



September 11, 2024

Project No: 100200.32

# ADDENDUM NO. 2 TO THE CONTRACT DOCUMENTS AND DRAWINGS

For the construction of the Aloe Bay Water Quality Enhancement Wastewater Treatment Facility

To All Planholders:

The following changes, additions, and/or deletions are hereby made a part of the Contract Documents and Drawings for the Aloe Bay Water Quality Enhancement Wastewater Treatment Facility project for Dauphin Island Water and Sewer Authority as fully and completely as if the same were set forth therein:

The Bid will be postponed to October 1<sup>st</sup> at 2:00 pm central. The questions cutoff date will be changed to September 24<sup>th</sup> at 4:00pm central time.

## **SPECIFICATIONS**

1. Remove Specification 15111 – Pipe Heat Tracing and replace with attached specification 15111 – Pipe Heat Tracing.

#### **DRAWINGS**

- 1. Remove sheet I-5.0 and replace with revised sheet I-5.0
- 2. Remove sheet I-0.50 and replace with revised sheet I-0.50
- 3. Remove sheets M-4.0, M-4.1, M-4.2, M-6.0, M-6.4 and replace with revised sheets M-4.0, M-4.1, M-4.2, M-6.0, M-6.4

## **CLARIFICATIONS**

1. Please confirm if this project is AIS

#### This project does not require compliance with American Iron and Steel (AIS).

- 2. The MCC cubicle (shown on drawing E-0.51) designated to provide power for the headworks compressor, shall be repurposed as a "Spare" instead of being dedicated for the "Headworks Air Compressor".
- 3. The "P9" power feeder for the Headworks Air Compressor shown on drawing E-0.51 shall be omitted.

- 4. The two pole 20A circuit breaker allotted to provide power for the "Headworks Screen Air Compressor" from Panel LV (drawing E-0.70) shall be revised to be a spare and the "Headworks Screen Air Compressor" shall be relocated to one of the spare single pole 20A breakers.
- 5. The "Headworks Compressor" in the "MCC Load Schedule" on drawing E-0.73 shall be omitted.
- 6. The P9 power feeder (consisting of 3#12 and 1#12 G in a 1" conduit) shown on drawing E-3.0 "Mechanical Screen Air Compressor" shall be replaced with a P15 power feeder (consisting of 3#12 in a 3/4" conduit). The associated disconnect switch shall be replaced with a weatherproof while-in-use GFI receptacle to provide power for the compressor.

#### **ATTACHMENTS**

- 1. Revised Sheet I-5.0
- 2. Revised Sheet I-0.50
- 3. Revised Sheets M-4.0, M-4.1, M-4.2, M-6.0, M-6.4
- 4. Markups to sheets E-0.51, E-0.70, E-0.73, E-3.0
- 5. Specification 15111 Pipe Heat Tracing
- 6. Pre-bid Sign-in Sheet

# **REQUEST FOR EQUALS**

- 1. BMC is an approved equal for laboratory fume hoods so long as the fume hood adheres to specification 11601 Laboratory Fumehoods
- 2. ValMatic is an approved equal for all plug valves, check valves, and butterfly valves.
- 3. AvTek is an approved equal for all knife gate valves.
- 4. Amwell is an approved equal for all telescoping valves.
- 5. EDGENG is an approved equal for any FRP application so long as it adheres to Specification 11356 Fiberglass Baffle Walls

## **QUESTIONS**

1. Per the "Procurement of Recovered Materials" list of products, do we have to purchase these products manufactured of recycled materials?

See note N.04.10 in the RESTORE council standard terms and conditions. The contractor must procure materials with the highest percentage of recovered materials practicable.

2. Will the Owner allow the GC to tie-into existing Water and Power sources, without incurring any usage fees?

DIWSA will not charge any connection fees or usage fees for utilities. The contractor will be responsible for locating and making any connections to power and water.

3. The Piping Schedule in sect. 15110 note #3 says to insulate and heat trace all water pipe that is less than 6" dia. Deleting the heat tracing all together and only insulating 2" dia. and smaller seems more appropriate given the location. Please confirm whether this spec can be amended, and what the new requirement would be.

Heat tracing and insulation will be required for all pipes 6" diameter and less.

4. We only seem to have the 1<sup>st</sup> page of Sect. 15111, Pipe Heat Tracing. If heat tracing is still required, please provide the full spec.

Heat tracing is required. See the attached revised specification 15111 – Pipe Heat Tracing.

5. Will Ardurra provide an initial survey of all corners of structures?

Ardurra can provide the original topographic survey performed during design as well as the electronic CAD file for the survey. Any additional survey for new structures shall be performed by the contractor.

6. Is MH-1 the standard 4'-0" dia.? It appears to be larger than the other 4' manholes on sheet C-4.0.

#### MH-1 will be a 5'-0" diameter manhole.

7. Sheet L-1.0 does not indicate that the 16 Palm Trees are existing. Are they to be new or remain as existing?

The palm trees seen on Sheet L-1.0 are existing and shall be protected during construction.

8. Does the PEMB at the CCB require any insulation at the walls or ceiling? The PEMB at the chlorine contact basin will not require any insulation in the walls or

ceiling. The PEMB at the dewatering facility WILL require insulation in both the walls and the ceiling, as specified.

9. Is the demo of the existing "barn", at the northeast corner of the site, to be included in the Base Bid?

The demolition of the barn shall be included in the base-bid.

10. Please specify the Launder Coating material, noted on sheet M-3.3. We've had Sprayroq specified many times before. This could also be utilized at the new MH-1 and the existing SMH-2.

Launder coating material is provided in Specification 09900 – Painting, section 3.10.C

11. On the roof of both PEMB's, 1 1/4" is referenced for the depth. Is this for standing seam metal or R-panel?

The roof panels should match the operations building as specified in Section 07411 – Metal Roof Panels. The 1-1/4" depth should only reference the PEMB side panel profile.

