	100	20	EX GFI @ H.W.	
4	1	100	20	EX DO	
5	1	100	20	EX HEAT TRACE	
6	2	100	20	EX AREA LIGHTS	
7	1	100	20	EX CV-1000	
8	-	-	-	EX AREA LIGHTS	
9	1	100	20	EX RECEPTACLES SBR4	
10	1	100	20	EX LIGHTING CONTACTOR	
11	1	100	20	SPARE	
12	2	100	20	EX AREA LIGHTS	
13	1	100	20	EX PLC (RIO-H1)	
14	-	-	-	EX AREA LIGHTS	
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

① PANEL HP-H

480/277V, 3 PHASE, 4 WIRES, 42 CKTS
150A MAIN CIRCUIT BREAKER
FEED FROM: MCC-H — LOCATION: MCC-H AREA

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	3	100	15	OX-1 AIR VALVE 1	5-AT4-V-1
2	3	100	15	OX-1 AIR VALVE 2	5-AT4-V-2
3	-	-	-	OX-1 AIR VALVE 1	
4	-	-	-	OX-1 AIR VALVE 2	
5	-	-	-	OX-1 AIR VALVE 1	
6	-	-	-	OX-1 AIR VALVE 2	
7	3	100	15	OX-1 AIR VALVE 3	5-AT4-V-3
8	3	100	15	OX-1 AIR VALVE 4	5-AT4-V-4
9	-	-	-	OX-1 AIR VALVE 3	
10	-	-	-	OX-1 AIR VALVE 4	
11	-	-	-	OX-1 AIR VALVE 3	
12	-	-	-	OX-1 AIR VALVE 4	
13	3	100	20	SPARE	
14	3	100	20	SPARE	
15	-	-	-	SPARE	
16	-	-	-	SPARE	
17	-	-	-	SPARE	
18	-	-	-	SPARE	
19	3	100	20	SPARE	
20	3	100	15	AD TANK 1 VALVE 6	12-AD-V-6
21	-	-	-	SPARE	
22	-	-	-	AD TANK 1 VALVE 6	
23	-	-	-	SPARE	
24	-	-	-	AD TANK 1 VALVE 6	
25	3	100	15	AD TANK 1 VALVE 7	12-AD-V-7
26	3	100	15	AD TANK 2 VALVE 8	12-AD-V-8
27	-	-	-	AD TANK 1 VALVE 7	
28	-	-	-	AD TANK 2 VALVE 8	
29	-	-	-	AD TANK 1 VALVE 7	
30	-	-	-	AD TANK 2 VALVE 8	
31	3	100	15	AD TANK 2 VALVE 9	12-AD-V-9
32	3	100	15	SPARE	
33	-	-	-	AD TANK 2 VALVE 9	
34	-	-	-	SPARE	
35	-	-	-	AD TANK 2 VALVE 9	
36	-	-	-	SPARE	
37-42					

② PANEL LP-MSG

208/120V, 3 PHASE, 4 WIRES, 12 CKTS
100A MAIN CIRCUIT BREAKER
FEED FROM: SG-MAIN — LOCATION: SG-MAIN

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	2	100	40	GRINDER PS	③
2	1	100	20	PLC-MSG	
3	-	-	-	GRINDER PS	
4	1	100	20	LIGHTING	
5	1	100	20	RECEPTACLES	
6	1	100	20	AS REQUIRED	
7	1	100	20	AS REQUIRED	
8	1	100	20	AS REQUIRED	
9	1	100	20	AS REQUIRED	
10	1	100	20	AS REQUIRED	
11	1	100	20	AS REQUIRED	
12	1	100	20	AS REQUIRED	

PANEL LP-H1

208/120V, 3 PHASE, 4 WIRES, 18CKTS (POWER ZONE)
100A MAIN CIRCUIT BREAKER
FEED FROM: EX MCC-H — LOCATION: EX MCC-H

CKT #	POLE	FRAME	TRIP	NAMEPLATE	EQUIPMENT ID
1	1	100	20	HEAT TRACE	
2	1	100	20	HEAT TRACE	
3	1	100	20	AT4 MIXING VALVE 2	14-CA-VM-2
4	1	100	20	AD1 MIXING VALVE 3	14-CA-VM-3
5	1	100	20	AD2 MIXING VALVE 4	14-CA-VM-4
6	1	100	20	AT4 DO 1/2 TRANSMITTER	
7	1	100	20	AT4 DO 3/4 TRANSMITTER	
8	1	100	20	AT4 ORP TRANSMITTER	
9	1	100	30	PLC-H	
10	1	100	20	COMPRESSED AIR MCP	14-CA-MCP
11	1	100	30	RIO-BNR1	
12	1	100	15	AT4 FLOW METER 5	6-AT4-F-5
13	1	100	15	AT4 FLOW METER 6	6-AT4-F-6
14	1	100	15	AD TANK 1 LEVEL	12-AD-L-1
15	1	100	15	AD TANK 2 LEVEL	12-AD-L-2
16					
17					
18					

NOTES:

1. REFER TO PANELBOARD NOTES AND KEY NOTES ON DRAWING E-29.

GEORGIA
No. PE028093
PROFESSIONAL
TIMOTHY L. HARTWELL
10/30/2020

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CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
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CHECKED BY: TLH
APPROVED BY: TLH
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CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

PANELBOARD SCHEDULE 3

SHEET NO.
E-30

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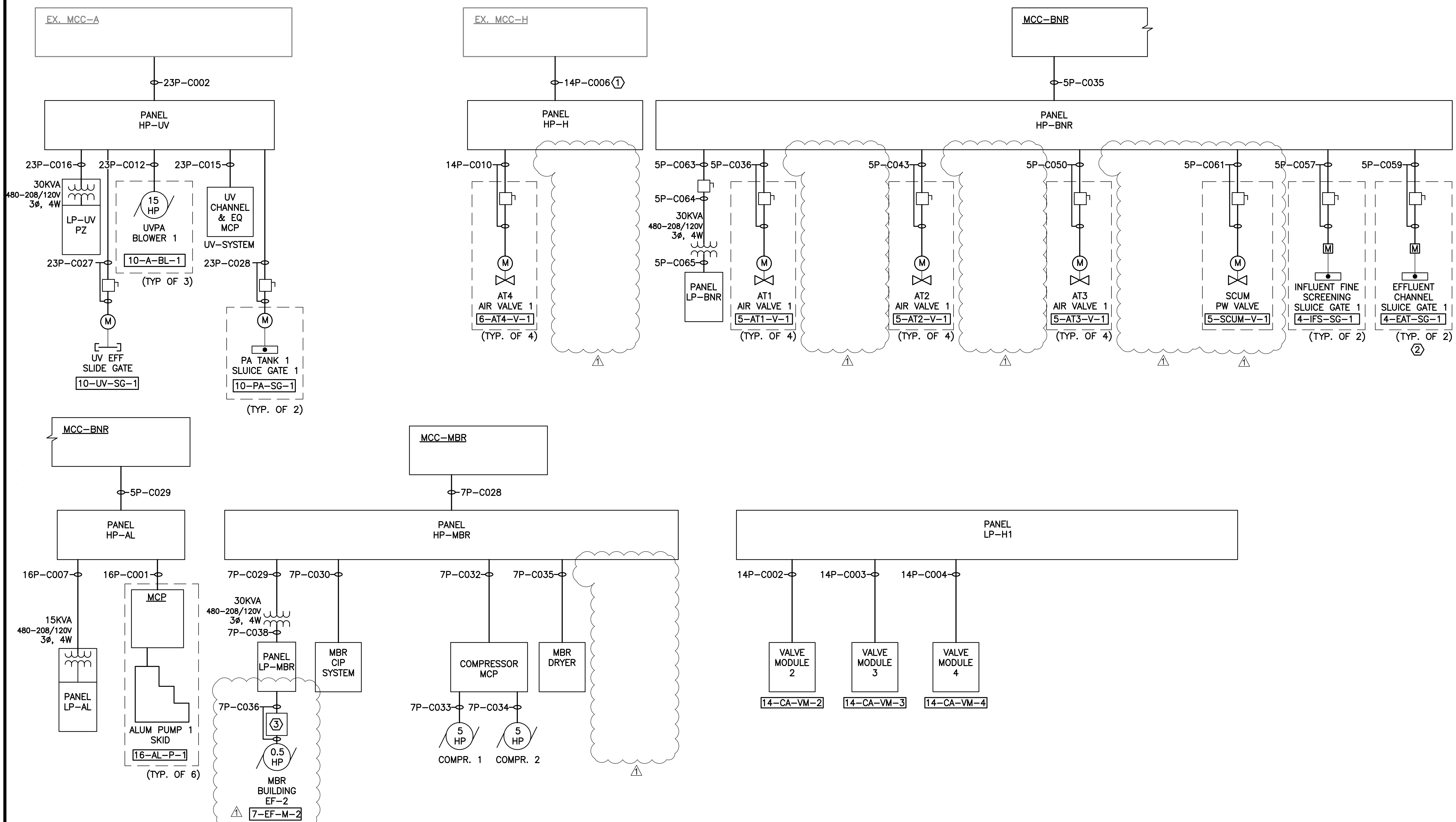

KEY NOTES:

(1) WIRE OR CONNECT TO MCC-H BUS AS REQUIRED.

(2) TYPICAL FOR INFLUENT CHANNEL SLUICE GATE 1 5-IAT-SG-1.

(3) PROVIDE INLINE THERMOSTAT FOR THE FAN.

NOTES:

1. FOR TYPICAL FEEDERS SHOWN, REFER TO CONDUIT/WIRE SCHEDULE FOR NUMBERING. NOT ALL CIRCUITS SHOWN, REFER TO CONDUIT AND WIRE SCHEDULES.

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CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

POWER RISER DIAGRAMS 1

SHEET NO.
E-31

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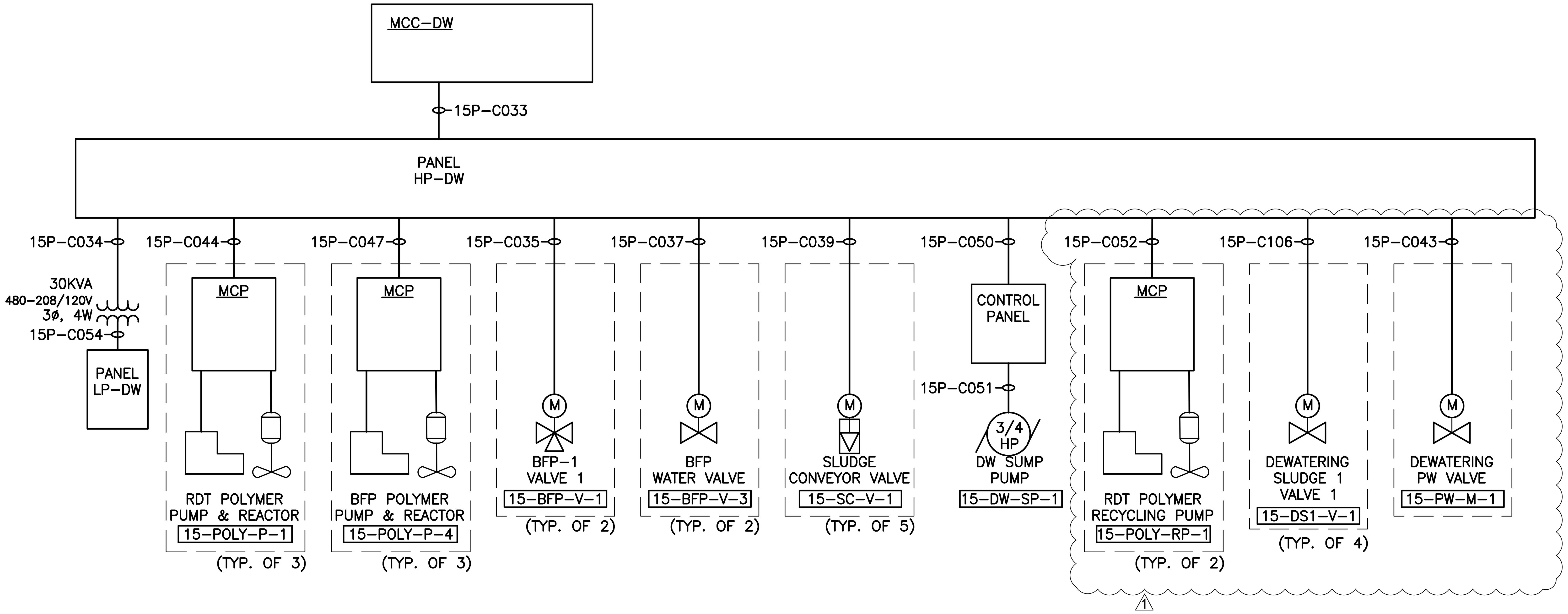

NOTES:

1. FOR TYPICAL FEEDERS SHOWN, REFER TO CONDUIT/WIRE SCHEDULE FOR NUMBERING. NOT ALL CIRCUITS SHOWN, REFER TO CONDUIT AND WIRE SCHEDULES.

GEORGIA
No. PE028093
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10/30/2020

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CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

POWER RISER DIAGRAMS 2

SHEET NO.
E-32

FEEDER SCHEDULE - POWER

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE	
SG-OC (GRIT REMOVAL SYSTEM)					
1P-C001	1-GR MCP	EX 1-GR-1 TB	1"	(6) #12 + (2) #12 EGC	(1)
1P-C002	EX 1-GR-1 TB	1-GR1-M-1	3/4"	(3) #12 + (1) #12 EGC	
1P-C003	EX 1-GR-1 TB	1-GR1-M-2	3/4"	(3) #12 + (1) #12 EGC	
1P-C004	1-GR MCP	1-GR2-M-1	3/4"	(3) #12 + (1) #12 EGC	
1P-C005	1-GR MCP	1-GR2-M-2	3/4"	(3) #12 + (1) #12 EGC	
1P-C006	1-GR MCP	EX 1-GR-1 TB	3/4"	(4) #10 + (2) #10 EGC	(2)
1P-C007	EX 1-GR-1 TB	EX 1-GR-C-1 LCP	3/4"	(2) #10 + (1) #10 EGC	
1P-C008	EX 1-GR-1 TB	EX 1-GR1-VP-1 PNL	3/4"	(2) #10 + (1) #10 EGC	
1P-C009	1-GR MCP	1-GR2-VP-1 PNL	3/4"	(2) #10 + (1) #10 EGC	
MCC-BNR (BNR FACILITY)					
5P-C001	MCC-BNR	4-FS-1 MCP	1-1/4"	(4) #4 + (1) #3 EGC	
5P-C002	4-FS-1 MCP	4-FS1-P-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C003	4-FS-1 MCP	4-FS1-P-2	1"	(3) #8 + (1) #10 EGC	
5P-C004	MCC-BNR	4-FS-2 MCP	1-1/4"	(4) #4 + (1) #3 EGC	
5P-C005	4-FS-2 MCP	4-FS2-P-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C006	4-FS-2 MCP	4-FS2-P-2	1"	(3) #8 + (1) #10 EGC	
5P-C007	MCC-BNR	4-FS-C-MCP	3/4"	(4) #12 + (1) #12 EGC (TYP. OF 2)	
5P-C008	4-FS-C-MCP	4-FS-C-1	3/4"	(3) #12 + (1) #12 EGC (TYP. OF 2)	
5P-C009	MCC-BNR	5-AT1-P-1	1"	(3) #8 + (1) #10 EGC+(2)#14	
5P-C010	MCC-BNR	5-AT1-P-2	1"	(3) #8 + (1) #10 EGC+(2)#14	
5P-C011	MCC-BNR	5-AT2-P-1	1"	(3) #8 + (1) #10 EGC+(2)#14	
5P-C012	MCC-BNR	5-AT2-P-2	1"	(3) #8 + (1) #10 EGC+(2)#14	
5P-C013	MCC-BNR	5-AT3-P-1	1"	(3) #8 + (1) #10 EGC+(2)#14	
5P-C014	MCC-BNR	5-AT3-P-2	1"	(3) #8 + (1) #10 EGC+(2)#14	
5P-C015	MCC-BNR	5-A-BL-1	4"	(3) 600 KCMIL + (1) #2 EGC	
5P-C016	MCC-BNR	5-A-BL-2	4"	(3) 600 KCMIL + (1) #2 EGC	
5P-C017	MCC-BNR	5-A-BL-3	4"	(3) 600 KCMIL + (1) #2 EGC	
5P-C018	MCC-BNR	5-A-BL-4	4"	(3) 600 KCMIL + (1) #2 EGC	
5P-C019	MCC-BNR	14-CA-M-1	1-1/4"	(3) #1/0 + (1) #3 EGC	
5P-C020	MCC-BNR	14-CA-M-2	1-1/4"	(3) #1/0 + (1) #3 EGC	
5P-C021	MCC-BNR	5-A-BL-5	2 SETS OF 3"	(3) 300 KCMIL + (1) #1 EGC	1
5P-C022	NOT USED	-	-	-	
5P-C023	NOT USED	-	-	-	
5P-C024	NOT USED	-	-	-	
5P-C025	NOT USED	-	-	-	
5P-C026	NOT USED	-	-	-	
5P-C027	NOT USED	-	-	-	
5P-C028	NOT USED	-	-	-	
5P-C029	MCC-BNR	PANEL HP-AL	1-1/4"	(4) #3 + (1) #8 EGC	
5P-C030	MCC-BNR	11-WAS-P-1	1"	(3) #8 + (1) #10 EGC	
5P-C031	MCC-BNR	11-WAS-P-2	1"	(3) #8 + (1) #10 EGC	
5P-C032	MCC-BNR	11-WAS-P-3	1"	(3) #8 + (1) #10 EGC	
5P-C033	MCC-BNR	7-RTU-1	1-1/2"	(3) #6 + (1) #8 EGC	1
5P-C034	MCC-BNR	7-EF-M-1	1"	(3) #10 + (1) #10 EGC	
5P-C035	MCC-BNR	HP-BNR	1-1/4"	(4) 1/0 + (1) #6 EGC	
5P-C036	HP-BNR	5-AT1-V-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C037	HP-BNR	5-AT1-V-2	3/4"	(3) #12 + (1) #12 EGC	
5P-C038	HP-BNR	5-AT1-V-3	3/4"	(3) #12 + (1) #12 EGC	
5P-C039	HP-BNR	5-AT1-V-4	3/4"	(3) #12 + (1) #12 EGC	
5P-C040	HP-BNR	5-AT1-V-5	3/4"	(3) #12 + (1) #12 EGC	
5P-C041	HP-BNR	5-AT1-V-6	3/4"	(3) #12 + (1) #12 EGC	
5P-C042	NOT USED	-	-	-	
5P-C043	HP-BNR	5-AT2-V-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C044	HP-BNR	5-AT2-V-2	3/4"	(3) #12 + (1) #12 EGC	
5P-C045	HP-BNR	5-AT2-V-3	3/4"	(3) #12 + (1) #12 EGC	
5P-C046	HP-BNR	5-AT2-V-4	3/4"	(3) #12 + (1) #12 EGC	
5P-C047	HP-BNR	5-AT2-V-5	3/4"	(3) #12 + (1) #12 EGC	
5P-C048	HP-BNR	5-AT2-V-6	3/4"	(3) #12 + (1) #12 EGC	

MCC-BNR (BNR FACILITY) CONTINUED					
5P-C049	NOT USED	-	-	-	
5P-C050	HP-BNR	5-AT3-V-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C051	HP-BNR	5-AT3-V-2	3/4"	(3) #12 + (1) #12 EGC	
5P-C052	HP-BNR	5-AT3-V-3	3/4"	(3) #12 + (1) #12 EGC	
5P-C053	HP-BNR	5-AT3-V-4	3/4"	(3) #12 + (1) #12 EGC	
5P-C054	HP-BNR	5-AT3-V-5	3/4"	(3) #12 + (1) #12 EGC	
5P-C055	HP-BNR	5-AT3-V-6	3/4"	(3) #12 + (1) #12 EGC	
5P-C056	NOT USED	-	-	-	
5P-C057	HP-BNR	4-IFS-SG-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C058	HP-BNR	4-IFS-SG-2	3/4"	(3) #12 + (1) #12 EGC	
5P-C059	HP-BNR	5-EAT-SG-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C060	HP-BNR	5-IAT-SG-1	3/4"	(3) #12 + (1) #12 EGC	
5P-C061	HP-BNR	5-SCUM-V-1	3/4"	(3) #12 + (1) #12 EGC	1
5P-C062	NOT USED	-	-	-	
5P-C063	HP-BNR	XFMR DS	1"	(3) #8 + (1) #10 EGC	
5P-C064	XFMR DS	LP-BNR via 30 KVA XFMR	1"	(3) #8 + (1) #10 EGC	
5P-C065	LP-BNR - 30 KVA XFMR	LP-BNR	1-1/4"	(4) #3 + (1) #8 EBJ	
5P-C066	LP-BNR	LIGHTING	3/4"	(2) #12 + (1) #12 EGC	
5P-C067	LP-BNR	RECEPTACLES	3/4"	(2) #12 + (1) #12 EGC	
5P-C068	LP-BNR	PLC-BNR	3/4"	(2) #12 + (1) #12 EGC	
5P-C069	LP-BNR	RIO-BNR2	3/4"	(2) #10 + (1) #12 EGC	
5P-C070	LP-BNR	5-AT1-DO/ORP-1	3/4"	(2) #12 + (1) #12 EGC	
5P-C071	LP-BNR	5-AT1-ORP-2	3/4"	(2) #12 + (1) #12 EGC	
5P-C072	LP-BNR	5-AT1-DO-2&3	3/4"	(2) #12 + (1) #12 EGC	
5P-C073	LP-BNR	PLC-BNR	-	-	
5P-C074	LP-BNR	7-MBR-MCP	-	-	
5P-C075	LP-BNR	RIO-BNR2	-	-	
5P-C076	NOT USED	-	-	-	
5P-C077	LP-BNR	5-AT1-F-5	3/4"	(2) #12 + (1) #12 EGC	
5P-C078	LP-BNR	5-AT1-F-6	3/4"	(2) #12 + (1) #12 EGC	
5P-C079	NOT USED	-	-	-	
5P-C080	LP-BNR	5-AT2-DO/ORP-1	3/4"	(2) #12 + (1) #12 EGC	
5P-C081	LP-BNR	5-AT2-ORP-2	3/4"	(2) #12 + (1) #12 EGC	
5P-C082	LP-BNR	5-AT2-DO-2&3	3/4"	(2) #12 + (1) #12 EGC	
5P-C083	NOT USED	-	-	-	
5P-C084	NOT USED	-	-	-	
5P-C085	NOT USED	-	-	-	
5P-C086	NOT USED	-	-	-	
5P-C087	LP-BNR	5-AT2-F-5	3/4"	(2) #12 + (1) #12 EGC	
5P-C088	LP-BNR	5-AT2-F-6	3/4"	(2) #12 + (1) #12 EGC	
5P-C089	NOT USED	-	-	-	
5P-C090	LP-BNR	5-AT3-DO/ORP-1	3/4"	(2) #12 + (1) #12 EGC	
5P-C091	LP-BNR	5-AT3-ORP-2	3/4"	(2) #12 + (1) #12 EGC	
5P-C092	LP-BNR	5-AT3-DO-2&3	3/4"	(2) #12 + (1) #12 EGC	
5P-C093	NOT USED	-	-	-	
5P-C094	NOT USED	-	-	-	
5P-C095	NOT USED	-	-	-	
5P-C096	NOT USED	-	-	-	
5P-C097	LP-BNR	5-AT3-F-5	3/4"	(2) #12 + (1) #12 EGC	
5P-C098	LP-BNR	5-AT3-F-6	3/4"	(2) #12 + (1) #12 EGC	
5P-C099	NOT USED	-	-	-	
5P-C100	LP-BNR	14-CA-VM-1	3/4"	(2) #10 + (1) #10 EGC	
MCC-MBR (MEMBRANE BUILDING)					
7P-C001	MCC-MBR	7-TK-BL-1	1"	(3) #4 + (1) #8 EGC	
7P-C002	MCC-MBR	7-TK-BL-2	1"	(3) #4 + (1) #8 EGC	
7P-C003	MCC-MBR	7-TK-BL-3	1"	(3) #4 + (1) #8 EGC	
7P-C004	MCC-MBR	7-TK-BL-4	1"	(3) #4 + (1) #8 EGC	
7P-C005	MCC-MBR	7-TK-BL-5	1"	(3) #4 + (1) #8 EGC	

KEY NOTES:

(1) INCLUDE CONDUIT WIRES IP-C002 & IP-C003.

(2) INCLUDE CONDUIT WIRES IP-C007 & IP-C008.

