

City of Apalachicola

Wastewater Treatment Plant Improvements – Bid Package A

ADDENDUM NO. 2

September 26, 2025

PROJECT: Wastewater Treatment Plant Improvements – Bid Package A

OWNER: City of Apalachicola
192 Coach Wagner Blvd.
Apalachicola, FL 32320

TO: All Prospective Bidders

The bid date has been extended as follows:

Bids will be received until **12:00 noon on Friday, October 10, 2025**, at City Hall, 1 Bay Avenue, Apalachicola, Florida 32320 and will be opened and read aloud at 2:00 on Friday, October 10, 2025, at City Hall, 1 Bay Avenue, Apalachicola, Florida 32320.

The following changes and clarifications are hereby made a part of the Contract Documents. All information below shall, as to the matters detailed below, supersede, and replace the information provided in the originally issued Contract Documents as to the matters detailed below:

Questions and Clarifications:

1. Can you confirm whether AIS is a requirement for this project?

Response: Yes, this project does require AIS, see attached AIS certification and requirement document.

2. Are the ATS-2, ATS-3, and the 75 KVA 120/208 Transformer covered under the owner furnished equipment or something the contractor needs to address?

Response: Yes ATS-2, ATS-3, and the 75 KVA 120/208 Transformer on page E-601A will be Owner furnished and will offloaded, stored, and installed by the Contractor. All new electrical equipment shown on E-601A and E-603A will be Owner furnished and will offloaded, stored, and installed by the Contractor. Refer to each electrical specification which also discusses Owner furnishment and Contractor responsibilities. See revisions to Section 01010 below.

3. The drawings show a 3” riser pipe for the lift station but specify a 4” pump.

Response: See updated drawing number 110M-301_A that shows 6" riser pipes.

4. Submittal of a lift station pump substitution manufactured by Wilo for review and approval.

Response: Wilo is an acceptable manufacturer. See the update to Section 11208 in the specification updates section below.

5. We have found that Domestic Preferences for Procurement are required in appendix B of the specs. Are there any other American Iron & Steel (AIS), Build America, Buy America (BABA), or domestic requirements for this project?

Response: Build America Buy America (BABA) does not apply. Iron and Steel for Public Works Projects provisions apply per Florida Statute 255.0993 F.S. Please see the attached BABA/Iron and Steel clarification from FDEP for more information. Bidders shall complete the attached Florida AIS Compliance Certification and provide it with their bid.

6. Can you share a copy of the pre-bid meeting sign-in sheet including all virtual & in-person attendees?

Response: See attached sign-in document.

7. Note # 1 on sheet 110M-101_A mentions a valve vault and hatch, but we do not see a valve vault in the drawing. Can you confirm there is no valve vault required at the in-plant pump station?

Response: There is no valve vault at the in-plant pump station. See updated drawing 110M-101_A with valve vault language removed.

8. Addendum 01: Sheet 110M-301_A shows the top and bottom elevation of the in-plant pump station as 10.75' and -6.75'. This gives a total depth of 17.5' for the wet well. However, scaling the wet well on the drawings yields an 11.0' total depth. Can you confirm the total depth of the wet well?

Response: The total depth of the wet well is 17.5', the drawings show a break to fit the section views on the drawing sheet.

9. After reviewing the General Specifications I noticed the following statement in Section 01010 Summary of Work Part 1, A., Item 4, is this the case?

Response: Correct, the electrical gear as specified in the summary of work Part 1. A. 4. in addition to ATS-2, ATS-3, and the 75 KVA 120/208 Transformer will be owner furnished and will be offloaded, stored, and installed by the contractor. See revisions to Section 01010 in the specification updates section below.

10. At the headworks, some of the piping is shown as going "into" or "out of" the page. Or has greyed out lines over it preventing us from deciphering exactly what is needed in our takeoff. I have marked up the headworks mechanical drawings to show where some of these locations are.

Response: See attached new drawings 10M-303_A and 10M-304_A for clarity.

11. Is it possible to provide section views of each line of piping that is under, through, or above the headworks structure so we can make an accurate takeoff.

Response: See attached new drawings 10M-303_A and 10M-304_A for clarity.

12. Is it possible to show a top view of each level of the headworks piping without the structure/grating layer turned on? This may help us to complete a more accurate takeoff.

Response: See attached new drawings 10M-303_A and 10M-304_A for clarity.

13. Please see the marked-up drawing sheets that point out a few areas where we are unable to quantify material for takeoff.

Response: See attached new drawings 10M-303_A and 10M-304_A for clarity.

14. Flow Stream Identification Sheet G-004_A shows the Flanged Ductile Iron Pipe receiving system 10 or 1 for submerged as seen in 09900, 2.01 and 2.03. This section calls for a High Build Epoxy two coat system w/polyurethane. Section 09900 2.03 calls for this to be a Tnemec, Devoe... etc., which is standard. Section 09976 calls for Fusion Bonded Epoxy on all steel, cast-iron and ductile Iron Equipment such as valves, flexible couplings, gates and structural steel. Please clarify that FBE will not be required on Flanged Ductile Iron Pipe.

Response: FBE is not required for this flanged ductile iron piping. The Drawing G-004 flow stream ID and corresponding coating system numbers in conjunction with Section 09900 provide the desired coatings and linings.

15. Spec 15100, 2.11 – Painting and Coating – This section states that Above Ground Valves, including those in vaults and structures shall be coated the same as the adjacent Piping, which would be system 10 or 1 for submerged per Spec 09900. Paragraph E is confusing, it states “Alternatively, line and coat valves with FBE per Section 09976”. Please clarify what this means, is this only if there is no adjacent piping being coated with System 1 or 10?

Response: Paragraph 2.11 E. of Section 15100 is hereby removed.

16. Spec 11281 – SSTL Slide Gates – Please confirm that Fusion Bonded Epoxy is Not Required in this application per Spec Section 09976, and that the Operators are to be coated with System 10.

Response: Confirmed, yes coat operators with System 10.

17. Specification 11550 2.1.A.7. states 4.72 mgd peak and Drawing G-301_A reference 4 mgd peak. All previous proposals were based on a peak flow of 4 mgd with a 106 micron cut point. A 9' 4 Tray unit at a flow of 4.72 mgd will have a 125 micron cut point. Changes will be required to the duct and influent channel to accommodate 4. mgd. Please clarify if we are to change to the 4.72 mgd design or if the peak flow will be 4 mgd.

Response: A 4 MGD peak flow will be acceptable.

18. Regarding Specification 11550 Sections 2.1.A.13, 2.1.B.6., 2.1.C.4., 2.1.D.1., 2.6.E., 2.7.A.1., and Drawing I-602A: Hydro has been proposing a HeadCell unit with a metal underflow pot and a 1" NPW connection that requires continuous 20 gpm NPW supply. The specs have conflicting information with a mix of wording based on the metal underflow pot (continuous fluidizing) and fluidizing ring (intermittent fluidizing w/ 32 gpm NPW supply). Drawings indicate the metal underflow pot. Please confirm the metal underflow pot design is expected.

Response: Metal underflow pot is expected.

19. Regarding Specification 11550 2.1.D.1.d.: Drawing E-501 indicates a C1D2 location. Please confirm NEMA 7 solenoids are to be used.

Response: NEMA 4X solenoid valves installed a minimum of 18" away from the screening equipment and minimum 18" above the top of channel are desired.

20. Specification 11550 Section 2.3.A.2 indicates a flow rate of 250 gpm to the Grit Washing/Dewatering unit, however section 2.2.A.4. in the same spec indicates 200 gpm. Please provide a TDH based on the 250 gpm flow rate.

Response: Specification Section 11550 Part 2.2.A.4 flow rate of 200 gpm in for the grit pumps, while section 2.3.A.2 is regarding the grit washing and dewatering unit design flow. Grit Pumps will be 200gpm, size grit washing and dewatering for 250gpm capacity.

21. Regarding Specification 11550 Sections 2.3.A.17, 2.3.A.18., and 2.3.E.2.: Drawing E-501 indicates a C1D2 location. Please confirm XPFC motors are to be used.

Response: TENV/TEXP motors to be provided.

22. Regarding Specification 11550 Sections 2.3.F.1.a, 2.3.F.1.c, 2.3.F.1.g: Drawing E-501 indicates a C1D2 location. Please confirm NEMA 7/intrinsically safe valves/actuator/sensor are to be used.

Response: NEMA 4X actuators will be acceptable.

23. Regarding Specification 11550 2.4.B: Contractor to supply SuperChute.

Response: See revisions to Specification 11550 2.4.B. below:

The chute from the grit classifier auger discharge to the hopper on the upper level shall be provided by the ~~grit classifier~~ MANUFACTURER Contractor. This chute shall be supported by the auger or independently supported as recommended by the MANUFACTURER of the grit classifier and is the responsibility of the ~~grit classifier~~ MANUFACTURER Contractor.

24. Regarding Specification 2.5.A.2.f: There is no PLC make/model listed. Will AB Micro850 PLC be acceptable?

Response: Per Section 16910 PLC system shall be Rockwell, Allen Bradley CompactLogix L30ER.

25. Please confirm the Grit System control panel VCP-1011 will be installed in a non-hazardous area.

Response: Confirmed, provide control panel legs such that the control panel is mounted a minimum of 18 inches above the top of channel.

26. Specification 16495 is not referenced in 11550. The standard GritCleanse VFDs are provided as the Schneider Altivar 320 series. Please advise if the Altivar 320 VFDs are acceptable or if the VFDs need to be provided as Allen-Bradley PowerFlex 525 with Ethernet to meet the requirements of section 16495-2.04.F.1.

Response: Hydro-International's standard VFDs are acceptable.

27. Specification 11550 does not appear to reference section 16910. Please advise if the Grit System control panel VCP-1011 will need to meet the requirements of section 16910, including spare parts, 316SS enclosure, surge protection, Allen-Bradley CompactLogix PLC, Allen-Bradley PanelView 7" display, witnessed factory acceptance test, etc.

Response: Confirmed, VCP-1011 shall meet requirements of 16910, Section 11550 updated accordingly.

28. Section 11550-2.5.A.2.g requires a 15" PanelView display for the Grit System control panel VCP-1011, but section 16910-2.02.R outlines a 7" PanelView display. Please confirm the operator interface display size required for the Grit System control panel VCP-1011.

Response: Provide 7" PanelView Display, refer to response to question 27.

29. Section 11550-2.5.A.2.b requires the Grit System control panel VCP-1011 to be NEMA 4X, 304SS. Section 16910-2.01.D requires outdoor control panels to be 316SS. Please advise if the Grit System control panel VCP-1011 should be provided as 304SS or 316SS.

Response: NEMA 4X 316SS per 16910 shall be provided, see updated Specification Section 11550-2.5.A.2.b.

Drawing Updates:

See attached clouded revisions on the following drawings:

- G-002_A
- CD-101_A
- C-102_A
- C-103_A
- C-104_A
- C-105_A
- C-201_A
- 10M-101_A
- 10M-303_A
- 10M-304_A
- 10M-501_A
- 110M-101_A
- 110M-301_A
- A000
- A100
- A200
- S-EB-101
- S-EB-501
- S-GP-101
- 25-101
- 25-301
- SG-100

Specification Updates:

- Section 11214 Vertical Turbine Pumps is hereby added. Attached are record drawings of the existing effluent transfer pump station for reference for the replacement vertical turbine pumps.

See attached specifications with the following revisions:

- Section 01010 Part 1, A., 4. Is revised as follows:

Electrical and instrumentation and controls improvements include installation of a new electrical building, electrical gear, one (1) new emergency generator and fuel tank, cast in place concrete slab, controls, lighting fixtures, site duct banks, lightning protection for all new structures and all existing structures that will remain, SCADA integration and programming, PLCs, HMI screen production, SCADA licensing, and all other I&C related items. **Please note that all electrical equipment shown on Drawings E-601A and E-603A including the standby generator, Motor Control Center 1 (MCC-1), Master Circuit Breaker 1 (MCB-1), Automatic Transfer Switch 1 (ATS-1), Automatic Transfer Switch 2 (ATS-2), Automatic Transfer Switch 3 (ATS-3), Transformer 1 (XFMR-1), all transformers, Lighting Panel 1 (LP-1) and Lighting Panel 2 (LP-2) will be owner furnished through a separate contract and are to be offloaded, stored, and installed under this contract.**

- Section 01010 Part 1, C. 1. is revised as follows:

All existing valves, equipment and facilities are to be operated only by the Owner. The Contractor shall coordinate and schedule operation and shutdown control of existing valves and facilities with the Owner. **Please note that all electrical equipment shown on Drawings E-601A and E-603A including standby generator, Motor Control Center 1 (MCC-1), Master Circuit Breaker 1 (MCB-1), Automatic Transfer Switch 1 (ATS-1), Automatic Transfer Switch 2 (ATS-2), Automatic Transfer Switch 3 (ATS-3), Transformer 1 (XFMR-1), all transformers, Transformer 1 (XFMR-1), Lighting Panel 1 (LP-1) and Lighting Panel 2 (LP-2) will be owner furnished through a separate contract and are to be offloaded, stored, and installed under this contract.**

- Section 11208, 1.02., C. is revised as follows:

The pumps shall be furnished complete with accessories required and shall be as manufactured by Xylem, Flygt, Wilo, Grundfos, ~~Pumps~~ or approved equal.

- Section 15100, 2.11, E. is revised as follows:

~~Alternatively, line and coat valves with fusion bonded epoxy per Section 09976.~~

- Section 11550, 2.4, B. is revised as follows:

The chute from the grit classifier auger discharge to the hopper on the upper level shall be provided by the ~~grit classifier~~ **MANUFACTURER Contractor**. This chute shall be supported by the auger or independently supported as recommended by the MANUFACTURER of the grit classifier and is the responsibility of the ~~grit classifier~~ **MANUFACTURER Contractor**.

- Section 11550, 2.1, 9. is revised as follows:

Peak Flow/Unit: ~~4.72~~ 4.0 mgd with 12" headloss

Attachments

SIGN IN SHEET
50156540 - Apalachicola WWTF Improvements - Bid Package A
Pre-Bid Meeting
9/12/2025 - 10:00 am

IN-PERSON

Name	Company	Phone Number	Email Address
Philip Jones	Dewberry	(850) 571-1210	pajones@dewberry.com
Ken Harrell	NCMC	(352) 427-9586	ken@ncmc-llc.com
Jonathan Connelly	North Florida Construction	(850) 209-3397	jonathan@northfloridaconst.com

VIA TEAMS

Name	Company	Phone Number	Email Address
Brent White	Dewberry	(321) 354-9787	bwhite@dewberry.com
Ricky Ramie	Marshall Brothers Construction & Engineering	(850) 265-8742	ricky.ramie@marshallbrothers.us
Justin Hanson	Sawcross, Inc.	(904) 772-4611	justinh@sawcross.com
Venessa Jordan	Talcon Group	(850) 574-4400	vjordan@talcongroup.com
Savanna Gualtieri	Dewberry	(321) 239-1720	sgualtieri@dewberry.com
Joshua Baxley	Dewberry	(850) 354-5187	jbaxley@dewberry.com
Leslie Glaze	City of Apalachicola		lglaze@cityofapalachicola
Felicity Edwards	Gouras & Associates		felicity@gourasandassociates.com

UNITED STATES-PRODUCED IRON AND STEEL CERTIFICATION

(Florida Statutes § 255.0993)

Project Name/Number: _____

Bidder/Contractor Name: _____

CERTIFICATION AND REQUIREMENT

Florida Statutes § 255.0993 requires that any iron or steel product permanently incorporated into this Public Works Project be produced in the United States. By signing this form, the Bidder (Contractor) certifies, warrants, and agrees to the following:

1. U.S.-Produced Iron and Steel

All iron or steel products permanently incorporated into this Project (purchased by the Contractor or any subcontractor) will be produced in the United States. "Produced in the United States" means that all manufacturing processes, from initial melting through application of coatings, occur within the U.S., except metallurgical processes to refine steel additives.