12. What is the location of the monorail at the Dewatering Bldg? Does it travel back and forth in the building?

Monorail shall be installed on the centerline of the screw press and extend from wall to wall (north to south). Coordinate attachments with the PEMB supplier to provide the maximum available travel between the two walls.

13. Please specify the thickness of the PVC wall liner panels in the Dewatering Bldg. Section 13121 – Pre-Engineered Metal Buildings paragraph 2.08 Interior Liner Panels, E. Thickness 0.039"

- 14. The electrical specs state no EMT allowed. Can we amend this statement to state EMT is only allowed in interior Operations building enclosed in ceilings, walls?
- EMT is allowed in the interior operations building enclosed in ceilings and walls.
- 15. In the structural S-9.3, this wall is shown as 8" CMU. Please clarify if it's 8" or 12". **The wall is an 8" CMU.** 
  - 16. Clarifications to Specification 11542 Screw Press
    - 1.03 Please provide section 16150 as we were not able to locate this item in the full specification package. Section 11542 Screw press, 1.03 submittals, paragraph G, Remove sentence: "Include motor data as required by Section 16150"
    - 1.02 Please list In-Line Grinder as optional equipment from dewatering manufacturer as wedge wire basket systems that use wipers and brushes do not require inline grinders. An In-line grinder will be required. No Exception.
    - 1.01.2 Confirm 331 lbs/hr is the correct solids throughput for sludge with a concentration of 0.5-2.0%.

Solids to Dewatering based on 5 days/week: 1,987 lb/day Solids to Dewatering based on 30 hr/week operation: 331 lb/hr With digester percent solids at 1.0%-1.5%, the hydraulic loading to the screw press: 3,960-2,648 gal/hr (66-44 gpm)

- 2.03.C Please list rotary drum thickener and drum Transfer pump as "if applicable", as this is not required for all screw press applications. The rotary Drum Thickener and drum transfer pump is required for this installation. No Exception.
- 2.09 Please list the Equipment skid as "if applicable", as this is the only needed by screw presses that include integrated thickener units and not necessary for screw press systems that can be inspected without a platform **Integrated thickener and associated equipment skid is required.** No Exception.
- Sheet M-6.2 Please confirm number of screw conveyors for dewatered cake. It appears as there is three (a smaller cake transport conveyor connected to the discharge end of the screw press, the inclined transfer conveyor, and the distribution conveyor)

  Three screw press conveyors will be required. No Exception.

Ardurra,			
Jin Sitt			
Jim Smith, P. E.			
AL PE No. 25847			
All Bidders shall acknowledge:	receint and accentance o	f the Addendum with	the Rid Package
Proposals submitted without acinformal.			_
Receipt acknowledged and cond	itions agreed to this	day of	, 2024.
Bidder			
Ву			
Бу			

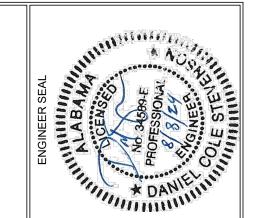
# **GENERAL NOTES:**

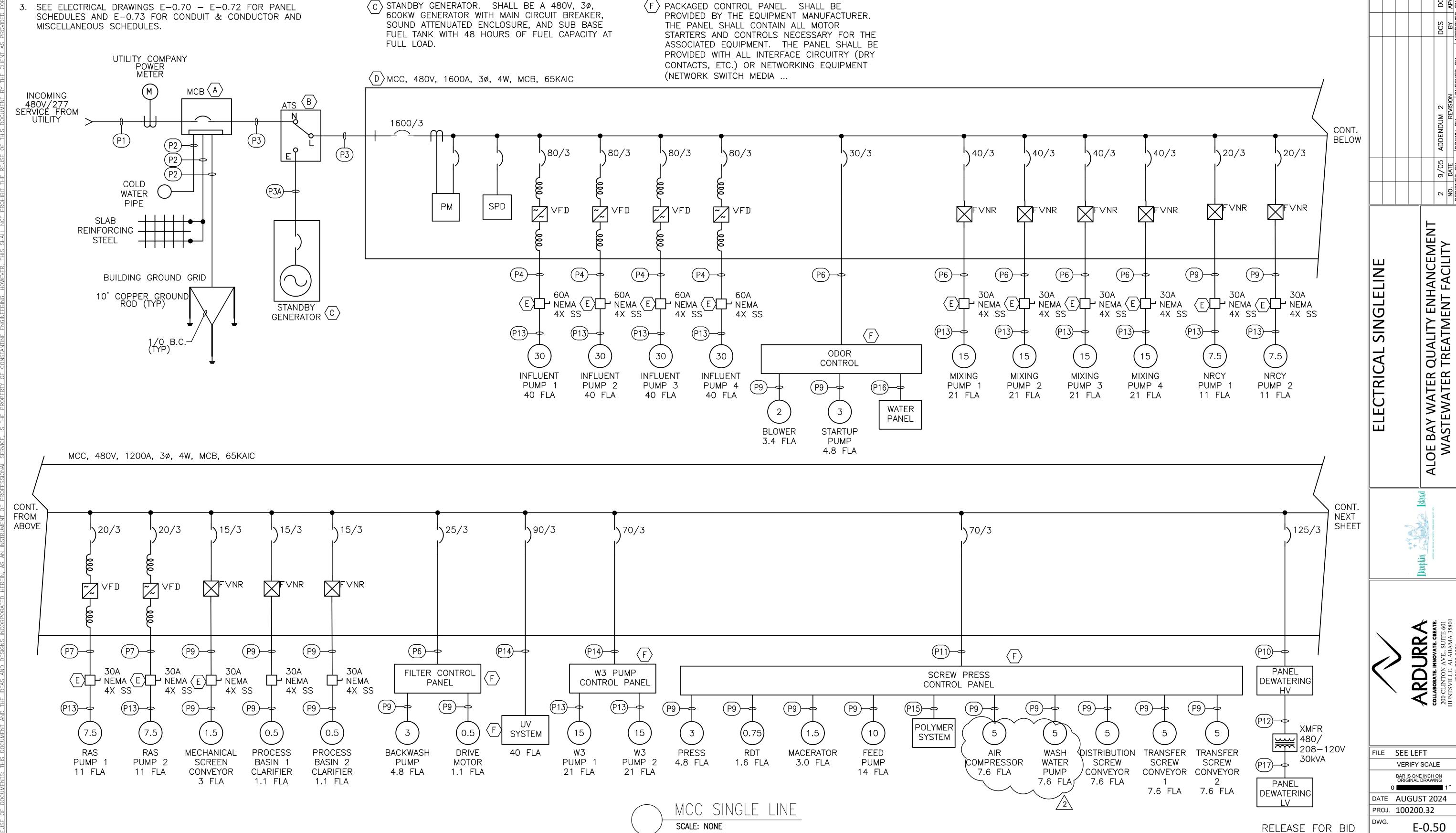
- 1. ALL CONDUITS AND CONDUCTORS REQUIRED FOR FUTURE LOADS SHALL BE INSTALLED AND PULLED AS PART OF THE INITIAL PROJECT.
- 2. CONDUITS AND CONDUCTORS CAN BE COMBINED IN ACCORDANCE WITH NEC FILL REQUIREMENTS. POWER (AC) AND CONTROL SIGNAL CONDUCTORS SHALL BE ROUTED SEPARATE CONDUITS. DIGITAL AND ANALOG CONTROL SIGNAL CONDUCTORS SHALL BE ROUTED IN SEPARATE CONDUITS.