GEORGIA
No. PE028093
PROFESSIONAL
TIMOTHY L. HARTWELL
10/30/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS
196 LOG CANOE CIRCLE
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CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
△		
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE
POWER 1

SHEET NO.
E-33

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-33.DWG|Tab: E-33|Plotted: October 30, 2020 11:27am

FEEDER SCHEDULE - POWER

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
MCC-MBR (MEMBRANE BUILDING) CONTINUED				
7P-C006	MCC-MBR	7-RAS-P-1	3/4"	(3) #8 + (1) #10 EGC
7P-C007	MCC-MBR	7-RAS-P-2	3/4"	(3) #8 + (1) #10 EGC
7P-C008	MCC-MBR	7-RAS-P-3	3/4"	(3) #8 + (1) #10 EGC
7P-C009	MCC-MBR	7-RAS-P-4	3/4"	(3) #8 + (1) #10 EGC
7P-C010	MCC-MBR	7-PR-P-1	1"	(3) #6 + (1) #8 EGC
7P-C011	MCC-MBR	7-PR-P-2	1"	(3) #6 + (1) #8 EGC
7P-C012	MCC-MBR	7-PR-P-3	1"	(3) #6 + (1) #8 EGC
7P-C013	MCC-MBR	7-PR-P-4	1"	(3) #6 + (1) #8 EGC
7P-C014	MCC-MBR	7-CA-P-1	3/4"	(3) #12 + (1) #12 EGC
7P-C015	MCC-MBR	7-CA-P-2	3/4"	(3) #12 + (1) #12 EGC
7P-C016	MCC-MBR	7-SHC-P-1	3/4"	(3) #12 + (1) #12 EGC
7P-C017	MCC-MBR	7-SHC-P-2	3/4"	(3) #12 + (1) #12 EGC
7P-C018	MCC-MBR	7-EF-M-1	3/4"	(3) #12 + (1) #12 EGC
7P-C019	MCC-MBR	7-SF-M-1	3/4"	(3) #12 + (1) #12 EGC
7P-C020	MCC-BNR	7-AC-M-1	3/4"	(3) #12 + (1) #12 EGC
7P-C021	MCC-BNR	7-AC-M-2	3/4"	(3) #12 + (1) #12 EGC
7P-C022	MCC-BNR	7-TK-V-1	3/4"	(3) #12 + (1) #12 EGC
7P-C023	MCC-BNR	7-TK-V-2	3/4"	(3) #12 + (1) #12 EGC
7P-C024	MCC-BNR	7-TK-V-3	3/4"	(3) #12 + (1) #12 EGC
7P-C025	MCC-BNR	7-TK-V-4	3/4"	(3) #12 + (1) #12 EGC
7P-C026	MCC-BNR	7-TK-V-5	3/4"	(3) #12 + (1) #12 EGC
7P-C027	MCC-BNR	7-TK-V-6	3/4"	(3) #12 + (1) #12 EGC
7P-C028	MCC-MBR	HP-MBR	1-1/2"	(4) 1/0 + (1) #6 EGC
7P-C029	HP-MBR	30 KVA TRANSFORMER 1	1"	(3) #8 + (1) #10 EGC
7P-C030	HP-MBR	CIP SYSTEM	3/4"	(3) #12 + (1) #12 EGC
7P-C031	LP-MBR	MBR MAIN CONTROL PANEL	3/4"	(2) #12 + (1) #12 EGC
7P-C032	HP-MBR	COMPRESSOR MCP	1"	(3) #4 + (1) #8 EGC
7P-C033	COMPRESSOR MCP	COMPRESSOR 1	3/4"	(3) #12 + (1) #12 EGC
7P-C034	COMPRESSOR MCP	COMPRESSOR 2	3/4"	(3) #12 + (1) #12 EGC
7P-C035	HP-MBR	DRYER	3/4"	(3) #12 + (1) #12 EGC
7P-C036	LP-MBR	7-EF-M-2	3/4"	(2) #12 + (1) #12 EGC 1
7P-C037	NOT USED	-	-	-
7P-C038	30 KVA TRANSFORMER	LP-MBR	1-1/4"	(4) #3 + (1) #8 EBJ
7P-C039	LP-MBR	LIGHTING	3/4"	(2) #12 + (1) #12 EGC
7P-C040	LP-MBR	RECEPTACLES	3/4"	(2) #12 + (1) #12 EGC
7P-C041	LP-MBR	CONTROLS	3/4"	(2) #12 + (1) #12 EGC
WAS HOLDING AND REUSE PUMPS				
11P-C001	Ex REUSE PUMP CTR PNL	EX 11-RP-P-1	2 1/2"	(3) 4/0 + (1) #2 EGC
11P-C002	Ex REUSE PUMP CTR PNL	EX 11-RP-P-2	2 1/2"	(3) 4/0 + (1) #2 EGC
11P-C003	Ex REUSE PUMP CTR PNL	EX 11-RP-HP-1	3/4"	(3) #12 + (1) #12 EGC
11P-C004	Ex REUSE PUMP CTR PNL	EX 11-RP-RV-1	3/4"	(3) #12 + (1) #12 EGC
11P-C005	Ex LP-RP	EX 11-RP-F-1	3/4"	(2) #12 + (1) #12 EGC
11P-C006	Ex LP-RP	EX 11-RP-RV-1 (HEATER)	3/4"	(2) #10 + (1) #10 EGC
11P-C007	Ex LP-RP	EX RECEPTACLES	3/4"	(2) #12 + (1) #10 EGC
11P-C008	Ex LP-RP	EX LIGHTS	3/4"	(2) #12 + (1) #10 EGC
EX. MCC-H				
14P-C001	LP-H1	14-CA-VM-2	3/4"	(2) #10 + (1) #10 EGC
14P-C002	LP-H1	14-CA-VM-3	3/4"	(2) #10 + (1) #10 EGC
14P-C003	LP-H1	14-CA-VM-4	3/4"	(2) #10 + (1) #10 EGC
14P-C004	MCC-H	6-AT4-P-1	3/4"	(3) #8 + (1) #10 EGC
14P-C005	MCC-H	6-AT4-P-2	3/4"	(3) #8 + (1) #10 EGC
14P-C006	MCC-H	PANEL HP-H	1-1/2"	(4) 1/0 + (1) #6 EGC
14P-C007	MCC-H	11-WAS-BL-1	2"	(3) 250 KCMIL + (1) #4 EGC
14P-C008	MCC-H	11-WAS-BL-2	2"	(3) 250 KCMIL + (1) #4 EGC
14P-C009	MCC-H	11-WAS-BL-3	2"	(3) 250 KCMIL + (1) #4 EGC
14P-C010	PANEL HP-H	6-AT4-V-1	3/4"	(3) #12 + (1) #12 EGC
14P-C011	PANEL HP-H	6-AT4-V-2	3/4"	(3) #12 + (1) #12 EGC
14P-C012	PANEL HP-H	6-AT4-V-3	3/4"	(3) #12 + (1) #12 EGC
14P-C013	PANEL HP-H	6-AT4-V-4	3/4"	(3) #12 + (1) #12 EGC

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
EX. MCC-H CONTINUED				
14P-C014	NOT USED	-	-	- 1
14P-C015	NOT USED	-	-	-
14P-C016	LP-H1	PLC-H	3/4"	(4) #10 + (1) #10 EGC
14P-C017	PANEL HP-H	12-AD-V-6	3/4"	(3) #12 + (1) #12 EGC
14P-C018	PANEL HP-H	12-AD-V-7	3/4"	(3) #12 + (1) #12 EGC
14P-C019	PANEL HP-H	12-AD-V-8	3/4"	(3) #12 + (1) #12 EGC
14P-C020	PANEL HP-H	12-AD-V-9	3/4"	(3) #12 + (1) #12 EGC
14P-C021	EX. LP-H	6-AT4-DO-1/2	3/4"	(2) #12 + (1) #12 EGC
14P-C022	EX. LP-H	6-AT4-DO-3/4	3/4"	(2) #12+ (1) #12 EGC
14P-C021	PANEL HP-H	LP-H1	1-1/2"	(4) #3 + (1) #8 EBJ
14P-C022	LP-H1	RIO-BNR1	3/4"	(4) #10+ (1) #10 EGC
14P-C023	LP-H1	14-CA MCP	3/4"	(2) #10 + (1) #10 EGC
14P-C024	LP-H1	6-AT4-ORP-1	3/4"	(2) #12 + (1) #12 EGC
14P-C025	LP-H1	6-AT4-DO-1&2	3/4"	(2) #12 + (1) #12 EGC
14P-C026	LP-H1	6-AT4-DO-3&4	3/4"	(2) #12 + (1) #12 EGC
14P-C027	LP-H1	6-AT4-F-5	3/4"	(2) #12 + (1) #12 EGC
14P-C028	LP-H1	6-AT4-F-6	3/4"	(2) #12 + (1) #12 EGC
14P-C030	LP-H1	11-WT-L-1	3/4"	(2) #12 + (1) #12 EGC
14P-C031	EX LP-H	12-AD-L-1	3/4"	(2) #12 + (1) #12 EGC
14P-C032	EX LP-H	12-AD-L-2	3/4"	(2) #12 + (1) #12 EGC
14P-C033	LP-H1	12-AD-DO-1A & B	3/4"	(2) #12 + (1) #12 EGC
14P-C034	LP-H1	12-AD-DO-2A & B	3/4"	(2) #12 + (1) #12 EGC
14P-C035	LP-H1	11-WAS-SP-1	3/4"	(2) #12 + (1) #12 EGC
SG-OC (AT ODOR CONTROL AREA)				
14P-C051	SG-OC	NEW GRIT CONTROL PANEL	1"	(4) #6 + (1) #10 EGC
14P-C052	SG-OC	REUSE PS CONTROL PANEL	4"	(3) 600kcmil + (1) #3 EGC
14P-C053	NOT USED	-	-	-
14P-C054	NOT USED	-	-	-
14P-C055	NOT USED	-	-	-
14P-C056	SG-OC	EX MCC-A	5 SETS of 4"	(4) 600kcmil + (1) 250 kcmil
14P-C057	SG-OC	18-OC-1 MCP	1-1/4"	(3) #3 + (1) #8 EGC
14P-C058	SG-OC	MCC-DW	4 SETS of 4"	(4) 600kcmil + (1) 250 kcmil
14P-C059	SG-OC	Panel LP-OC 30kva XFMR (PWR ZONE)	1"	(3) #3 + (1) #8 EGC
14P-C060	Panel LP-OC POWER ZONE	PLC-OC (1-OC-MCP)	3/4"	(2) #12 + (1) #12 EGC
14P-C061	Panel LP-OC POWER ZONE	PLC-IH	3/4"	(4) #10 + (1) #10 EGC
14P-C062	Panel LP-OC POWER ZONE	SG-OC CONTROLS	3/4"	(2) #12 + (1) #12 EGC
14P-C063	Panel LP-OC POWER ZONE	LIGHTING	3/4"	(2) #12 + (1) #12 EGC
14P-C064	Panel LP-OC POWER ZONE	RECEPTACLE	3/4"	(2) #12 + (1) #12 EGC
14P-C065	Panel LP-OC POWER ZONE	HEAT TRACE	3/4"	(2) #12 + (1) #12 EGC
14P-C066	Panel LP-OC POWER ZONE	HEAT TRACE	3/4"	(2) #12 + (1) #12 EGC
SG-MAIN (AT PLANT ENTRANCE)				
14P-C101	GA POWER TRANSFORMER 1	MAIN SWITCH GEAR (SG-MAIN)	11 SETS of 4"	(4) 600 kcmil + 500 kcmil EGC
14P-C102	GA POWER TRANSFORMER 2	MAIN SWITCH GEAR (SG-MAIN)	11 SETS of 4"	(4) 600 kcmil + 500 kcmil EGC
14P-C103	MAIN SWITCH GEAR (SG-MAIN)	SG-OC	11 SETS of 4"	(4) 600 kcmil + (1) 500 kcmil EGC
14P-C104	MAIN SWITCH GEAR (SG-MAIN)	MCC-MBR	3 SETS of 4"	(4) 600 kcmil + (1) 250 kcmil EGC
14P-C105	MAIN SWITCH GEAR (SG-MAIN)	MCC-BNR	5 SETS of 4"	(4) 600 kcmil + (1) 250 kcmil EGC
14P-C106	MAIN SWITCH GEAR	CONTROL BUILDING	4"	(4) 500 kcmil + (1) #3 EGC
14P-C107	LP-MSG	PLC-MSG	3/4"	(2) #12 + (1) #12 EGC
14P-C108	LP-MSG	PLC-MMSG	3/4"	(2) #12 + (1) #12 EGC
MCC-DW (DEWATERING BUILDING)				
15P-C001	MCC-DW	12-AD-BL-1	2"	(3) 250 KCMIL + (1) #4 EGC
15P-C002	MCC-DW	12-AD-BL-2	2"	(3) 250 KCMIL + (1) #4 EGC
15P-C003	MCC-DW	15-RDT-1-MCP	3/4"	(3) #10 + (1) #10 EGC
15P-C004	15-RDT-1-MCP	15-RDT1-MX-1	3/4"	(3) #12 + (1) #12 EGC
15P-C005	15-RDT-1-MCP	15-RDT1-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C006	15-RDT-1-MCP	15-RDT1-D-1	3/4"	(3) #12 + (1) #12 EGC
15P-C007	MCC-DW	15-RDT-2-MCP	3/4"	(3) #10 + (1) #10 EGC
15P-C008	15-RDT-2-MCP	15-RDT2-MX-1	3/4"	(3) #12 + (1) #12 EGC
15P-C009	15-RDT-2-MCP	15-RDT2-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C010	15-RDT-2-MCP	15-RDT2-D-1	3/4"	(3) #12 + (1) #12 EGC
15P-C011	MCC-DW	12-AD-BL-3	2"	(3) 250 KCMIL + (1) #4 EGC
15P-C012	MCC-DW	12-AD-MX-2	1"	(3) #6 + (1) #8 EGC

GEORGIA
No. PE028093
PROFESSIONAL
TIMOTHY L. HARTWELL
10/30/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE POWER 2

SHEET NO.
E-34

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-34.DWG|Tab: E-34|Plotted: October 30, 2020 11:27am

FEEDER SCHEDULE - POWER

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
MCC-DW (DEWATERING BUILDING) CONTINUED				
15P-C013	MCC-DW	15-BFP-1 - MCP	3/4"	(3) #12 + (1) #12 EGC
15P-C014	15-BFP-1-MCP	15-BFP1-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C015	15-BFP-1-MCP	15-BFP1-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C016	MCC-DW	15-BFP-2 - MCP	3/4"	(3) #12 + (1) #12 EGC
15P-C017	15-BFP-2-MCP	15-BFP2-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C018	15-BFP-2-MCP	15-BFP2-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C019	MCC-DW	15-DP-P-1	1"	(3) #4 + (1) #8 EGC
15P-C020	MCC-DW	15-DP-P-2	1"	(3) #4 + (1) #8 EGC
15P-C021	MCC-DW	15-S-C-1	3/4"	(3) #12 + (1) #12 EGC
15P-C022	MCC-DW	15-S-C-2	3/4"	(3) #12 + (1) #12 EGC
15P-C023	MCC-DW	15-TW-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C024	MCC-DW	15-TW-P-2	3/4"	(3) #12 + (1) #12 EGC
15P-C025	MCC-DW	15-BFP-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C026	MCC-DW	15-BFP-P-2	3/4"	(3) #12 + (1) #12 EGC
15P-C027	MCC-DW	15-BFP-P-3	3/4"	(3) #12 + (1) #12 EGC
15P-C028	MCC-DW	15-EF-M-1	3/4"	(3) #12 + (1) #12 EGC (1)
15P-C029	MCC-DW	15-SF-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C030	MCC-DW	15-BFP-BP-1	3/4"	(3) #12 + (1) #12 EGC
15P-C031	MCC-DW	15-BFP-BP-2	3/4"	(3) #12 + (1) #12 EGC
15P-C032	MCC-DW	15-BFP-BP-3	3/4"	(3) #12 + (1) #12 EGC
15P-C033	MCC-DW	HP-DW	1-1/2"	(4) 1/0 + (1) #6 EGC
15P-C034	HP-DW	30 KVA XFMR	3/4"	(3) #8 + (1) #10 EGC
15P-C035	HP-DW	15-BFP-V-1	3/4"	(3) #12 + (1) #12 EGC
15P-C036	HP-DW	15-BFP-V-2	3/4"	(3) #12 + (1) #12 EGC
15P-C037	HP-DW	15-BFP-V-3	3/4"	(3) #12 + (1) #12 EGC
15P-C038	HP-DW	15-BFP-V-4	3/4"	(3) #12 + (1) #12 EGC
15P-C039	HP-DW	15-SC-V-1	3/4"	(3) #12 + (1) #12 EGC
15P-C040	HP-DW	15-SC-V-2	3/4"	(3) #12 + (1) #12 EGC
15P-C041	HP-DW	15-SC-V-3	3/4"	(3) #12 + (1) #12 EGC
15P-C042	MCC-DW	15-RTU-1	1"	(3) #6 + (1) #8 EGC
15P-C043	HP-DW	15-PW-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C044	HP-DW	15-POLY-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C045	HP-DW	15-POLY-P-2	3/4"	(3) #12 + (1) #12 EGC
15P-C046	HP-DW	15-POLY-P-3	3/4"	(3) #12 + (1) #12 EGC
15P-C047	HP-DW	15-POLY-P-4	3/4"	(3) #12 + (1) #12 EGC
15P-C048	HP-DW	15-POLY-P-5	3/4"	(3) #12 + (1) #12 EGC
15P-C049	HP-DW	15-POLY-P-6	3/4"	(3) #12 + (1) #12 EGC
15P-C050	HP-DW	15-DW-SP-1 CP	3/4"	(3) #12 + (1) #12 EGC
15P-C051	15-DW-SP-1 CP	15-DW-SP-1	3/4"	(3) #12 + (1) #12 EGC
15P-C052	HP-DW	15-POLY-RP-1	3/4"	(3) #12 + (1) #12 EGC
15P-C053	HP-DW	15-POLY-RP-2	3/4"	(3) #12 + (1) #12 EGC
15P-C054	30 KVA XFMR	LP-DW	1-1/2"	(4) #3 + (1) #8 EBJ
15P-C055	LP-DW	LIGHTING	3/4"	(2) #12 + (1) #12 EGC
15P-C056	LP-DW	RECEPTACLES	3/4"	(2) #12 + (1) #12 EGC
15P-C057	LP-DW	PLC DW	3/4"	(2) #12 + (1) #12 EGC
15P-C058	LP-DW	15-RDT1-F-1	3/4"	(2) #12 + (1) #12 EGC
15P-C059	LP-DW	15-RDT2-F-1	3/4"	(2) #12 + (1) #12 EGC
15P-C060	LP-DW	15-POLY-L-1	3/4"	(2) #12 + (1) #12 EGC
15P-C061	LP-DW	15-POLY-L-2	3/4"	(2) #12 + (1) #12 EGC
15P-C062	LP-DW	15-BFP-F-1	3/4"	(2) #12 + (1) #12 EGC
15P-C063	LP-DW	15-BFP-F-2	3/4"	(2) #12 + (1) #12 EGC
15P-C064	LP-DW	15-DP-F-1	3/4"	(2) #12 + (1) #12 EGC
15P-C065	LP-DW	15-DW-GM MCP	3/4"	(2) #12 + (1) #12 EGC
15P-C066	MCC-DW	15-TK-RP-1	3/4"	(3) #12 + (1) #12 EGC
15P-C067	MCC-DW	15-TK-RP-2	3/4"	(3) #12 + (1) #12 EGC
15P-C068	MCC-DW	15-D-P-1	3/4"	(3) #12 + (1) #12 EGC
15P-C069	MCC-DW	15-D-P-2	3/4"	(3) #12 + (1) #12 EGC
15P-C070	MCC-DW	15-D-P-3	3/4"	(3) #12 + (1) #12 EGC
15P-C071	MCC-DW	15-D-P-4	3/4"	(3) #12 + (1) #12 EGC

MCC-DW (DEWATERING BUILDING) CONTINUED				
15P-C072	MCC-DW	15-D-P-5	3/4"	(3) #12 + (1) #12 EGC
15P-C073	MCC-DW	15-D-P-6	3/4"	(3) #12 + (1) #12 EGC
15P-C074	MCC-DW	15-D-P-7	3/4"	(3) #12 + (1) #12 EGC
15P-C075	MCC-DW	15-D-P-8	3/4"	(3) #12 + (1) #12 EGC
15P-C076	MCC-DW	15-RDS-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C077	MCC-DW	15-DTB-D-1	3/4"	(3) #12 + (1) #12 EGC
15P-C078	MCC-DW	15-DBB-D-1	3/4"	(3) #12 + (1) #12 EGC
15P-C079	MCC-DW	15-DWZ-F-1	3/4"	(3) #10 + (1) #10 EGC
15P-C080	MCC-DW	15-DWZ-F-2	3/4"	(3) #10 + (1) #10 EGC
15P-C081	MCC-DW	15-DEZ-F-1	3/4"	(3) #10 + (1) #10 EGC
15P-C082	MCC-DW	15-DEZ-F-2	3/4"	(3) #10 + (1) #10 EGC
15P-C083	MCC-DW	15-DA-F-1	3/4"	(3) #8 + (1) #10 EGC
15P-C084	MCC-DW	15-V-F-1	3/4"	(3) #12 + (1) #12 EGC
15P-C085	MCC-DW	15-DES-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C086	MCC-DW	15-DES-V-1	3/4"	(3) #12 + (1) #12 EGC
15P-C087	MCC-DW	15-SHOC-MCP	3/4"	(3) #10 + (1) #10 EGC
15P-C088	MCC-DW	15-DS-P-1	3/4"	(3) #8 + (1) #10 EGC
15P-C089	MCC-DW	15-DS-P-2	3/4"	(3) #8 + (1) #10 EGC
15P-C090	MCC-DW	15-DF-P-1	3/4"	(3) #8 + (1) #10 EGC
15P-C091	MCC-DW	15-DF-P-2	3/4"	(3) #8 + (1) #10 EGC
15P-C092	MCC-DW	15-BBS-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C093	MCC-DW	15-BBS-M-2	3/4"	(3) #12 + (1) #12 EGC
15P-C094	MCC-DW	15-BLS-M-1	3/4"	(3) #12 + (1) #12 EGC
15P-C095	MCC-DW	15-BLS-M-2	3/4"	(3) #12 + (1) #12 EGC
15P-C096	MCC-DW	15-TO-P-1	3/4"	(3) #6 + (1) #8 EGC
15P-C097	MCC-DW	15-TO-P-2	3/4"	(3) #10 + (1) #10 EGC
15P-C098	MCC-DW	15-TO-F-1	3/4"	(3) #12 + (1) #12 EGC
15P-C099	LP-DW	15-HOPPER MCP	3/4"	(2) #12 + (1) #12 EGC
15P-C100	15-SHOC-MCP	15-OC-OF-1	1"	(3)#10 + (1) #10 EGC
15P-C101	15-SHOC-MCP	15-OC-RP-1	1"	(3)#12 + (1) #12 EGC
15P-C102	15-SHOC-MCP	15-OC-NP-1	1"	(2)#10 + (1) #10 EGC
15P-C103	15-SHOC-MCP	15-OC-F-1	3/4"	(2) #12 + (1) #12 EGC
15P-C104	15-SHOC-MCP	15-OC-F-2	3/4"	(2) #12 + (1) #12 EGC
15P-C105	15-SHOC-MCP	15-OC-HT-1	3/4"	(2) #12 + (1) #12 EGC
15P-C106	HP-DW	15-DS1-V-1	3/4"	(3) #12 + (1) #12 EGC (2)

KEY NOTES:

1. TYPICAL OF 4: PROVIDE FEEDERS FOR 15-EF-M-2, 15-EF-M-3, AND 15-EF-M-4.
2. TYPICAL OF 4: PROVIDE FEEDERS FOR 15-DS1-V-2, 15-DS2-V-1, 15-DS2-V-2.

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STEVENSVILLE, MARYLAND
(443) 249-3111

CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

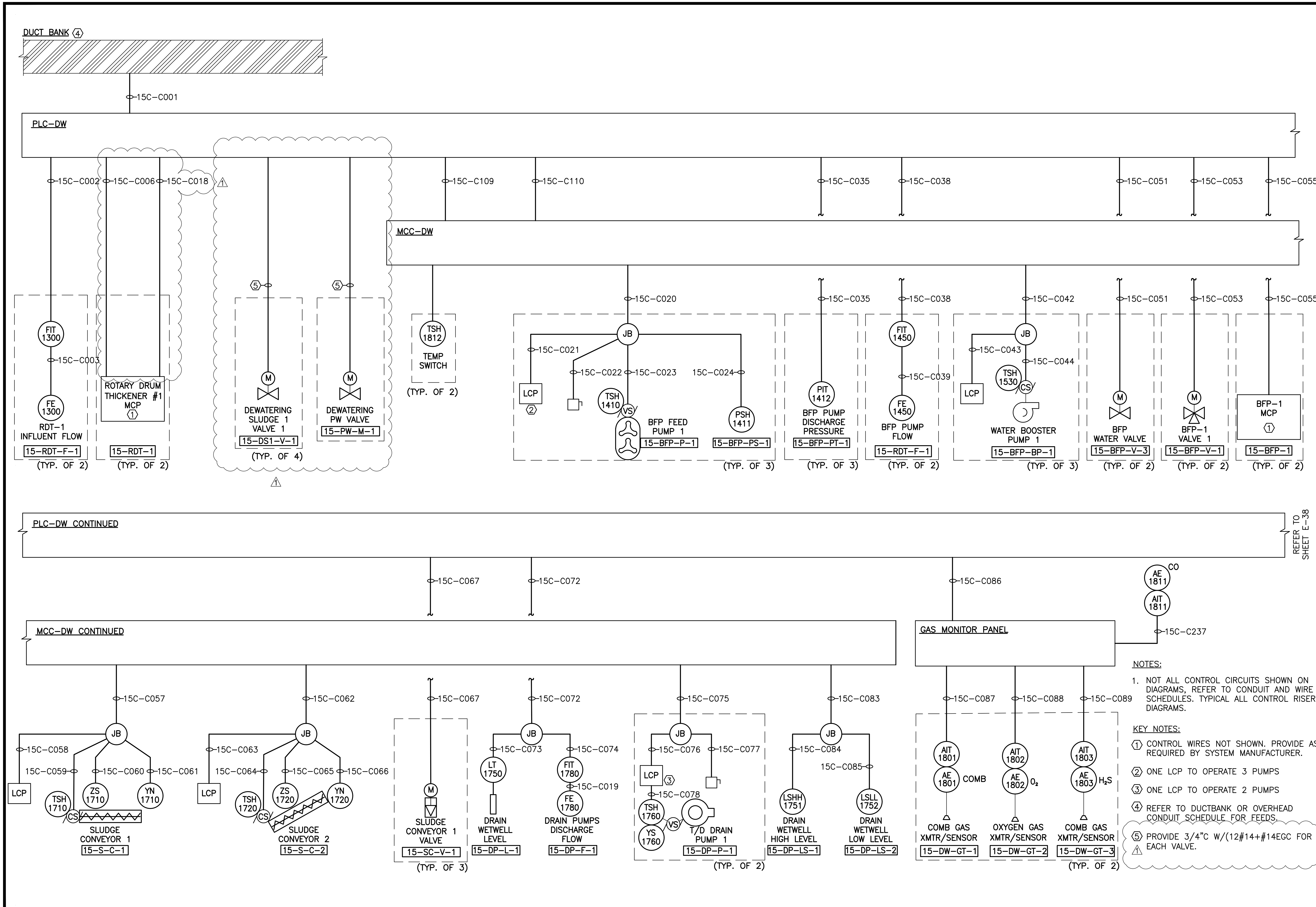
PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE POWER 3

SHEET NO.
E-35

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-35.DWG|Tab: E-35|Plotted: October 30, 2020 11:31am



NOTES:

1. NOT ALL CONTROL CIRCUITS SHOWN ON DIAGRAMS, REFER TO CONDUIT AND WIRE SCHEDULES. TYPICAL ALL CONTROL RISER DIAGRAMS.

KEY NOTES:

1. CONTROL WIRES NOT SHOWN. PROVIDE AS REQUIRED BY SYSTEM MANUFACTURER.
2. ONE LCP TO OPERATE 3 PUMPS
3. ONE LCP TO OPERATE 2 PUMPS
4. REFER TO DUCTBANK OR OVERHEAD CONDUIT SCHEDULE FOR FEEDS.
5. PROVIDE 3/4"C W/(12#14+#14EGC FOR EACH VALVE.

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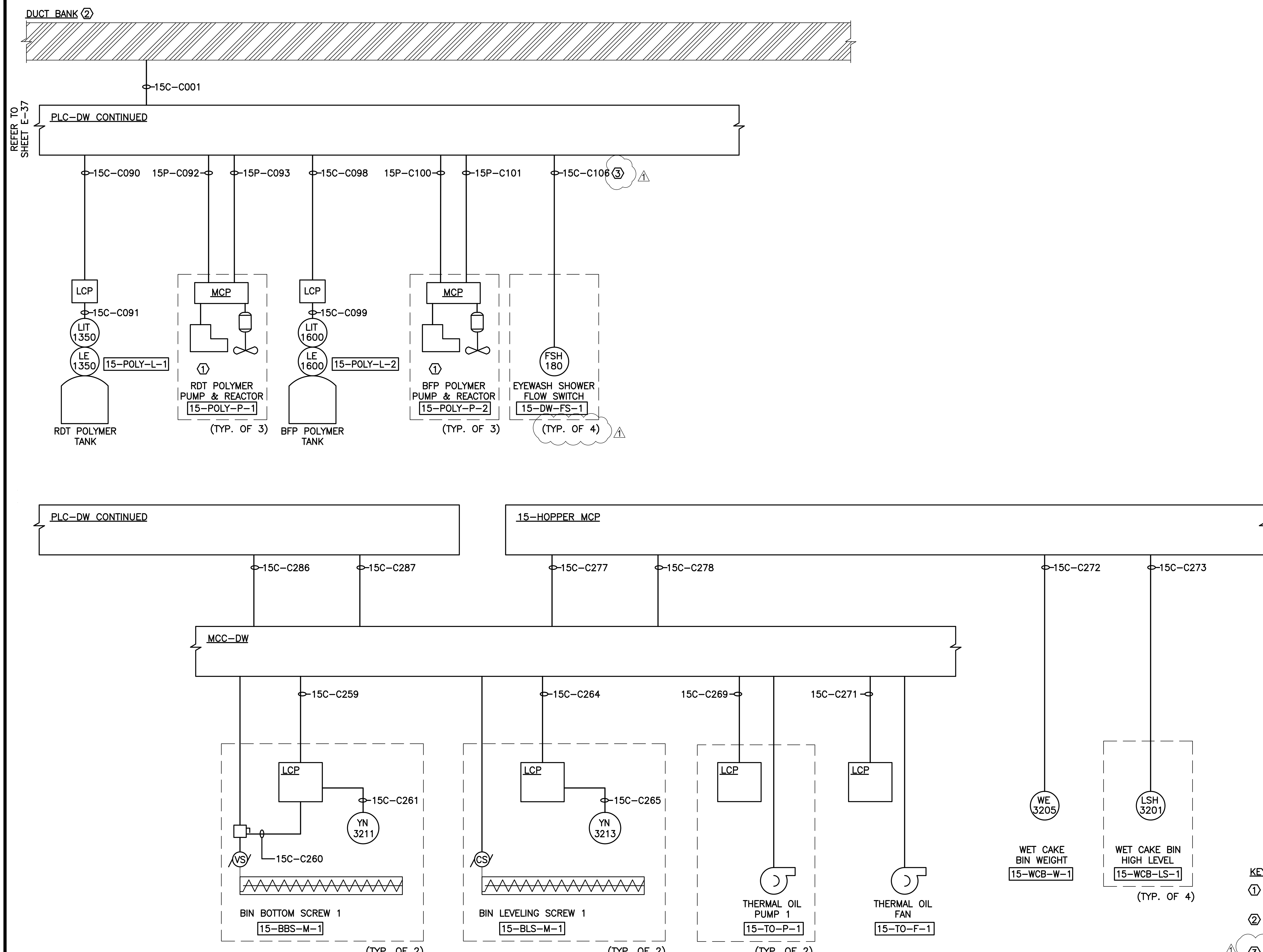
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONTROL RISER DIAGRAMS 1

SHEET NO.
E-37

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-37.DWG|Tab: E-37|Plotted: October 30, 2020 11:32am



KEY NOTES:

① SKID SYSTEM. COORDINATE INSTALLATION REQUIREMENTS WITH MANUFACTURER.