2. Supplier Compliance

The Contractor will require all manufacturers, fabricators, suppliers, and subcontractors providing iron or steel products for this Project to comply with these requirements.

3. Exceptions

The Contractor acknowledges that the requirement for U.S.-produced iron and steel does not apply **only if**, and **only after**, the Governmental Entity administering the Project (the "Owner") **provides prior written approval** that one or more of the following conditions is met:

- a. Iron or steel products produced in the U.S. are not produced in sufficient quantities, reasonably available, or of satisfactory quality;
- b. Using U.S.-produced iron or steel will increase the total Project cost by more than 20%; or
- c. Complying with the requirement is inconsistent with the public interest.

4. Minimal Use: A minimal use of foreign iron or steel is allowed only if such materials are incidental or ancillary to the primary product and not separately identified in the specifications, and the cost does not exceed the greater of 0.1% of the total contract cost or \$2,500.

5. Exclusions

The Contractor recognizes that electrical components, equipment, systems, and appurtenances (other than transmission and distribution poles) necessary for operation or concealment are not considered iron or steel products for purposes of this requirement.

6. Documentation and Recordkeeping

The Contractor shall maintain detailed records and documentation establishing compliance with these requirements, including certifications of origin from manufacturers, invoices, mill test reports, or other relevant documentation. The Contractor shall make such records available for inspection upon request by the Owner or any authorized representative.

7. Consequences of Noncompliance

The Contractor understands that compliance with these provisions is a material term of the contract. Failure to comply may result in the governmental entity pursuing all available remedies, including contract termination, withholding of payments, or other actions as allowed by law.

ACKNOWLEDGMENT

By signing below, the Contractor certifies under penalty of perjury that all statements herein are true, accurate, and complete, and that the Contractor will comply with Florida’s U.S.-produced iron and steel requirements for the duration of the Project.

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

White, Brent

From: Reyes, Karley <Karley.Reyes@FloridaDEP.gov>
Sent: Friday, September 12, 2025 10:36 AM
To: Felicity Edwards; Doran, Shane
Cc: White, Brent; Leslie Glaze; Holmes, Mitch
Subject: RE: !! WG038 / 22SRP17 - BABA / AIS Question

You don't often get email from karley.reyes@floridadep.gov. [Learn why this is important](#)

[CAUTION] External Email. DO NOT click links or open attachments unless expected. Please use the "Phish Alert" button to report all suspicious emails.

Good morning, Falicity,

You are correct that BABA does not apply and that Iron and Steel does apply because it is in Florida Statute.

Best,



Karley Reyes

Environmental Specialist III
Resilient Florida Program
Office of Resilience and Coastal Protection
Florida Dept. of Environmental Protection
Karley.Reyes@floridadep.gov
Office: 850-245-8449

From: Felicity Edwards <Felicity@gourasandassociates.com>
Sent: Friday, September 12, 2025 10:20 AM
To: Doran, Shane <Shane.Doran@FloridaDEP.gov>; Reyes, Karley <Karley.Reyes@FloridaDEP.gov>
Cc: White, Brent <bwhite@dewberry.com>; Leslie Glaze <lgaze@cityofapalachicola.com>; Holmes, Mitch <Mitch.Holmes@FloridaDEP.gov>
Subject: !! WG038 / 22SRP17 - BABA / AIS Question
Importance: High

EXTERNAL MESSAGE

This email originated outside of DEP. Please use caution when opening attachments, clicking links, or responding to this email.

Shane, Karley – Need your help with a time sensitive item. As always – thank you!!!

Apalachicola had the pre-bid meeting for WG038 / 22SRP17 – Bid Package A this morning. Contractors had questions re: BABA, 255.0993 F.S. (Iron & Steel for Public Works Projects), and Domestic Procurements. One or both grant agreements were not clear on applicability of these items – can DEP please confirm that the info below is accurate, so that we can include feedback in an addendum?

- Regarding BABA:
 - o BABA DOES NOT apply.
 - o WG038 doesn't reference BABA.

- 22SRP17, Amendment 2, Attachment 1-B (Para #24) indicates that BABA does not apply to agreements funded wholly by Coronavirus SLFRF / ARPA funds. All Federal funds in this project fall in this category. As such, BABA would not apply.
- Regarding 255.0993 F.S. (Iron and Steel For Public Works Projects):
 - This provision isn't referenced in either WG038 or 22SRP17. (We know that other DEP grants have amended this provision in, but neither 22SRP17 nor WG038 does.)
 - Even so, this provision DOES apply since it's Florida Statute that applies to purchase of materials for public works projects.
- 2 CFR 200.322 (Domestic Preferences for Procurements) DOES apply. The current version of this regulation states:

200.322 Domestic preferences for procurements.

(a) The recipient or subrecipient should, to the greatest extent practicable and consistent with law, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards, contracts, and purchase orders under Federal awards.

(b) For purposes of this section:

(1) "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

Felicity R. Edwards
Gouras & Associates
 (228) 493-1633 (cell)
felicity@gourasandassociates.com



Drawing Updates

[illegible]

DRAWN BY MAJ.VESSE
APPROVED BY B.WHITE
CHECKED BY C.MARSH

TITLE

SHEET INDEX

PROJECT NO. 50156540

G-002 A

SHEET NO.

Sheet List Table	
Sheet Number	DESCRIPTION
GENERAL	
G-001_A	COVER SHEET
G-002_A	SHEET INDEX
G-003_A	GENERAL NOTES
G-004_A	FLOW STREAM IDENTIFICATION
G-005_A	ABBREVIATIONS AND SYMBOLS
G-001_A	PROCESS FLOW DIAGRAM
G-006_A	PROPOSED HYDRAULIC PROFILE
CIVIL	
CD-101_A	DEMOLITION PLAN
C-101_A	EXISTING SITE CONDITIONS
C-102_A	PROPOSED SITE PLAN
C-103_A	PROPOSED YARD PIPING PLAN
C-104_A	PROPOSED PAVING, GRADING AND DRAINAGE PLAN
C-105_A	NEW SANITARY SEWER LOCATION PLAN
C-201-A	NEW SANITARY SEWER PROFILES
C-501_A	CIVIL DETAILS (1 OF 3)
C-502_A	CIVIL DETAILS (2 OF 3)
C-503_A	CIVIL DETAILS (3 OF 3)
MECHANICAL	
10M-101_A	PRELIMINARY TREATMENT STRUCTURE PLAN (HEADWORKS)
10M-301_A	PRELIMINARY TREATMENT STRUCTURE SECTIONS (HEADWORKS)
10M-502_A	PRELIMINARY TREATMENT STRUCTURE SECTIONS (HEADWORKS 2 OF 2)
10M-601_A	NON-POTABLE WATER SYSTEM FEED
75M-101_A	RECLAIMED WATER PUMP STATION PLAN
110M-101_A	RECLAIMED WATER PUMP STATION SECTIONS
110M-301_A	IN-PLANT PUMP STATION PLAN
110M-401_A	IN-PLANT PUMP STATION SECTIONS
110M-501_A	IN-PLANT PUMP STATION ISOMETRIC
MD-501_A	MECHANICAL DETAILS (1 OF 4)
MD-502_A	MECHANICAL DETAILS (2 OF 4)
MD-503_A	MECHANICAL DETAILS (3 OF 4)
MD-504_A	MECHANICAL DETAILS (4 OF 4)
ARCHITECTURAL	
A100	TITLE SHEET
A000	SCHEDULES NOTES & LIFE SAFETY PLAN
A100	FLOOR & ROOF PLANS
A200	EXTERIOR ELEVATIONS
A300	DETAILS
A600	INTERIOR ELEVATIONS
M001	HVAC NOTES & LEGENDS
M101	FLOOR PLAN HVAC
M601	HVAC SCHEDULES & DETAILS
P001	PLUMBING NOTES & LEGENDS
P101	FLOOR PLAN - PLUMBING - DRAIN & VENT
P102	FLOOR PLAN - PLUMBING - PRESSURE
P501	PLUMBING DETAILS
P601	PLUMBING SCHEDULES
STRUCTURAL	
00S-01	GENERAL STRUCTURAL NOTES, ABBREVIATIONS AND LEGEND
10S-101	PRELIMINARY TREATMENT STATION BASE PLAN
10S-102	PRELIMINARY TREATMENT STATION INTERMEDIATE PLAN
10S-103	PRELIMINARY TREATMENT STATION UPPER PLAN
10S-104	PRELIMINARY TREATMENT STATION SECTIONS
10S-105	PRELIMINARY TREATMENT STATION SECTIONS
10S-106	PRELIMINARY TREATMENT STATION SECTIONS
10S-107	PRELIMINARY TREATMENT STATION SECTIONS AND DETAILS
10S-108	PRELIMINARY TREATMENT STATION SECTIONS AND DETAILS
10S-109	EQUIPMENT PLATFORM PLAN, SECTIONS AND DETAILS
SD-1	STANDARD STRUCTURAL DETAILS
SD-2	STANDARD STRUCTURAL DETAILS
SD-3	STANDARD STRUCTURAL DETAILS
SD-4	MISC. EQUIPMENT PADS
SD-5	MISC. EQUIPMENT PADS
SD-6	STAIRS DETAILS
S-EB-101	ELECTRICAL BUILDING PLAN
S-EB-101	ELECTRICAL BUILDING DETAILS
S-GP-101	GENERATOR PAD PLAN & SECTION
SC-100	STRUCTURAL GENERAL NOTES

Sheet Number	DESCRIPTION
	ELECTRICAL
E-001	ELECTRICAL LEGEND ABBREVIATIONS AND NOTES 1
E-002	ELECTRICAL LEGEND ABBREVIATIONS AND NOTES 1
E-100A	ELECTRICAL DEMOLITION PLAN
E-101A	PROPOSED ELECTRICAL SITE PLAN
E-102A	PROPOSED SITE LIGHTING PLAN
E-103A	HEADWORKS ELECTRICAL PLAN
E-111A	EFFLUENT - HYDRONEUMATIC TANK ELECTRICAL PLAN
E-112A	REFUSE PUMP AND IN PLANT DRAIN STATION ELECTRICAL PLANS
E-117A	ELECTRICAL BUILDING ELECTRICAL PLAN
E-118A	ELECTRICAL BUILDING LIGHTING PLAN
E-119A	GENERATOR PLAN
E-120A	EXISTING MCC-REUSE BUILDING
E-201	ELECTRICAL SPACE CLASSIFICATION DETAILS
E-202	ELECTRICAL RACEWAYS AND BOXES DETAILS
E-203	ELECTRICAL HANERS AND SUPPORT DETAILS
E-204	ELECTRICAL GROUNDING AND BONDING DETAILS
E-205	LIGHTNING PROTECTION PLAN
E-201A	PROPOSED ONE-LINE DIAGRAM 1
E-203A	PROPOSED ONE-LINE DIAGRAM 3
E-204A	ONE-LINE DIAGRAM EXISTING
E-205A	ONE-LINE DIAGRAM EXISTING
E-210A	MAIN ELECTRICAL BUILDING LIGHTING SCHEDULES
E-211	TYPICAL VFD SCHEMATICS
E-212	SUBMERSIBLE PUMP AND MIXER TYPICAL VFD SCHEMATIC
E-213A	RACEWAY AND CABLE SCHEDULES 1
E-214A	RACEWAY AND CABLE SCHEDULES 2
E-220A	PANEL SCHEDULES
	INSTRUMENTATION
I-001	INSTRUMENTATION LEGEND ABBREVIATIONS AND NOTES 1
I-002	INSTRUMENTATION LEGEND ABBREVIATIONS AND NOTES 2
I-501	INSTRUMENTATION DETAILS 1
I-502	INSTRUMENTATION DETAILS 2
I-503	INSTRUMENTATION DETAILS 3
I-600A	NETWORK BLOCK DIAGRAM
I-601A	CONTROL BLOCK DIAGRAM 1
I-602A	CONTROL BLOCK DIAGRAM 2
I-603A	CONTROL BLOCK DIAGRAM 3
I-604A	CONTROL BLOCK DIAGRAM 4
I-605A	CONTROL BLOCK DIAGRAM 5
I-606A	CONTROL BLOCK DIAGRAM 6
I-610A	HEADWORKS P&ID
I-630A	PLANT REUSE SYSTEM P&ID
I-660A	IN-PLANT DRAIN PUMP STATIO P&ID

[illegible]

DRAWN BY	M.MIVES
APPROVED BY	B.WHITE
CHECKED BY	C.MARSH
DATE	AUGUST 2025



[illegible]

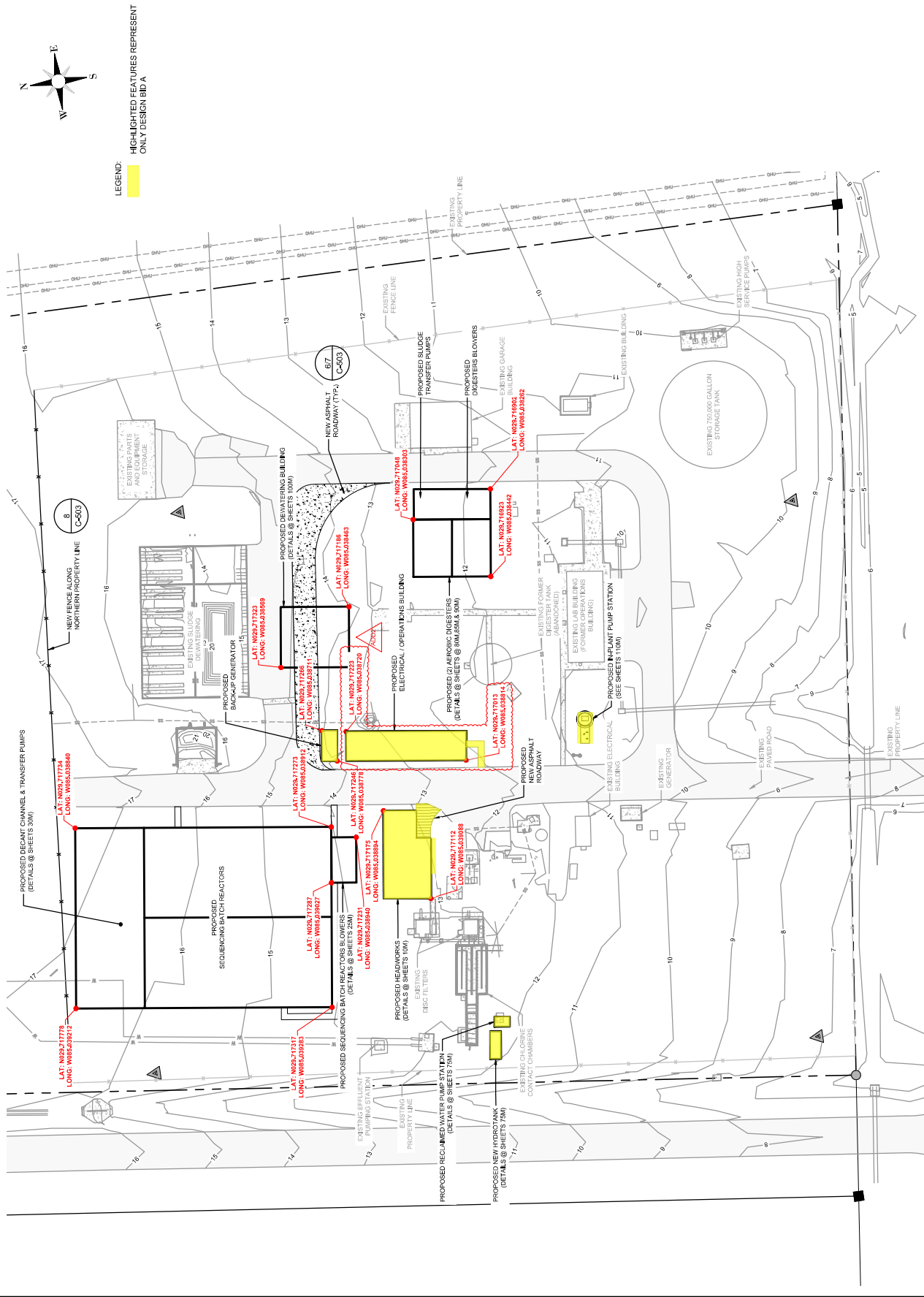
DRAWN BY _____ M.WIVES
 APPROVED BY _____ B.WHITE
 CHECKED BY _____ C.MARSH
 DATE _____ AUGUST 2025
 TITLE _____

PROPOSED SITE PLAN

PROJECT NO. 50156540

C-102 A

SHEET NO.