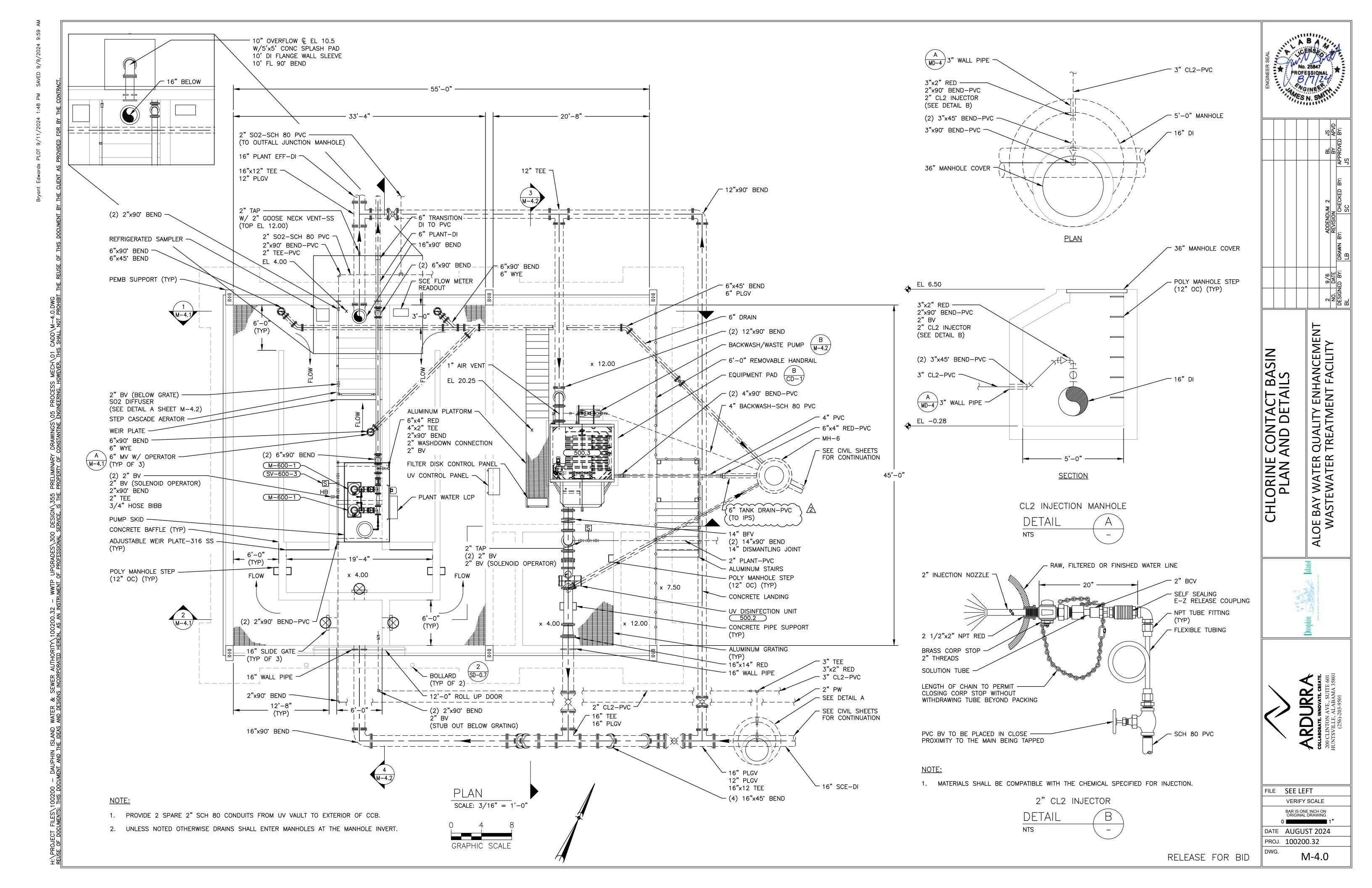
# **KEY NOTES:**

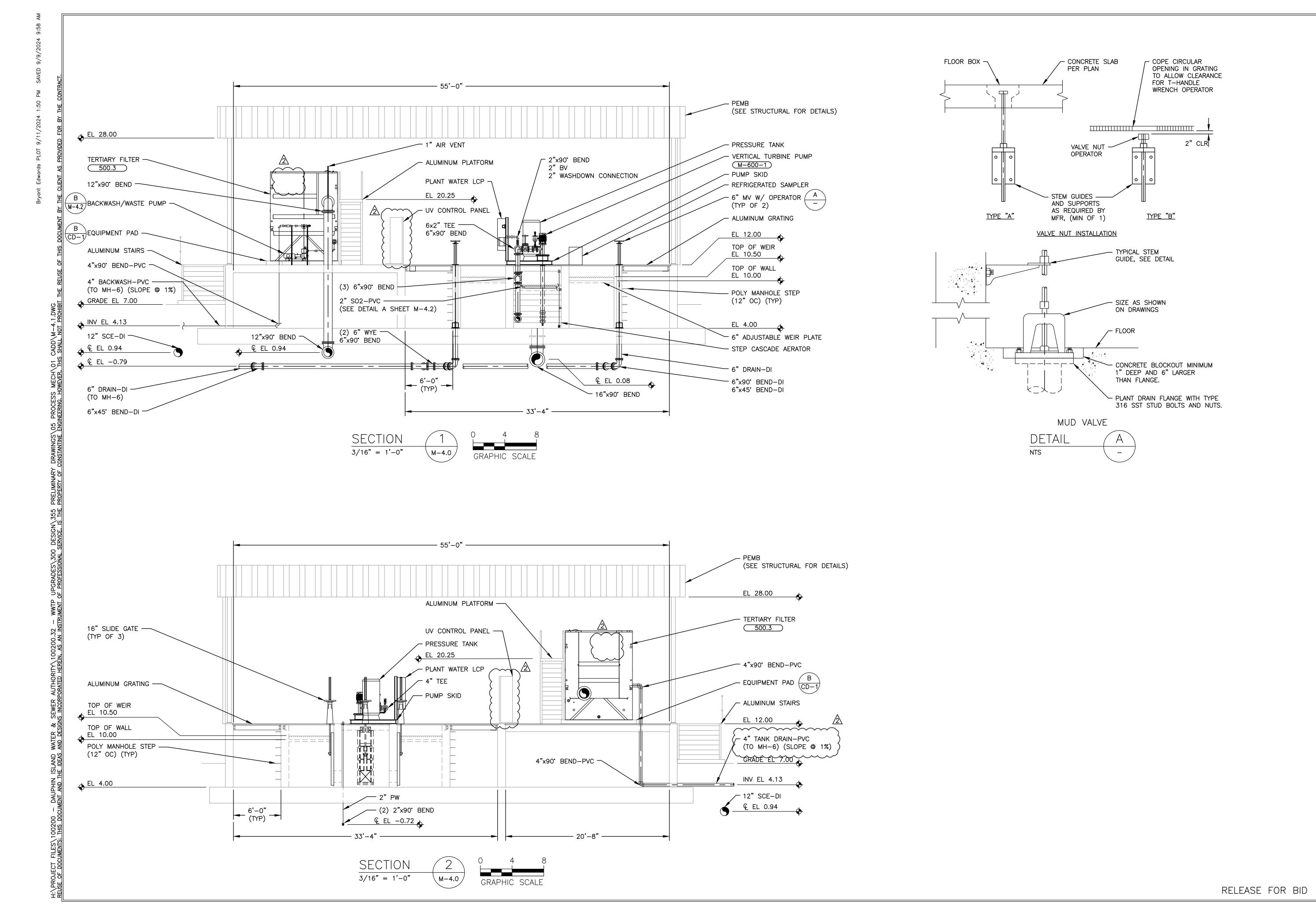
- (A) MAIN CIRCUIT BREAKER (MCB). SHALL BE A 480V, 3 POLE, 1600A FULLY RATED BREAKER IN A UL TYPE 4 CIRCUIT BREAKER DISCONNECT ENCLOSURE WITH GROUND AND NEUTRAL KITS. SHALL BE SE RATED.
- (B) AUTOMATIC TRANSFER SWITCH (ATS). SHALL BE A 480V, 3 POLE 1600A SWITCH IN A UL TYPE 4 ENCLOSURE.
- 600KW GENERATOR WITH MAIN CIRCUIT BREAKER. SOUND ATTENUATED ENCLOSURE, AND SUB BASE FUEL TANK WITH 48 HOURS OF FUEL CAPACITY AT
- D MOTOR CONTROL CENTER (MCC). SHALL BE A 480V. 3ø, 4W, 1600A, MAIN CIRCUIT BREAKER (FULLY RATED), 65KAIC, UL TYPE 4 MCC.
- (E) DISCONNECT WITH A 30MM 3 POSITION SELECTOR SWITCH (HOA) FOR LOCAL CONTROL AND A 30MM GREEN PILOT LIGHT FOR RUNNING
- F PACKAGED CONTROL PANEL. SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER. THE PANEL SHALL CONTAIN ALL MOTOR STARTERS AND CONTROLS NECESSARY FOR THE ASSOCIATED EQUIPMENT. THE PANEL SHALL BE PROVIDED WITH ALL INTERFACE CIRCUITRY (DRY CONTACTS, ETC.) OR NETWORKING EQUIPMENT (NETWORK SWITCH MEDIA ...

... CONVERTER, ETC.) TO FACILITATE INTERCONNECTION WITH THE PLANT'S SCADA SYSTEM. THE CONTROL PANEL SHALL BE CONSTRUCTED TO UL 508A AND UL 698A STANDARDS (IF APPLICABLE) AND THE COMPLETED ASSEMBLY SHALL BE UL TYPE 4X IF OUTDOORS OR IN CORROSIVE ENVIRONMENTS; UL TYPE 12 IF LOCATED IN NON-CORROSIVE INDOOR LOCATIONS