② REFER TO DUCTBANK OR OVERHEAD CONDUIT SCHEDULE FOR FEEDS.

③ PROVIDE 3/4"C W/(2)#14+(1)#14EGC FOR 15-DW-FS-4.

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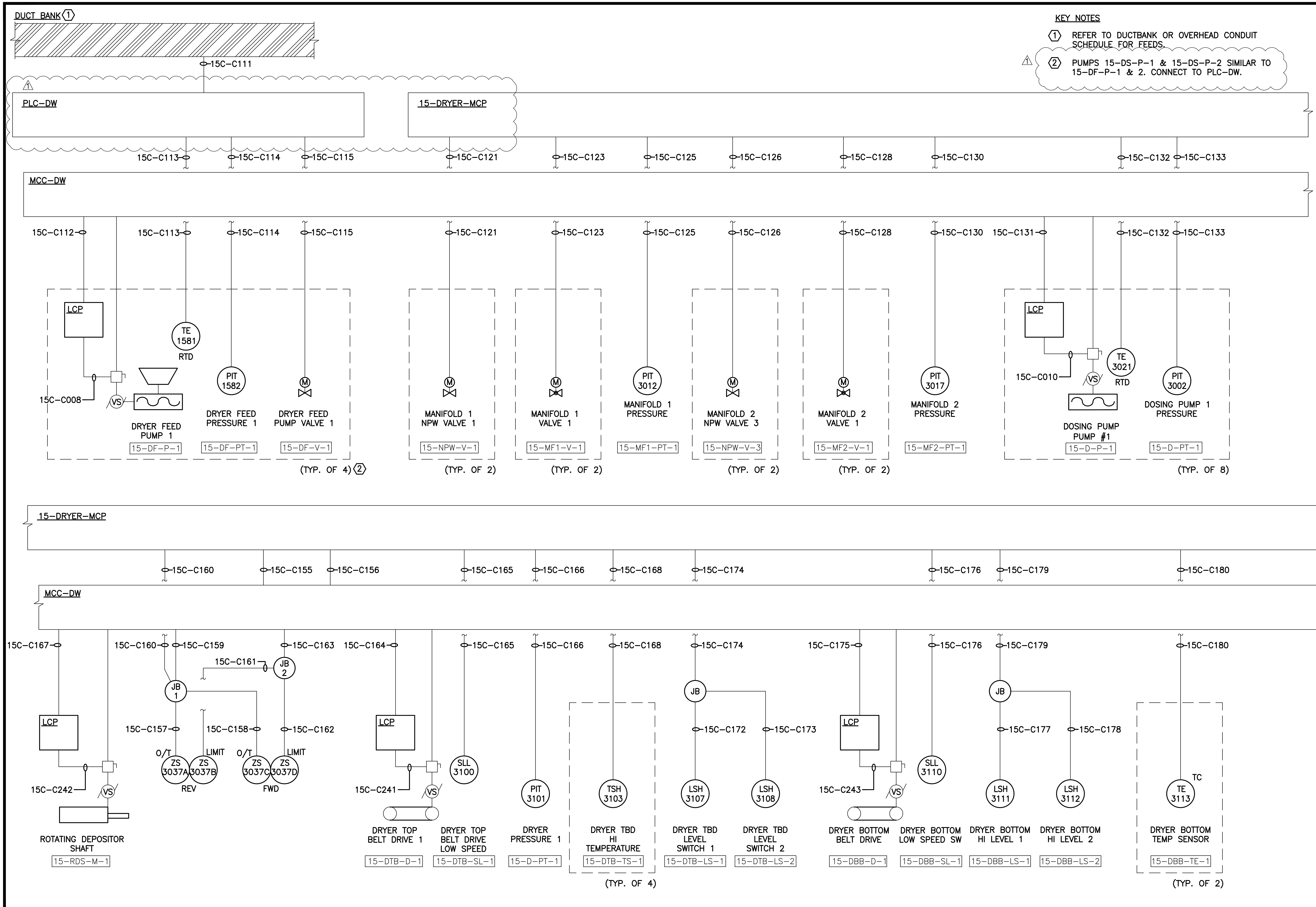
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONTROL RISER DIAGRAMS 2

SHEET NO.
E-38

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-38.DWG|Tab: E-38|Plotted: October 30, 2020 11:32am


DUCT BANK 1
15C-C111
PLC-DW
15-DRYER-MCP
MCC-DW
15C-C112
15C-C113
15C-C114
15C-C115
15C-C121
15C-C123
15C-C125
15C-C126
15C-C128
15C-C130
15C-C131
15C-C132
15C-C133
LCP
TE 1581
RTD
PIT 1582
15C-C008
VS
DRYER FEED PUMP 1
15-DF-P-1
DRYER FEED PRESSURE 1
15-DF-PT-1
DRYER FEED PUMP VALVE 1
15-DF-V-1
(TYP. OF 4) 2
MANIFOLD 1 NPW VALVE 1
15-NPW-V-1
(TYP. OF 2)
MANIFOLD 1 VALVE 1
15-MF1-V-1
(TYP. OF 2)
PIT 3012
MANIFOLD 1 PRESSURE
15-MF1-PT-1
MANIFOLD 2 NPW VALVE 3
15-NPW-V-3
(TYP. OF 2)
MANIFOLD 2 VALVE 1
15-MF2-V-1
(TYP. OF 2)
PIT 3017
MANIFOLD 2 PRESSURE
15-MF2-PT-1
15C-C010
TE 3021
RTD
DOSING PUMP #1
15-D-P-1
PIT 3002
DOSING PUMP 1 PRESSURE
15-D-PT-1
(TYP. OF 8)
15-DRYER-MCP
15C-C160
15C-C155
15C-C156
15C-C165
15C-C166
15C-C168
15C-C174
15C-C176
15C-C179
15C-C180
MCC-DW
15C-C167
15C-C159
15C-C163
15C-C164
15C-C161
JB 1
JB 2
15C-C157
15C-C158
15C-C162
O/T
LIMIT
ZS 3037A
ZS 3037B
ZS 3037C
ZS 3037D
REV
FWD
15C-C242
ROTATING DEPOSITOR SHAFT
15-RDS-M-1
15C-C241
SLL 3100
DRYER TOP BELT DRIVE 1
15-DTB-D-1
DRYER TOP BELT DRIVE LOW SPEED
15-DTB-SL-1
PIT 3101
DRYER PRESSURE 1
15-D-PT-1
TSH 3103
DRYER TBD HI TEMPERATURE
15-DTB-TS-1
(TYP. OF 4)
JB
15C-C172
15C-C173
LSH 3107
DRYER TBD LEVEL SWITCH 1
15-DTB-LS-1
LSH 3108
DRYER TBD LEVEL SWITCH 2
15-DTB-LS-2
15C-C175
15C-C243
SLL 3110
DRYER BOTTOM BELT DRIVE
15-DBB-D-1
DRYER BOTTOM LOW SPEED SW
15-DBB-SL-1
15C-C177
15C-C178
LSH 3111
DRYER BOTTOM HI LEVEL 1
15-DBB-LS-1
LSH 3112
DRYER BOTTOM HI LEVEL 2
15-DBB-LS-2
TC
TE 3113
DRYER BOTTOM TEMP SENSOR
15-DBB-TE-1
(TYP. OF 2)

KEY NOTES

1. REFER TO DUCTBANK OR OVERHEAD CONDUIT SCHEDULE FOR FEEDS.
2. PUMPS 15-DS-P-1 & 15-DS-P-2 SIMILAR TO 15-DF-P-1 & 2. CONNECT TO PLC-DW.

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CERTIFICATE OF AUTHORIZATION #PEF007323 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

REVISION	DATE
ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONTROL RISER DIAGRAMS 3

SHEET NO.
E-39

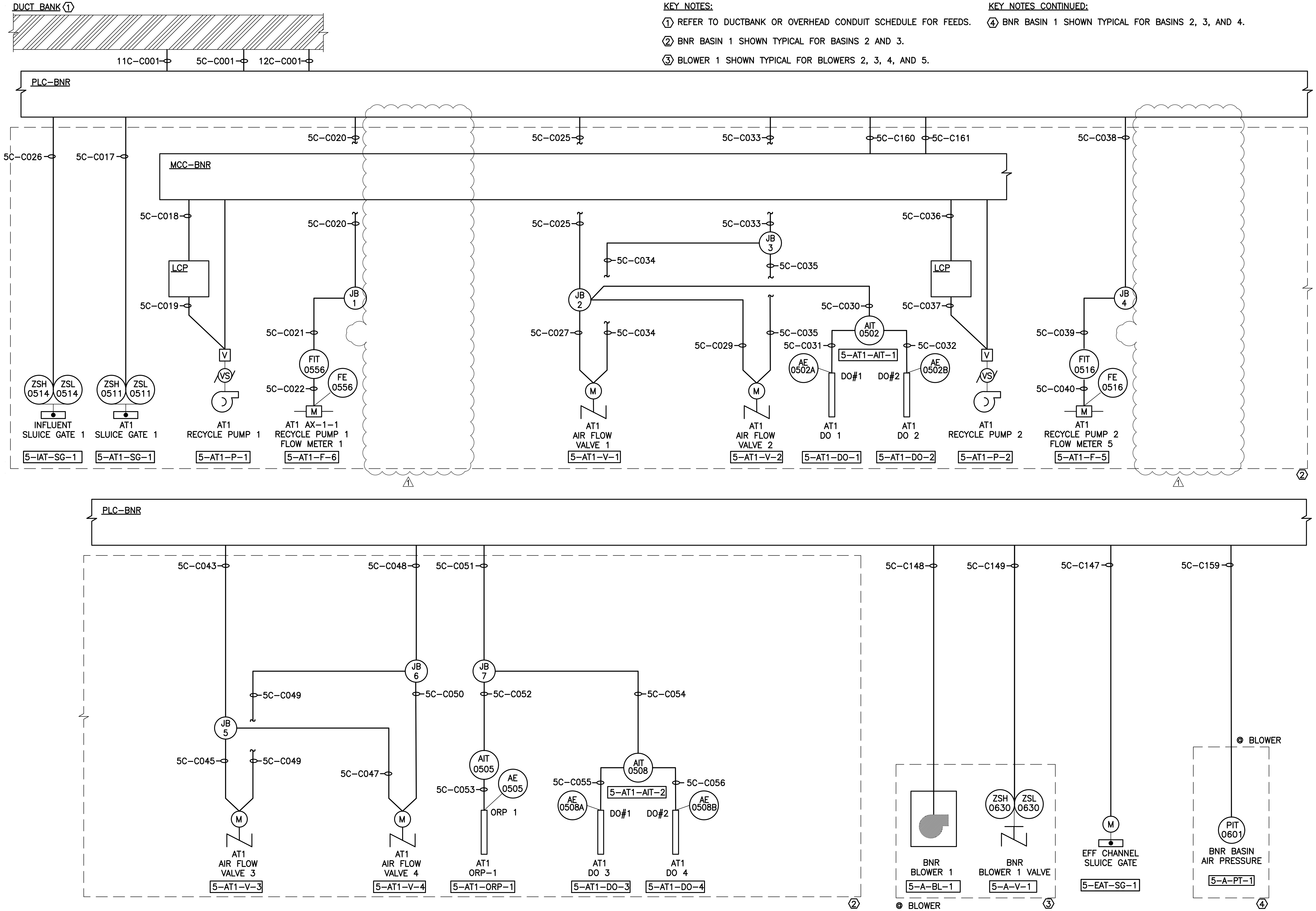
File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-39.DWG|Tab: E-39|Plotted: October 30, 2020 11:31am

KEY NOTES:

1. REFER TO DUCTBANK OR OVERHEAD CONDUIT SCHEDULE FOR FEEDS.
2. BNR BASIN 1 SHOWN TYPICAL FOR BASINS 2 AND 3.
3. BLOWER 1 SHOWN TYPICAL FOR BLOWERS 2, 3, 4, AND 5.

KEY NOTES CONTINUED:

4. BNR BASIN 1 SHOWN TYPICAL FOR BASINS 2, 3, AND 4.



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CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

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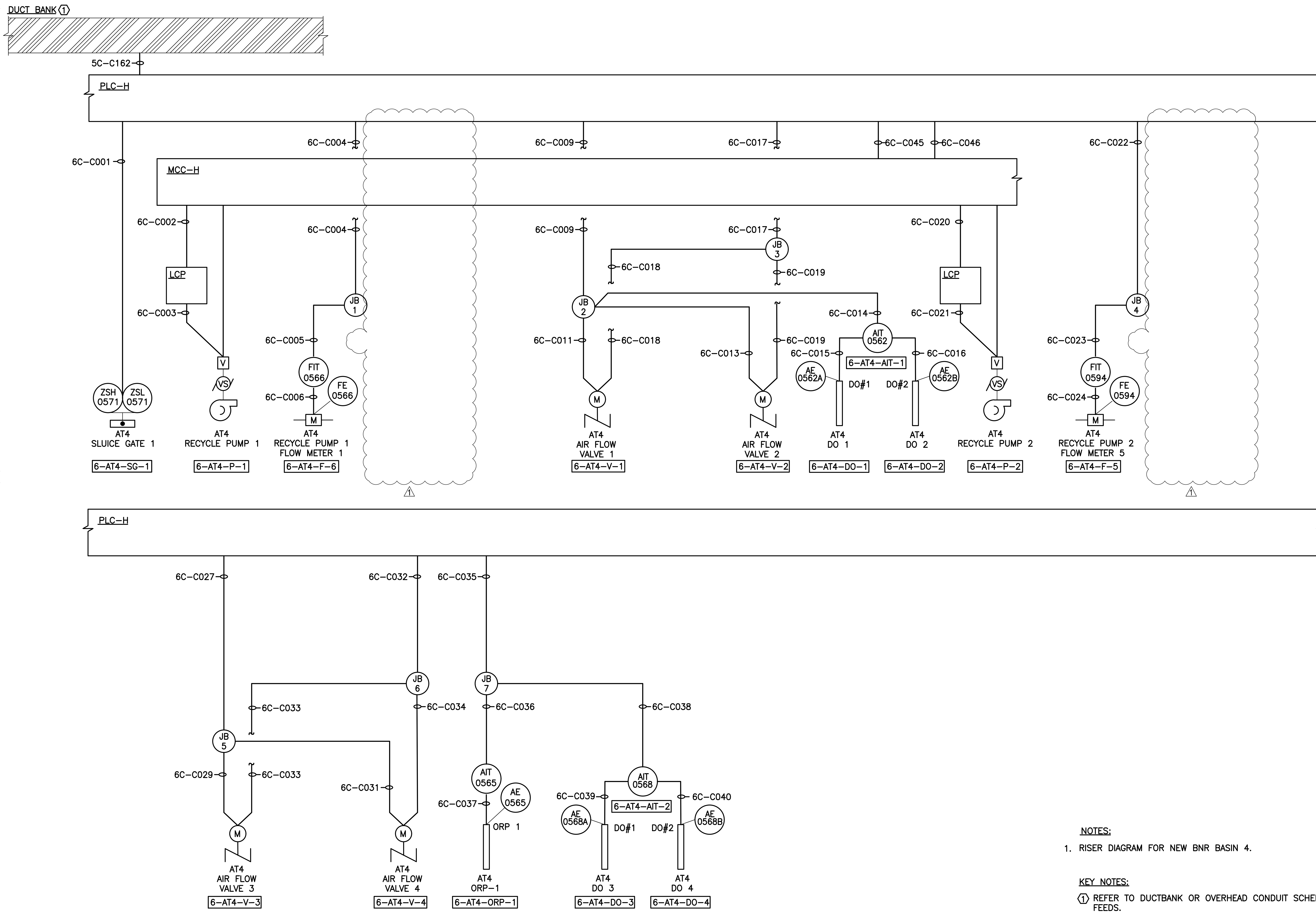
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONTROL RISER DIAGRAMS 7

SHEET NO.
E-43

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-43.DWG|Tab: E-43|Plotted: October 30, 2020 11:31am



NOTES:

1. RISER DIAGRAM FOR NEW BNR BASIN 4.

KEY NOTES:

(1) REFER TO DUCTBANK OR OVERHEAD CONDUIT SCHEDULE FOR FEEDS.

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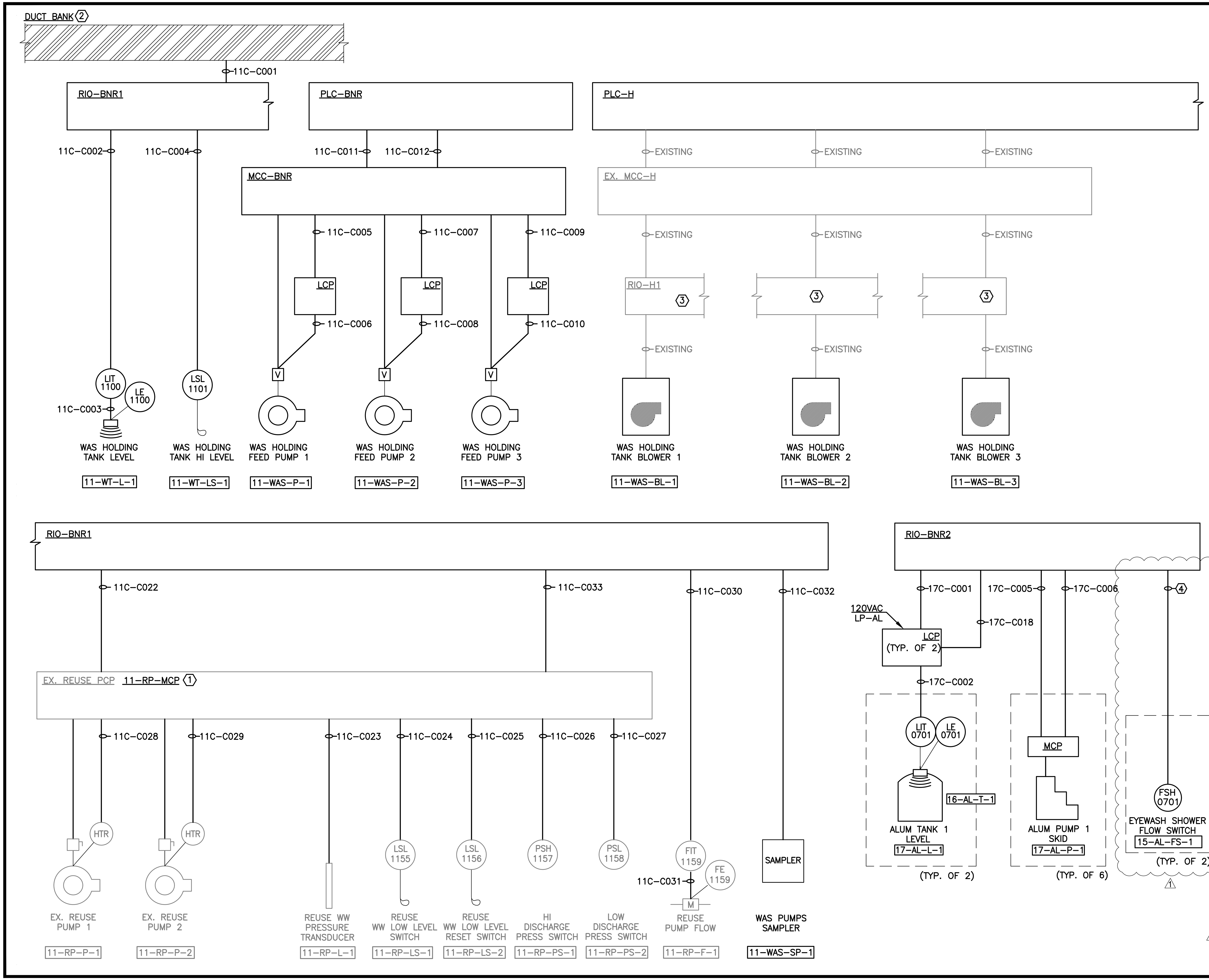
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONTROL RISER DIAGRAMS 8

SHEET NO.
E-44

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-44.DWG|Tab: E-44|Plotted: October 30, 2020 11:31am



KEY NOTES

1. EX. REUSE PUMPS, CONTROL PANEL, TRANSFORMER AND ASSOCIATED EQUIPMENT TO BE RELOCATED.
2. REFER TO DUCTBANK OR OVERHEAD CONDUIT SCHEDULE FOR FEEDS.
3. EX. LCP TO REMAIN AND MODIFY FOR RIO-H1.
4. PROVIDE 3/4"C W/(2)#14+(1)#14EGC FOR EACH FLOW SWITCH.

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3	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
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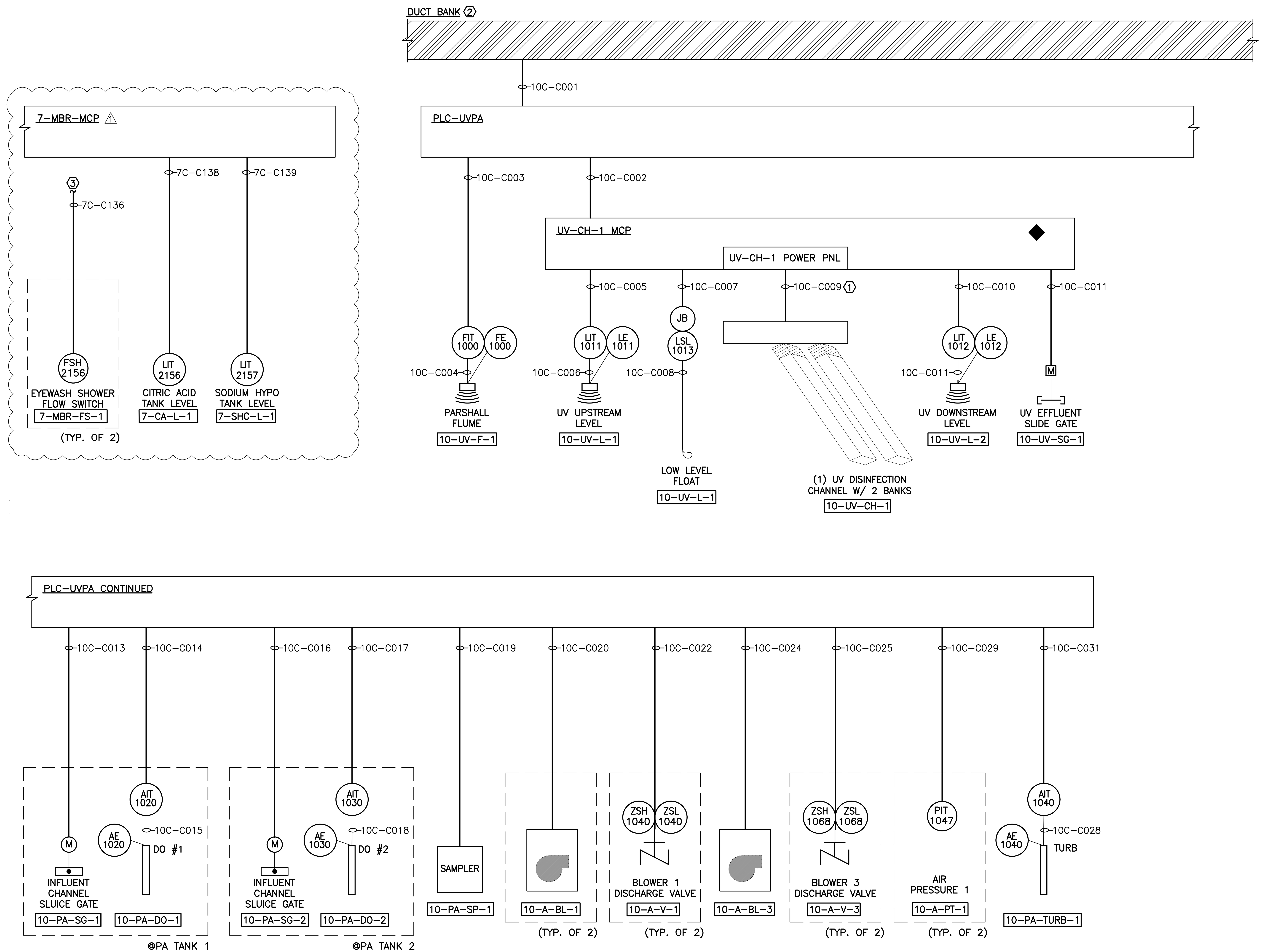
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONTROL RISER DIAGRAMS 9

SHEET NO.
E-45

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-45.DWG|Tab: E-45|Plotted: October 30, 2020 11:31am



KEY NOTES:

1. PROVIDE ALL CONNECTIONS WIRING, AND CONDUIT FOR CONNECTION OF UV BANKS AND EQUIPMENT TO MCP.
2. REFER TO DUCTBANK OR OVERHEAD CONDUIT SCHEDULE FOR FEEDS.
3. FLOW SWITCH INPUT TO PLC-BNR.