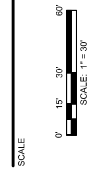




Dewberry Engineers Inc.
10000 North Central Expressway
Suite 1000
Dallas, Texas 75243
(214) 414-7300

CITY OF APALACHICOLA
WWTf IMPROVEMENTS
BID PACKAGE A - FOR BID
FRANKLIN COUNTY, FLORIDA
FOR BID

SEAL



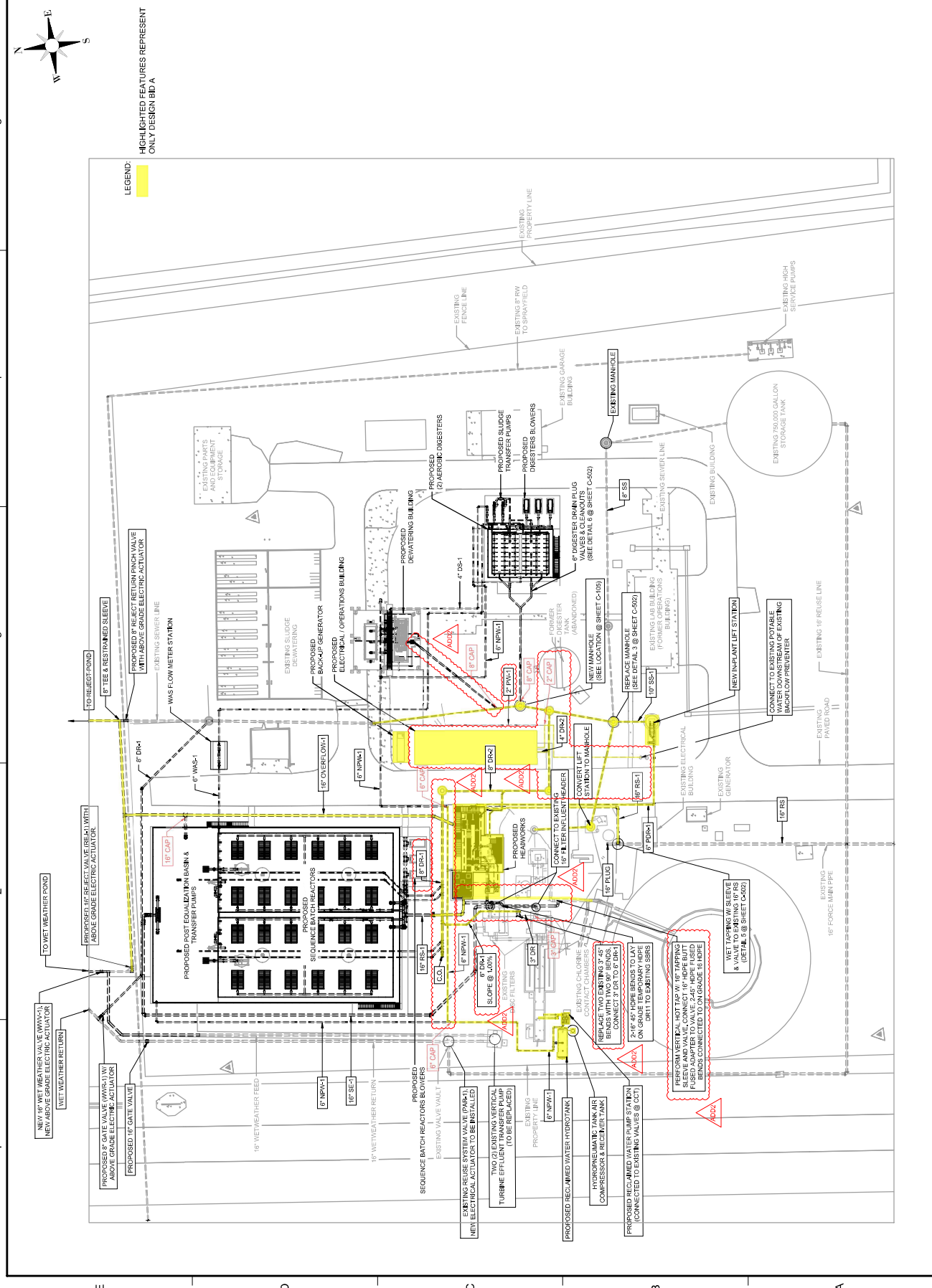
REVISIONS		NO.	DESCRIPTION	DATE
1	ADDENDUM 1	09/25		
2	ADDENDUM 2	09/25		
DRAWN BY		WALLES	DATE	
APPROVED BY		BURRIS	DATE	
CHECKED BY		CHARRISH	DATE	
DATE		AUGUST 2022		
TITLE				

PROPOSED YARD
PIPING PLAN

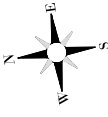
PROJECT NO. 2016540

C-103_A

SHEET NO.



1 2 3 4 5



LEGEND:
HIGHLIGHTED FEATURES REPRESENT
ONLY DESIGN BID A

[illegible]

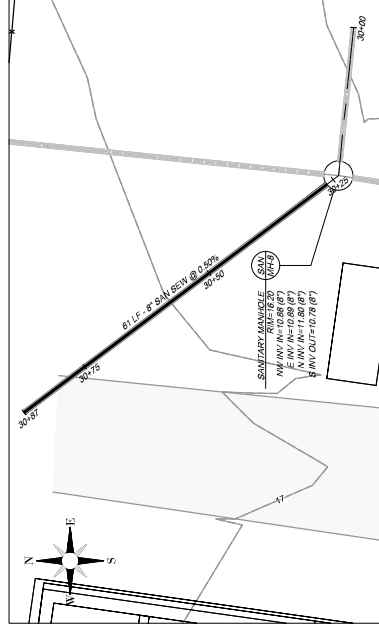
NO.	DESCRIPTION	DATE
	DRAWN BY <u>M.VIVES</u>	
	APPROVED BY <u>B.WHITE</u>	
	CHECKED BY <u>C.MARSH</u>	
	DATE <u>AUGUST 2025</u>	

NEW SANITARY SEWER
LOCATION PLAN

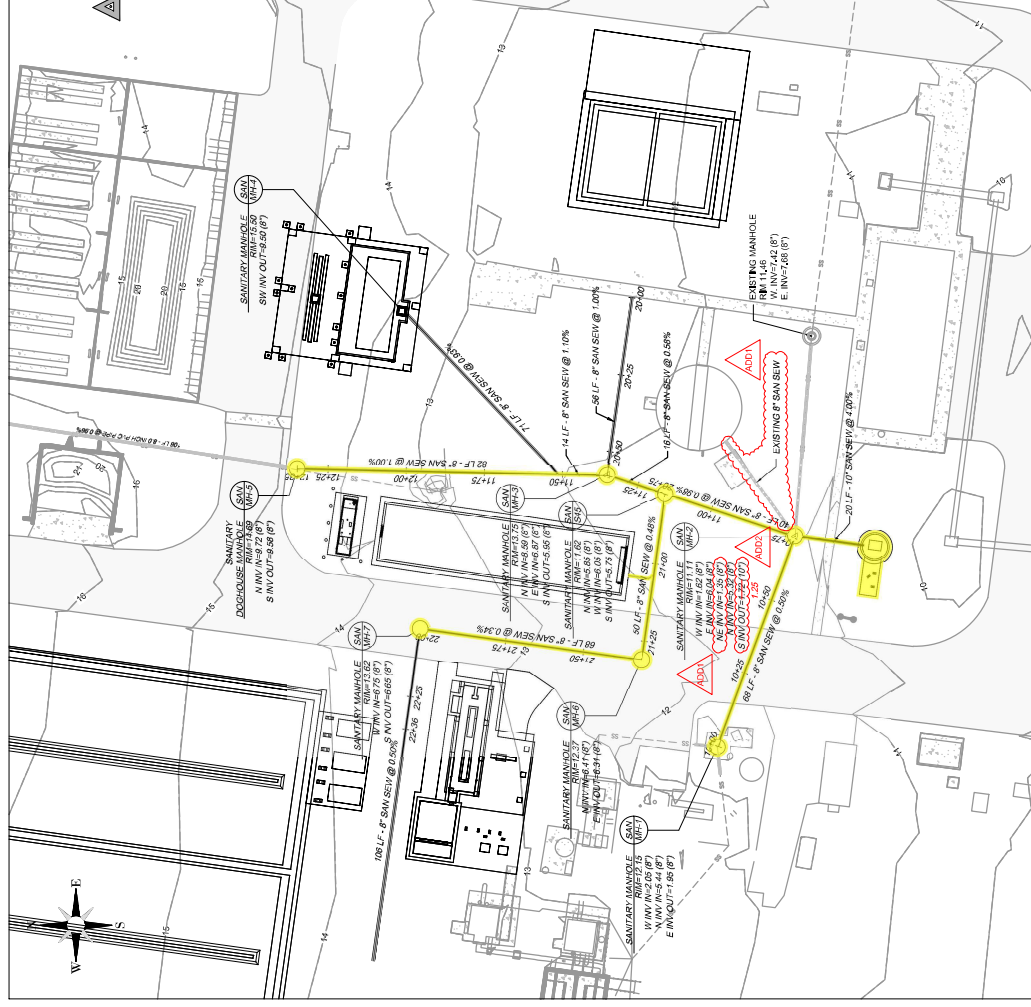
PROJECT NO. 50156540

C-105_A

SHEET NO.



3 PROPOSED WAS DRAIN TO SANITARY SEWER (PLAN VIEW)



1 PROPOSED SANITARY SEWER (PLAN VIEW)

LEGEND:

HIGHLIGHTED FEATURES REPRESENT ONLY DESIGN BID A

[illegible]

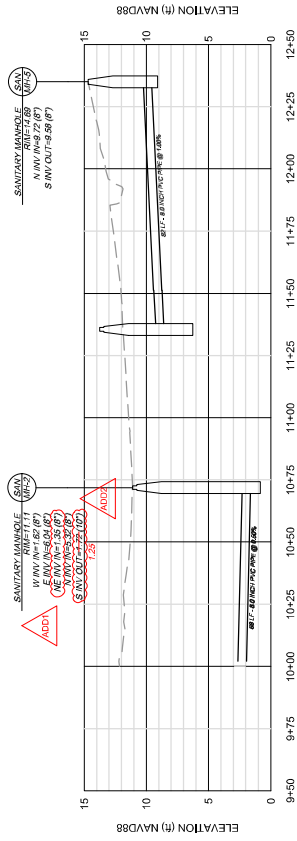
DRAWN BY _____ M. VIVES
 APPROVED BY _____ B. WHITE
 CHECKED BY _____ C. MARSH
 DATE _____ AUGUST 2025

NEW SANITARY SEWER PROFILES

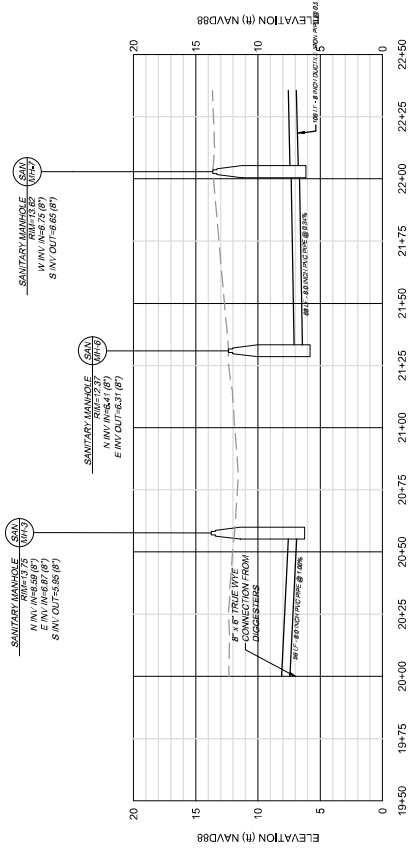
PROJECT NO. 50156540

C-201-A

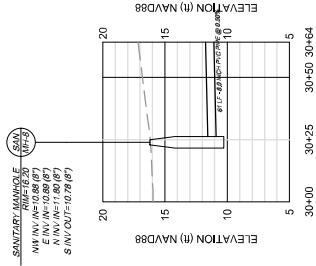
SHEET NO.