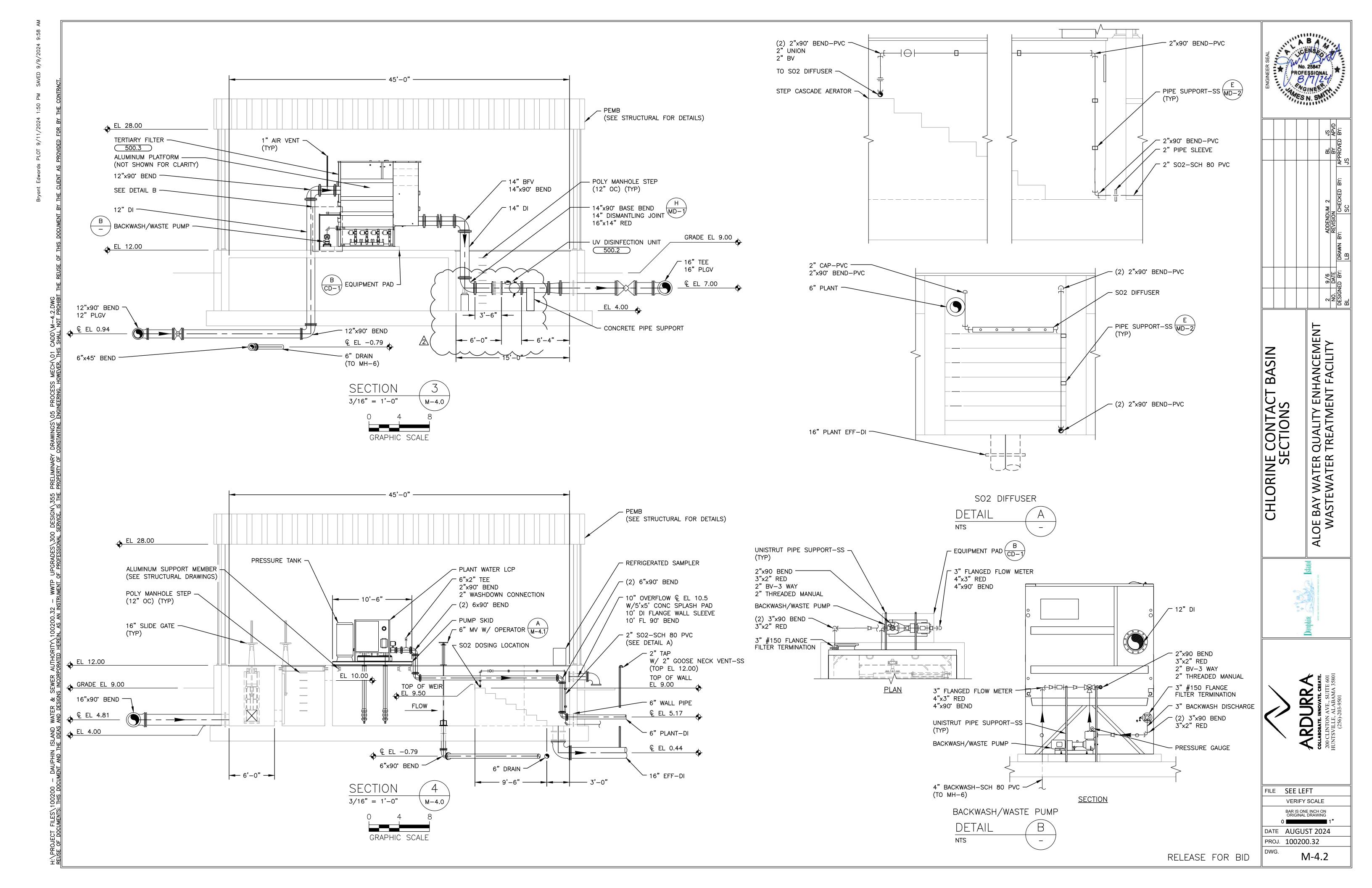


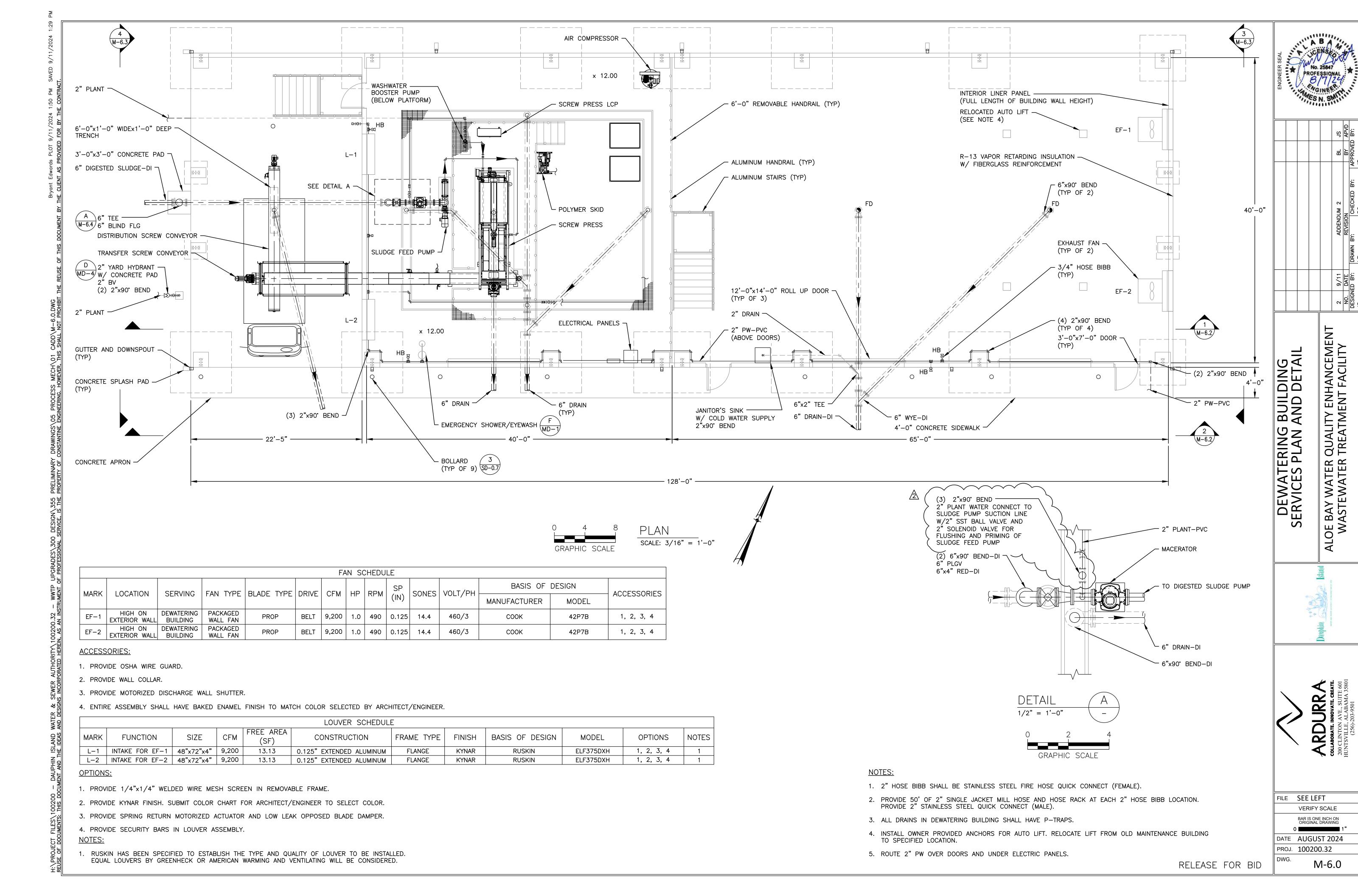


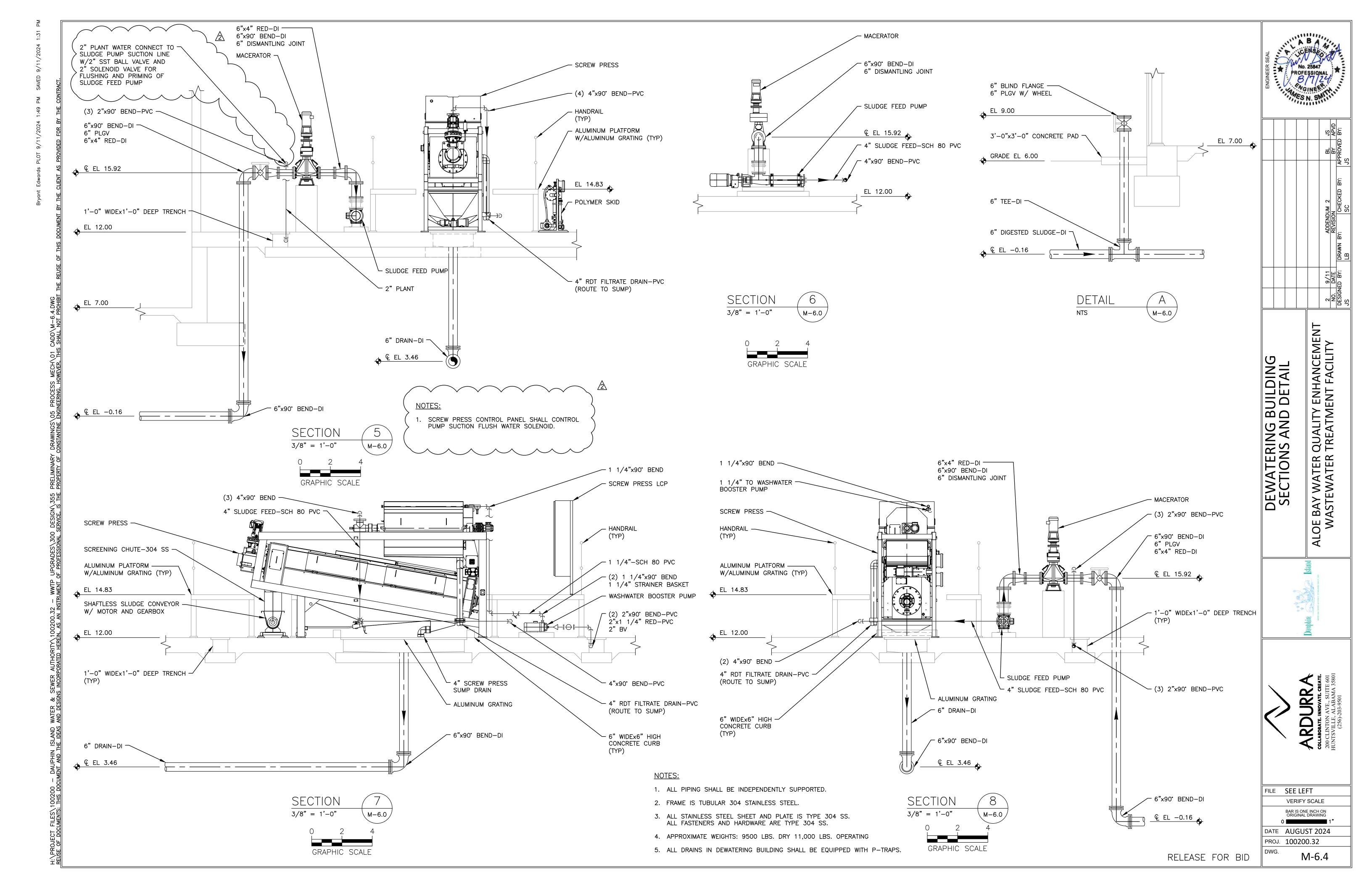