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PROJ. NO.: 100061831
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CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONTROL RISER DIAGRAMS 11

SHEET NO.
E-47

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-47.DWG|Tab: E-47|Plotted: October 30, 2020 11:31am

FEEDER SCHEDULE - CONTROL

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE	Note
PLC-IH (GRIT REMOVAL SYSTEM)					
1C-C001	PLC-IH	PLC-MSG	2"	(2)-(6) PAIR-FO CABLE	
1C-C002	PLC-IH	1-GR MCP	2"	(6) PAIR-FO CABLE	
1C-C003	1-GR MCP	EX 1-GR-1 TB	1 1/2"	(20) #14 + (1) #14 EGC	1
1C-C004	EX 1-GR-1 TB	EX 1-GR1-M-2 (START)	3/4"	(4) #14 + (1) #14 EGC	2
1C-C005	EX 1-GR-1 TB	EX 1-GR1-VP-1 LCP	1"	(4) #14 + (1) #14 EGC	3
1C-C006	EX 1-GR-1 TB	EX 1-GR-C-1 LCP	1"	(12) #14 + (1) #14 EGC	
1C-C007	1-GR MCP	1-GR2-VP-1 LCP	3/4"	(4) #14 + (1) #14 EGC	
1C-C008	1-GR2-VP-1 PNL	1-GR2-SV-1	3/4"	(2) #14 + (1) #14 EGC	
1C-C009	1-GR MCP	1-GR2-M-2 (START)	3/4"	(4) #14 + (1) #14 EGC	
1C-C010	PLC-H	OC-MCP	2"	(6) PAIR-FO CABLE	
RIO-MSG-1 - FINE SCREEN SYSTEM					
4C-C001	PLC-BNR	RIO-BNR2	2"	(6) PAIR-FO CABLE	
4C-C002	RIO-BNR2	4-IFS-SG-1	1"	(12) #14 + (1) #14 EGC	
4C-C003	RIO-BNR2	4-IFS-SG-2	1"	(12) #14 + (1) #14 EGC	
4C-C004	RIO-BNR2	4-FS-1 MCP	1"	(2)-CAT6E CABLE	
4C-C005	4-FS-1 MCP	4-FS-1 LCP	1 1/2"	(26) #14 + (1) #14 EGC	
4C-C006	4-FS-1 MCP	4-FS1-WV-1	3/4"	(6) #14 + (1) #14 EGC	
4C-C007	4-FS-1 MCP	4-FS1-SV-1	3/4"	(4) #14 + (1) #14 EGC	
4C-C008	4-FS-1 MCP	4-FS1-L-1	3/4"	(2)-18TSP	
4C-C009	4-FS1-L-1 (LIT)	4-FS1-L-1 (LE-A)	3/4"	(1) MFR CABLE	
4C-C010	4-FS1-L-1 (LIT)	4-FS1-L-1 (LE-B)	3/4"	(1) MFR CABLE	
4C-C011	4-FS-1-MCP	4-FS-C-1-MCP	3/4"	(4) #14 + (1) #14 EGC	
4C-C012	RIO-BNR2	4-FS-2 MCP	1"	(2)-CAT6E CABLE	
4C-C013	4-FS-2 MCP	4-FS-2 LCP	1 1/2"	(26) #14 + (1) #14 EGC	
4C-C014	4-FS-2 MCP	4-FS2-WV-1	3/4"	(6) #14 + (1) #14 EGC	
4C-C015	4-FS-2 MCP	4-FS2-SV-1	3/4"	(4) #14 + (1) #14 EGC	
4C-C016	4-FS-2 MCP	4-FS2-L-1 (LIT)	3/4"	(2)-18TSP	
4C-C017	4-FS2-L-1 (LIT)	4-FS2-L-1 (LE-A)	3/4"	(1) MFR CABLE	
4C-C018	4-FS2-L-1 (LIT)	4-FS2-L-1 (LE-A)	3/4"	(1) MFR CABLE	
4C-C019	4-FS-2 MCP	4-FS-C-2 MCP	3/4"	(4) #14 + (1) #14 EGC	
4C-C020	NOT USED	-	-	-	
4C-C021	NOT USED	-	-	-	
4C-C022	RIO-BNR2	4-FS-C-1-MCP	3/4"	(6) #14 + (1) #14 EGC	
4C-C023	4-FS-C-1-MCP	4-FS-C-1-LCP	1"	(12) #14 + (1) #14 EGC	4
4C-C024	4-FS-C-1-MCP	4-FS-C-A (E-STOP)	3/4"	(4) #14 + (1) #14 EGC	4
4C-C025	NOT USED	-	-	-	
PLC-BNR					
5C-C001	PLC-MSG	PLC-BNR	2"	2-(6) PAIR - FO CABLE	
5C-C002	RIO-BNR1	14-CA-MCP	2"	(2)-CAT6E CABLE	
5C-C003	14-CA MCP	14-CA-M-1	1"	(10) #14 + (1) #14 EGC	
5C-C004	14-CA MCP	14-CA-M-1	3/4"	(1) - #18 TSP	
5C-C005	14-CA MCP	14-CA-M-2	1"	(10) #14 + (1) #14 EGC	
5C-C006	14-CA MCP	14-CA-M-2	3/4"	(1) - #18 TSP	
5C-C007	14-CA MCP	14-CA-RT-1	3/4"	(2) - #18 TSP	
5C-C008	14-CA MCP	14-CA-DV-1	3/4"	(6) #14 + (1) #14 EGC	
5C-C009	14-CA MCP	14-CA-VM-1	1"	(10) #14 + (1) #14 EGC	
5C-C010	14-CA MCP	14-CA-VM-1	3/4"	(2) - #18 TSP	
5C-C011	14-CA MCP	14-CA-VM-2	3/4"	(8) #14 + (1) #14 EGC	
5C-C012	14-CA MCP	14-CA-VM-2	3/4"	(2) - #18 TSP	
5C-C013	14-CA MCP	14-CA-VM-3	1"	(16) #14 + (1) #14 EGC	
5C-C014	14-CA MCP	14-CA-VM-3	1"	(2) - #18 TSP	
5C-C015	14-CA MCP	14-CA-VM-4	1"	(16) #14 + (1) #14 EGC	
5C-C016	14-CA MCP	14-CA-VM-4	1"	(2) - #18 TSP	
5C-C017	PLC-BNR	5-AT1-SG-1	3/4"	(4) #14 + (1) #14 EGC	
5C-C018	MCC-BNR	5-AT1-P-1 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC	
5C-C019	5-AT1-P-1 (LCP)	5-AT1-P-1 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC	
5C-C020	PLC-BNR	AT1 JB1	1"	(3)-#18 TSP	

PLC-BNR CONTINUED

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
5C-C021	AT1 JB1	5-AT1-F-6 (FIT)	3/4"	(1)-#18 TSP
5C-C022	5-AT1-F-6 (FIT)	5-AT1-F-6 (FE)	1"	(1) MFR CABLE
5C-C023	NOT USED	-	-	-
5C-C024	NOT USED	-	-	-
5C-C025	PLC-BNR	AT1- JB2	1 1/2"	(6)-#18TSP
5C-C026	PLC-BNR	5-IAT-SG-1	3/4"	(4) #14 + (1) #14 EGC
5C-C027	AT1- JB2	5-AT1-V-1	3/4"	(2)-#18TSP
5C-C028	PLC-BNR	8-RAS-L-1	3/4"	(2)-#18TSP
5C-C029	AT1- JB2	5-AT1-V-2	3/4"	(2)-#18TSP
5C-C030	AT1- JB2	5-AT1-AIT-1	3/4"	(2)-#18TSP
5C-C031	5-AT1-AIT-1 (DO1)	5-AT1-DO-1	1"	(1) MFR CABLE
5C-C032	5-AT1-AIT-1 (DO2)	5-AT1-DO-2	1"	(1) MFR CABLE
5C-C033	PLC-BNR	AT1 JB3	1"	(12) #14 + (1) #14 EGC
5C-C034	AT1 JB3	5-AT1-V-1	3/4"	(6) #14 + (1) #14 EGC
5C-C035	AT1 JB3	5-AT1-V-2	3/4"	(6) #14 + (1) #14 EGC
5C-C036	MCC-BNR	5-AT1-P-2 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC
5C-C037	5-AT1-P-2 (LCP)	5-AT1-P-2 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
5C-C038	PLC-BNR	AT1 JB4	1"	(3)-#18TSP
5C-C039	AT1 JB4	5-AT1-F-5 (FIT)	3/4"	(1)-#18TSP
5C-C040	5-AT1-F-5 (FIT)	5-AT1-F-5 (FE)	1"	(1) MFR CABLE
5C-C041	NOT USED	-	-	-
5C-C042	NOT USED	-	-	-
5C-C043	PLC-BNR	AT1 JB5	1 1/2"	(4)-#18TSP
5C-C044	NOT USED	-	-	-
5C-C045	AT1 JB5	5-AT1-V-3	3/4"	(2)-#18TSP
5C-C046	PLC-BNR	5-SCUM-V-1	1"	(12) #14 + (1) #14 EGC
5C-C047	AT1 JB5	5-AT1-V-4	3/4"	(2)-#18TSP
5C-C048	PLC-BNR	AT1 JB6	1"	(12) #14 + (1) #14 EGC
5C-C049	AT1 JB6	5-AT1-V-3	3/4"	(6) #14 + (1) #14 EGC
5C-C050	AT1 JB6	5-AT1-V-4	3/4"	(6) #14 + (1) #14 EGC
5C-C051	PLC-BNR	AT1 JB7	1"	(3)-#18TSP
5C-C052	AT1 JB7	5-AT1-ORP-1 (AIT)	3/4"	(1)-#18TSP
5C-C053	5- AT1-ORP-1 (AIT)	5-AT1-ORP-1 (AE)	1"	(1) MFR CABLE
5C-C054	AT1 JB7	5-AT1-AIT-2	3/4"	(2)-#18TSP
5C-C055	5-AT1-AIT-2	5-AT1-DO-3	1"	(1) MFR CABLE
5C-C056	5-AT1-AIT-2	5-AT1-DO-4	1"	(1) MFR CABLE
5C-C057	PLC-BNR	5-BNR-TS-1	3/4"	(2) #14 + (1) #14 EGC
5C-C058	PLC-BNR	5-BNR-TS-2	3/4"	(2) #14 + (1) #14 EGC
5C-C059	PLC-BNR	5-PW-FS-1	3/4"	(2) #14 + (1) #14 EGC
5C-C060	MCC BNR	5-SC-PS-1	3/4"	(2) #14 + (1) #14 EGC
5C-C061	PLC BNR	5-SC-LS-1	3/4"	(2) #14 + (1) #14 EGC
5C-C062	PLC-BNR	5-AT2-SG-1	3/4"	(4) #14 + (1) #14 EGC
5C-C063	MCC-BNR	5-AT2-P-1 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC
5C-C064	5-AT2-P-1 (LCP)	5-AT2-P-1 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
5C-C065	PLC-BNR	AT2 JB1	1"	(3)-#18 TSP
5C-C066	AT2 JB1	5-AT2-F-6 (FIT)	3/4"	(1)-#18 TSP
5C-C067	5-AT2-F-6 (FIT)	5-AT2-F-6 (FE)	1"	(1) MFR CABLE
5C-C068	NOT USED	-	-	-
5C-C069	NOT USED	-	-	-
5C-C070	PLC-BNR	AT2- JB2	1 1/2"	(6)-#18TSP
5C-C071	PLC BNR	A-RAS-LS-1	3/4"	(2) #14 + (1) #14 EGC
5C-C072	AT2- JB2	5-AT2-V-1	3/4"	(2)-#18TSP
5C-C073	MCC BNR	5-SC-PS-2	3/4"	(2) #14 + (1) #14 EGC
5C-C074	AT2- JB2	5-AT2-V-2	3/4"	(2)-#18TSP
5C-C075	AT2- JB2	5-AT2-AIT-1	3/4"	(2)-#18TSP
5C-C076	5-AT2-AIT-1 (DO1)	5-AT2-DO-1	1"	(1) MFR CABLE
5C-C077	5-AT2-AIT-1 (DO2)	5-AT2-DO-2	1"	(1) MFR CABLE

KEY NOTES:

1. INCLUDE CONDUIT WIRES IC-C004, IC-C005, & IC-C006.
2. TO EXISTING SONIC START RELAY AT I-GR1-M-2.
3. TO EXISTING VACUUM PUMP START CIRCUIT.
4. TYPICAL FOR CONVEYOR 2.

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

ATKINS
1600 RiverEdge Parkway, NW, Suite 700
Atlanta, Ga 30328
P: 770-933-0280

HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS
196 LOG CANOE CIRCLE
STEVENSVILLE, MARYLAND
(443) 249-3111

CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE
CONTROL 1

SHEET NO.
E-48

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 – E-48.DWG|Tab: E-48|Plotted: October 30, 2020 11:31am

FEEDER SCHEDULE - CONTROL

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
PLC-BNR CONTINUED				
5C-C078	PLC-BNR	AT2 JB3	1"	(12) #14 + (1) #14 EGC
5C-C079	AT2 JB3	5-AT2-V-1	3/4"	(6) #14 + (1) #14 EGC
5C-C080	AT2 JB3	5-AT2-V-2	3/4"	(6) #14 + (1) #14 EGC
5C-C081	MCC-BNR	5-AT2-P-2 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC
5C-C082	5-AT2-P-2 (LCP)	5-AT2-P-2 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
5C-C083	PLC-BNR	AT2 JB4	1"	(3)-#18TSP
5C-C084	AT2 JB4	5-AT2-F-5 (FIT)	3/4"	(1)-#18TSP
5C-C085	5-AT2-F-S (FIT)	5-AT2-F-5 (FE)	1"	(1) MFR CABLE
5C-C086	NOT USED	-	-	-
5C-C087	NOT USED	-	-	-
5C-C088	PLC-BNR	AT2 JB5	1 1/2"	(4)-#18TSP
5C-C089	PLC BNR	5-SC-L-1	3/4"	(1)-#18TSP
5C-C090	AT2 JB5	5-AT2-V-3	3/4"	(2)-#18TSP
5C-C091	NOT USED	-	-	-
5C-C092	AT2 JB5	5-AT2-V-4	3/4"	(2)-#18TSP
5C-C093	PLC-BNR	AT2 JB6	1"	(12) #14 + (1) #14 EGC
5C-C094	AT2 JB6	5-AT2-V-3	3/4"	(6) #14 + (1) #14 EGC
5C-C095	AT2 JB6	5-AT2-V-4	3/4"	(6) #14 + (1) #14 EGC
5C-C096	PLC-BNR	AT2 JB7	1"	(3)-#18TSP
5C-C097	AT2 JB7	5-AT2-ORP-1 (AIT)	3/4"	(1)-#18TSP
5C-C098	5- AT2-ORP-1 (AIT)	5-AT2-ORP-1 (AE)	1"	(1) MFR CABLE
5C-C099	AT2 JB7	5-AT2-AIT-2	3/4"	(2)-#18TSP
5C-C100	5-AT2-AIT-2	5-AT2-DO-3	1"	(1) MFR CABLE
5C-C101	5-AT2-AIT-2	5-AT2-DO-4	1"	(1) MFR CABLE
5C-C102	NOT USED	-	-	-
5C-C103	NOT USED	-	-	-
5C-C104	NOT USED	-	-	-
5C-C105	NOT USED	-	-	-
5C-C106	NOT USED	-	-	-
5C-C107	PLC-BNR	5-AT3-SG-1	3/4"	(4) #14 + (1) #14 EGC
5C-C108	MCC-BNR	5-AT3-P-1 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC
5C-C109	5-AT3-P-1 (LCP)	5-AT3-P-1 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
5C-C110	PLC-BNR	AT3 JB1	1"	(3)-#18 TSP
5C-C111	AT3 JB1	5-AT3-F-6 (FIT)	3/4"	(1)-#18 TSP
5C-C112	5-AT3-F-6 (FIT)	5-AT3-F-6 (FE)	1"	(1) MFR CABLE
5C-C113	NOT USED	-	-	-
5C-C114	NOT USED	-	-	-
5C-C115	PLC-BNR	AT3- JB2	1 1/2"	(6)-#18TSP
5C-C116	NOT USED	-	-	-
5C-C117	AT3- JB2	5-AT3-V-1	3/4"	(2)-#18TSP
5C-C118	NOT USED	-	-	-
5C-C119	AT3- JB2	5-AT3-V-2	3/4"	(2)-#18TSP
5C-C120	AT3- JB2	5-AT3-AIT-1	3/4"	(2)-#18TSP
5C-C121	5-AT3-AIT-1 (DO1)	5-AT3-DO-1	1"	(1) MFR CABLE
5C-C122	5-AT3-AIT-1 (DO2)	5-AT3-DO-2	1"	(1) MFR CABLE
5C-C123	PLC-BNR	AT3 JB3	3/4"	(8) #14 + (1) #14 EGC
5C-C124	AT3 JB3	5-AT3-V-1	3/4"	(6) #14 + (1) #14 EGC
5C-C125	AT3 JB3	5-AT3-V-2	3/4"	(4) #14 + (1) #14 EGC
5C-C126	MCC-BNR	5-AT3-P-2 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC
5C-C127	5-AT3-P-2 (LCP)	5-AT3-P-2 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
5C-C128	PLC-BNR	AT3 JB4	1"	(3)-#18TSP
5C-C129	AT3 JB4	5-AT3-F-5 (FIT)	3/4"	(1)-#18TSP
5C-C130	5-AT3-F-S (FIT)	5-AT3-F-5 (FE)	1"	(1) MFR CABLE
5C-C131	NOT USED	-	-	-
5C-C132	NOT USED	-	-	-
5C-C133	PLC-BNR	AT3 JB5	1 1/2"	(6)-#18TSP
5C-C134	NOT USED	-	-	-
5C-C135	AT3 JB5	5-AT3-V-3	3/4"	(2)-#18TSP

PLC-BNR CONTINUED				
5C-C136	NOT USED	-	-	-
5C-C137	AT3 JB5	5-AT3-V-4	3/4"	(2)-#18TSP
5C-C138	PLC-BNR	AT3 JB6	1"	(12) #14 + (1) #14 EGC
5C-C139	AT3 JB6	5-AT3-V-3	3/4"	(6) #14 + (1) #14 EGC
5C-C140	AT3 JB6	5-AT3-V-4	3/4"	(6) #14 + (1) #14 EGC
5C-C141	PLC-BNR	AT3 JB7	1"	(3)-#18TSP
5C-C142	AT3 JB7	5-AT3-ORP-1 (AIT)	3/4"	(1)-#18TSP
5C-C143	5- AT3-ORP-1 (AIT)	5-AT3-ORP-1 (AE)	1"	(1) MFR CABLE
5C-C144	AT3 JB7	5-AT3-AIT-2	3/4"	(2)-#18TSP
5C-C145	5-AT3-AIT-2	5-AT3-DO-3	1"	(1) MFR CABLE
5C-C146	5-AT3-AIT-2	5-AT3-DO-4	1"	(1) MFR CABLE
5C-C147	PLC-BNR	5-EAT-SG-1	1"	(14) #14 + (1) #14 EGC
5C-C148	PLC-BNR	5-A-BL-1	1"	(1) CAT6E CABLE
5C-C149	PLC-BNR	5-A-V-1	3/4"	(6) #14 + (1) #14 EGC
5C-C150	PLC-BNR	5-A-BL-2	1"	(1) CAT6E CABLE
5C-C151	PLC-BNR	5-A-V-2	3/4"	(6) #14 + (1) #14 EGC
5C-C152	PLC-BNR	5-A-BL-3	1"	(1) CAT6E CABLE
5C-C153	PLC-BNR	5-A-V-3	3/4"	(6) #14 + (1) #14 EGC
5C-C154	PLC-BNR	5-A-BL-4	1"	(1) CAT6E CABLE
5C-C155	PLC-BNR	5-A-V-4	3/4"	(6) #14 + (1) #14 EGC
5C-C156	PLC-BNR	5-A-BL-5	1"	(1) CAT6E CABLE
5C-C157	PLC-BNR	5-A-V-5	3/4"	(6) #14 + (1) #14 EGC
5C-C158	PLC-BNR	5-A-V-6	3/4"	(6) #14 + (1) #14 EGC
5C-C159	PLC-BNR	5-A-PT-1	3/4"	(1)-#18TSP (1)
5C-C160	PLC-BNR	MCC-BNR	2"	(12)-#18TSP
5C-C161	PLC-BNR	MCC-BNR	3"	(120) #14 + (1) #14 EGC
RIO - BNR1 - AERATION TANK 4				
6C-C001	PLC-H	6-AT4-SG-1	3/4"	(4) #14 + (1) #14 EGC
6C-C002	EX MCC-H	6-AT4-P-1 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC
6C-C003	6-AT4-P-1 (LCP)	6-AT4-P-1 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
6C-C004	PLC-H	AT4 JB1	1"	(1)-#18 TSP
6C-C005	AT4 JB1	6-AT4-F-6 (FIT)	3/4"	(1)-#18 TSP
6C-C006	6-AT4-F-6 (FIT)	6-AT4-F-6 (FE)	3/4"	(1) MFR CABLE
6C-C007	NOT USED	-	-	-
6C-C008	NOT USED	-	-	-
6C-C009	PLC-H	AT4- JB2	1 1/2"	(6)-#18TSP
6C-C010	NOT USED	-	-	-
6C-C011	AT4- JB2	6-AT4-V-1	3/4"	(2)-#18TSP
6C-C012	NOT USED	-	-	-
6C-C013	AT4- JB2	6-AT4-V-2	3/4"	(2)-#18TSP
6C-C014	AT4- JB2	6-AT4-AIT-1	3/4"	(2)-#18TSP
6C-C015	6-AT4-AIT-1 (DO1)	6-AT4-DO-1	1"	(1) MFR CABLE
6C-C016	6-AT4-AIT-1 (DO2)	6-AT4-DO-2	1"	(1) MFR CABLE
6C-C017	PLC-H	AT4 JB3	3/4"	(8) #14 + (1) #14 EGC
6C-C018	AT4 JB3	6-AT4-V-1	3/4"	(6) #14 + (1) #14 EGC
6C-C019	AT4 JB3	6-AT4-V-2	3/4"	(4) #14 + (1) #14 EGC
6C-C020	EX MCC-H	6-AT4-P-2 (LCP)	1 1/2"	(26) #14 + (1) #14 EGC
6C-C021	6-AT4-P-2 (LCP)	6-AT4-P-2 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
6C-C022	PLC-H	AT4 JB4	1"	(1)-#18TSP
6C-C023	AT4 JB4	6-AT4-F-5 (FIT)	3/4"	(1)-#18TSP
6C-C024	6-AT4-F-S (FIT)	6-AT4-F-5 (FE)	1"	(1) MFR CABLE
6C-C025	NOT USED	-	-	-
6C-C026	NOT USED	-	-	-
6C-C027	PLC-H	AT4 JB5	1 1/2"	(6)-#18TSP
6C-C028	NOT USED	-	-	-
6C-C029	AT4 JB5	6-AT4-V-3	3/4"	(2)-#18TSP
6C-C030	NOT USED	-	-	-
6C-C031	AT4 JB5	6-AT4-V-4	3/4"	(2)-#18TSP
6C-C032	PLC-H	AT4 JB6	1"	(12) #14 + (1) #14 EGC
6C-C033	AT4 JB6	6-AT4-V-3	3/4"	(6) #14 + (1) #14 EGC
6C-C034	AT4 JB6	6-AT4-V-4	3/4"	(6) #14 + (1) #14 EGC

KEY NOTES:

(1) PROVIDE FEEDERS TYPICAL OF 4 PRESSURE TRANSMITTERS, PT-1, PT-2, PT-3, AND PT-4.

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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ENGINEERS • INTEGRATORS
196 LOG CANOE CIRCLE
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CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE CONTROL 2

SHEET NO. E-49

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-49.DWG|Tab: E-49|Plotted: October 30, 2020 11:31am

FEEDER SCHEDULE - CONTROL

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE	
MBR MCP - MBR FACILITY CONTINUED					
7C-C098	7-MBR MCP	7-TK4-SV-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C099	7-MBR MCP	7-TK4-PT-1	3/4"	(1) #18 TSP	
7C-C100	7-MBR MCP	7-TK4-V-3	3/4"	(2) #14 + (1) #14 EGC	
7C-C101	7-MBR MCP	7-TK4-V-4	3/4"	(2) #14 + (1) #14 EGC	
7C-C102	7-MBR MCP	7-TK4-F-1 (FIT)	3/4"	(1) #18 TSP	2
7C-C103	7-TK4-F-1 (FIT)	7-TK4-F-1 (FE)	1"	(1) MFR CABLE	
7C-C104	MCC-MBR	7-PR-P-3 (DS)	3/4"	(2) #14 + (1) #14 EGC	
7C-C105	MCC-MBR	7-PR-P-3 (TSH)	3/4"	(2) #14 + (1) #14 EGC	
7C-C106	MCC-MBR	7-PR-PS-7 (PSH)	3/4"	(2) #14 + (1) #14 EGC	
7C-C107	MCC-MBR	7-PR-PS-8 (PSH)	3/4"	(2) #14 + (1) #14 EGC	
7C-C108	7-MBR MCP	7-TK4-SV-2	3/4"	(2) #14 + (1) #14 EGC	
7C-C109	7-MBR MCP	7-TK4-TU-1 (AIT)	3/4"	(1) #18 TSP	2
7C-C110	7-TK4-TU-1 (AIT)	7-TK4-TU-1 (AE)	1"	(1) MFR CABLE	
7C-C111	7-MBR MCP	7-TK4-SV-3	3/4"	(2) #14 + (1) #14 EGC	
7C-C112	7-MBR MCP	7-TK4-V-5	3/4"	(6) #14 + (1) #14 EGC	
7C-C113	MCC-MBR	7-RAS-P-4 (TSH)	3/4"	(2) #14 + (1) #14 EGC	
7C-C114	MCC-MBR	7-RAS-P-4 DS	3/4"	(2) #14 + (1) #14 EGC	
7C-C115	7-MBR MCP	7-RAS-F-4 (FIT)	3/4"	(1) #18 TSP	2
7C-C116	7-RAS-F-4 (FIT)	7-RAS-F-4 (FE)	1"	(1) MFR CABLE	
7C-C117	7-MBR MCP	7-PC-T-1	3/4"	(1) #18 TSP	
7C-C118	7-MBR MCP	7-PC-LS-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C119	7-MBR MCP	7-CA-F-1 (FIT)	3/4"	(1) #18 TSP	2
7C-C120	7-CA-F-1 (FIT)	7-CA-F-1 (FE)	1"	(1) MFR CABLE	
7C-C121	7-MBR MCP	7-CA-V-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C122	7-MBR MCP	7-SHC-F-1 (FIT)	3/4"	(1) #18 TSP	2
7C-C123	7-SHC-F-1 (FIT)	7-SHC-F-1 (FE)	1"	(1) MFR CABLE	
7C-C124	7-MBR MCP	7-SHC-V-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C125	MCC-MBR	7-CA-PS-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C126	MCC-MBR	7-CA-PS-2	3/4"	(2) #14 + (1) #14 EGC	
7C-C127	7-MBR MCP	7-CA-PS-3	3/4"	(2) #14 + (1) #14 EGC	
7C-C128	7-MBR MCP	7-CA-PS-4	3/4"	(2) #14 + (1) #14 EGC	
7C-C129	7-MBR MCP	MCC-MBR	2 1/2"	(110) #14 + (1) #14 EGC	
7C-C130	7-MBR MCP	MCC-MBR	2 1/2"	(20) #18 TSP	
7C-C131	7-MBR MCP	7-MBR-RIO 1, 2, 3, AND 4	2"	(6) PAIR - FO CABLE	
7C-C132	7-MBR MCP	7-WAS-F-1 (FIT)	3/4"	(1) #18 TSP	2
7C-C133	7-WAS-F-1 (FIT)	7-WAS-F-1 (FE)	1"	(1) MFR CABLE	
7C-C134	7-MBR MCP	7-WAS-V-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C135	7-MBR MCP	7-SP-LS-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C136	7-MBR MCP	7-MBR-FS-1	3/4"	(2) #14 + (1) #14 EGC	
7C-C137	7-MBR MCP	7-MBR-FS-2	3/4"	(2) #14 + (1) #14 EGC	
7C-C138	7-MBR MCP	7-CA-L-1	3/4"	(1) #18 TSP	
7C-C139	7-MBR MCP	7-SHC-L-1	3/4"	(1) #18 TSP	
PLC-UVPA (UVPA FACILITY)					
10C-C001	PLC-A	PLC-UVPA	2"	(6) PAIR - FO CABLE	
10C-C002	PLC-UVPA	UV-CH-1 MCP	1"	(1) - CAT 6E CABLE	
10C-C003	PLC-UVPA	10-UV-F-1- (FIT)	3/4"	(1) - #18 TSP	
10C-C004	10-UV-F-1- (FIT)	10-UV-F-1 (FE)	1"	(1) MFR CABLE	
10C-C005	10-UV-CH-1-MCP	10-UV-L-1 (LIT)	3/4"	(1) - #18 TSP	
10C-C006	10-UV-L-1 (LIT)	10-UV-L-1 (LE)	1"	(1) MFR CABLE	1
10C-C007	UV-CH-1 MCP	10-UV-LS-1 JB	3/4"	(4) #14 + (1) #14 EGC	
10C-C008	10-UV-LS-1 JB	10-UV-LS-1	1"	(1) MFR CABLE	
10C-C009	10-UV-CH-1 - POWER PANEL	10-UV-CH-1 BANKS	KEY NOTE #1	KEY NOTE #1	
10C-C010	10-UV-CH-1-MCP	10-UV-L-2 (LIT)	3/4"	(1) - #18 TSP	
10C-C011	10-UV-L-2 (LIT)	10-UV-L-2 (LE)	1"	(1) MFR CABLE	
10C-C012	10-UV-CH-1 MCP	10-UV-SG-1	3/4"	(12) #14 + (1) #14 EGC	
10C-C013	PLC-UVPA	10-PA-SG-1	3/4"	(12) #14 + (1) #14 EGC	

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
PLC-UVPA (UVPA FACILITY)				
10C-C014	PLC-UVPA	10-PA-DO-1 (AIT)	3/4"	(1) - #18 TSP
10C-C015	10-PA-DO-1 (AIT)	10-PA-DO-1 (AE)	1"	(1) MFR CABLE
10C-C016	PLC-UVPA	10-PA-SG-2	3/4"	(12) #14 + (1) #14 EGC
10C-C017	PLC-UVPA	10-PA-DO-2 (AIT)	3/4"	(1) - #18 TSP
10C-C018	10--PA-DO-2 (AIT)	10-PA-DO-2 (AE)	1"	(1) MFR CABLE
10C-C019	PLC-UVPA	10-PA-SP-1	3/4"	(1) - #18 TSP
10C-C020	PLC-UVPA	10-A-BL-1	3/4"	(1) - CAT 6E CABLE
10C-C021	PLC-UVPA	10-A-BL-2	3/4"	(1) - CAT 6E CABLE
10C-C022	PLC-UVPA	10-A-V-1	3/4"	(4) #14 + (1) #14 EGC
10C-C023	PLC-UVPA	10-A-V-2	3/4"	(4) #14 + (1) #14 EGC
10C-C024	PLC-UVPA	10-A-BL-3	3/4"	(1) - CAT 6E CABLE
10C-C025	PLC-UVPA	10-A-V-3	3/4"	(4) #14 + (1) #14 EGC
10C-C026	PLC-UVPA	10-A-V-4	3/4"	(4) #14 + (1) #14 EGC
10C-C027	PLC-UVPA	10-A-F-1	3/4"	(1) - #18 TSP
RIO - BNR1 - WAS HOLDING TANK AND REUSE PUMPS (CONTINUED)				
11C-C001	PLC-BNR	RIO-BNR1	2"	(6) PAIR - FO CABLE
11C-C002	RIO-BNR1	11-WT-L-1 (LIT)	3/4"	(1) - #18 TSP
11C-C003	11-WT-L-1 (LIT)	11-WT-L-1 (LE)	1"	(1) MFR CABLE
11C-C004	RIO-BNR1	11-WT-LS-1	3/4"	(2) #14 + (1) #14 EGC
11C-C005	MCC-BNR	11-WAS-P-1 (LCP)	1"	(26) #14 + (1) #14 EGC
11C-C006	11-WAS-P-1 (LCP)	11-WAS-P-1 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
11C-C007	MCC-BNR	11-WAS-P-2 (LCP)	1"	(26) #14 + (1) #14 EGC
11C-C008	11-WAS-P-2 (LCP)	11-WAS-P-2 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
11C-C009	MCC-BNR	11-WAS-P-3 (LCP)	1"	(26) #14 + (1) #14 EGC
11C-C010	11-WAS-P-3 (LCP)	11-WAS-P-3 (CONTROLS)	3/4"	(6) #14 + (1) #14 EGC
11C-C011	PLC-BNR	MCC-BNR	1 1/2"	(6) - #18 TSP
11C-C012	PLC-BNR	MCC-BNR	2"	(48) #14 + (1) #14 EGC
11C-C013	NOT USED	-	-	-
11C-C014	NOT USED	-	-	-
11C-C015	NOT USED	-	-	-
11C-C016	NOT USED	-	-	-
11C-C017	NOT USED	-	-	-
11C-C018	NOT USED	-	-	-
11C-C019	RIO-BNR1	11-WAS-F-1 (FIT)	3/4"	(1) - #18 TSP
11C-C020	11-WAS-F-1 (FIT)	11-WB-F-1 (FE)	1"	(1) MFR CABLE
11C-C021	NOT USED	-	-	-
11C-C022	RIO-BNR1	11-RP MCP	1 1/2"	(20) #14 + (1) #14 EGC
11C-C023	11-RP MCP	11-RP-L-1	3/4"	(1) - #18 TSP
11C-C024	11-RP MCP	11-RP-LS-1	3/4"	(2) #14 + (1) #14 EGC
11C-C025	11-RP MCP	11-RP-LS-2	3/4"	(2) #14 + (1) #14 EGC
11C-C026	11-RP MCP	11-RP-PS-1	3/4"	(2) #14 + (1) #14 EGC
11C-C027	11-RP MCP	11-RP-PS-2	3/4"	(2) #14 + (1) #14 EGC
11C-C028	11-RP MCP	11-RP-P-1 (HTR)	3/4"	(2) #14 + (1) #14 EGC
11C-C029	11-RP MCP	11-RP-P-2 (HTR)	3/4"	(2) #14 + (1) #14 EGC
11C-C030	RIO-BNR1	11-RP-F-1 (FIT)	3/4"	(1) - #18 TSP
11C-C031	11-RP-F-1 (FIT)	11-RP-F-1 (FE)	1"	(1) - MFR CABLE
11C-C032	RIO-BNR1	11-WAS-SP-1	3/4"	(1) - #18 TSP
11C-C033	RIO-BNR1	11-R-WWLEVEL	1"	(2) - #18 TSP

KEY NOTES:

1. CONTRACTOR SHALL COORDINATE WITH UV MANUFACTURER AND PROVIDE ALL WIRE & CONDUIT REQUIREMENTS FOR CONNECTION OF UV BANKS AND ASSOCIATED INSTRUMENTATION TO UV ENCLOSURES. (MCP & POWER PANELS.)
2. PROVIDE AN ADDITIONAL $\frac{3}{4}$" CONDUIT WITH (2)#12+#12EGC TO POWER EQUIPMENT FROM PANEL.