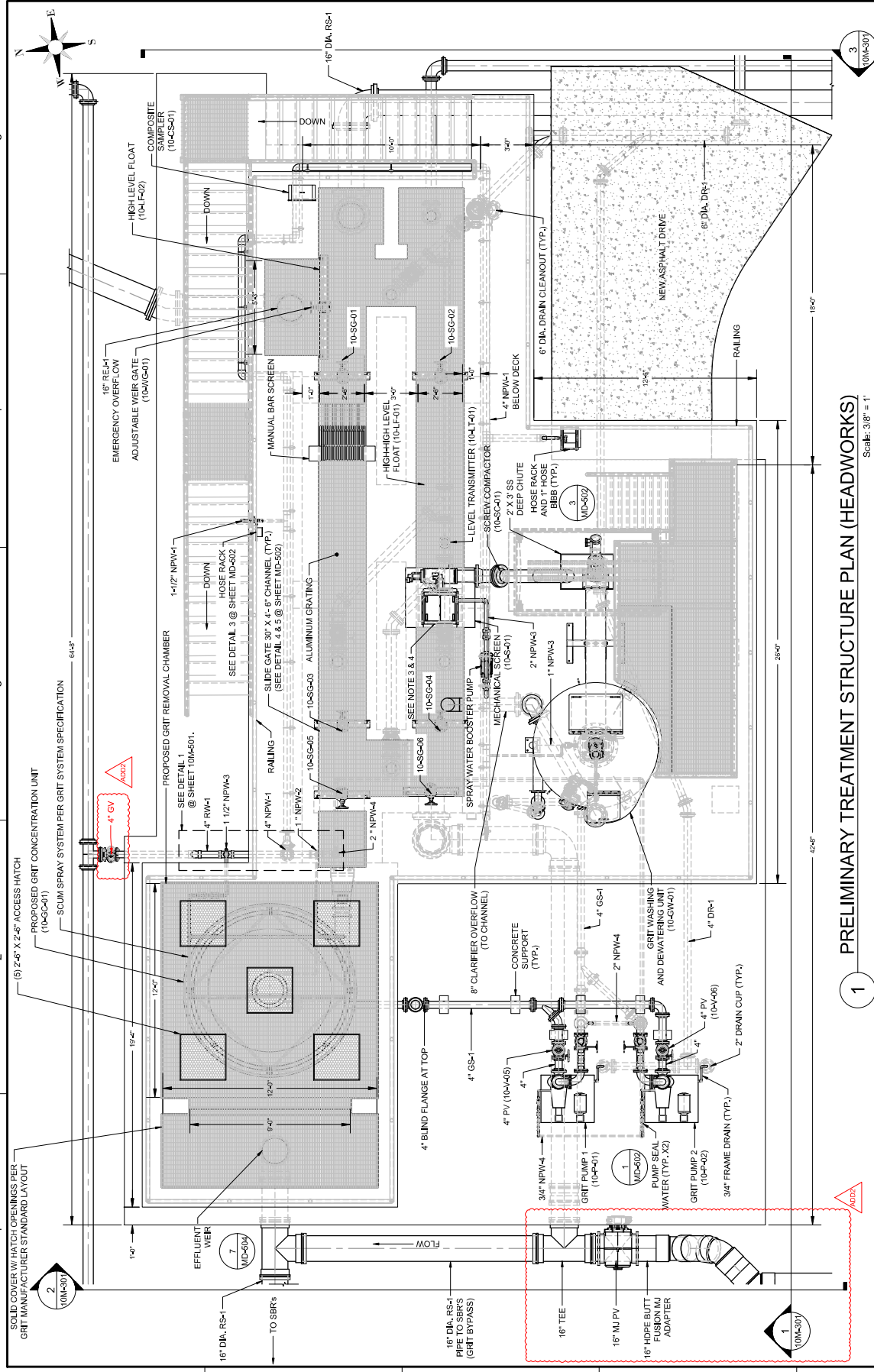
PROPOSED SANITARY SEWER STA 10+00 TO STA 12+35 (PROFILE)



PROPOSED SANITARY SEWER STA 20+00 TO STA 22+00 (PROFILE)



PROPOSED WAS DRAIN SANITARY SEWER (PROFILE)



1 PRELIMINARY TREATMENT STRUCTURE PLAN (HEADWORKS)
Scale: 3/8" = 1'

- NOTES:
- SCREEN SPRAY WASH BOOSTER PUMP BASIS OF DESIGN IS GOULDS SERIES 3642-1BF RUTTED FOR 22 GPM @ 35 PSI. INSTALLED PUMP SHALL BE COORDINATED WITH THE SELECTED SCREEN MANUFACTURER TO MEET SPRAY WATER REQUIREMENTS. PUMP & SPRAY WATER PIPING SHALL BE EQUIPPED WITH SUCTION AND DISCHARGE ISOLATION BALL VALVES, DISCHARGE CHECK VALVE, 2" ELECTRIC ACTUATED BALL VALVE, AND ROTAMETER.
 - PROVIDE 1'-1/2" TREATED TAP & 3/4" SS BALL VALVE ON GRIT PIPING DOWNSTREAM OF PUMP DISCHARGE ISOLATION BALL VALVES.
 - DOWNSTREAM REAR BYPASS GATE TO BE PROVIDED WITH WEIR ELEVATION SET TO 38.25'.
 - PROVIDE RECESSED CONCRETE AT SIDE OF SCREEN PER MANUFACTURER'S RECOMMENDATIONS.

[illegible]

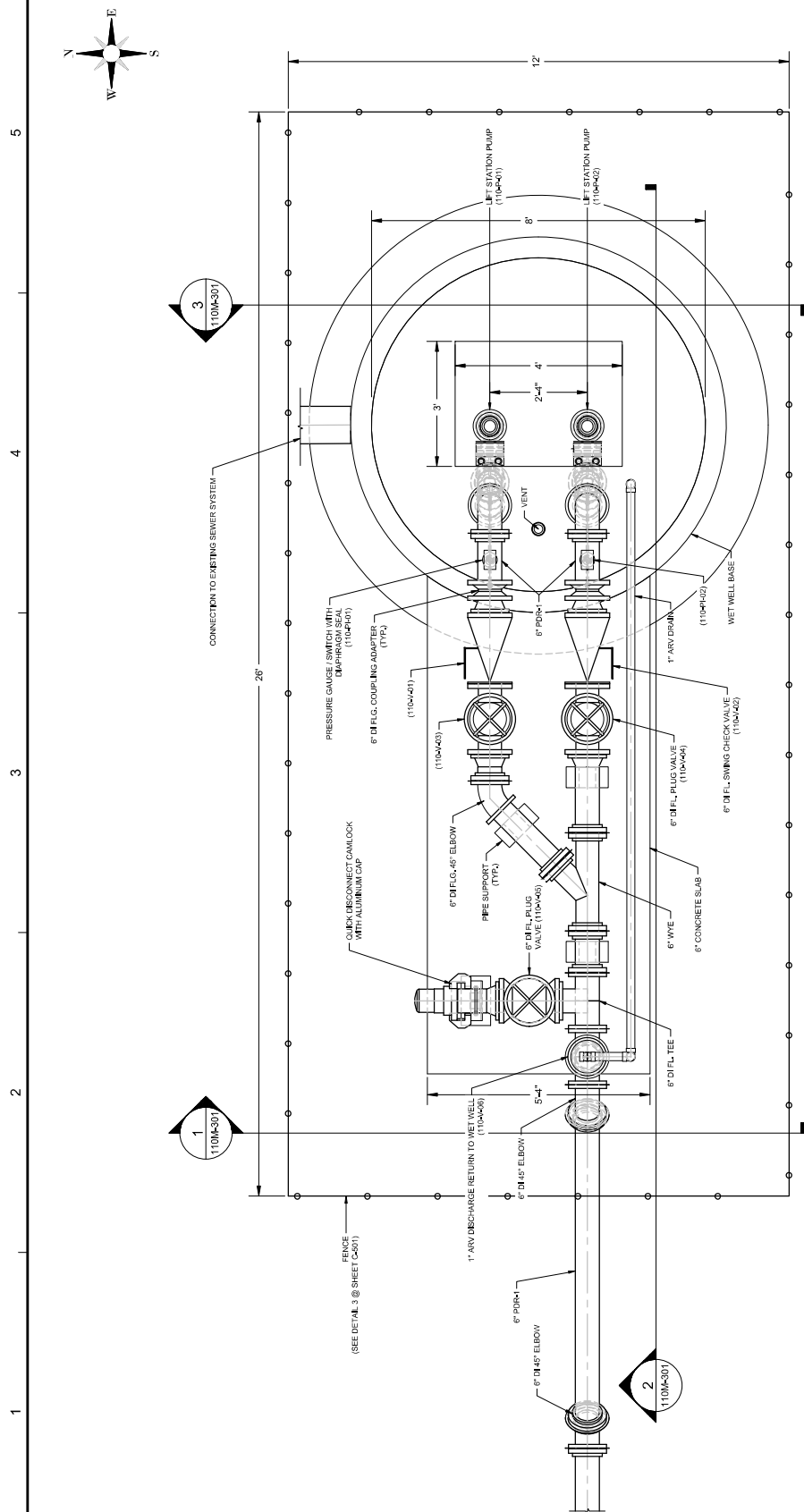
NO.	DESCRIPTION	DATE
DRAWN BY <u>MAJVES</u>		
APPROVED BY <u>B.WHITE</u>		
CHECKED BY <u>C.MARSH</u>		
DATE <u>AUGUST 2005</u>		
TITLE _____		

IN-PLANT PUMP STATION PLAN

PROJECT NO. 50156540

110M-101 A

SHEET NO.



LIFT STATION PLAN VIEW

Scale: $3/4" = 1'$

- NOTES:
1. ~~VALVE VAULT INTERIOR WALL DIMENSIONS AND HATCH FRAME OPENING DIMENSIONS TO BE -222222-~~
 2. WETWALL AND VALVE HATCHES SHALL BE US FOUNDRY, HALLIDAY (OR APPROVED EQUAL) THOTPD ALUMINUM ACCESS HATCHES. ALL HARDWARE TO BE 316 STAINLESS STEEL.
 3. FALL PROTECTION REQUIRED FOR WETWALL ~~AND VALVE VAULT~~ (SUBMITTAL REQUIRED).
 4. HATCHES TO BE EQUIPPED WITH AUTOMATIC HOLD OPEN ARMS. HORIZONTAL COMPRESSION SPRINGS, WATERTIGHT SLAM LOCKS, RECESSED OVERSIDE PADLOCK BOX, AND SAFETY CHAINS. HINGES TO BE ATTACHED USING TAMPER PROOF CARRIAGE BOLTS WITH WELDED NUTS. SHOP DRAWINGS REQUIRED FOR PRECAST WETWALL, ~~VALVE VAULT~~ AND TOP SLABS. ALL PRECAST STRUCTURES MUST MEET ASTM C478 SPECIFICATIONS.

[illegible]

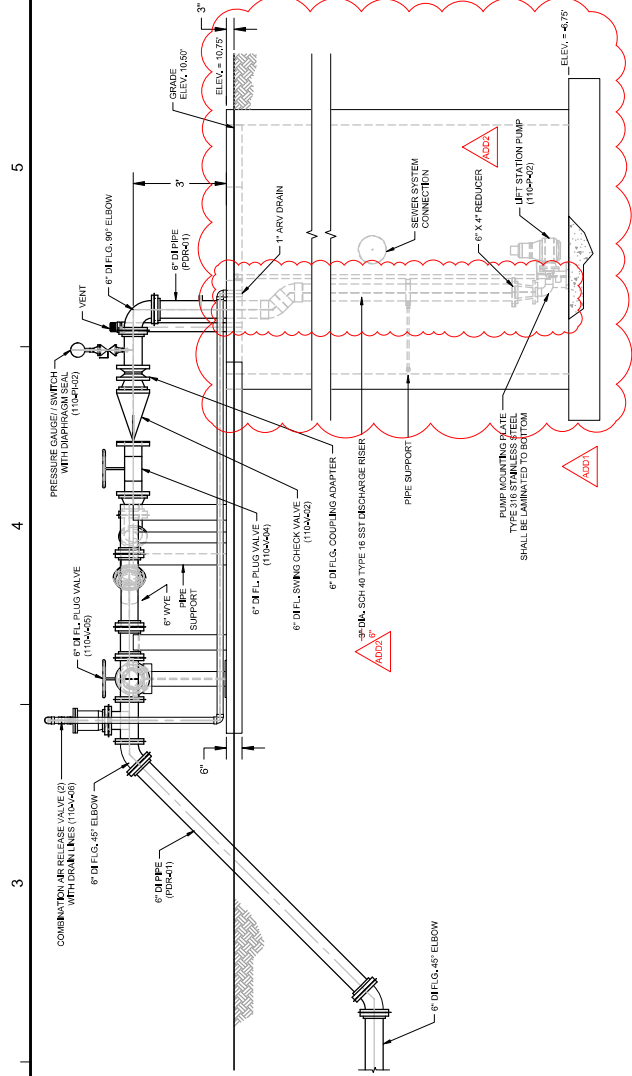
NO.	DESCRIPTION	DATE
DRAWN BY	M.JAMES	
APPROVED BY	B.WHITE	
CHECKED BY	C.MARSH	
DATE		AUGUST 2025
TITLE		

IN-PLANT PUMP STATION SECTION

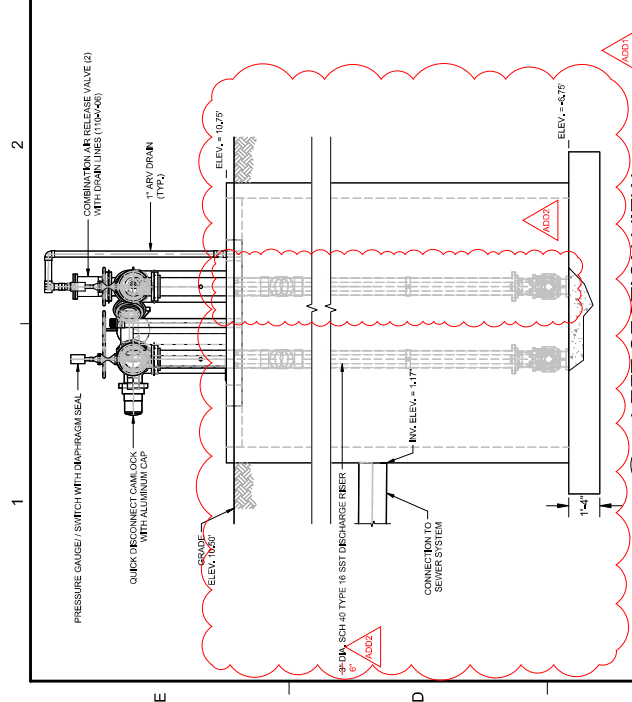
PROJECT NO. 50156540

110M-301 A

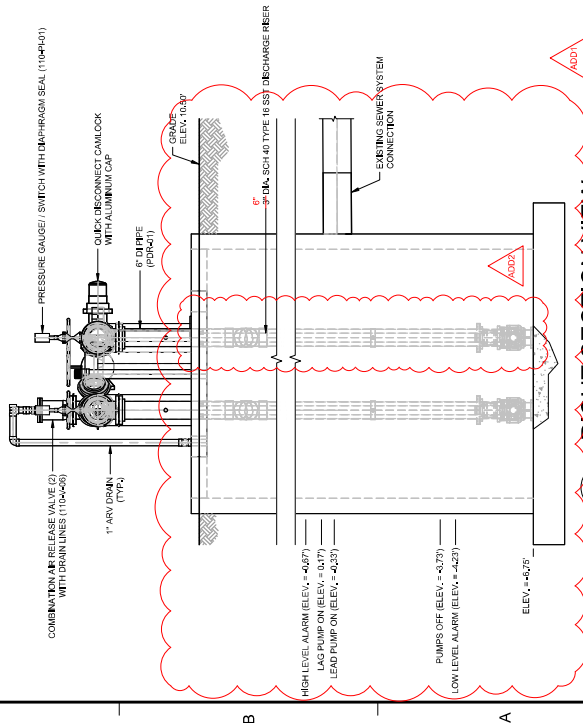
SHEET NO.