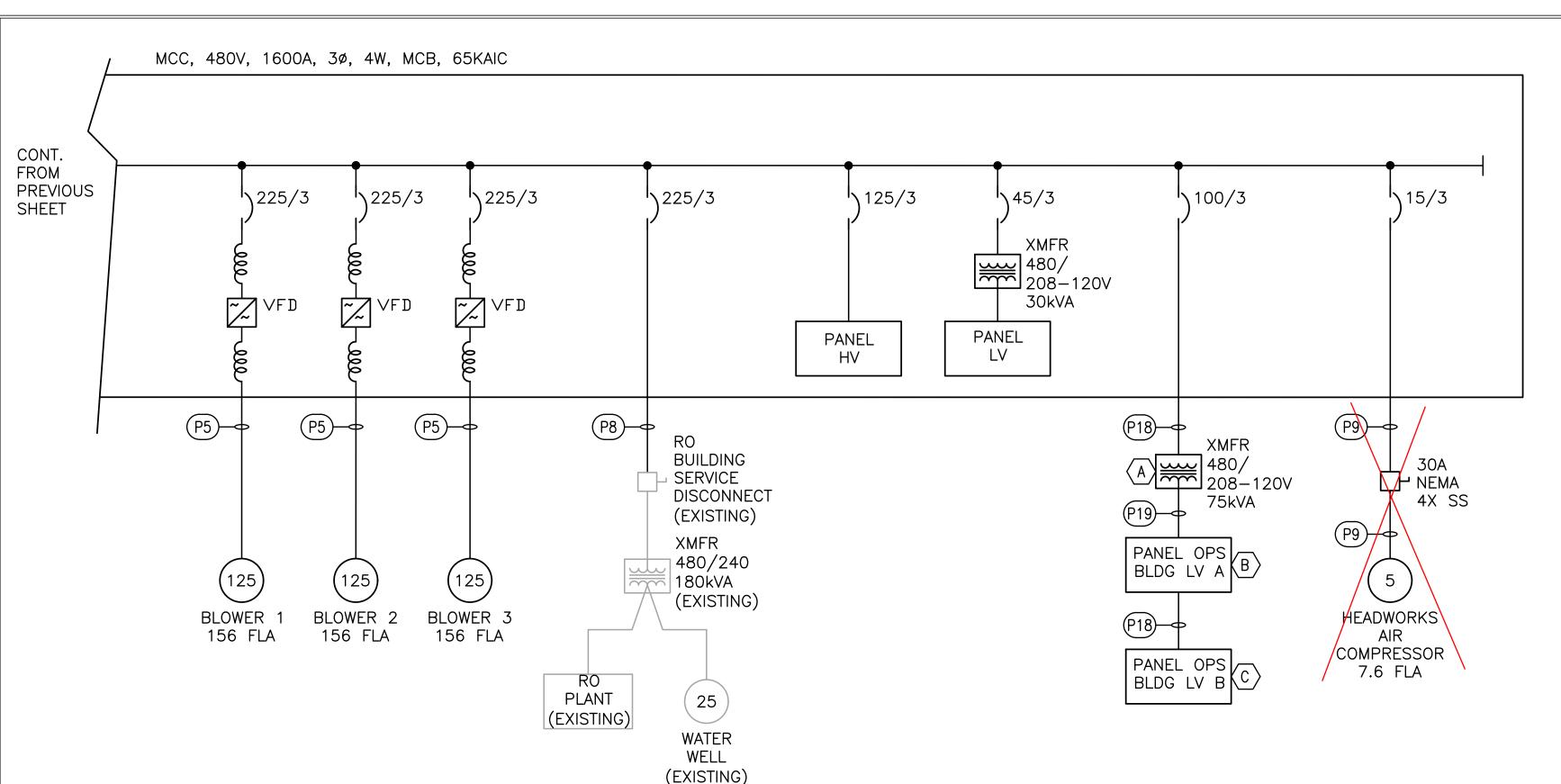


No. 25847 PROFESSIONAL 8/7/24 JS APVD BY: Y WATER QUALITY ENHANCEMENT TEWATER TREATMENT FACILITY CHLORINE CONTACT BASIN SECTIONS AND DETAIL ALOE BAY WAST FILE SEE LEFT **VERIFY SCALE** BAR IS ONE INCH ON ORIGINAL DRAWING DATE AUGUST 2024 PROJ. 100200.32 M-4.1