GEORGIA
No. PE028093
PROFESSIONAL
TIMOTHY L. HARTWELL
10/30/2020

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CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
1	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE CONTROL 4

SHEET NO.
E-51

FEEDER SCHEDULE - CONTROL

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
PLC-H - AEROBIC DIGESTER				
12C-C001	PLC-BNR	PLC-H	2"	(2)-(6) PAIR - FO CABLE
12C-C002	PLC-H	12-AD-LS-1 (JUNCTION BOX)	3/4"	(2) #14 + (1) #14 EGC
12C-C003	12-AD-LS-1 JUNCTION BOX	12-AD-LS-1 (JUNCTION BOX)	1"	(1) MFR CABLE
12C-C004	PLC-H	12-AD-L-1 (LIT)	3/4"	(1) - #18 TSP
12C-C005	12-AD-L-1 (LIT)	12-AD-L-1 (LE)	1"	(1) MFR CABLE
12C-C006	PLC-H	12-AD-DO-1/2 (AIT)	3/4"	(1) - #18 TSP
12C-C007	12-AD-DO-1/2 (AIT)	12-AD-DO-1 (AE)	1"	(1) MFR CABLE
12C-C008	12-AD-DO-1/2 (AIT)	12-AD-DO-2 (AE)	1"	(1) MFR CABLE
12C-C009	PLC-H	12-AD-LS-2 (JUNCTION BOX)	3/4"	(2) #14 + (1) #14 EGC
12C-C010	12-AD-LS-2 JUNCTION BOX	12-AD-LS-2	1"	(1) MFR CABLE
12C-C011	PLC-H	10-UV-L-2 (LIT)	3/4"	(1) - #18 TSP
12C-C012	12-AD-L-2 (LIT)	12-AD-L-2 (LE)	1"	(1) MFR CABLE
12C-C013	PLC-H	12-AD-DO-3/4-(AIT)	3/4"	(1) - #18 TSP
12C-C014	12-AD-DO-3/4-(AIT)	12-AD-DO-3-(AE)	1"	(1) MFR CABLE
12C-C015	12-AD-DO-3/4-(AIT)	12-AD-DO-4-(AE)	1"	(1) MFR CABLE
12C-C016	PLC-H	12-AD-BL-1	1"	(3) PAIR - FO CABLE
12C-C017	PLC-H	12-AD-V-1	3/4"	(4) #14 + (1) #14 EGC
12C-C018	PLC-H	12-AD-BL-2	1"	(3) PAIR - FO CABLE
12C-C019	PLC-H	12-AD-V-2	3/4"	(4) #14 + (1) #14 EGC
12C-C020	PLC-H	12-AD-BL-3	1"	(3) PAIR - FO CABLE
12C-C021	PLC-H	12-AD-V-3	3/4"	(4) #14 + (1) #14 EGC
12C-C022	PLC-H	12-AD-PT-1	3/4"	(1) - #18 TSP
12C-C023	PLC-H	12-AD-PT-2	3/4"	(1) - #18 TSP
12C-C024	PLC-H	12-AD-V-4	3/4"	(4) #14 + (1) #14 EGC
12C-C025	PLC-H	12-AD-V-5	3/4"	(4) #14 + (1) #14 EGC
12C-C026	PLC-H	12-AD-V-6 & 7JB1	3/4"	(8) #14 + (1) #14 EGC
12C-C027	PLC-H	12-AD-V-6 & 7JB2	1"	(4) - #18 TSP
12C-C028	12-AD-V-6 & 7JB1	12-AD-V-6	3/4"	(4) #14 + (1) #14 EGC
12C-C029	12-AD-V-6 & 7JB1	12-AD-V-7	3/4"	(4) #14 + (1) #14 EGC
12C-C030	12-AD-V-6 & 7JB2	12-AD-V-6	3/4"	(2) - #18 TSP
12C-C031	12-AD-V-6 & 7JB2	12-AD-V-7	3/4"	(2) - #18 TSP
12C-C032	PLC-H	12-AD-V-8 & 9JB1	3/4"	(8) #14 + (1) #14 EGC
12C-C033	PLC-H	12-AD-V-8 & 9JB2	1"	(4) - #18 TSP
12C-C034	12-AD-V-8 & 9JB1	12-AD-V-8	3/4"	(4) #14 + (1) #14 EGC
12C-C035	12-AD-V-8 & 9JB1	12-AD-V-9	3/4"	(4) #14 + (1) #14 EGC
12C-C036	12-AD-V-8 & 9JB2	12-AD-V-8	3/4"	(2) - #18 TSP
12C-C037	12-AD-V-8 & 9JB2	12-AD-V-9	3/4"	(2) - #18 TSP
12C-C038	PLC-H	RIO-H1	1"	(1) - CAT 6E CABLE
PLC-MSG (SG-MAIN)				
14C-C001	PLC-MSG	PCS (NETWORK CABINET)	2"	(2)-(6) PAIR - FO CABLE
PLC-DW (DEWATERING BUILDING)				
15C-C001	PLC-MSG	PLC-DW	2"	(2) - 6 PAIR FO CABLE
15C-C002	PLC-DW	15-RDT-F-1 (FIT)	3/4"	(1)-18TSP
15C-C003	15-RDT-F-1 (FIT)	15-RDT-F-1 (FE)	1"	(1) MFR CABLE
15C-C004	PLC-DW	15-RDT-F-2 (FIT)	3/4"	(1)-18TSP
15C-C005	15-RDT-F-2 (FIT)	15-RDT-F-2 (FE)	1"	(1) MFR CABLE
15C-C006	PLC-DW	15-RDT-1 MCP	1"	(24) #14 + (1) #14 EGC
15C-C007	PLC-DW	15-RDT-2 MCP	1"	(24) #14 + (1) #14 EGC
15C-C008	15-DF-P-1 (LCP)	15-DF-P-1 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C009	15-DF-P-2 (LCP)	15-DF-P-2 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C010	15-D-P-1 (LCP)	15-D-P-1 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C011	15-D-P-2 (LCP)	15-D-P-2 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C012	15-D-P-3 (LCP)	15-D-P-3 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C013	15-D-P-4 (LCP)	15-D-P-4 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C014	15-D-P-5 (LCP)	15-D-P-5 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C015	15-D-P-6 (LCP)	15-D-P-6 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C016	15-D-P-7 (LCP)	15-D-P-7 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C017	15-D-P-8 (LCP)	15-D-P-8 DS	3/4"	(2) #14 + (1) #14 EGC

PLC-DW (DEWATERING BUILDING) CONTINUED

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
15C-C018	PLC-DW	15-RDT-1 MCP	1"	(24) #14 + (1) #14 EGC
15C-C019	15-DP-F-1 (FIT)	15-DP-F-1 (FE)	1"	(1) MFR CABLE
15C-C020	MCC-DW	15-BFP-P-1 JB	1"	(26) #14 + (1) #14 EGC
15C-C021	15-BFP-P-1 JB	15-BFP-P-1 LCP	1"	(20) #14 + (1) #14 EGC
15C-C022	15-BFP-P-1 JB	15-BFP-P-1 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C023	15-BFP-P-1 JB	15-BFP-P-1 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C024	15-BFP-P-1 JB	15-BFP-PS-1	3/4"	(2) #14 + (1) #14 EGC
15C-C025	MCC-DW	15-BFP-P-2 JB	1"	(26) #14 + (1) #14 EGC
15C-C026	15-BFP-P-2 JB	15-BFP-P-2 LCP	1"	(20) #14 + (1) #14 EGC
15C-C027	15-BFP-P-2 JB	15-BFP-P-2 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C028	15-BFP-P-2 JB	15-BFP-P-2 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C029	15-BFP-P-2 JB	15-BFP-PS-2	3/4"	(2) #14 + (1) #14 EGC
15C-C030	MCC-DW	15-BFP-P-3 JB	1"	(26) #14 + (1) #14 EGC
15C-C031	15-BFP-P-3 JB	15-BFP-P-3 LCP	1"	(20) #14 + (1) #14 EGC
15C-C032	15-BFP-P-3 JB	15-BFP-P-3 DS	3/4"	(2) #14 + (1) #14 EGC
15C-C033	15-BFP-P-3 JB	15-BFP-P-3 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C034	15-BFP-P-3 JB	15-BFP-PS-3	3/4"	(2) #14 + (1) #14 EGC
15C-C035	PLC-DW	15-BFP-PT-1	3/4"	(1)-18TSP
15C-C036	PLC-DW	15-BFP-PT-2	3/4"	(1)-18TSP
15C-C037	PLC-DW	15-BFP-PT-3	3/4"	(1)-18TSP
15C-C038	PLC-DW	15-BFP-F-1 (FIT)	3/4"	(1)-18TSP
15C-C039	15-BFP-F-1 (FIT)	15-BFP-F-1 (FE)	1"	(1) MFR CABLE
15C-C040	PLC-DW	15-BFP-F-1 (FIT)	3/4"	(1)-18TSP
15C-C041	15-BFP-F-1 (FIT)	15-BFP-F-1 (FE)	3/4"	(1) MFR CABLE
15C-C042	MCC-DW	15-BFP-BP-1 JB	1"	(18) #14 + (1) #14 EGC
15C-C043	15-BFP-BP-1 JB	15-BFP-BP-1 LCP	1"	(16) #14 + (1) #14 EGC
15C-C044	15-BFP-BP-1 JB	15-BFP-BP-1 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C045	MCC-DW	15-BFP-BP-2 JB	1"	(18) #14 + (1) #14 EGC
15C-C046	15-BFP-BP-2 JB	15-BFP-BP-2 LCP	1"	(16) #14 + (1) #14 EGC
15C-C047	15-BFP-BP-2 JB	15-BFP-BP-2 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C048	MCC-DW	15-BFP-BP-3 JB	1"	(18) #14 + (1) #14 EGC
15C-C049	15-BFP-BP-3 JB	15-BFP-BP-3 LCP	1"	(16) #14 + (1) #14 EGC
15C-C050	15-BFP-BP-3 JB	15-BFP-BP-3 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C051	PLC-DW	15-BFP-V-3	1"	(12) #14 + (1) #14 EGC
15C-C052	PLC-DW	15-BFP-V-4	1"	(12) #14 + (1) #14 EGC
15C-C053	PLC-DW	15-BFP-V-1	1"	(12) #14 + (1) #14 EGC
15C-C054	PLC-DW	15-BFP-V-2	1"	(12) #14 + (1) #14 EGC
15C-C055	PLC-DW	15-BFP-1 MCP	1"	(2)-CAT6E CABLE
15C-C056	PLC-DW	15-BFP-1 MCP	1"	(2)-CAT6E CABLE
15C-C057	MCC-DW	15-S-C-1 JB	1"	(26) #14 + (1) #14 EGC
15C-C058	15-S-C-1 JB	15-S-C-1 LCP	1"	(20) #14 + (1) #14 EGC
15C-C059	15-S-C-1 JB	15-S-C-1 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C060	15-S-C-1 JB	15-S-C-1 (ZS)	3/4"	(2) #14 + (1) #14 EGC
15C-C061	15-S-C-1 JB	15-S-C-1 (PULL CORD)	3/4"	(2) #14 + (1) #14 EGC
15C-C062	MCC-DW	15-S-C-2 JB	1"	(26) #14 + (1) #14 EGC
15C-C063	15-S-C-2 JB	15-S-C-2 LCP	1"	(20) #14 + (1) #14 EGC
15C-C064	15-S-C-2 JB	15-S-C-2 (TSH)	3/4"	(2) #14 + (1) #14 EGC
15C-C065	15-S-C-2 JB	15-S-C-2 (ZS)	3/4"	(2) #14 + (1) #14 EGC
15C-C066	15-S-C-2 JB	15-S-C-2 (PULL CORD)	3/4"	(2) #14 + (1) #14 EGC
15C-C067	PLC-DW	15-SC-V-1	1"	(12) #14 + (1) #14 EGC
15C-C068	PLC-DW	15-SC-V-2	1"	(12) #14 + (1) #14 EGC
15C-C069	PLC-DW	15-SC-V-3	1"	(12) #14 + (1) #14 EGC
15C-C070	PLC-DW	15-SC-V-4	1"	(12) #14 + (1) #14 EGC
15C-C071	PLC-DW	15-SC-V-5	1"	(12) #14 + (1) #14 EGC
15C-C072	PLC-DW	15-DP-L-1 & 15-DP-F-1 JB	1"	(2)-18TSP
15C-C073	15-DP-L-1 & 15-DP-F-1 JB	15-DP-L-1	3/4"	(1)-18TSP
15C-C074	15-DP-L-1 & 15-DP-F-1 JB	15-DP-F-1	3/4"	(1)-18TSP
15C-C075	MCC-DW	15-DP-P-1 JB	1"	(26) #14 + (1) #14 EGC
15C-C076	15-DP-P-1 JB	15-DP-P-1 LCP	1"	(22) #14 + (1) #14 EGC
15C-C077	15-DP-P-1 JB	15-DP-P-1 DS	1"	(2) #14 + (1) #14 EGC
15C-C078	15-DP-P-1 LCP	15-DP-P-1 (TSH&YS)	3/4"	(2)-18TSP

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L HARTWELL 10/30/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION #PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
3	ADDENDUM No.3	10/30/20

PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE
CONTROL 5

SHEET NO.
E-52

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-52.DWG|Tab: E-52|Plotted: October 30, 2020 11:40am

FEEDER SCHEDULE - CONTROL

FEEDER	FROM	TO	CONDUIT SIZE	WIRE SIZE
PLC-DW (DEWATERING BUILDING) CONTINUED				
15C-C079	MCC-DW	15-DP-P-2 JB	1"	(26) #14 + (1) #14 EGC
15C-C080	15-DP-P-2 JB	15-DP-P-2 LCP	1"	(22) #14 + (1) #14 EGC
15C-C081	15-DP-P-2 JB	15-DP-P-2 DS	1"	(2) #14 + (1) #14 EGC
15C-C082	15-DP-P-2 LCP	15-DP-P-2 (TSH&YS)	3/4"	(2)-18TSP
15C-C083	MCC-DW	15-DP-LS-1 & 15-DP-LS-2 JB	3/4"	(8) #14 + (1) #14 EGC
15C-C084	15-DP-LS-1 & 15-DP-LS-2 JB	15-DP-LS-1	3/4"	(4) #14 + (1) #14 EGC
15C-C085	15-DP-LS-1 & 15-DP-LS-2 JB	15-DP-LS-2	3/4"	(4) #14 + (1) #14 EGC
15C-C086	PLC-DW	15-DW-GT MCP	20"	(50) #14 + (1) #14 EGC
15C-C087	15-DW-GT MCP	15-DW-GT-1 (COMB)	3/4"	(2)-#18 TSP
15C-C088	15-DW-GT MCP	15-DW-GT-2 (O2)	3/4"	(2)-#18 TSP
15C-C089	15-DW-GT MCP	15-DW-GT-3 (H2S)	3/4"	(2)-#18 TSP
15C-C090	PLC-DW	15-POLY-TK-1 LCP	3/4"	(2)-#18 TSP
15C-C091	15-POLY-TK-1 LCP	15-POLY-L-1	3/4"	(1)-#18 TSP
15C-C092	PLC-DW	15-POLY-P-1	3/4"	(10) #14 + (1) #14 EGC
15C-C093	PLC-DW	15-POLY-P-1	3/4"	(2)-#18 TSP
15C-C094	PLC-DW	15-POLY-P-2	3/4"	(10) #14 + (1) #14 EGC
15C-C095	PLC-DW	15-POLY-P-2	3/4"	(2)-#18 TSP
15C-C096	PLC-DW	15-POLY-P-3	3/4"	(10) #14 + (1) #14 EGC
15C-C097	PLC-DW	15-POLY-P-3	3/4"	(2)-#18 TSP
15C-C098	PLC-DW	15-POLY-TK-2 LCP	3/4"	(2)-#18 TSP
15C-C099	15-POLY-TK-2 LCP	15-POLY-L-2	3/4"	(1)-#18 TSP
15C-C100	PLC-DW	15-POLY-P-4	3/4"	(10) #14 + (1) #14 EGC
15C-C101	PLC-DW	15-POLY-P-4	3/4"	(2)-#18 TSP
15C-C102	PLC-DW	15-POLY-P-5	3/4"	(10) #14 + (1) #14 EGC
15C-C103	PLC-DW	15-POLY-P-5	3/4"	(2)-#18 TSP
15C-C104	PLC-DW	15-POLY-P-6	3/4"	(10) #14 + (1) #14 EGC
15C-C105	PLC-DW	15-POLY-P-6	3/4"	(2)-#18 TSP
15C-C106	PLC-DW	15-DW-FS-1	3/4"	(2) #14 + (1) #14 EGC
15C-C107	PLC-DW	15-DW-FS-2	3/4"	(2) #14 + (1) #14 EGC
15C-C108	PLC-DW	15-DW-FS-3	3/4"	(2) #14 + (1) #14 EGC
15C-C109	PLC-DW	MCC-DW	1-1/2"	(14)-#18 TSP
15C-C110	PLC-DW	MCC-DW	2-1/2"	(172) #14 + (1) #14 EGC
15C-C111	PLC-DW	15-DRYER-MCP	1"	(2) - CAT 6E CABLE
15C-C112	MCC-DW	15-DF-P-1 (LCP)	1"	(12) #14 + (1) #14 EGC
15C-C113	PLC-DW ⚠	15-DF-P-1 (TE)	3/4"	(2)-#18 TSP
15C-C114	PLC-DW	15-DF-PT-1	3/4"	(2)-#18 TSP
15C-C115	PLC-DW	15-DF-V-1	1"	(8) #14 + (1) #14 EGC
15C-C116	MCC-DW	15-DF-P-2 (LCP)	3/4"	(12) #14 + (1) #14 EGC
15C-C117	PLC-DW ⚠	15-DF-P-2 (TE)	3/4"	(2)-#18 TSP
15C-C118	PLC-DW	15-DF-PT-2	3/4"	(2)-#18 TSP
15C-C119	PLC-DW	15-DF-V-2	3/4"	(8) #14 + (1) #14 EGC
15C-C120	PLC-DW	15-RDT-2 MCP	1"	(4) - #18 TSP ⚠
15C-C121	15-DRYER-MCP	15-NPW-V-1	3/4"	(4) #14 + (1) #14 EGC
15C-C122	15-DRYER-MCP	15-NPW-V-2	3/4"	(4) #14 + (1) #14 EGC
15C-C123	15-DRYER-MCP	15-MF1-V-1	3/4"	(8) #14 + (1) #14 EGC
15C-C124	15-DRYER-MCP	15-MF1-V-2	3/4"	(8) #14 + (1) #14 EGC
15C-C125	15-DRYER-MCP	15-MF1-PT-1	3/4"	(2)-#18 TSP
15C-C126	15-DRYER-MCP	15-NPW-V-3	3/4"	(4) #14 + (1) #14 EGC
15C-C127	15-DRYER-MCP	15-NPW-V-4	3/4"	(4) #14 + (1) #14 EGC
15C-C128	15-DRYER-MCP	15-MF2-V-1	3/4"	(8) #14 + (1) #14 EGC
15C-C129	15-DRYER-MCP	15-MF2-V-2	3/4"	(8) #14 + (1) #14 EGC
15C-C130	15-DRYER-MCP	15-MF2-PT-1	3/4"	(2)-#18 TSP
15C-C131	MCC-DW	15-D-P-1 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C132	15-DRYER-MCP	15-D-P-1 (TE)	3/4"	(2)-#18 TSP
15C-C133	15-DRYER-MCP	15-D-PT-1	3/4"	(2)-#18 TSP
15C-C134	MCC-DW	15-D-P-2 (LCP)	3/4"	(12) #14 + (1) #14 EGC
15C-C135	15-DRYER-MCP	15-D-P-2 (TE)	3/4"	(2)-#18 TSP
15C-C136	15-DRYER-MCP	15-D-PT-2	3/4"	(2)-#18 TSP
15C-C137	MCC-DW	15-D-P-3 (LCP)	1"	(20) #14 + (1) #14 EGC

15C-C138	15-DRYER-MCP	15-D-P-3 (TE)	3/4"	(2)-#18 TSP
15C-C139	15-DRYER-MCP	15-D-PT-3	3/4"	(2)-#18 TSP
15C-C140	MCC-DW	15-D-P-4 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C141	15-DRYER-MCP	15-D-P-4 (TE)	3/4"	(2)-#18 TSP
15C-C142	15-DRYER-MCP	15-D-PT-4	3/4"	(2)-#18 TSP
15C-C143	MCC-DW	15-D-P-5 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C144	15-DRYER-MCP	15-D-P-5 (TE)	3/4"	(2)-#18 TSP
15C-C145	15-DRYER-MCP	15-D-PT-5	3/4"	(2)-#18 TSP
15C-C146	MCC-DW	15-D-P-6 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C147	15-DRYER-MCP	15-D-P-6 (TE)	3/4"	(2)-#18 TSP
15C-C148	15-DRYER-MCP	15-D-PT-6	3/4"	(2)-#18 TSP
15C-C149	MCC-DW	15-D-P-7 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C150	15-DRYER-MCP	15-D-P-7 (TE)	3/4"	(2)-#18 TSP
15C-C151	15-DRYER-MCP	15-D-PT-7	3/4"	(2)-#18 TSP
15C-C152	MCC-DW	15-D-P-8 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C153	15-DRYER-MCP	15-D-P-8 (TE)	3/4"	(2)-#18 TSP
15C-C154	15-DRYER-MCP	15-D-PT-8	3/4"	(2)-#18 TSP
15C-C155	PLC-DW	15-DRYER-MCP	3"	(172) #14 + (1) #14 EGC
15C-C156	PLC-DW	15-DRYER-MCP	3"	(30)-#18 TSP
15C-C157	15-RDS-M-1 (ZS-A)	15-RDS-M-1 JB1	3/4"	(4) #14 + (1) #14 EGC
15C-C158	15-RDS-M-1 (ZS-C)	15-RDS-M-1 JB1	3/4"	(4) #14 + (1) #14 EGC
15C-C159	MCC-DW	15-RDS-M-1 JB1	3/4"	(4) #14 + (1) #14 EGC
15C-C160	15-DRYER-MCP	15-RDS-M-1 JB1	3/4"	(4) #14 + (1) #14 EGC
15C-C161	15-RDS-M-1 (ZS-B)	15-RDS-M-1 JB2	3/4"	(2) #14 + (1) #14 EGC
15C-C162	15-RDS-M-1 (ZS-D)	15-RDS-M-1 JB2	3/4"	(2) #14 + (1) #14 EGC
15C-C163	MCC-DW	15-RDS-M-1 JB2	3/4"	(4) #14 + (1) #14 EGC
15C-C164	MCC-DW	15-DTB-D-1 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C165	15-DRYER-MCP	15-DTB-SL-1	3/4"	(4) #14 + (1) #14 EGC
15C-C166	15-DRYER-MCP	15-D-PT-1	3/4"	(2)-#18 TSP
15C-C167	MCC-DW	15-RDS-M-1 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C168	15-DRYER-MCP	15-DTB-TS-1	3/4"	(2) #14 + (1) #14 EGC
15C-C169	15-DRYER-MCP	15-DTB-TS-2	3/4"	(2) #14 + (1) #14 EGC
15C-C170	15-DRYER-MCP	15-DTB-TS-3	3/4"	(2) #14 + (1) #14 EGC
15C-C171	15-DRYER-MCP	15-DTB-TS-4	3/4"	(2) #14 + (1) #14 EGC
15C-C172	15-DTB-LS-1	15-DTB-LS-1/2 JB	3/4"	(2) #14 + (1) #14 EGC
15C-C173	15-DTB-LS-2	15-DTB-LS-1/2 JB	3/4"	(2) #14 + (1) #14 EGC
15C-C174	15-DRYER-MCP	15-DTB-LS-1/2 JB	3/4"	(4) #14 + (1) #14 EGC
15C-C175	MCC-DW	15-DMTB-D-1 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C176	15-DRYER-MCP	15-DMTB-SL-1	3/4"	(4) #14 + (1) #14 EGC
15C-C177	15-BTM-LS-1	15-BTM-LS-1/2 JB	3/4"	(2) #14 + (1) #14 EGC
15C-C178	15-BTM-LS-2	15-BTM-LS-1/2 JB	3/4"	(2) #14 + (1) #14 EGC
15C-C179	15-DRYER-MCP	15-BTM-LS-1/2 JB	3/4"	(4) #14 + (1) #14 EGC
15C-C180	15-DRYER-MCP	15-BTM-TE-1	3/4"	(1)-#18 TSP
15C-C181	15-DRYER-MCP	15-BTM-TE-2	3/4"	(1)-#18 TSP
15C-C182	15-DRYER-MCP	15-D-T-1	3/4"	(1)-#18 TSP
15C-C183	15-DRYER-MCP	15-D-T-2	3/4"	(1)-#18 TSP
15C-C184	15-DRYER-MCP	15-D-T-3	3/4"	(1)-#18 TSP
15C-C185	15-DRYER-MCP	15-D-T-4	3/4"	(1)-#18 TSP
15C-C186	15-DRYER-MCP	15-D-TS-1	3/4"	(2) #14 + (1) #14 EGC
15C-C187	15-DRYER-MCP	15-D-TS-2	3/4"	(2) #14 + (1) #14 EGC
15C-C188	15-DRYER-MCP	15-D-LS-1	3/4"	(2) #14 + (1) #14 EGC
15C-C189	15-DRYER-MCP	15-D-LS-2	3/4"	(2) #14 + (1) #14 EGC
15C-C190	MCC-DW	15-DWZ-F-1 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C191	MCC-DW	15-DWZ-F-2 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C192	MCC-DW	15-DEZ-F-1 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C193	MCC-DW	15-DEZ-F-2 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C194	MCC-DW	15-DES-M-1 (LCP)	1"	(20) #14 + (1) #14 EGC
15C-C195	MCC-DW	15-DES-M-1 (E-STOP)	3/4"	(6) #14 + (1) #14 EGC
15C-C196	15-DRYER-MCP	15-DES-M-1 (E-STOP)	3/4"	(4) #14 + (1) #14 EGC
15C-C197	15-DES-TE-1 (TIT)	15-DES-TE-1 (TE)	3/4"	(1)-#18 TSP
15C-C198	15-DRYER-MCP	15-DES-TE-1 (TE)	3/4"	(1)-#18 TSP
15C-C199	15-DES-TE-2 (TIT)	15-DES-TE-2 (TE)	3/4"	(1)-#18 TSP
15C-C200	15-DRYER-MCP	15-DES-TE-2 (TE)	3/4"	(1)-#18 TSP