2 FRONT SECTION VIEW



1 LEFT SECTION VIEW
Scale: #####



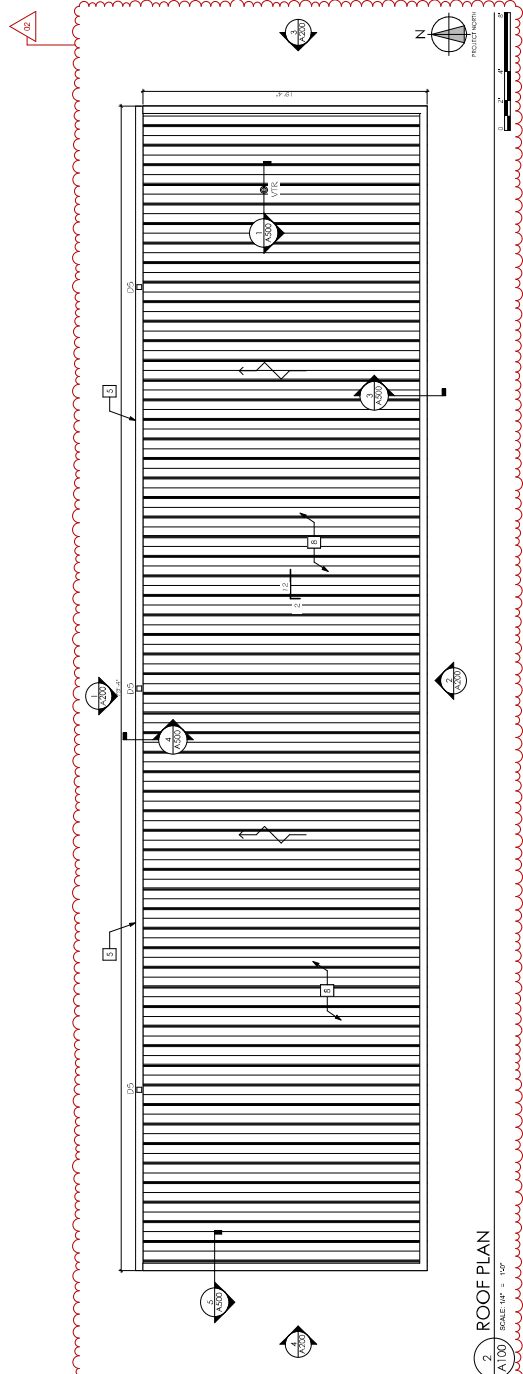
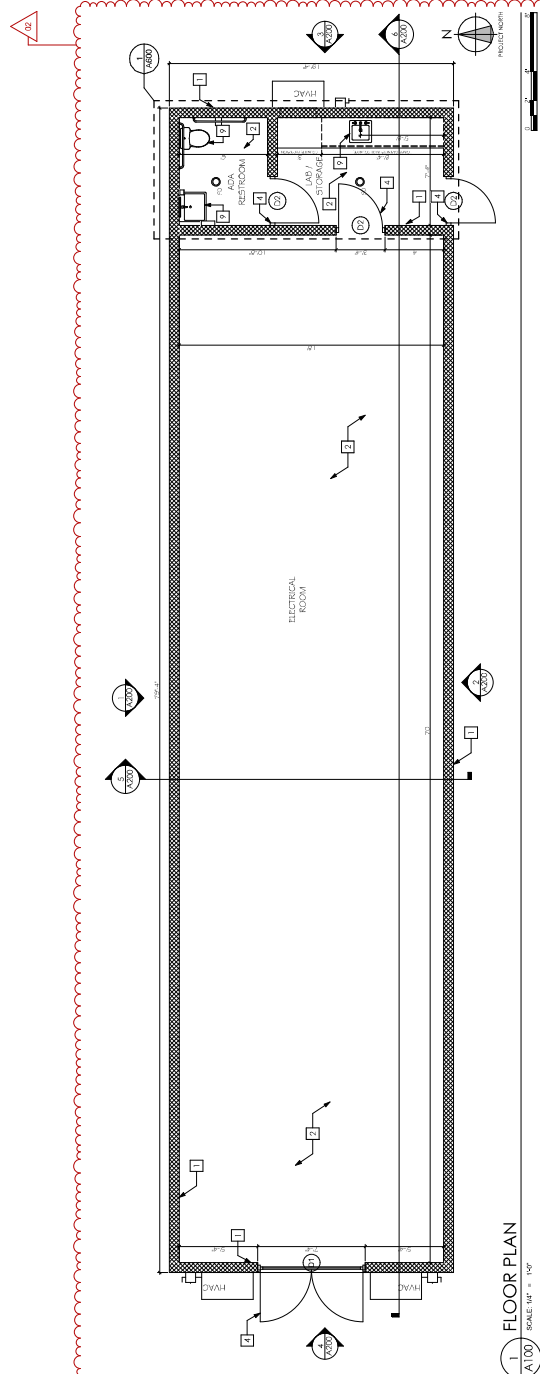
3 RIGHT SECTION VIEW

LEGEND	
	NEW DOOR. SEE DOOR SCHEDULE. SHEET 000.
	NEW WINDOW. SEE WINDOW SCHEDULE. SHEET 000.
	ROOM NAME
	STANDING SEAM METAL ROOF
	EAVE HUNG GUTTER AND D/S
	N.I.C. NOT IN CONTRACT
	ADVICE FINISH FLOOR
	SIMILAR
	TYP. TYPICAL
	MIRROR
	NEW OLD WALL
	ELEVATION CONNECTION NUMBER
	SHEET NUMBER
	WORK LEGEND NOTE
	FLOOR DRAIN
	HVAC UNIT. SEE MECHANICAL SHEETS
	V.P.
	SLOPE

WORK NOTES

THESE WORK ITEMS ARE TYPICAL AND MAY NOT BE ALL INCLUSIVE BUT INTENDED TO SUPPLEMENT THE DRAWINGS AND DETAILS AND CANNOT BE A SUBSTITUTE FOR WORK. WORK LOGGING SHALL BE REQUIRED FOR ALL WORK. THE LOCATION AND SCOPE OF WORK SHALL BE IDENTIFIED AND NOTED. WORK NOT SHOWN AT ANY SPECIFIC LOCATION WHICH SCOPE IS TO BE COMPLETED, IN ANY OTHER MANNER, NOTED.

- 1 INSTALL GOLF BACK WALLS, COORDINATE WITH STRUCTURAL SHEETS, APPLY 2 COATS OF CONFINEMENT REINFORCING IS INDICATED ON FINISH SCHEDULE.
- 2 INSTALL 4 CONCRETE SLAB PER STRUCTURAL SHEETS, FINISH SMOOTH AND SEAL CONCRETE WITH POLYMER BASE COAT.
- 3 INSTALL 4 CONCRETE SLAB ON GRADE PER STRUCTURAL SHEETS.
- 4 INSTALL GOLF AND FRAME SYSTEM WITH STAINLESS STEEL HANDRAILS AND FASTENERS PER LOOKS/DETAILS.
- 5 INSTALL PREFINISHED ALUMINUM GUTTER AND DOWNSPOUT SYSTEM WITH A CONCRETE SHAFT BLOCK AT THE OUTLET.
- 6 INSTALL THE ENGINEERED ROOF TRUSSES PER STRUCTURAL SHEETS WITH 5/8" CDX PLYWOOD FOR ROOFING STRUCTURE, SEE STRUCTURAL SHEETS.
- 7 INSTALL PRECAST LINTEL WITH 6" MIN. BOREHOLE ON JAMBS.
- 8 INSTALL PREFINISHED METAL ROOFING SYSTEM, SEE ARCHITECTURAL DETAILS.
- 9 PLUMBING EQUIPMENT, COORDINATE INSTALLATION WITH ELECTRICAL SHEETS.
- 10 ELECTRICAL EQUIPMENT, COORDINATE INSTALLATION WITH ELECTRICAL SHEETS.



SEAL

SCALE

NO.	DESCRIPTION	DATE
1	REVISIONS	
2	ADDITIONAL	10/25/23
3		
4		
5		
6		
7		
8		
9		
10		

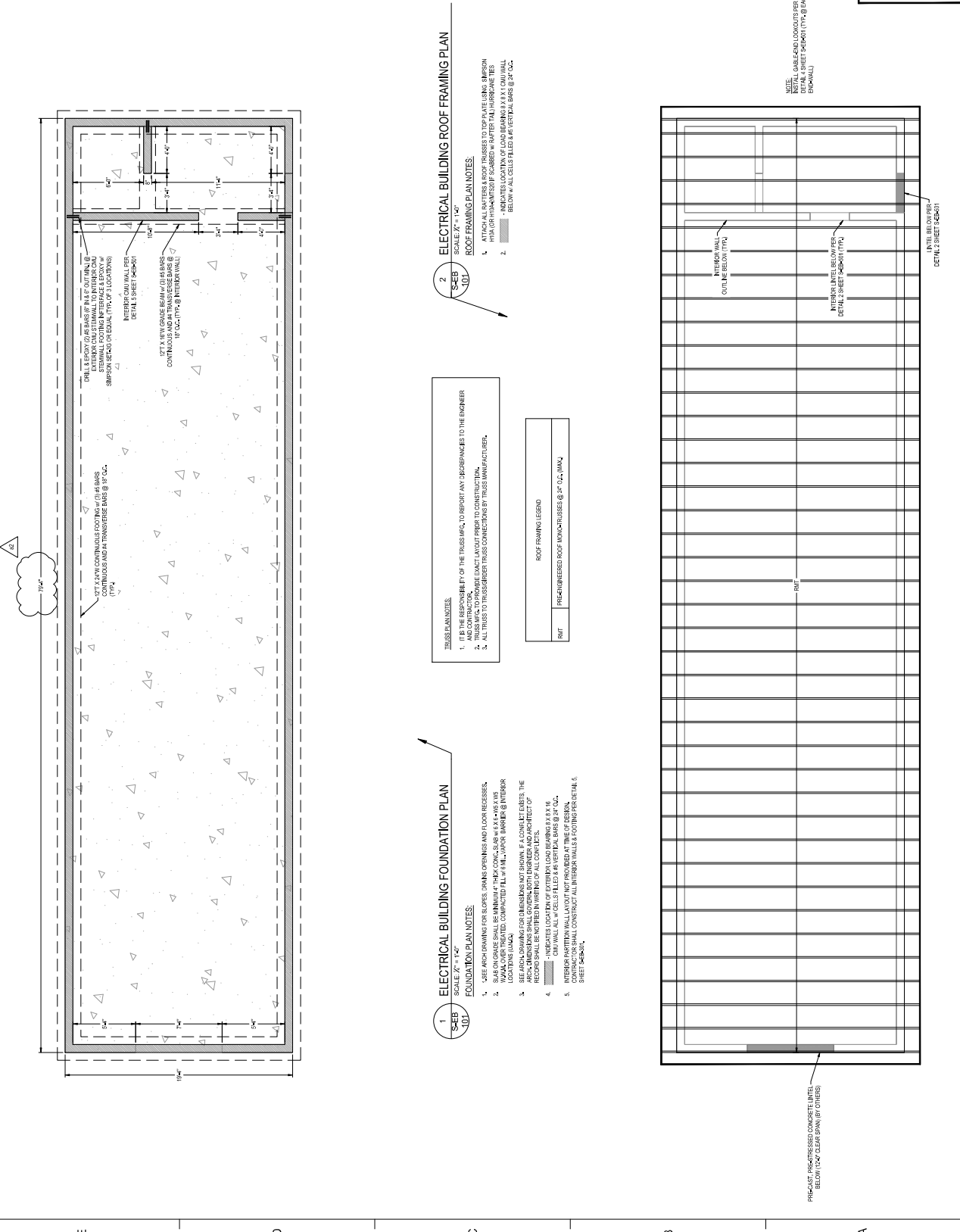
DRAWN BY	BAHAMCARGNER
APPROVED BY	J. HUSBAND
CHECKED BY	BAHAMCARGNER
DATE	10/25/23

ELECTRICAL BUILDING PLAN

PROJECT NO. 23-0000000000

S-EB-101

SHEET NO. 1 OF 60





Dewberry Engineers Inc.
10000 N. W. 11th Avenue, Suite 100
Miami, FL 33150
Tel: 305.440.0000
Fax: 305.440.0001
www.dewberry.com

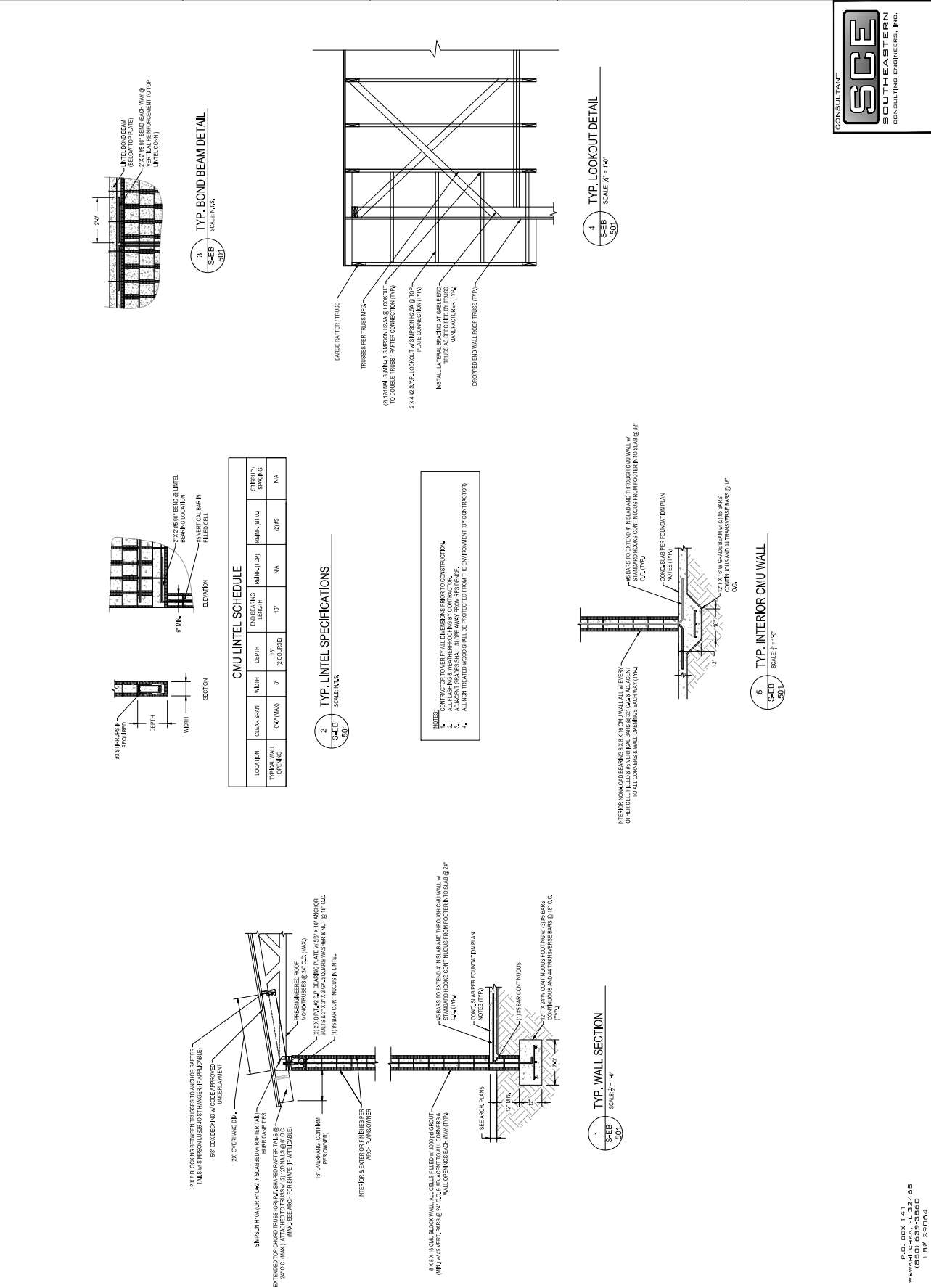
CITY OF APALACHICOLA
WWTFF IMPROVEMENTS
APALACHICOLA 1.0 MGD
FRANKLIN COUNTY, FLORIDA
BID PACKAGE A - FOR BID

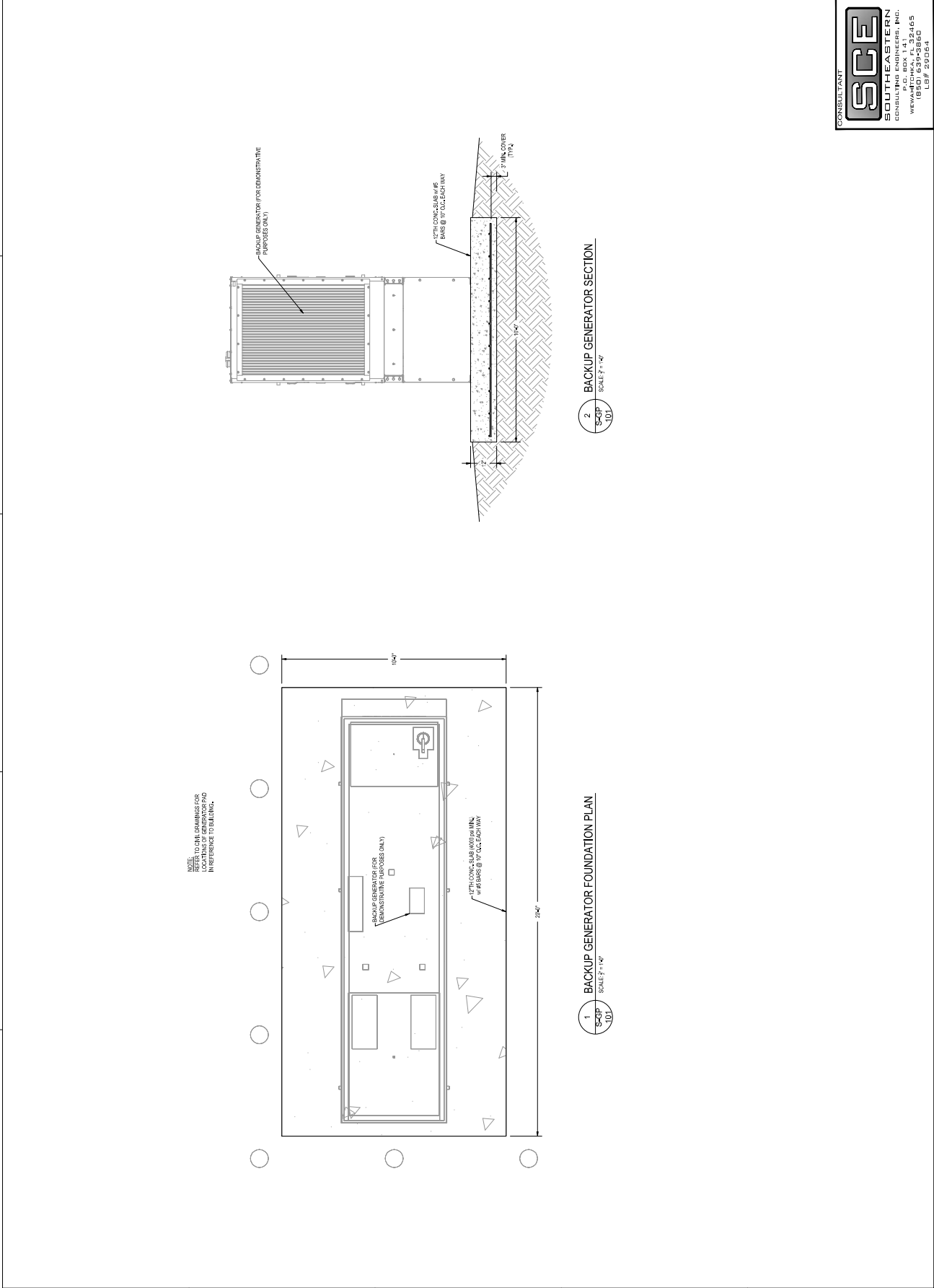
ELECTRICAL BUILDING DETAILS

PROJECT NO. SC195640
SHEET NO. S-EB-501
OF 60



P.O. BOX 141
WEAVER, FL 32245
(904) 885-5600
LB# 290064





Dewberry Engineers Inc.
10000 W. US HWY 90
SUITE 200
DALLAS, TEXAS 75243
PH: 214.343.8800
WWW.DEBERRY.COM

CITY OF APALACHICOLA
WWTf IMPROVEMENTS
FRANKLIN COUNTY, FLORIDA
BID PACKAGE A - FOR BID

SEAL

SCALE

REVISIONS	DATE	DESCRIPTION
1	09/25/25	ISSUED FOR BIDDING
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

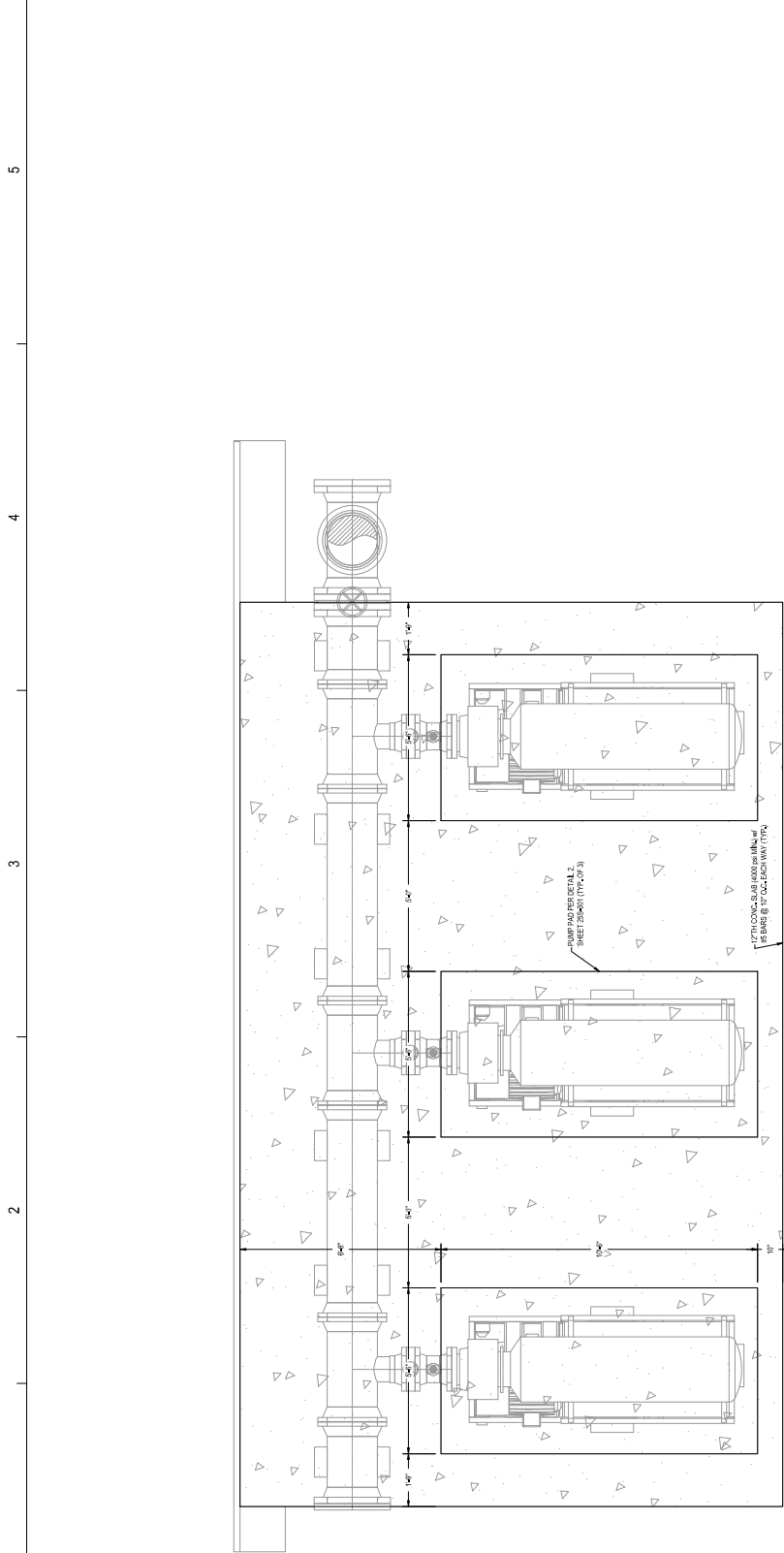
DRAWN BY: BRADEN THINPAP
APPROVED BY: J. H. HUBBARD
CHECKED BY: BRADEN THINPAP
DATE: 09/25/25

GENERATOR PAD
PLAN & SECTION

PROJECT NO.: 23-16705

S-GP-101

SHEET NO. 101 OF 101



1
25S-101
SBR BLOWER FOUNDATION PLAN
SCALE: 1"=1'-0"

[illegible]

NO.	DESCRIPTION	DATE
	DRAWN BY <u>B.BAUMGARDNER</u>	
	APPROVED BY <u>J.HUSBAND</u>	
	CHECKED BY <u>B.BAUMGARDNER</u>	
	DATE <u>September 26, 2025</u>	

MISC. PLAN AND
DETAILS

PROJECT NO. 50156540

25S-101

SHEET NO. OF 60



Dewberry Engineers Inc.
1475 Town Center Dr
Suite 1214
Lakeland, FL 33803
888.346.4638
CA.00734

CITY OF APALACHICOLA
APALACHICOLA 1.0 MGD
WWTF IMPROVEMENTS
FRANKLIN COUNTY, FLORIDA
BID PACKAGE A - FOR BID

SEAL

SCALE



Dewberry Engineers Inc.
10000 N. CENTRAL
SUITE 200
DALLAS, TEXAS 75243
PH: 214.635.1234
WWW.DEBERRY.COM

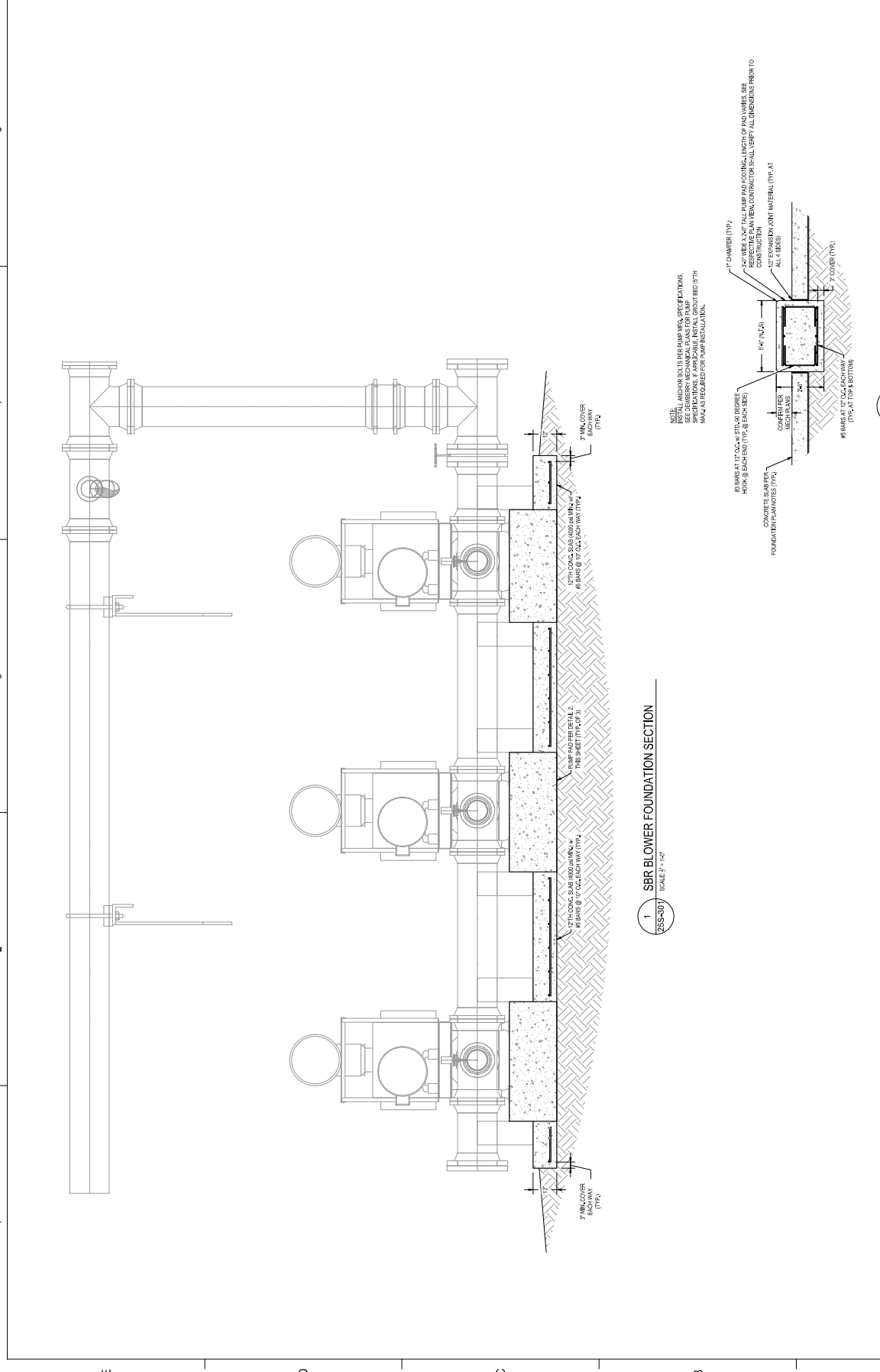
CITY OF APALACHICOLA
APALACHICOLA 1.0 MGD
WWTF IMPROVEMENTS
FRANKLIN COUNTY, FLORIDA
BID PACKAGE A - FOR BID

SEAL
SCALE

REVISIONS	
NO.	DESCRIPTION
1	ISSUED FOR BIDDING
2	ISSUED FOR BIDDING
3	ISSUED FOR BIDDING
4	ISSUED FOR BIDDING
5	ISSUED FOR BIDDING
6	ISSUED FOR BIDDING
7	ISSUED FOR BIDDING
8	ISSUED FOR BIDDING
9	ISSUED FOR BIDDING
10	ISSUED FOR BIDDING
11	ISSUED FOR BIDDING
12	ISSUED FOR BIDDING
13	ISSUED FOR BIDDING
14	ISSUED FOR BIDDING
15	ISSUED FOR BIDDING
16	ISSUED FOR BIDDING
17	ISSUED FOR BIDDING
18	ISSUED FOR BIDDING
19	ISSUED FOR BIDDING
20	ISSUED FOR BIDDING
21	ISSUED FOR BIDDING
22	ISSUED FOR BIDDING
23	ISSUED FOR BIDDING
24	ISSUED FOR BIDDING
25	ISSUED FOR BIDDING
26	ISSUED FOR BIDDING
27	ISSUED FOR BIDDING
28	ISSUED FOR BIDDING
29	ISSUED FOR BIDDING
30	ISSUED FOR BIDDING
31	ISSUED FOR BIDDING
32	ISSUED FOR BIDDING
33	ISSUED FOR BIDDING
34	ISSUED FOR BIDDING
35	ISSUED FOR BIDDING
36	ISSUED FOR BIDDING
37	ISSUED FOR BIDDING
38	ISSUED FOR BIDDING
39	ISSUED FOR BIDDING
40	ISSUED FOR BIDDING
41	ISSUED FOR BIDDING
42	ISSUED FOR BIDDING
43	ISSUED FOR BIDDING
44	ISSUED FOR BIDDING
45	ISSUED FOR BIDDING
46	ISSUED FOR BIDDING
47	ISSUED FOR BIDDING
48	ISSUED FOR BIDDING
49	ISSUED FOR BIDDING
50	ISSUED FOR BIDDING
51	ISSUED FOR BIDDING
52	ISSUED FOR BIDDING
53	ISSUED FOR BIDDING
54	ISSUED FOR BIDDING
55	ISSUED FOR BIDDING
56	ISSUED FOR BIDDING
57	ISSUED FOR BIDDING
58	ISSUED FOR BIDDING
59	ISSUED FOR BIDDING
60	ISSUED FOR BIDDING
61	ISSUED FOR BIDDING
62	ISSUED FOR BIDDING
63	ISSUED FOR BIDDING
64	ISSUED FOR BIDDING
65	ISSUED FOR BIDDING
66	ISSUED FOR BIDDING
67	ISSUED FOR BIDDING
68	ISSUED FOR BIDDING
69	ISSUED FOR BIDDING
70	ISSUED FOR BIDDING
71	ISSUED FOR BIDDING
72	ISSUED FOR BIDDING
73	ISSUED FOR BIDDING
74	ISSUED FOR BIDDING
75	ISSUED FOR BIDDING
76	ISSUED FOR BIDDING
77	ISSUED FOR BIDDING
78	ISSUED FOR BIDDING
79	ISSUED FOR BIDDING
80	ISSUED FOR BIDDING
81	ISSUED FOR BIDDING
82	ISSUED FOR BIDDING
83	ISSUED FOR BIDDING
84	ISSUED FOR BIDDING
85	ISSUED FOR BIDDING
86	ISSUED FOR BIDDING
87	ISSUED FOR BIDDING
88	ISSUED FOR BIDDING
89	ISSUED FOR BIDDING
90	ISSUED FOR BIDDING
91	ISSUED FOR BIDDING
92	ISSUED FOR BIDDING
93	ISSUED FOR BIDDING
94	ISSUED FOR BIDDING
95	ISSUED FOR BIDDING
96	ISSUED FOR BIDDING
97	ISSUED FOR BIDDING
98	ISSUED FOR BIDDING
99	ISSUED FOR BIDDING
100	ISSUED FOR BIDDING