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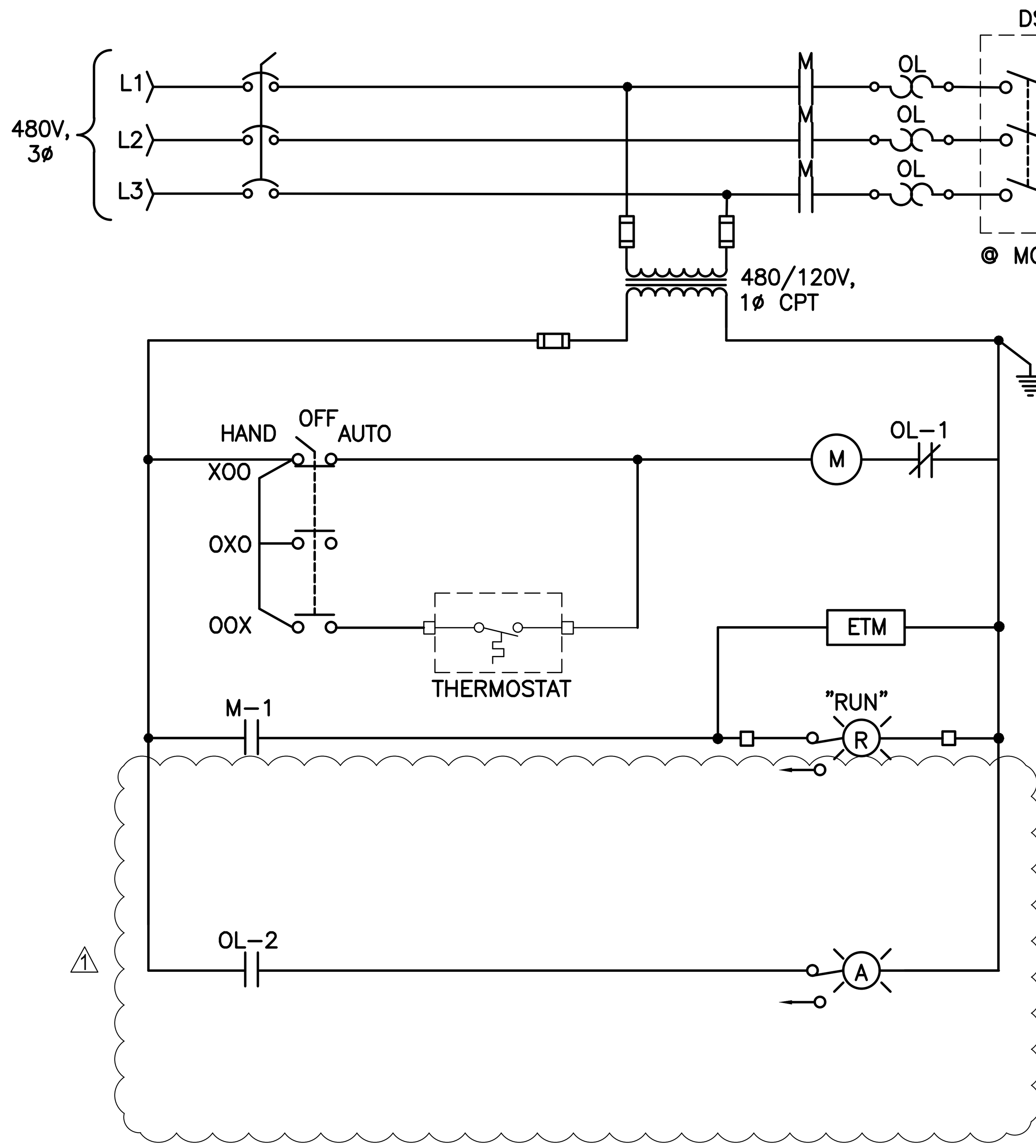
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

CONDUIT AND WIRE SCHEDULE
CONTROL 6

SHEET NO.
E-53

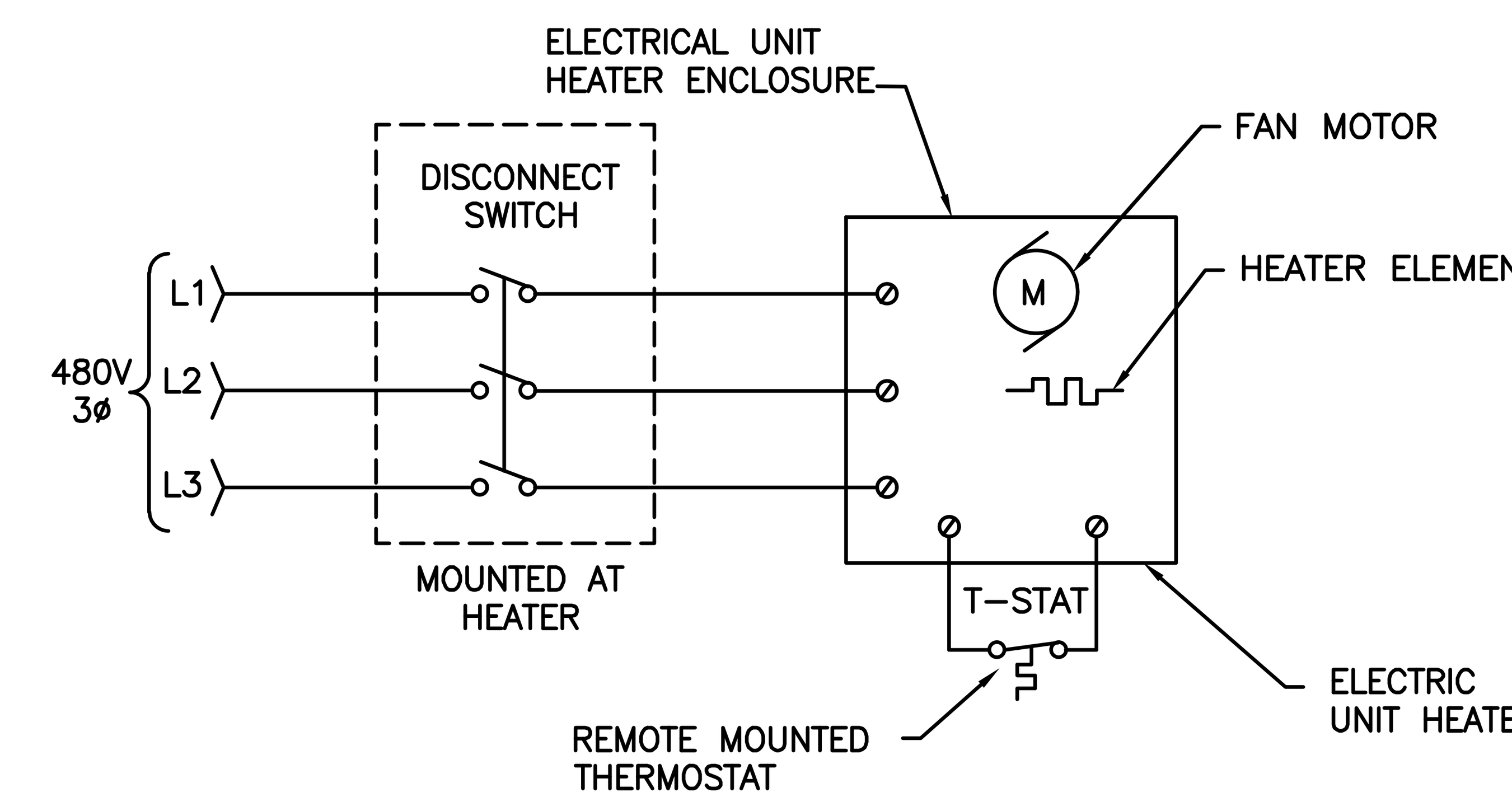
File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-53.DWGTab: E-53Plotted: October 30, 2020 11:40am



TYPICAL EXHAUST AND SUPPLY FAN SCHEMATIC

NOTES:

1. COORDINATE SCHEMATIC WITH FANS AND MOTORIZED DAMPERS PROVIDED IN THE SOLIDS HANDLING FACILITY AND THE MBR FACILITY. REFER HVAC DRAWINGS AND SPECIFICATIONS.
2. INTERLOCK SUPPLY AND EXHAUST TO SINGLE 2 POLE THERMOSTAT IF REQUIRED.
3. PROVIDE REMOTE MOUNTED THERMOSTAT AT LOCATIONS SHOWN ON HVAC DRAWINGS OR AS SPECIFIED, CONNECT WITH ¾"C/(2)-#12+#12GND.

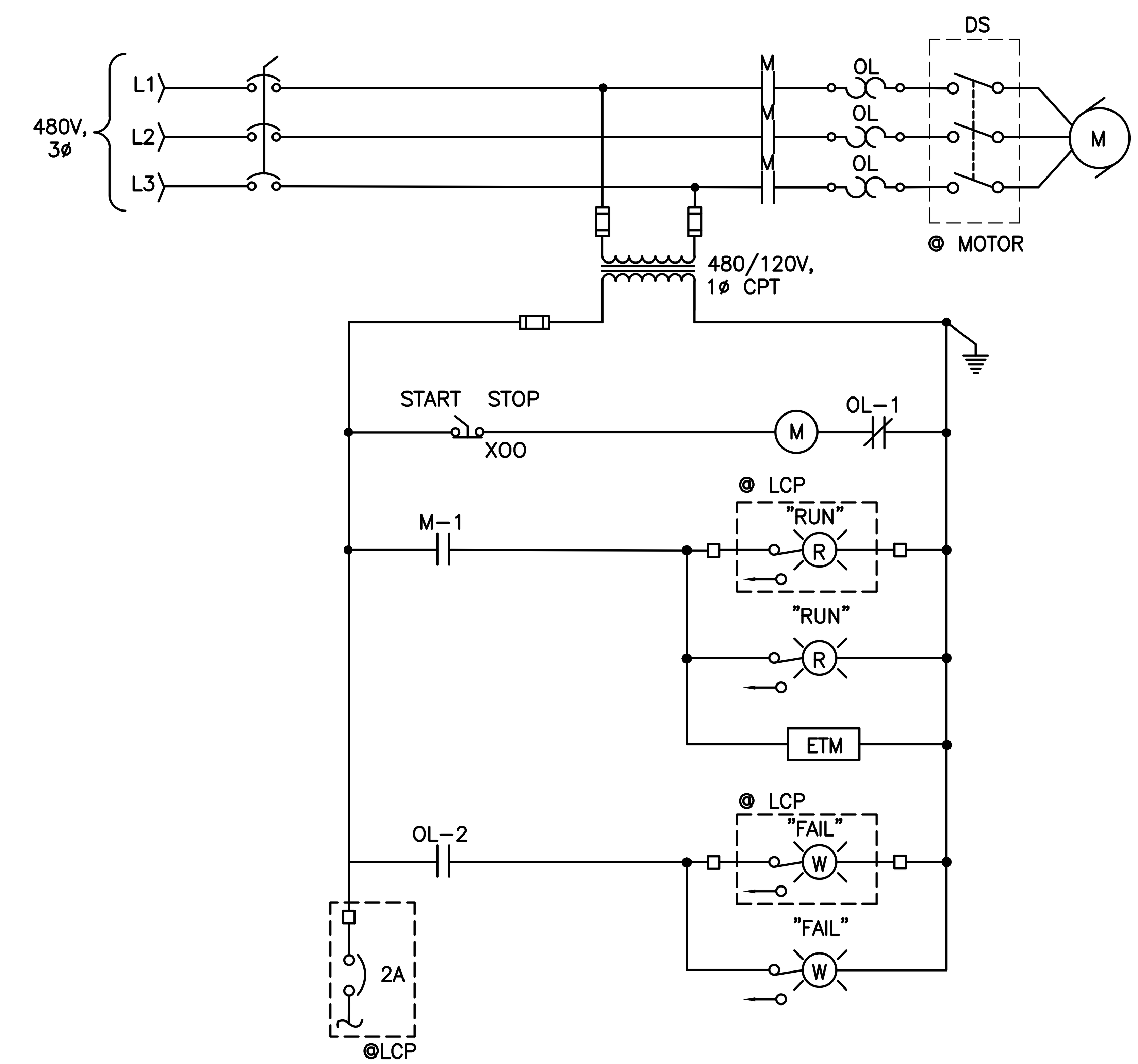


ELECTRIC UNIT HEATER (UH) SCHEMATIC

(TYPICAL FOR ALL UNIT HEATERS)

NOTES:

1. PROVIDE CONDUIT AND WIRE PER NEC AS REQUIRED TO T-STAT AND DISCONNECT SWITCH.
2. REFER TO MECHANICAL DRAWINGS FOR LOCATION OF UNIT HEATERS.
3. PROVIDE FUSED D/S AS REQUIRED TO MEET MANUFACTURER'S MAXIMMUM CURRENT RATINGS.



POLY RECIRCULATION PUMPS (15-D-SF-1)

(TYPICAL OF 2: 15-POLY-RP-1, 15-POLY-RP-2)

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE: 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
3	ADDENDUM No.3	10/30/20

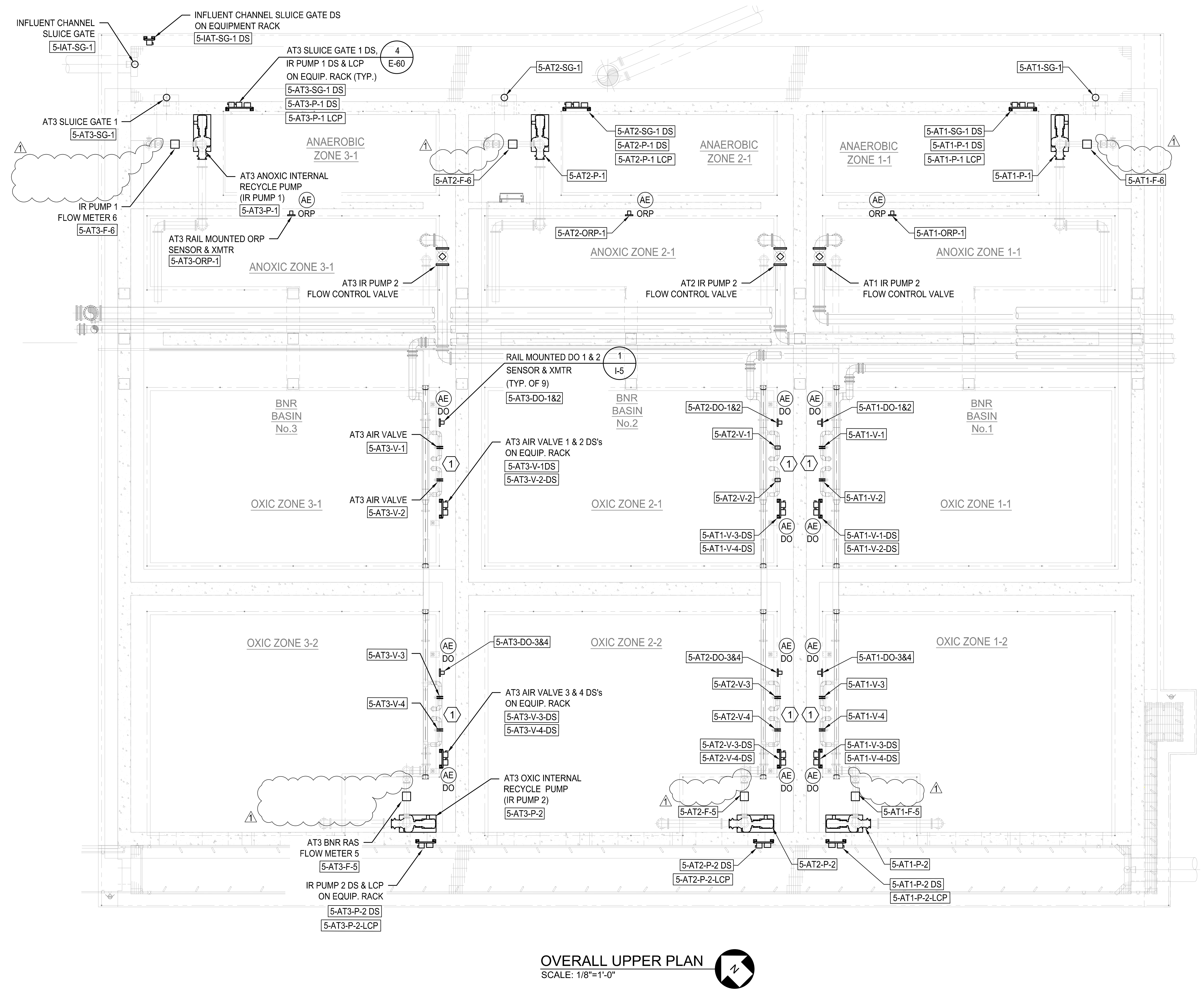
PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

ELECTRICAL SCHEMATICS 5

SHEET NO.
E-69

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1000 — E-69.DWG|Tab: E-69|Plotted: October 30, 2020 11:40am



OVERALL UPPER PLAN

SCALE: 1/8"=1'-0"

NOTES:

1. REFER TO DETAILS FOR HANDRAIL MOUNTING.
2. CONDUIT ROUTING SHALL BE ON STRUCTURAL SUPPORTS FOR PIPING. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO MEET NEC REQUIREMENTS.
3. STRUCTURE IS PRECAST, CONDUIT AND SUPPORTS ARE EXPOSED. MOUNT ALL CONDUIT ON WALL AND MOUNT SUPPORTS MINIMUM 18" ABOVE HIGH WATER LEVEL. IF SUPPORTS ARE ABOVE WALKWAYS. MOUNT MIN 96" ABOVE WALKWAY. ANCHORS PENETRATIONS IN STRUCTURES ARE ONLY ALLOWED BY APPROVAL OF PRE-CAST MANUFACTURER.
4. REFER TO MECHANICAL DRAWINGS AND SPECIFICATION 15250 - PIPING INSULATION FOR LOCATION AND QUANTITY OF HEAT TRACING REQUIRED.
5. PROVIDE GROUND LOOP PER DETAIL 4, DRAWING E-59.

KEY NOTES

(1) AIR VALVES LOCATED ON AIR PIPE. REFER TO MECHANICAL DRAWING 5-M-11 FOR LOCATION.

0 8 16 24

SCALE: 1/8" = 1'-0"

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SCALE: AS SHOWN

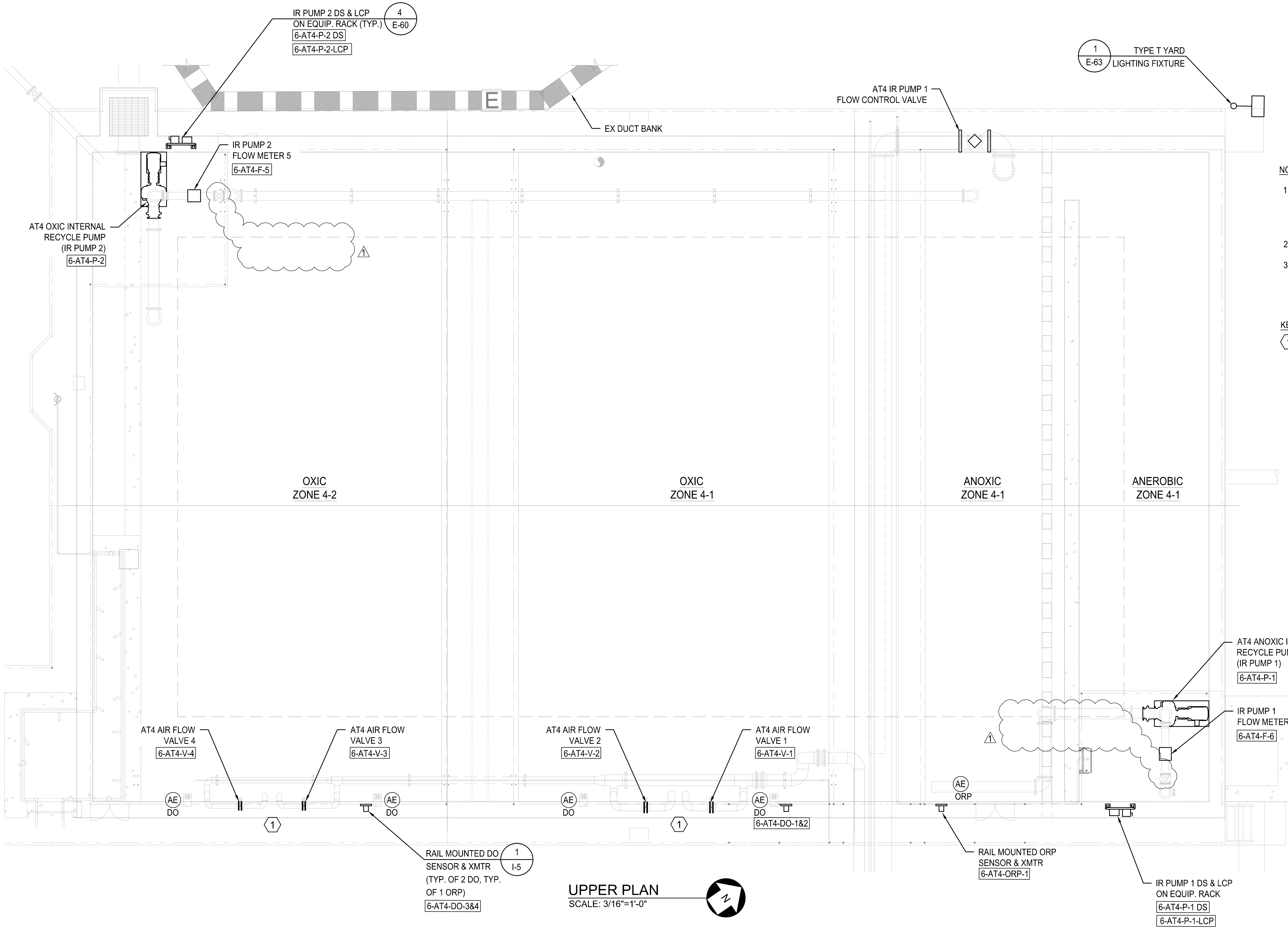
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

BNR BASINS 1-3
ELECTRICAL PLAN

SHEET NO.

5-E-1

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1005.01 — 5-E-1.DWG|Tab: 5-E-1|Plotted: October 30, 2020 11:41am



NOTES:

1. REFER TO MECHANICAL DRAWINGS AND SPECIFICATION 15250 - PIPING INSULATION FOR LOCATION AND QUANTITY OF HEAT TRACING REQUIRED.
2. REFER TO DETAILS FOR HANDRAIL MOUNTING.
3. CONDUIT ROUTING SHALL BE ON STRUCTURAL SUPPORTS FOR PIPING. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO MEET NEC REQUIREMENTS.

KEY NOTES

1. AIR VALVES LOCATED ON AIR PIPE. REFER TO MECHANICAL DRAWING 6-M-3 FOR LOCATION.

0 4 8 12 16
SCALE: 3/16" = 1'-0"

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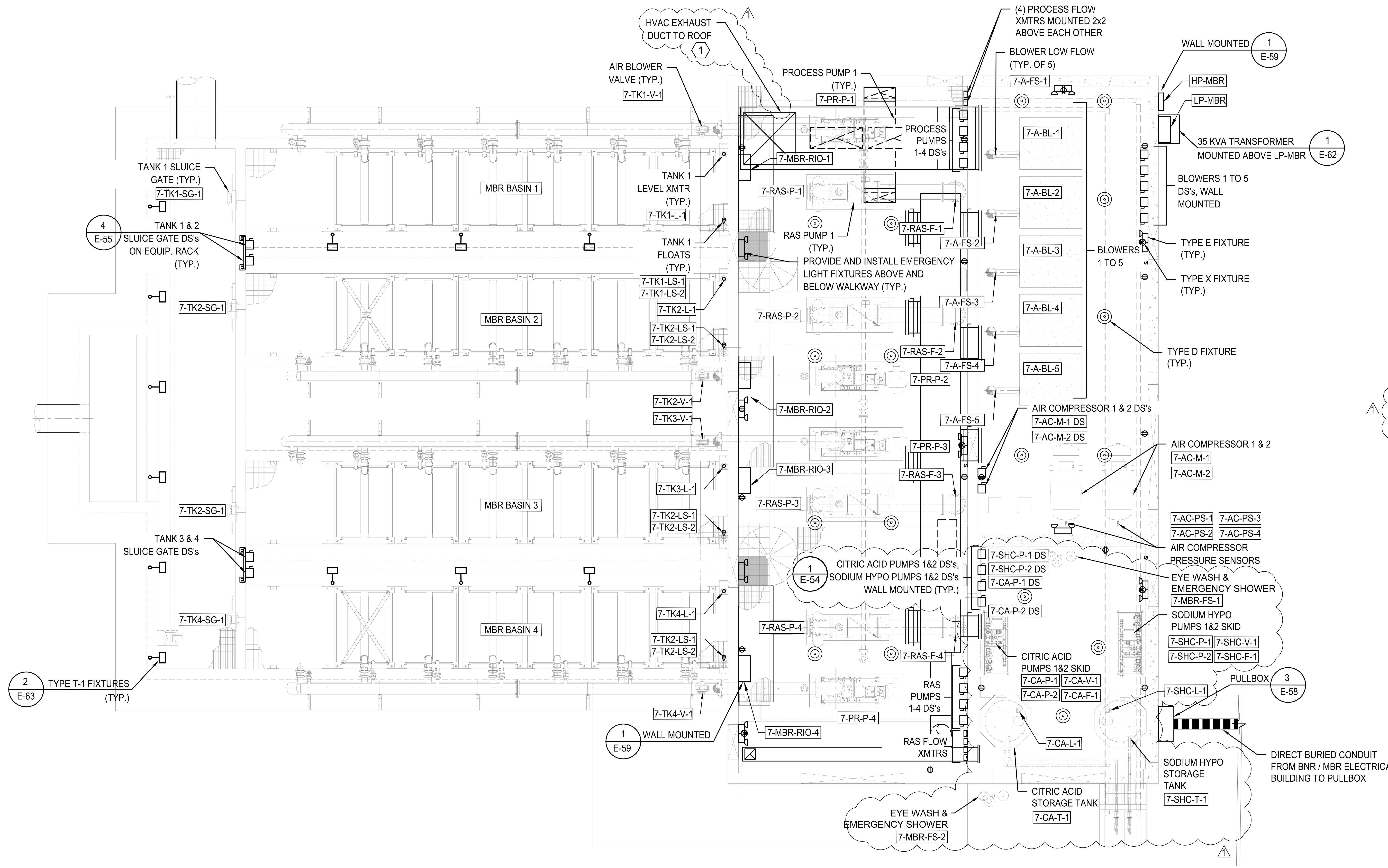
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

BNR No.4 MODIFICATIONS ELECTRICAL PLAN

SHEET NO.
6-E-1

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\1006.01 – 6-E-1.DWG|Tab: 6-E-1|Plotted: October 30, 2020 11:40am



UPPER PLAN
SCALE: 3/16"=1'-0"

NOTES

1. FOR LIGHT FIXTURE DETAILS REFER TO DRAWING E-63.
2. RIO PANELS SHALL BE LOCATED ON THE UPPER LEVEL BELOW THE WALKOVER LANDING.
3. PROVIDE 3-WAY TOGGLE SWITCHES AT EACH DOOR RELATED TO THE PROCESS AREA FOR LIGHTING.
4. PROVIDE 3-WAY TOGGLE SWITCH AT ENTRANCE TO MBR BASIN FOR T-1 LIGHTING.
5. REFER TO DRAWING E-64 FOR LIGHTING NOTES.
6. HEATING AND VENTILATION EQUIPMENT NOT SHOWN, REFER TO HVAC DRAWINGS. PROVIDE AND INSTALL ALL EQUIPMENT PER HVAC DRAWINGS AND SPECIFICATIONS. PROVIDE AND INSTALL ALL CONDUIT, WIRE, FUSED DISCONNECTS, OVERCURRENT PROTECTION, THERMOSTATS, AND OTHER EQUIPMENT FOR A COMPLETE SYSTEM.