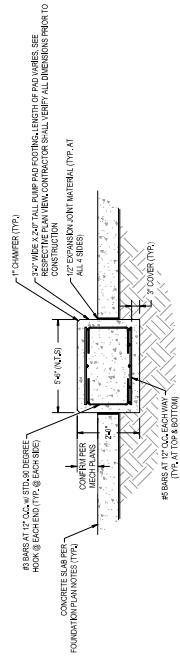
MISC. PLAN AND
DETAILS

PROJECT NO. 25S-301
SHEET NO. 60



1 SBR BLOWER FOUNDATION SECTION
SCALE: 1/2" = 1'-0"

NOTE:
INSTALL ANCHOR BOLTS PER PUMP MFG. SPECIFICATIONS.
SEE DEWBERRY MECHANICAL PLANS FOR PUMP
ANCHOR BOLT DETAILS. ANCHOR BOLT DETAIL 100
MAY BE REQUIRED FOR PUMP INSTALLATION.



2 TYP. PUMP PAD SECTION
SCALE: 1/2" = 1'-0"

Specification Additions

SECTION 11214 VERTICAL TURBINE PUMPS

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes materials, testing, and installation of vertical turbine pumps in wet wells for transfer pump station service.

1.02 SUBMITTALS

- A. Submit shop drawings in accordance with the General Conditions, Section 01300, and the following.
- B. Submit dimensional drawings.
- C. Submit manufacturer's catalog data and detail drawings showing all pump parts and described by material of construction, specification (such as AISI, ASTM, SAE, or CDA), and grade or type. Show linings and coatings. Identify each pump by tag number to which the catalog data and detail sheets pertain.
- D. Submit pump manufacturer ISO-9001 certification per Part 2.01.A. As an alternative, provide a letter from the pump manufacturer accepting warranty responsibility for the entire pump, motor, and baseplate unit.
- E. Show shaft diameter and bearing spacing. Submit calculations showing shaft critical frequency and determination of bearing spacings. Show calculated bearing life.
- F. Submit pump curves on which the specified operating points are marked. Show efficiency and brake horsepower for the selected pump curve. Include moment of inertia of the complete pump unit including driver, impeller, and liquid pumped. Show required submergence and NPSH.
- G. As part of the field test procedure for the pumps, record measurements for impeller adjustment at the top of shaft and total radial shaft deflection (shaft runout) above the stuffing box or seal chamber.
- H. Submit manufacturer's sample form for reporting performance test results at least two weeks before the tests. The test form should contain the data presented in the sample form in Section 6 of the ASME PTC 8.2 or ANSI/HI 14.6.
- I. If pump is tested with job motor, do not correct test results for speed. If factory motor is used, correct speed to that indicated for the job motor as determined by motor factory test.
- J. Submit manufacturer's certified performance curves for review at least two weeks prior to shipping the units from the factory. Show pump total head, torque, brake horsepower,

pump efficiency, required submergence, and required NPSH. Provide copies of the data recorded during the test and methods of data reduction for determining certified test results.

- K. Submit motor data per Section 16150.
- L. Submit manufacturer's requirements for pump alignment limits.
- M. Submit manufacturer's catalog data detailed drawings and data showing packing type and material and mechanical seal design parts. Describe material of construction by specification (AISI, ASTM, SAE, or CDA) and grade or type. Identify each mechanical seal and type of packing by tag number of the associated pump to which the catalog data and detail sheets pertain for each size and model of pump.

1.03 DEFINITIONS

- A. Terms shall be as defined in ANSI/HI 14.6
- B. Additional terms are defined below:

Submergence: Vertical distance in feet between the pumping water level and the bottom of the suction bell. Minimum submergence shall be calculated per Hydraulic Institute Standards.

1.04 MANUFACTURER'S SERVICES

Provide equipment manufacturer's services at the jobsite for the minimum labor days listed below, travel time excluded:

- A. Two (2) labor days for each service listed in the subsection on "Service Conditions" to check the installation and advise during start-up, testing, and adjustment of the equipment.
- B. Two (2) labor days (one (1) day for each shift) to instruct the Owner's personnel in the operation and maintenance of the equipment. If there are difficulties in operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no cost to the Owner.

PART 2 - MATERIALS

2.01 PUMP DESIGN

- A. Equipment for the pumps, including discharge heads, shafting, columns, motors, bases, and anchor bolts, shall be provided as a complete unit by the pump manufacturer in an ISO 9001 certified facility or by a pump manufacturer accepting warranty responsibility for the complete pump unit. Pump units assembled by entities other than the pump manufacturer will not be acceptable.

- B. Pump curve shall be continuously rising and shall be free of dips and valleys from the design point to the shutoff head. The shutoff head shall be at least 120% of the head that occurs at the design point.
- C. The NPSH required shall be at least ten (10) feet less than the minimum NPSH available at all points on the pump curve up to 120% of the flow at the BEP.
- D. Design the pump and its components to operate continuously over a preferred operating range (POR, as defined in ANSI/HI 9.6.3- latest edition) of 70% to 120% of the flow at the BEP.

2.02 MOTORS

- A. Motors shall be provided in accordance with section 16150 and the following.
- B. Motors shall be vertical high thrust, solid shaft. Motors shall be as further described in the subsection on "Service Conditions."
- C. The driver motor thrust bearing loading shall include the total pump lineshaft downthrust. Design the motor bearings to withstand any momentary total upthrust equivalent to at least 30% of the maximum downthrust developed.

2.03 COUPLINGS AND COUPLING GUARDS

- A. For solid shaft motors, comply with ANSI/HI 2.3.3. Provide four-piece flanged adjustable spacer type couplings between the motor and pump shafts. Coupling shall be steel. The spacer shall be of sufficient length to permit the removal of the seal and sleeve without disturbing the driver. Provide coupling guards.

2.04 DISCHARGE HEADS

- A. Provide a fabricated steel discharge head. The discharge head shall have bolted register or rabbet-fit connections for the motor. Discharge head shall have connections for the pump column and shall support the loadings which it imposes as well as contain the pump pressure.
- B. Design columns and discharge heads for 150% of the pump discharge pressure (suction pressure plus pump differential pressure) at shutoff.
- C. Access to the seal chamber or stuffing box shall be through windows placed 90 degrees from the discharge. Fit handholes and/or windows with Type 316 stainless steel expanded metal guards. Provide bolted or hinged or removable Type 316 stainless steel guards.
- D. Design fabricated steel discharge head to be aesthetically compatible with the mounted motor and with adjacent pumping units. Where the motor is smaller in horizontal dimension than the discharge pipe, shape a skirt to transition between the two masses. Where the motor is larger than the discharge head, a skirt of approximately motor

diameter dimension shall enclose the discharge head so as to provide an adequate-appearing support.

E. The discharge shall be flanged, having a pressure rating as shown in the subsection on "Service Conditions."

1. Class 150 flanges shall comply with AWWA C207, Class D.

2. Flanges shall be flat face.

F. Provide for lifting the heads by means of lifting eyes that are capable of sustaining the weight of the complete unit less the motor.

G. Provide a 2-inch steel half coupling welded to the discharge column for an air release. Provide plug.

2.05 MECHANICAL SPLIT SEAL SYSTEM

A. Seal Type: The seal shall be of a nondestructive (non-fretting) type requiring no wearing sleeve for the shaft. Provide shafts for pumps specified with mechanical seals with no reduction in size through the seal area. Mechanical seals shall be the split type, requiring no field assembly, other than assembly around the shaft and insertion into the pump. For clear water services and solids concentrations up to ½% by weight, the face combination shall be hard/soft.

B. Seal Materials:

1. Metals: Type 316 stainless steel for loaded parts over 0.060-inch cross section. For thinner parts (springs), use Hastelloy-C®, Alloy 20®, AMS5876 (Elgiloy®), or other alloy that is not vulnerable to chloride stress corrosion.

2. Elastomers: Fluorocarbon (Viton®), EPDM.

3. Faces: Faces shall be of homogeneous construction. Do not use surface treatments and plated faces. Acceptable hard face materials include self-sintered silicon carbide or reaction bonded silicon carbide. Acceptable soft face is carbon-graphite, either Union Carbide 658RC or Purecarbon P8412.

C. Seal shall be hydraulically balanced and designed for the range of 28-inch Hg vacuum to 400-psig service or 200% of sealing area pressure, whichever is higher, at the design rotating speed, shaft diameter, temperature, and liquid of the pump for the service.

D. Products: Self-aligning, self-centering, single Chesterton 442, Flowserve PSS III, or equal.

2.06 LUBRICATION

- A. Pumps shall have open lineshafts as shown in the subsection on "Service Conditions." Open lineshaft pumps shall be self-lubricated.

2.07 COLUMN PIPE

- A. The column pipe joints shall be flanged and bolted to the discharge head and to the pump bowl assembly and shall have register fits at each end. Material shall be as listed in the subsection on "Pump Materials of Construction." Provide bearing retainer containing a neoprene bearing as an integral part of the top end of each section where a lineshaft bearing is used. As an alternative, provide a separate retainer that is registered in the pipe flanges and easily removable for maintenance.
- B. Top and bottom column pipe sections shall not exceed 5-foot length.
- C. Column pipe joints shall be flanged.

2.08 SHAFTS AND BEARINGS

- A. Support the shafting by bearings at intervals so that the first natural frequency of the rotating assembly is at least 30% above the maximum operating speed. Provide an additional bearing retainer just below the head for added support. Calculate and size the shaft diameter for the pump shutoff head and the maximum horsepower conditions.
- B. For metal or rigid bearings, support the shafting at intervals per ANSI/HI 2.3.3.1, with maximum spacing of five (5) feet.
- C. For pumps having operating speeds 1,800 rpm and less with water-lubricated neoprene bearings, the bearing spacing for the intermediate columns shall not exceed 10-foot lengths. The bearing spacings for the top and bottom column sections shall not exceed 5 feet.
- D. Tolerance on the shaft diameter, with the shaft rotated on centers, shall not exceed 0.001-inch TIR. Shaft runout on the stuffing box or seal chamber face and at the impeller shall not exceed 0.002-inch full indication movement. The shaft stiffness shall limit the total deflection under the most severe dynamic conditions over the allowable operating range of the pump, with the maximum impeller diameter installed, to 0.002 inch at the primary seal faces or at the stuffing box faces.
- E. Pump shafts shall be machined or ground and finished throughout their entire length. The total indicated runout shall not exceed 0.0005 inch per foot of length. Total runout shall not exceed 0.003 inch over total shaft length. The pump shaft shall be in one piece unless otherwise approved by the Owner (because of total shaft length or shipping restrictions).
- F. Shaft couplings for shaft diameters 2 inches or larger shall be of the key and thrust-ring types or other nonthreaded design. Threaded couplings may be used for shaft diameters

1-15/16 inches or smaller. Thrust rings, cap screws, and keys where used shall be Type 410 stainless steel.

2.09 BOWL ASSEMBLY

- A. Each bowl assembly shall consist of the bowl, impeller and impeller shafting, and bearings. Bearings shall be sleeve type located above and below the impeller. Bearings (other than sleeve type) shall have an AFBMA L-10 life of at least 20,000 hours at any specified flow condition excluding the shutoff head. Impellers shall be dynamically balanced.
- B. Pump bowls shall be of the material listed under the subsection on "Pump Materials of Construction." Bowls shall be sufficiently rigid to prevent adverse changes in bearing alignment and to maintain the running clearance of wear rings. Bowls shall be flanged with male and female rabbets or registers for joining to the suction bell and the discharge column. Waterways and the diffusion vanes shall be smooth and free from nodules, bumps, and dips.

2.10 SUCTION BELL

The suction bell shall have, as an integral part, vanes supporting a central hub in which the bottom bearing is carried below the impeller. The outer suction bell entrance shall be at least the size of the maximum pump bowl dimension and as much larger as is practical. Maximum entrance fluid velocity shall not exceed 6 fps at the specified maximum flow. The contour between the outer edge and the impeller suction eye shall be smooth, continuous, and bell shaped.

2.11 IMPELLERS

Pump impellers shall be of the enclosed or semi-open type made of the material listed in the subsection on "Pump Materials of Construction" and shall be cast in one piece. Machine impellers to fit the contour of the bowl and hand file in the waterways. Equip impellers with replaceable wear rings. The impellers shall be attached to the shaft by means of an ASTM A582/276-416 stainless steel key/collet for positive driving of the impeller by the shaft. Attach impellers to the shaft in such a manner that they cannot become loose under any operating condition or under reverse rotation. Provide for adjustment of the axial position of the impeller at the top of the pump or motor so that proper clearance between bowls and impellers may be maintained.

2.12 VIBRATION AND RESIDUAL UNBALANCE

- A. At any operating speed, the ratio of the pump's natural reed frequency to the pump's rotating speed (f/N) shall be less than 0.8 and greater than 1.3.

- B. The Contractor shall require that the pump manufacturer determine whether the infinite mass and rigidity described in ANSI/HI 9.6.4-2000, paragraph 9.6.4.5.2 is applicable to the service conditions in this project and to select the appropriate analytical method to determine the critical speed and resonant frequencies of the pump system. At a minimum, the pump system shall include the bowls, impellers, lineshaft diameters, lineshaft bearing spacing, column diameter and wall thickness, the design of the discharge stand or motor stand with discharge nozzle, and the baseplate and soleplate dimensions (length, width, and thickness).

2.13 PUMP MATERIALS OF CONSTRUCTION

- A. Materials of construction shall conform to the requirements listed below. Materials of construction for components not listed below shall conform to ANSI/HI 9.1 through 9.5.