KEY NOTES

1 REFER TO HVAC DRAWINGS FOR DETAILS.

0 4 8 12 16
SCALE: 3/16" = 1'-0"

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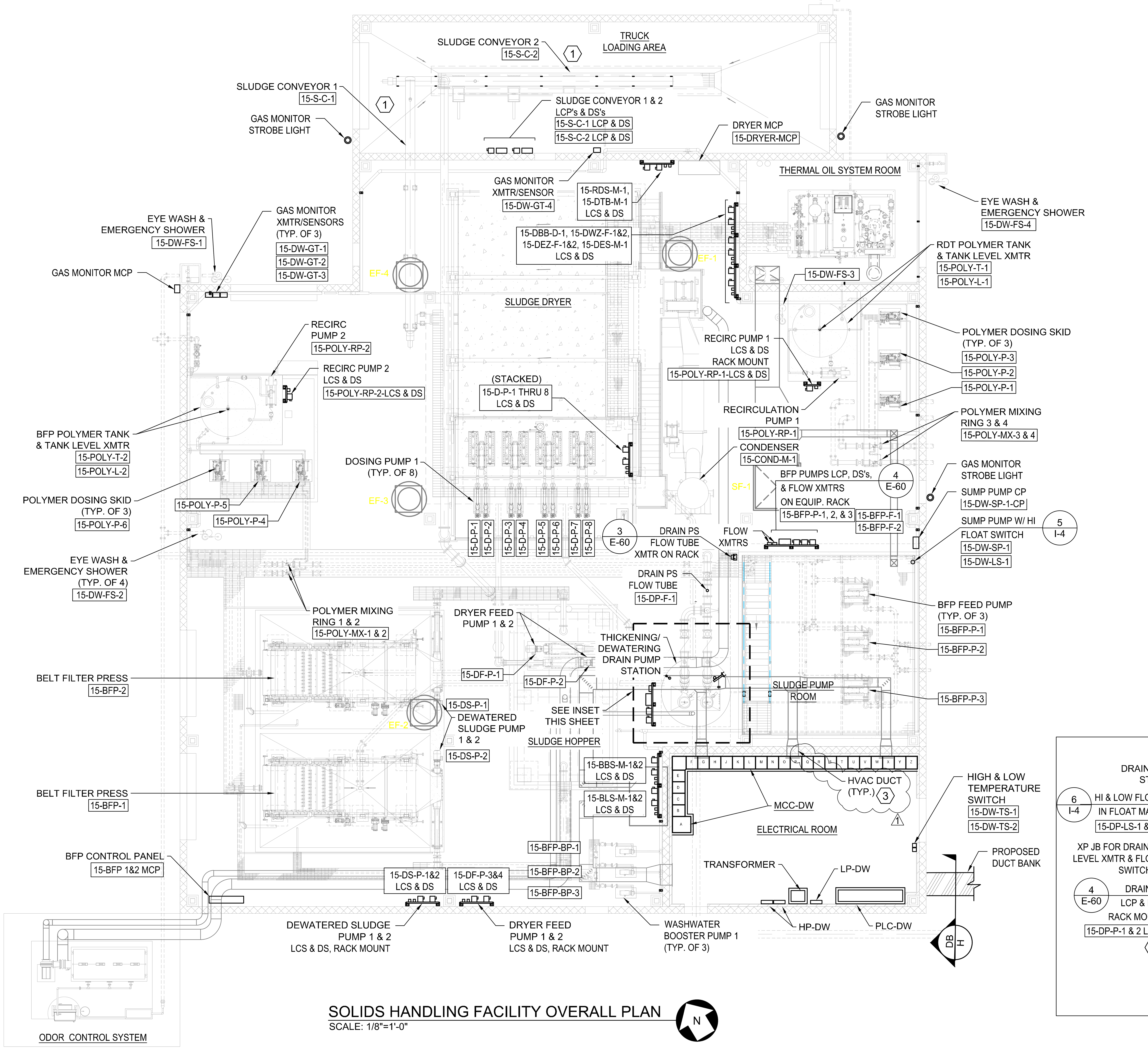
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

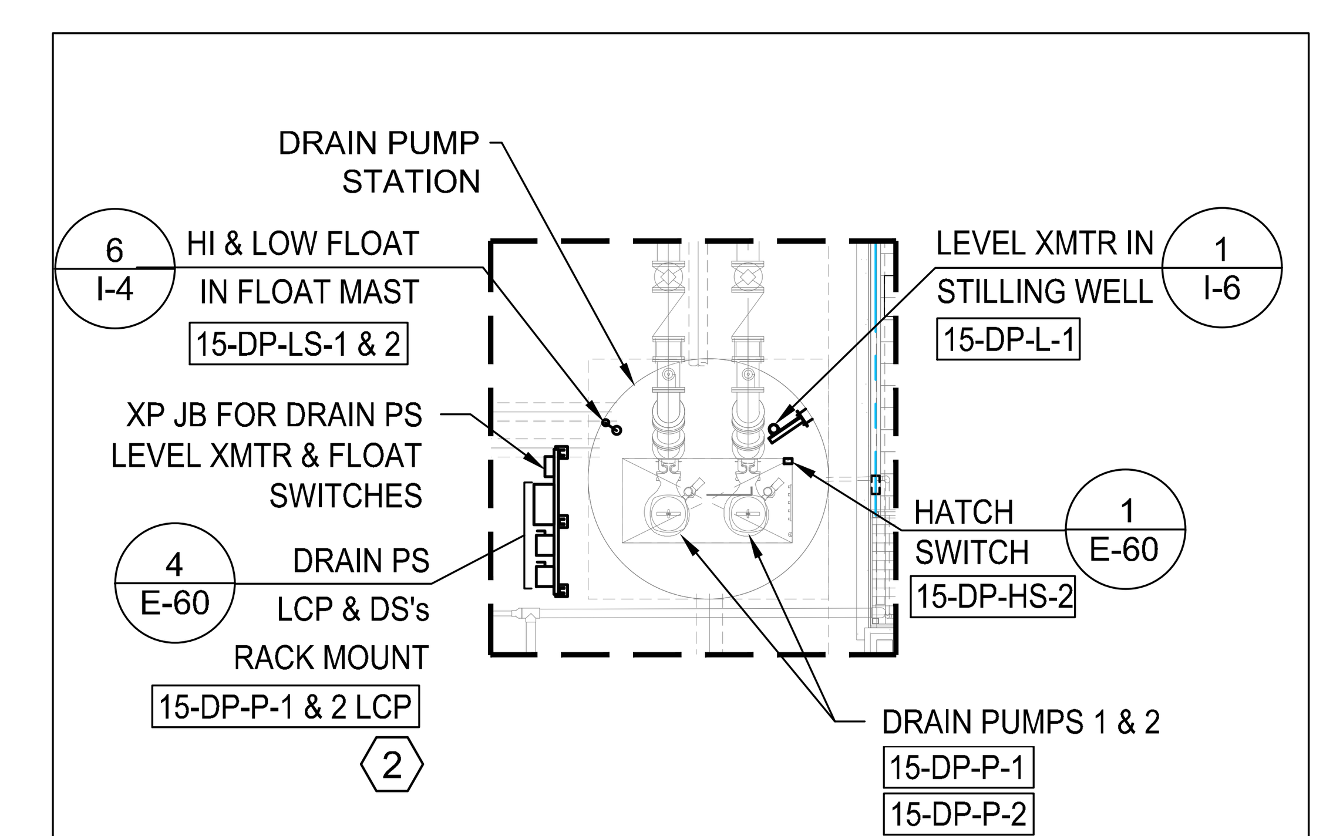
MEMBRANE FACILITY UPPER ELECTRICAL PLAN

SHEET NO.
7-E-2



SOLIDS HANDLING FACILITY OVERALL PLAN

SCALE: 1/8"=1'-0"



INSET

SCALE: 1/8"=1'-0"

NOTES:

1. ALL PANELS ARE WALL MOUNTED UNLESS OTHERWISE NOTED.
2. REFER TO DRAWING 15-E-2 FOR LIGHTING AND POWER.
3. REFER TO MECHANICAL DRAWINGS AND SPECIFICATION 15250 - PIPING INSULATION FOR LOCATION AND QUANTITY OF HEAT TRACING REQUIRED.
4. COORDINATE WITH DRYER MANUFACTURER FOR ELECTRICAL REQUIREMENTS. PROVIDE ALL CONDUIT, WIRE AND EQUIPMENT FOR A COMPLETE SYSTEM.
5. AC UNIT IN ELECTRICAL ROOM AND HEATING AND VENTILATION IN PROCESS AREA NOT SHOWN. REFER TO HVAC DRAWINGS. PROVIDE AND INSTALL ALL EQUIPMENT PER HVAC DRAWINGS AND SPECIFICATIONS. PROVIDE AND INSTALL ALL CONDUIT, WIRE, FUSED DISCONNECTS, OVERCURRENT PROTECTION, THERMOSTATS, AND OTHER EQUIPMENT FOR A COMPLETE SYSTEM.
6. PROVIDE GROUND LOOP PER DETAIL 4, DRAWING E-59.
7. ELECTRICAL ROOM IS INSULATED. COORDINATE MCC INSTALLATION WITH ROOM DIMENSIONS AVAILABLE. REMOVE INSULATION AROUND MCC, OR RECONFIGURE MCC, IF REQUIRED.

KEY NOTES

1. ZERO SPEED AND EMERGENCY PULL CORD TO BE PROVIDED WITH CONVEYOR, COORDINATE WITH SUPPLIER.
2. WETWELL IS A CLASS 1, DIV. 1 AREA.
3. REFER TO HVAC DRAWINGS FOR DETAILS.

0 8 16 24

SCALE: 1/8" = 1'-0"

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APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

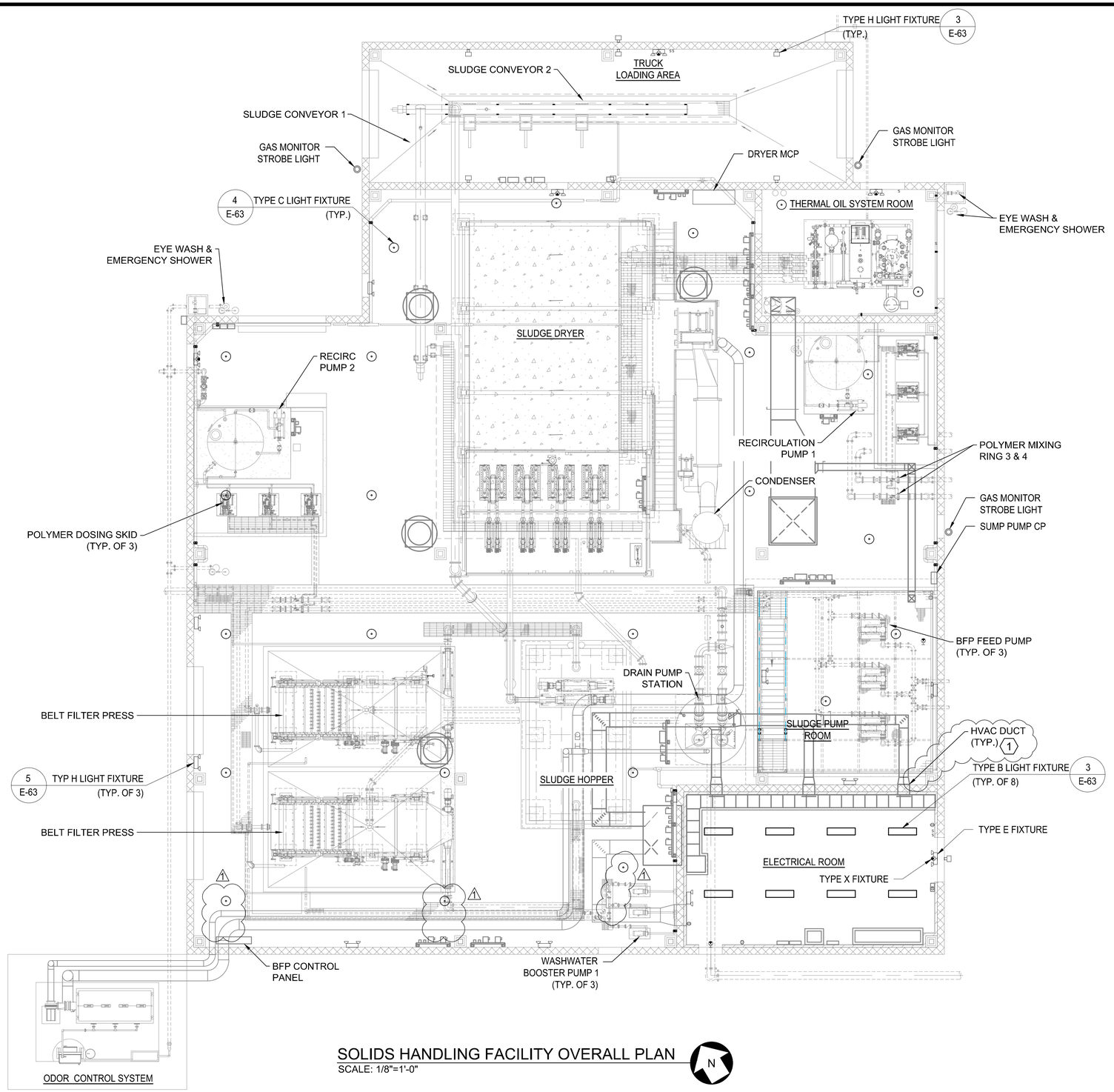
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

SOLIDS HANDLING FACILITY
ELECTRICAL PLAN

SHEET NO.

15-E-1

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35907\015.01 — 15-E-1.DWG.DWG|Tab:15-E-1|Plotted: October 30, 2020 11:44am



SOLIDS HANDLING FACILITY OVERALL PLAN

SCALE: 1/8"=1'-0"

N

0 8 16 24

SCALE: 1/8" = 1'-0"

NOTES:

1. LIGHTING SHALL BE PROVIDED WITH SWITCHES AT DOOR LOCATIONS. PROVIDE OPERATION OF LIGHTS THROUGH MULTIPLE TOGGLE SWITCHES TO OPERATE IN AREAS CONSISTING OF WEST, CENTER, AND EAST IN THE PROCESS AREA.
2. FOR ELECTRICAL ROOM, PROVIDE SWITCHES AT BOTH INGRESS LOCATIONS.
3. CONTROL TYPE H FIXTURES PER DRAWING E-64.

KEY NOTES

1 REFER TO HVAC DRAWINGS FOR DETAILS.

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1	ADDENDUM No.3	10/30/20

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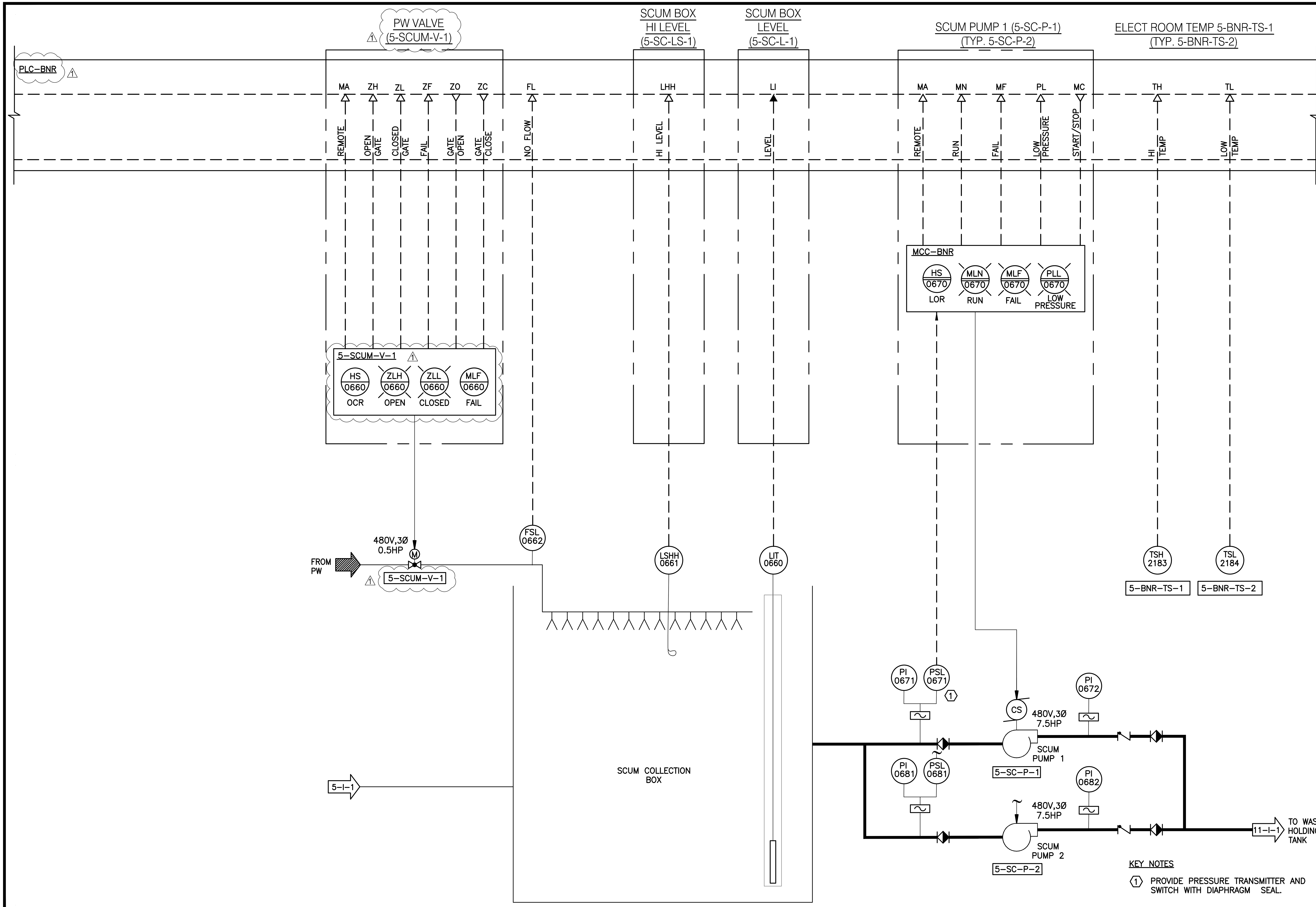
DATE: SEPTEMBER 2020
SCALE: AS SHOWN

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

SOLIDS HANDLING FACILITY LIGHTING PLAN

SHEET NO.
15-E-2

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS359071\1015.01 – 15-E-2.DWG|Tab:15-E-2|Plotted: October 30, 2020 11:43am



KEY NOTES

1. PROVIDE PRESSURE TRANSMITTER AND SWITCH WITH DIAPHRAGM SEAL.

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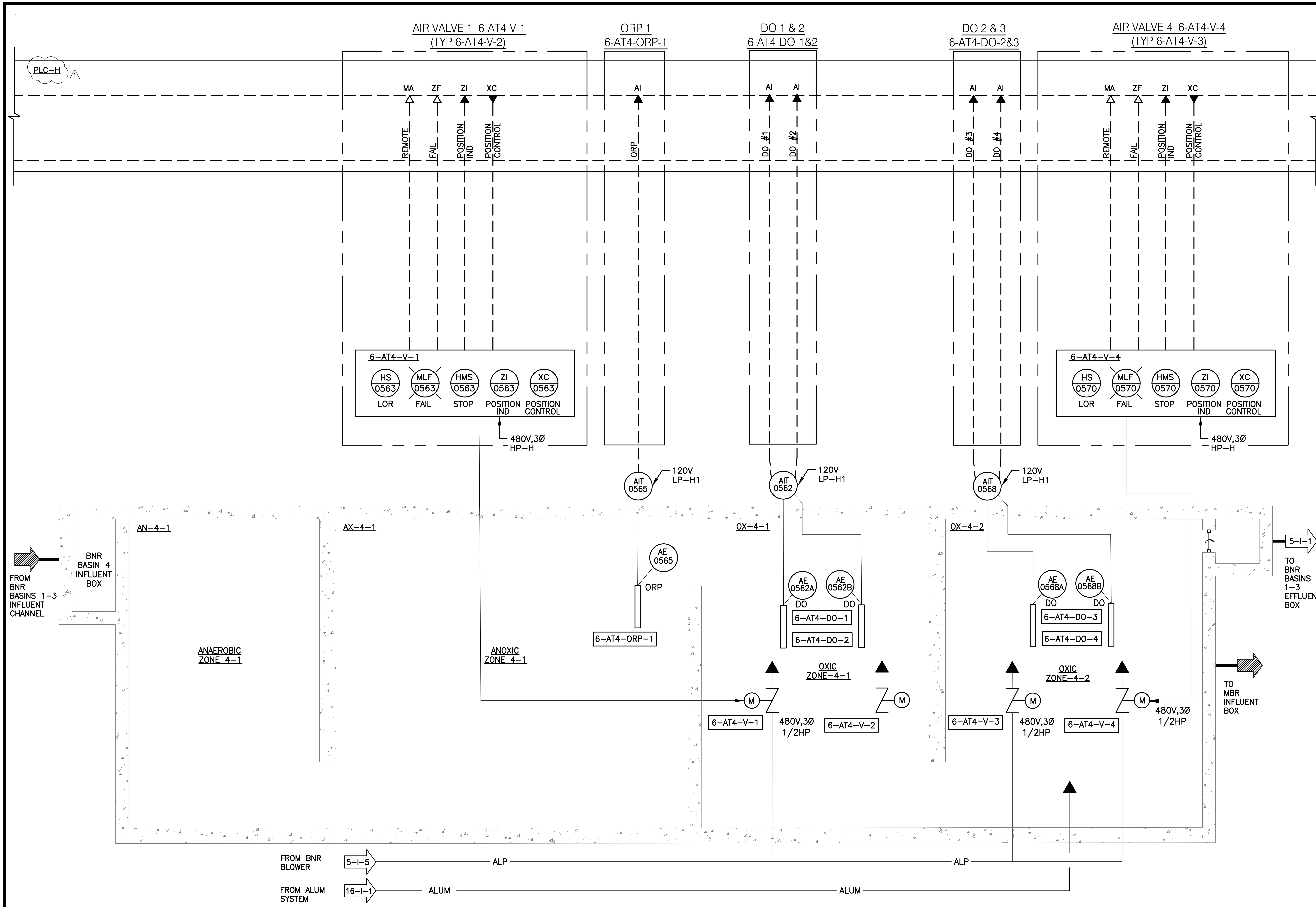
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
SCUM COLLECTION SYSTEM

SHEET NO.
5-I-4

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3005.04 - 5-I-4.DWG|Tab: 5-I-4|Plotted: October 30, 2020 11:17am



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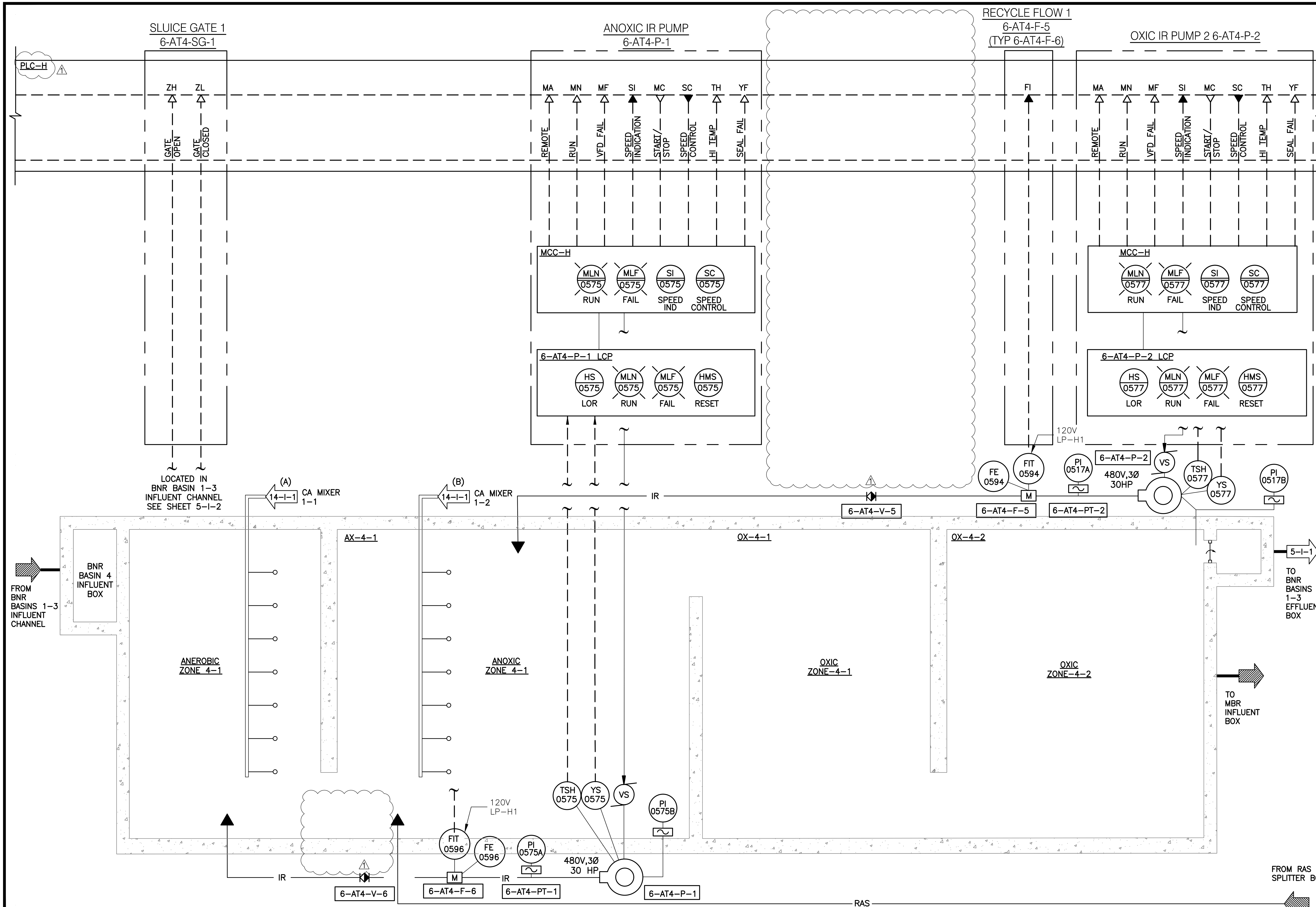
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
BNR BASIN 4
INSTRUMENTATION

SHEET NO.
6-I-1

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3006.01 - 6-I-1.DWG|Tab: 6-I-1|Plotted: October 30, 2020 11:17am



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CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
BNR BASIN 4
MOTORS