Component	Material
Pump shafts and couplings	Stainless steel, ASTM A276, UNS Grade S41600
Bearing retainers (fabricated integral)	Carbon steel, ASTM A283, Grade B.
Bearing retainers (insert type)	Bronze; see paragraph C below.
Lineshaft bearings	EPDM or Buna-N
Tube bearing	Bronze; see paragraph C below.
Impellers	Stainless Steel ASTM A743, Grade CF-8M; or Bronze per paragraph C below.
Impeller wear rings	Stainless steel (if bowl wear rings are bronze) or bronze (if bowl wear rings are stainless steel). Stainless steel: ASTM A743, Grade CF-8M or CA-15 or ASTM A276, Type 410. Bronze: see paragraph C below.
Suction strainer	Stainless steel, AISI Type 316.
Lantern ring	Bronze; see paragraph C below.
Pump bowls and suction bell	Cast iron, ASTM A48, Class 30 or ductile iron, ASTM A536.
Bowl bearings	Bronze; see paragraph C below.
All parts made of fabricated steel including discharge head or motor stand	Carbon steel, ASTM A283, Grade B or C; ASTM A36; or ASTM A53, Grade B.
Discharge head	Cast iron, ASTM A48, or fabricated steel.
Column pipe	Carbon steel, ASTM A283, Grade B or C, or ASTM A53, Grade A or B.

Component	Material
Mounting plate	Carbon steel, ASTM A283, Grade A or B or ASTM A36.
Flanges	ASTM A105, A181, or A182.
Bolts and nuts for discharge heads, column pipe flanges, and bowl flanges. See paragraph D below	Bolts shall be Type 316 stainless steel conforming to ASTM A193, Grade B8M. Nuts shall be Type 316 stainless steel conforming to ASTM A194, Grade 8M.
Stuffing box gland parts	Bronze; see paragraph C below.
Gland bolts and nuts	Stainless steel, Type 316.
Any bronze components in contact with water	See paragraph C below.

- B. Do not construct the impeller wear ring and bowl wear ring of the same material. Impeller and bowl wear ring materials shall have a minimum Brinell hardness difference of 50, unless both the stationary and the rotating wear surfaces have Brinell hardness numbers of at least 400.
- C. Bronze shall have the following chemical characteristics:

Constituent	Content
Zinc	7% maximum
Aluminum	2% maximum
Lead	8% maximum
Copper + Nickel + Silicon	83% minimum

2.14 SOLEPLATE AND ANCHOR BOLTS

- A. The Contractor shall assign the design and construction of the pump (including bowls, column, and discharge head), motor and supporting stand, and baseplate and soleplate system to the pump manufacturer. The pump manufacturer shall design and construct an integrated system to comply with the specified restraint, deflection, vibration, and critical speed criteria.
- B. Provide a steel or cast-iron soleplate for deck-mounted pumps to be permanently grouted in place. The thickness and bolting to the discharge head base shall be sufficient to restrain the discharge head against the discharge pressure at shut off head or any other pump operating condition and provide sufficient rigidity such that the pump and baseplate system meets the specified lateral vibration and critical speed criteria. Machine the soleplate topside to mate with a fully machined base of the discharge head.
- C. Provide vertical leveling screws spaced for stability on the outside perimeter of the soleplate. Locate the leveling screws adjacent to anchor bolts to minimize distortion

during the process of installation. These screws shall be numerous enough to carry the weight of the baseplate, pump, and drive train components without excessive deflection, but in no case shall fewer than six screws be provided. Sandblast the grout contact surfaces of the soleplate in accordance with SSPC SP-6, and coat those surfaces with a primer compatible with epoxy grout.

- D. Provide anchor bolts of sufficient quantity and size to restrain any pump operating condition. The anchor bolts shall conform to ASTM A276 Type 316.

2.15 SPARE PARTS

- A. Provide the following spare parts for each model of pump:

Quantity	Description
One Set	Impeller wear ring
One Set	Bowl wear ring
One	Lantern ring (for pumps specified to have packing)
Two sets	Bowl bearings
Two sets	Shaft bearings
One	Shaft coupling
Two	Mechanical seals

- B. Pack spare parts in wooden boxes; label with manufacturer's name and local representative's name, address, and telephone number; and attach list of materials contained therein.

PART 3 - EXECUTION

3.01 SHIPMENT AND STORAGE

- A. Prepare equipment for shipment including blocking of the rotor when necessary. Identify blocked rotors by means of corrosion-resistant tags attached with stainless steel wire. The preparation shall make the equipment suitable for six months of outdoor storage from the time of shipment, with no disassembly required before operation, except for inspection of bearings and seals.
- B. Identify the equipment with item and serial numbers and project equipment tag numbers. Material shipped separately shall be identified with securely affixed, corrosion-resistant metal tags indicating the item and serial number and project equipment tag numbers of the equipment for which it is intended. In addition, ship crated equipment with duplicate packing lists, one inside and one on the outside of the shipping container.

- C. Pack and ship one copy of the manufacturer's standard installation instructions with the equipment. Provide the instructions necessary to preserve the integrity of the storage preparation after the equipment arrives at the jobsite and before start-up.
- D. Store and protect pumps per ANSI/HI 2.4.1 and as described below.
- E. Coat exterior machined surfaces with a rust preventative.
- F. The interior of the equipment shall be clean and free from scale, welding spatter, and foreign objects.
- G. Provide flanged openings with metal closures at least 3/16-inch thick, with elastomer gaskets and at least four full-diameter bolts. Install closures at place of pump manufacture prior to shipping. For studed openings, use all the nuts needed for the intended service to secure closures.
- H. Provide threaded openings with steel caps or solid-shank steel plugs. Do not use nonmetallic (such as plastic) plugs or caps. Install plugs at place of pump manufacture prior to shipping.
- I. Clearly identify lifting points and lifting lugs on the equipment or equipment package. Identify the recommended lifting arrangement on boxed equipment.
- J. Wrap exposed shafts and shaft couplings with waterproof, moldable waxed cloth or volatile-corrosion-inhibitor paper. Seal the seams with oil-proof adhesive tape.
- K. If electric motors are stored or installed outside or in areas subject to temperatures below 40°F or are exposed to the weather prior to permanent installation, provide the manufacturer's recommended procedures for extended storage. Provide temporary covers over the motor electrical components. Provide temporary conduits, wiring, and electrical supply to space heaters. Inspect electrical contacts before start-up.

3.02 PUMP INSTALLATION

- A. Install equipment horizontal and vertical within 1 degree and according to the manufacturer's written instructions and the contract documents. Confirm that pumps are set to meet the vertical alignment requirements established by the manufacturer.
- B. Check to ensure that pump baseplates or soleplates have been provided with vertical leveling screws, as opposed to shims or wedges. Do not use shims and wedges.
- C. Provide the manufacturer's recommended lubricants and operating fluids and verify that each piece of equipment contains the amount recommended by the manufacturer.
- D. Verify that the installed pump is fully self-supporting before bolting pipe flanges, so that no strain is imparted on the flanges, pipes, or pipe supports from the pump assembly. Adjust the position of the pump assembly so that the pump discharge flanges are plumb and aligned with the adjacent pipe flanges. Do not use temporary shims or jacking nuts

for leveling, aligning, or supporting equipment. Provide final grouting of the pump assembly base according to Section 03600

- E. When the alignment is correct, tighten the foundation bolts evenly but not too firmly. Then grout the unit to the foundation. The leveling pieces may be grouted in place. Do not tighten foundation bolts until the grout is hardened a minimum of 48 hours after pouring.
- F. Provide continuous protection of the installed equipment from the elements, dust, debris, paint spatter, or other conditions that will adversely affect the unit's operation until such time as the equipment is scheduled for start-up testing.
- G. Installation of Mechanical Seals
 - 1. Install per ANSI/HI 2.4.5.2.

3.03 MOUNTING AND ALIGNMENT OF VERTICAL SOLID SHAFT DRIVERS

- A. Before mounting the driver on the discharge head/driver stand, check the register fit, if furnished, and the mounting face on the driver for acceptable tolerance on runout and squareness, respectively, using a dial indicator mounted on the driver shaft. See ANSI/NEMA MG-1. Next, check the squareness of the face of the driver coupling half, mounted on the shaft with a tight fit and seated against a split ring, using a dial indicator on a firm base.
- B. With the driver bolted to the discharge head, mount a dial indicator on the driver shaft above the coupling half and sweep the bore of the stuffing box. If excess runout exists, some adjustment can be made at the driver mounting fit and the stuffing box mounting fit. Before installing any additional coupling parts, check the driver for correct rotation, as given in the manufacturer's installation instructions.
- C. Next, mount the pump half coupling, shaft adjusting nut, and coupling spacer if applicable, and raise the impeller in accordance with the manufacturer's instructions. Then secure the coupling bolts. Make a final check of the shaft runout below the pump half coupling with a dial indicator. If the runout is within acceptable tolerances, check the tightness of the driver hold-down bolts. If dowels are used to secure the driver location, then redoweling is required after disassembly/reassembly, since tolerance buildup in the multiple vertical joints results in alignment variation.

3.04 FACTORY PERFORMANCE TESTS

- A. Each pumping unit shall be subjected to a non-witnessed laboratory performance test. Conduct tests in accordance with the ANSI/HI 14.6, using the job driver. Tested pumps shall meet ANSI/HI 14.6 Acceptance Grade 1U.
- B. No motor overload above nameplate rating will be allowed at any flow up to 120% of the flow at the BEP.

- C. Hydrostatically test columns, bowls, and discharge heads at design pressure.
- D. Measure flow by the “Capacity Measurement by Weight,” the “Capacity Measurement by Volume,” or the “Capacity Measurement by Venturi Meter, Nozzle, or Thin Plate Orifice” methods.
- E. Perform tests and record data, including head, flow rate, speed, and power at a minimum of seven points. These points shall include shutoff, minimum flow, midway between minimum flow and design flow, design flow, 120% of design flow, and maximum flow.
- F. Performance tests shall be “full-scale.” The complete pump, including column and discharge elbow, and job motor, shall be used. Measuring devices shall have been calibrated within the previous year.
- G. Conduct tests preferably at the same minimum submergence that will be realized in the field.
- H. Locate the pressure tap for head measurement not less than 10 pipe diameters downstream from the discharge elbow of the test pump.
- I. Should results of the full-scale tests indicate, in the opinion of the Owner’s Representative, that the pumps will fail to meet any of the specified requirements, the Owner’s Representative will notify the Contractor of such failure. The manufacturer shall thereupon, at no expense to the Owner, make such modifications and perform additional tests as may be necessary to comply with these specifications.
- J. Perform a hydrostatic test on pump pressure-containing components.

3.05 PAINTING AND COATING

- A. Line and coat interiors and exteriors of pump columns, shaft enclosing tube, discharge heads, bowl assemblies, and suction bells with fusion-bonded epoxy per Section 09976. Apply coating at factory.
- B. Coat exterior of discharge head, motor stand, and motor the same as the adjacent piping. If the adjacent piping is not coated, then coat per Section 09900, System No. 10 in accordance with Section 09900. Apply the specified prime coat at the place of manufacture. Apply intermediate and finish coats in field. Finish coat shall match the color of the adjacent piping and selected by the Owner.

3.06 SERVICE CONDITIONS

- A. Pump hydraulic performance characteristics shall be as shown below.

1. Pump Tag #: 60-P-01 & 60-P-02

Location	Effluent Pump Station (Process 60)	
Type of discharge	Surface	
Service	Outdoors environmental temperature range of 20°F to 110°F	
Elevation	85 feet above mean sea level	
Relative humidity	Up to 100%	
Fluid temperature range	50°F to 90°F	
<u>Pump Data</u>		
Capacity (gpm)	Pump Total Head (feet)	Minimum Bowl Efficiency (%)
0	78	
2,290 ⁽¹⁾	45	75
3,500	32	80
⁽¹⁾ Design point.		
Liquid pumped	Reclaimed Water	
Maximum pump speed	1,800 rpm	
Minimum submergence	3.50 feet	
Motor horsepower (minimum)	40 HP	
Motor type (per section 16150)	NEMA TEFC, continuous duty, premium efficiency, 120-V heating element, thermostats, moisture shield motor winding, non-reversing ratchet, NEMA MG 1, and inverter duty.	
Variable speed drive required	Yes	
Minimum shaft diameter	1-1/4 inches	
Pump lubrication	Open lineshaft	
Minimum discharge connection size	10 inches	
Minimum column size	10 inches	
Minimum column wall thickness	0.375 inch	
Bearing lubrication	Water	
Suction strainer	No	
Antivortex suction baffle	No	
Pump manufacturers and models	Flowserve 23EKL	

3.07 FIELD TESTING

- A. Bump motor to ensure that motor has been connected for proper rotation prior to coupling pump.
- B. Perform field tests for 24 consecutive hours on each pump. Measure flows at the following head points:

Tag Numbers	60-P-01 & 60-P-02
Location	Effluent Pump Station (Process 60)
Service	Reclaimed Water
Maximum (rpm)	1,800
Test Points (Feet)	17, 29, and 56

If the measured flows at the above-tabulated pump heads are more than 5% below the flows obtained from the laboratory or factory test, adjust the impellers or provide new impellers or otherwise repair or replace the pumps or calibrate meters or pressure gauges.

- C. Conduct vibration level tests with pumps operating at their rated capacity. Adjust or replace pumps that exceed the maximum vibration levels listed in ANSI/HI 9.6.4.4-2000. Field vibration measurements shall be made in accordance with ANSI/HI 9.6.4.3-2000.
- D. Operate each pump one at a time. Manually adjust the speed for each pump (one at a time) via the respective speed control unit such that the pump output is 30%, 40%, 50%, 60%, 80%, and 100% of the maximum capacity specified. The duration at each flow rate shall be at least one hour.
- E. Assure that in the automatic mode each pump responds to its level or pressure signal. Assure that each pump operates at a steady rate ($\pm 5\%$ of set point) at any given level pressure for 30%, 40%, 50%, 60%, 80%, and 100% of the maximum capacity specified.
- F. Assure that each motorized valve on the seal water supply line opens and closes when its respective pump starts and stops. Start and stop each pump twice and verify that the pump/solenoid interlock functions.

- G. Assure that limit switches on the pumps' check valves indicate and transmit the signals for the valves in the open and closed positions.
- H. Demonstrate that the pumping units, drivers, and control system meet the following requirements:
 - 1. The pumping units operate as specified without excessive noise, cavitation, vibration, and without overheating of the bearings.
 - 2. Automatic and manual controls function in accordance with the specified requirements.
 - 3. Drive equipment operates without being overloaded.

3.08 FIELD MEASUREMENT OF COATING THICKNESS ON COLUMNS

Field measure coating thickness on pump columns per Section 09900.

3.09 CONTRACT CLOSE OUT

Provide in accordance with Section 01700.

3.10 WARRANTY

- 1. The Manufacturer shall furnish a written warranty covering materials and workmanship for the equipment provided for a period of three (3) years. The warranty period shall begin at the date of substantial completion of the respective individual pump.
- 2. The Manufacturer shall furnish, deliver, and install new parts to replace the defective parts. The manufacturer shall furnish all supervision, labor, equipment, and materials to repair or replace components which have failed as defined by the warranty at no cost to the Owner.

3.11 CERTIFICATION

Provide a written certification from the equipment manufacturer that each pumping system has been properly installed according to the Contract Documents and the Manufacturer's recommendations, and that the equipment is operating normally. Make all necessary corrections and adjustments including but not limited to parts, labor, or freight at no additional cost to the Owner.

END OF SECTION

THIS PAGE IS LEFT BLANK INTENTIONALLY