SHEET NO.
6-I-2

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3006.02 – 6-I-2.DWG|Tab: 6-I-2|Plotted: October 30, 2020 11:17am

WAS TANK
(11-WT-L-1)
WAS FEED PUMP 3 (11-SF-P-3)
WAS FEED PUMP 2 (11-SF-P-2)
WAS FEED PUMP 1 (11-SF-P-1)
WAS BYPASS FLOW & REUSE FLOW
11-WB-F-1 & 11-RP-F-1
REUSE PUMP 1 (11-RP-P-1)
(TYP 11-RP-P-2)
WAS PUMPS SAMPLER
(11-RP-SP-1)
RIO-BNR1
PLC-BNR
LHH LI
MA MN MF SI MC SC TH YF
FI
MN MF MN MF PH PL LL LI
FC
TANL HI-HI LEVEL
TANL LEVEL
REMOTE
RUN
VFD FAIL
SPEED INDICATION
START/STOP
SPEED CONTROL
HI TEMP
SEAL VFD FAIL
WAS BYPASS FLOW
PUMP 1 RUN
PUMP 1 FAIL
PUMP 2 RUN
PUMP 2 FAIL
HI DISCH. PRESS
LOW DISCH. PRESS
LOW WW LEVEL
LEVEL (TANK & POND)
WAS TANK FLOW PLACE
MCC-BNR
MLN 1130 RUN
MLF 1130 FAIL
SI 1130 SPEED IND
SC 1130 SPEED CONTROL
11-SF-P-3 LCP
HS 1130 LOR
MLN 1130 RUN
MLF 1130 FAIL
HMS 1130 RESET
MLN 1120 RUN
MLF 1120 FAIL
SI 1120 SPEED IND
SC 1120 SPEED CONTROL
11-SF-P-2 LCP
HS 1120 LOR
HMS 1120 RESET
MLN 1110 RUN
MLF 1110 FAIL
SI 1110 SPEED IND
SC 1110 SPEED CONTROL
11-SF-P-1 LCP
HS 1110 LOR
HMS 1110 RESET
11-RP-P-1&2 MCP
LLH 1145 HI POND LEVEL
HS 1140 HOA
MLN 1140 PUMP 1 RUN
MLF 1140 PUMP 1 FAIL
HMS 1140 PUMP 1 RESET
LI 1154 WW LEVEL
LLL 1155 WW LO LEVEL
PSH 1157 HIGH PRESS
HMS 1157 HIGH PRESS RESET
PSL 1158 LOW PRESS
HMS 1158 LOW PRESS RESET
480V, 3Ø
SG-OC
11-RL-LS-1
11-RP-L-1
LIT 1155
LSH 1155
LE 1100
LIT 1100
120V
LP-H1
11-WT-L-1
LSH 1101
11-WT-LS-1
WAS STORAGE
YS 1130
VS
TSH 1130
480V,3Ø
10HP
YS 1120
TSH 1120
YS 1110
TSH 1110
FROM MBR
FROM SCUM COLLECTION SYSTEM
11-I-2
FROM WAS BLOWER
PI 1130
PI 1120
PI 1110
ARV
120V
LP-DW
FIT 1155
FE 1155
11-WB-F-1
M
HTR 1140
CS
PI 1140
480V,3Ø
150HP
PSL 1140
PSH 1140
PSL 1150
PSH 1150
HTR 1150
PI 1150
REUSE PUMP STATION
FROM EX SODIUM HYPOCHLORITE
SAMPLER
EX REUSE DISTRIBUTION SYSTEM
11-RP-F-1
1159 FIT
1159 FE
EX. 120V
(A)
TO ROTARY DRUM THICKENER 1
(B)
TO ROTARY DRUM THICKENER 2
12-I-1
TO AEROBIC DIGESTER
KEY NOTES
1 EXISTING REUSE PUMP CONTROL PANEL TO BE RELOCATED, ONLY PUMP 1 SHOWN, PUMP 2 SIMILAR.
2 TRANSMIT TANK AND POND LEVELS TO RIO-BNR1.
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REVISION
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DATE
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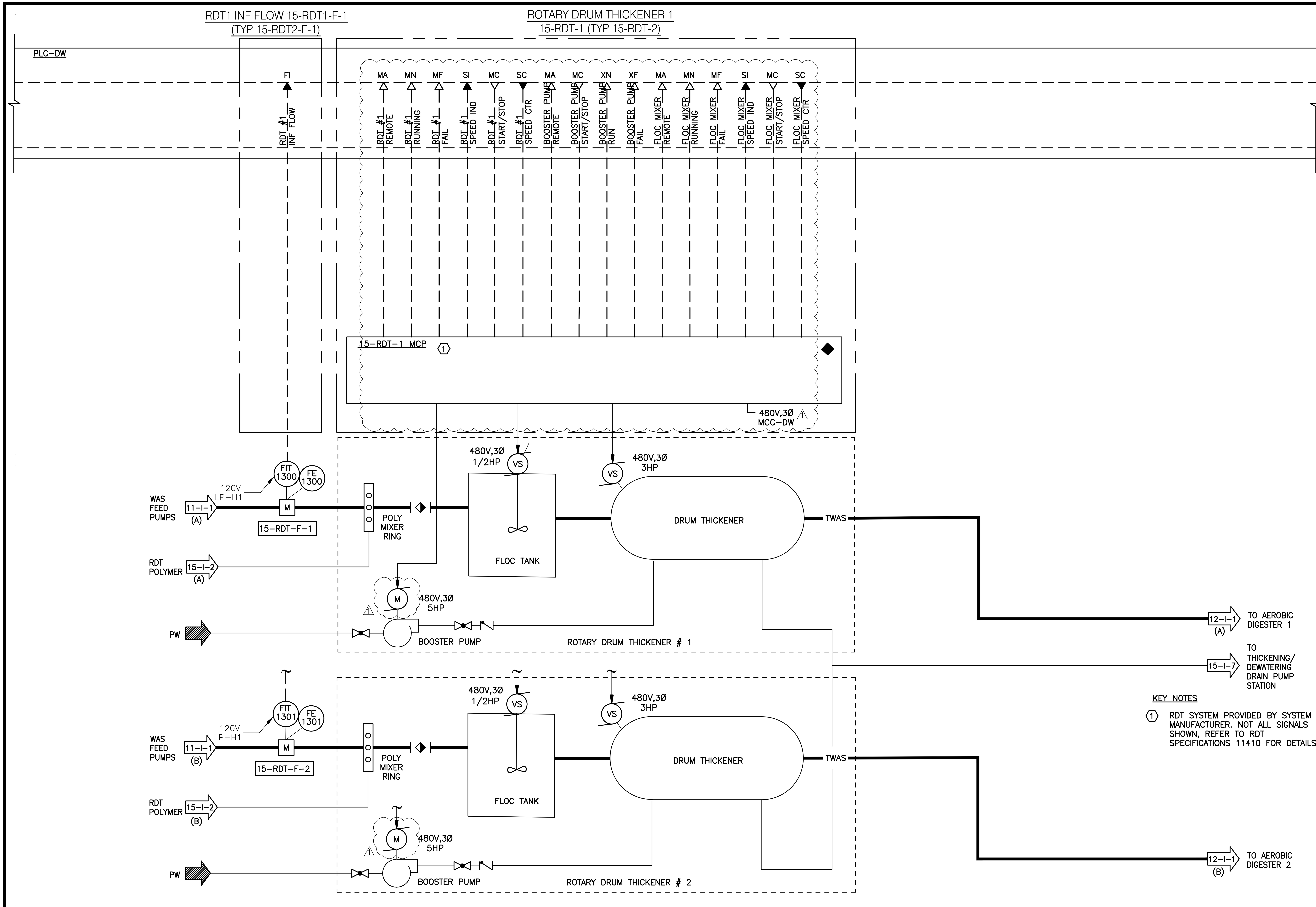
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: NTS
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD
P&ID
WAS STORAGE
AND REUSE PUMP STATION
SHEET NO.
11-I-1
File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3011.01 - 11-I-1.DWG|Tab:11-I-1|Plotted: October 30, 2020 11:18am



KEY NOTES

1. RDT SYSTEM PROVIDED BY SYSTEM MANUFACTURER. NOT ALL SIGNALS SHOWN, REFER TO RDT SPECIFICATIONS 11410 FOR DETAILS.

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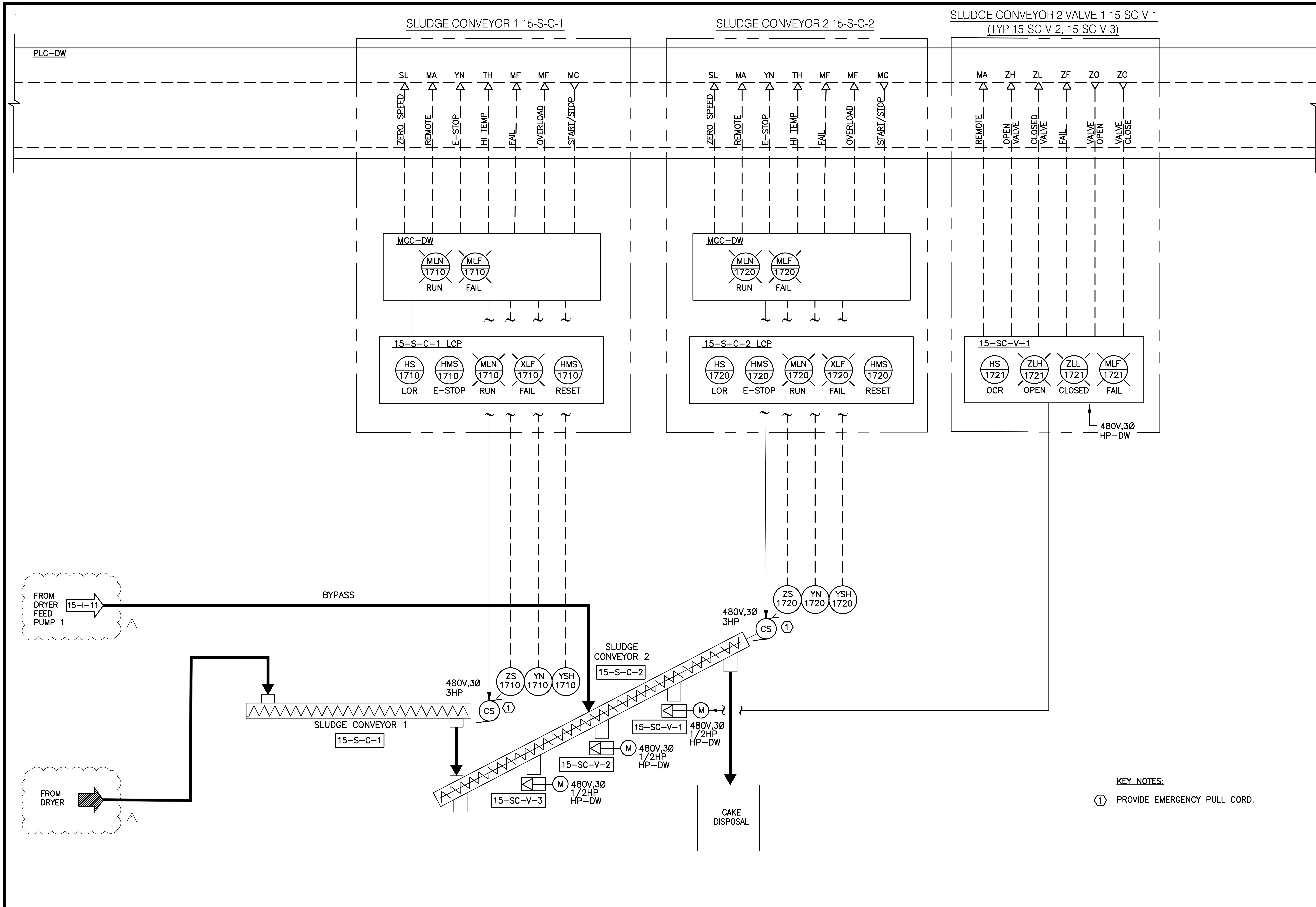
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
ROTARY DRUM THICKENER

SHEET NO.

15-I-1

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3015.01 - 15-I-1.DWG|Tab:15-I-1|Plotted: October 30, 2020 11:18am



GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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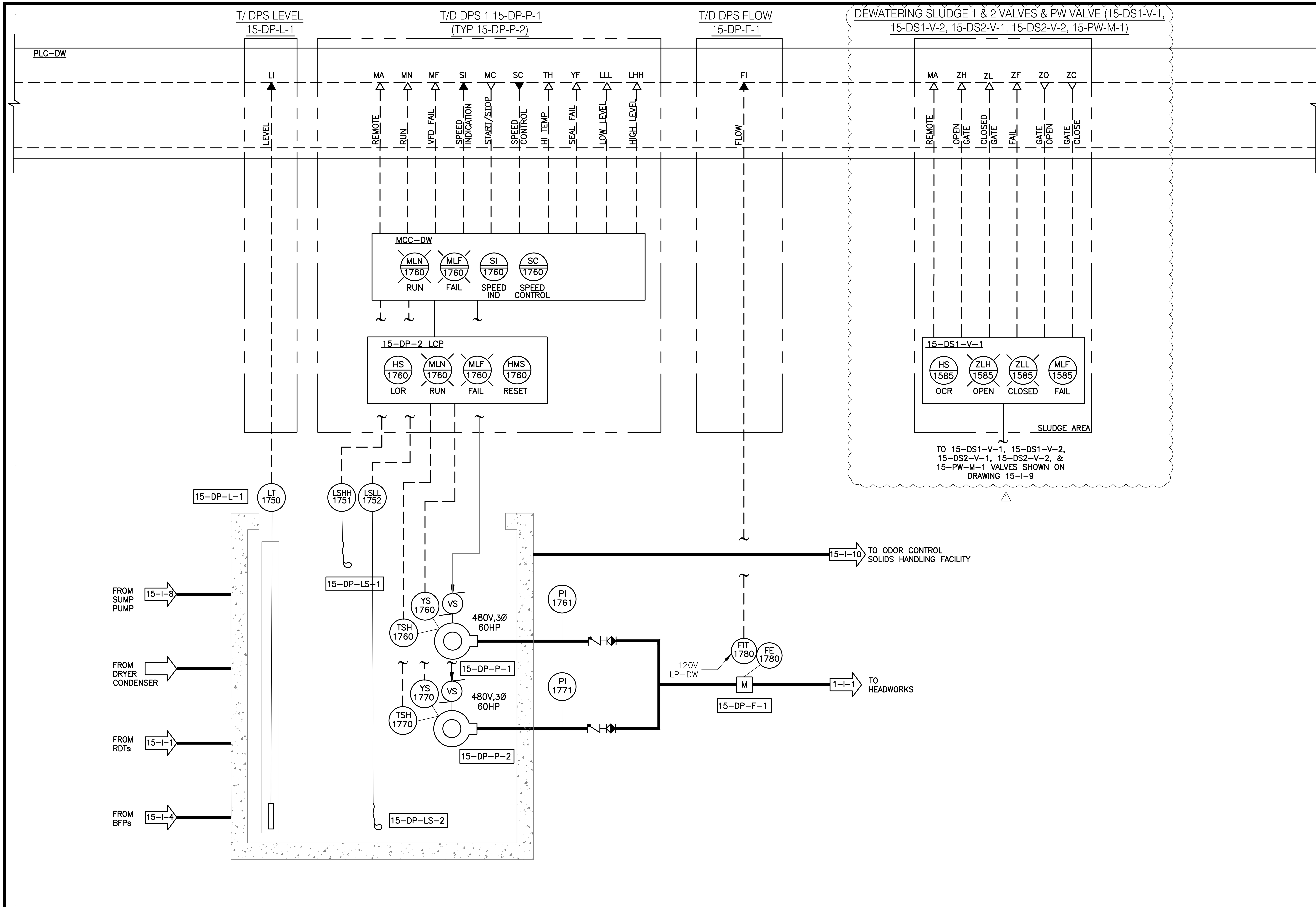
CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
SLUDGE CONVEYORS

SHEET NO.
15-I-6

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3015.06 – 15-I-6.DWG Tab: 15-I-6 Plotted: October 30, 2020 11:13am



GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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HARTWELL ENGINEERING, INC.
ENGINEERS • INTEGRATORS

CERTIFICATE OF AUTHORIZATION # PEF007823 EXPIRATION DATE 06/30/2022 HARTWELL ENGINEERING, INC.

	REVISION	DATE
3	ADDENDUM No.3	10/30/20

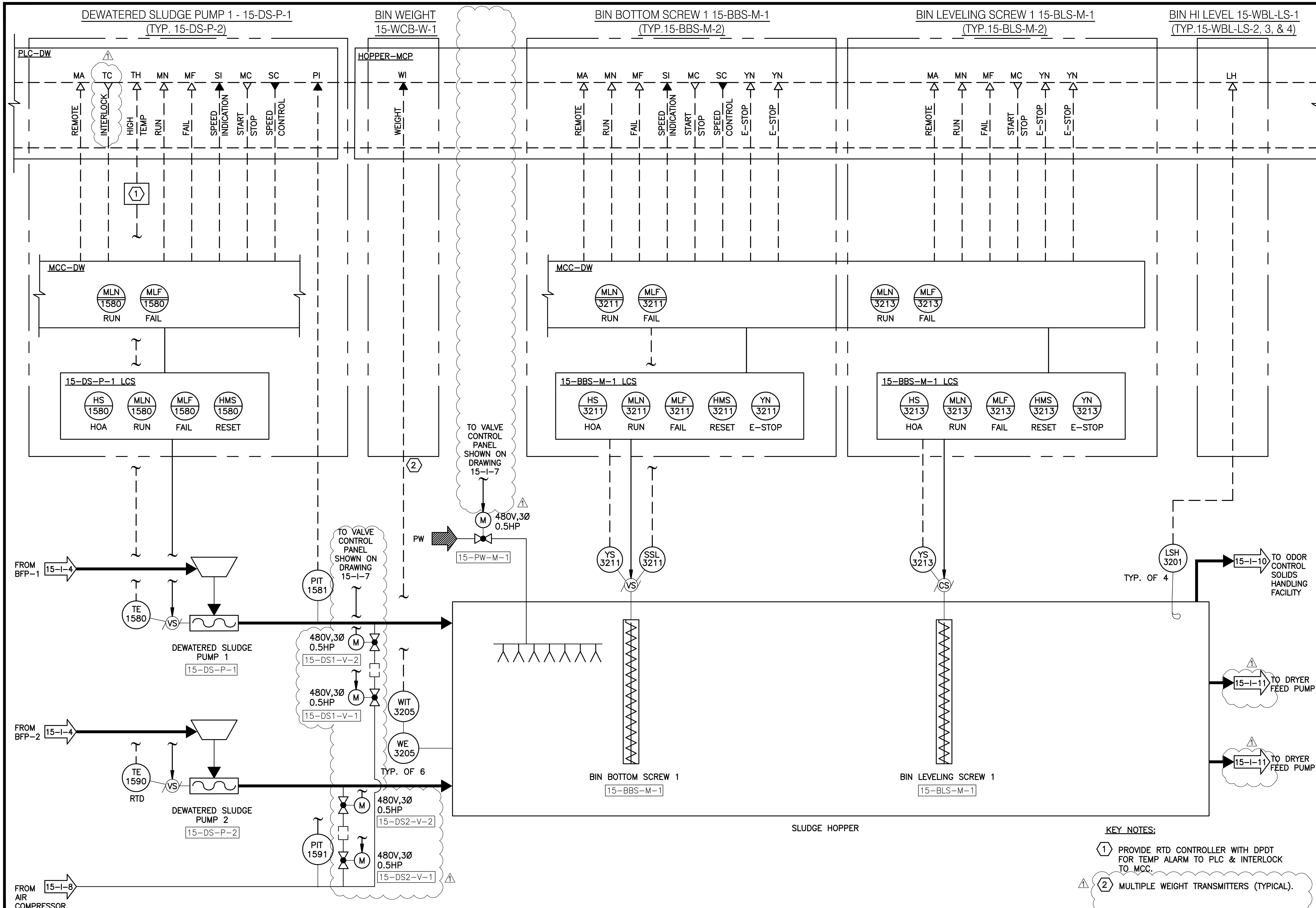
PROJ. NO.: 100061831
DESIGNED BY: RDW/NJZ
DRAWN BY: NCT/NJZ
CHECKED BY: TLH
APPROVED BY: TLH
DATE: SEPTEMBER 2020
SCALE: NTS

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
THICKENING/DEWATERING
DRAIN PUMP STATION

SHEET NO.
15-I-7

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3015.07 – 15–I–7.DWG Tab: 15–I–7 Plotted: October 30, 2020 11:17am


DEWATERED SLUDGE PUMP 1 - 15-DS-P-1
(TYP. 15-DS-P-2)
BIN WEIGHT
15-WCB-W-1
BIN BOTTOM SCREW 1 15-BBS-M-1
(TYP.15-BBS-M-2)
BIN LEVELING SCREW 1 15-BLS-M-1
(TYP.15-BLS-M-2)
BIN HI LEVEL 15-WBL-LS-1
(TYP.15-WBL-LS-2, 3, & 4)
PLC–DW
MA TC TH MN MF SI MC SC PI
REMOTE
INTERLOCK
HIGH TEMP
RUN
FAIL
SPEED INDICATION
START STOP
SPEED CONTROL
HOPPER–MCP
WI
WEIGHT
MA MN MF SI MC SC YN YN
E–STOP
MA MN MF MC YN YN
LH
MCC–DW
MLN 1580 RUN
MLF 1580 FAIL
15–DS–P–1 LCS
HS 1580 HOA
MLN 1580 RUN
MLF 1580 FAIL
HMS 1580 RESET
MLN 3211 RUN
MLF 3211 FAIL
MLN 3213 RUN
MLF 3213 FAIL
15–BBS–M–1 LCS
HS 3211 HOA
MLN 3211 RUN
MLF 3211 FAIL
HMS 3211 RESET
YN 3211 E–STOP
15–BBS–M–1 LCS
HS 3213 HOA
MLN 3213 RUN
MLF 3213 FAIL
HMS 3213 RESET
YN 3213 E–STOP
TO VALVE CONTROL PANEL SHOWN ON DRAWING 15–I–7
480V,3Ø 0.5HP
PW
15–PW–M–1
YS 3211
SSL 3211
VS
YS 3213
CS
LSH 3201
TYP. OF 4
15–I–10
TO ODOR CONTROL SOLIDS HANDLING FACILITY
FROM BFP–1
15–I–4
TE 1580
DEWATERED SLUDGE PUMP 1
15–DS–P–1
PIT 1581
480V,3Ø 0.5HP
15–DS1–V–2
15–DS1–V–1
WIT 3205
WE 3205
TYP. OF 6
FROM BFP–2
TE 1590
RTD
DEWATERED SLUDGE PUMP 2
15–DS–P–2
PIT 1591
15–DS2–V–2
15–DS2–V–1
FROM AIR COMPRESSOR
15–I–8
BIN BOTTOM SCREW 1
15–BBS–M–1
BIN LEVELING SCREW 1
15–BLS–M–1
SLUDGE HOPPER
15–I–11
TO DRYER FEED PUMP 1
TO DRYER FEED PUMP 2

KEY NOTES:

1. PROVIDE RTD CONTROLLER WITH DPDT FOR TEMP ALARM TO PLC & INTERLOCK TO MCC.
2. MULTIPLE WEIGHT TRANSMITTERS (TYPICAL).

GEORGIA No. PE028093 PROFESSIONAL TIMOTHY L. HARTWELL 10/30/2020

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PROJ. NO.: 100061831
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APPROVED BY: TLH
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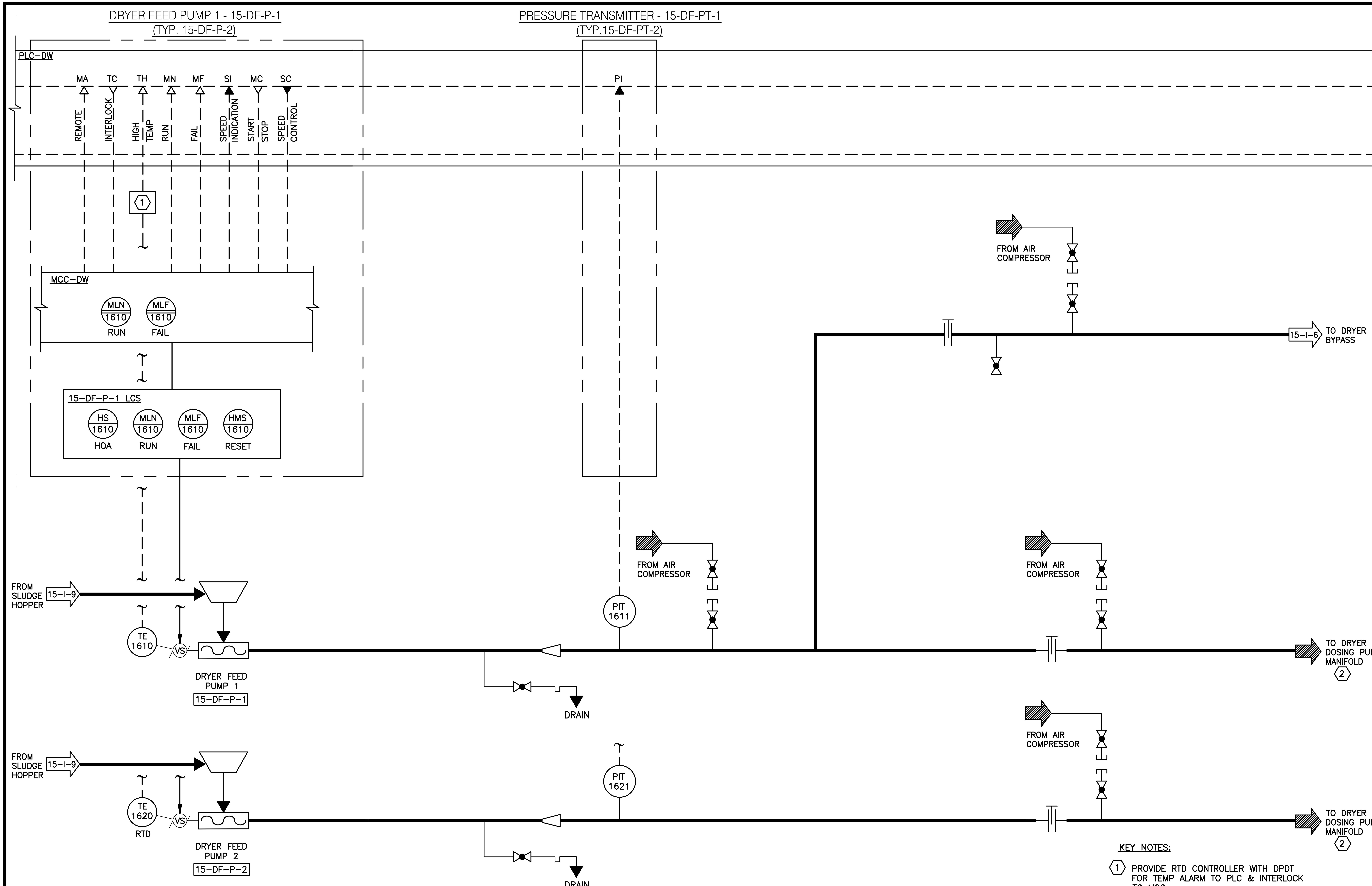
SCALE: NTS

CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
SLUDGE HOPPER

SHEET NO.
15-I-9

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3015.09 – 15–I–9.DWGTab: 15–I–9Plotted: October 30, 2020 11:17am



KEY NOTES:

1. PROVIDE RTD CONTROLLER WITH DPDT FOR TEMP ALARM TO PLC & INTERLOCK TO MCC.
2. REFER TO SPECIFICATIONS SECTION 16900 I&C ATTACHMENT FOR VEOLIA DRYER SYSTEM P&ID's.

GEORGIA
No. PE028093
PROFESSIONAL
TIMOTHY L. HARTWELL
10/30/2020

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CITY OF CANTON, GEORGIA
WATER POLLUTION CONTROL PLANT EXPANSION TO 6 MGD

P&ID
DRYER FEED PUMPS

SHEET NO.
1 15-I-11

File Name: C:\PW_WORK\ATKNAGA01\NICKY.TODD\DMS35909\3015.11 – 15–I–11.DWG|Tab: 15–I–11|Plotted: October 30, 2020 11:13am