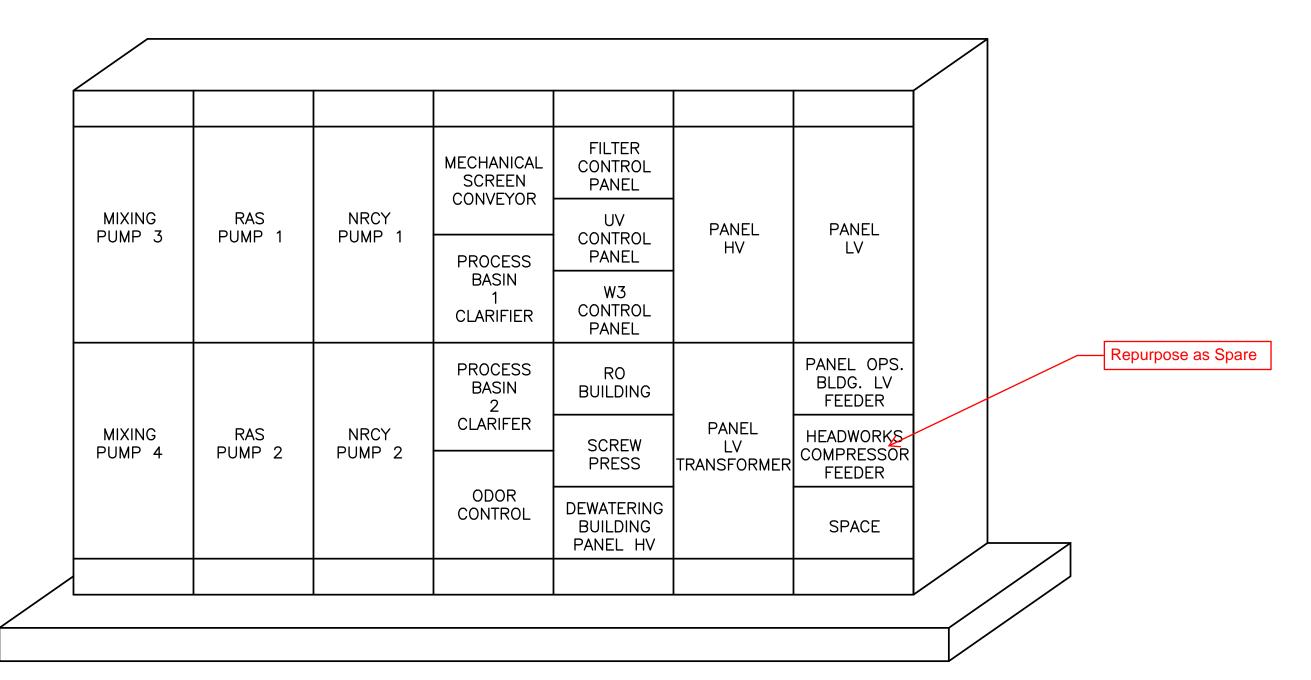




MCC SINGLE LINE CONT. SCALE: NONE

POWER MONITORING	INFLUENT	INFLUENT				MIXING	
SURGE SUPPRESSION	PUMP 1	PUMP 3	BLOWER	BLOWER	BLOWER	PUMP 1	
INCOMING POWER	INFLUENT PUMP 2	INFLUENT PUMP 4	1	2	3	MIXING PUMP 2	

SCALE: 3/4" = 1'



MCC ELEVATION - BACK

SCALE: 3/4" = 1'

**GENERAL NOTES:** 

1. SEE ELECTRICAL DRAWINGS E-0.70 - E-0.72 FOR PANEL SCHEDULES AND E-0.73 FOR CONDUIT & CONDUCTOR AND MISCELLANEOUS SCHEDULES.

# **KEY NOTES:**

- A TRANSFORMER LV. SHALL BE A 480-208/120V 75KVA ENCLOSED TRANSFORMER.
- B PANEL OPS BLDG LV A SHALL BE A 208/120V 3Ø 200A MCB DISTRIBUTION PANEL HOÚSED IN A NEMA TYPE 4 ENCLOSURE.
- (C) PANEL OPS BLDG LV B SHALL BE A 208/120V 3ø 125A MLO DISTRIBUTION PANEL HOÚSED IN A NEMA TYPE 4 ENCLOSURE.

QUALITY ENHANCEMENT TREATMENT FACILITY CONT SINGLELINE CTRICAL AY WATER (STEWATER ALOE BAY WAST FILE SEE LEFT VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING

0 1"

E-0.51

DATE AUGUST 2024 PROJ. 100200.32

RELEASE FOR BID

					PANEL:	HV						
3	PH	4	WIRE VOLTAGE	L-L:	480	L-N:	: 277	MAIN:	125A MLO			
LOCATION:	ELECTRICAL	L ROOM MC	C		PHASE	PHASE	PHASE		MOUNTING: MCC			
CKT#	BKR.	POLE	DESCRIPTION	VOLT-AMP	Α	В	С	VOLT-AMP	DESCRIPTION	POLE	BKR.	CKT#
1	20	3	DIGESTER 1 TELESCOPING VALVE	305	4305			4000	HOT WATER MAINT. CONTROLLER	1	15	2
3	-	-		305		305		0	SPARE	1	20	4
5	-	-		305			305	0	SPARE	1	20	6
7	20	3	DIGESTER 1 TELESCOPING VALVE	305	305			0	SPARE	3	20	8
9	-	-		305		305		0		-	-	10
11	-	-		305			305	0		-	-	12
13	40	3	ADMIN BLDG OUTDOOR HVAC OU-1	7750	7750			0	SPARE	3	50	14
15	-	-		7750		7750		0		-	-	16
17	-	-		7750			7750	0		-	-	18
19	40	3	MAKE UP AIR UNIT MAU-1	8400	8400			0	SPARE	3	20	20
21	-	-		8400		8400		0		-	-	22
23	-	-		8400			8400	0		-	-	24
25	20	3	WATER HEATER EWH-1	3052	3052			0	SPARE	3	50	26
27	-	-		3052		3052		0		-	-	28
29	-	-		3052			3052	0		-	-	30
31	20	3	ELEVATOR	3330	3330			0	SPARE	3	20	32
33	-	-		3330		3330		0		-	-	34
35	-	-		3330			3330	0		-	-	36
37	25	3	MECH/ELEC JANITORAL CLOSET EWH-1	4000	4000			0	SPARE	3	20	38
39	-	-		4000		4000		0		-	-	40
41	-	-		4000			4000	0		-	-	42
TOTAL LOA	D(VA)/PHASI	E THIS PANE	EL:		31142	27142	27142					
TOTAL CON	NECTED LO	AD(VA) THIS	PANEL:		85426		TOTAL CON	NECTED LOAD (AN	IPS):	103		
TOTAL DEM	IAND LOAD (	VA) THIS PA	NEL:		68340.8		TOTAL DEM	AND LOADS (AMPS	3):	82		
NOTES:												

PANEL HV SCHEDULE

SCALE: NONE

					PANEL:							
	PH		WIRE VOLTAGE	L-L:	208	L-N:		MAIN:	125A MLO			
OCATION:	ELECTRICAL	L ROOM MCC			PHASE	PHASE	PHASE		MOUNTING: MCC		_	
CKT#	BKR.	POLE	DESCRIPTION	VOLT-AMP	Α	В	С	VOLT-AMP	DESCRIPTION	POLE	BKR.	CKT#
1	20	1	EFFLUENT REFRIGERATED SAMPLER	600	1360			760	INFLUENT PS & ODOR LIGHTS & RECPT.	1	20	2
3	20	1	INFLUENT PUMP STATION FLOW METER	120		500		380	NORTH BASIN AREA LIGHT & RECPT.	1	20	4
5	20	1	NORTH BASIN NRCY FLOW METER	120			500	380	SOUTH BASIN AREA LIGHT & RECPT.	1	20	6
7	20	1	SOUTH BASIN NRCY FLOW METER	120	880			760	HEADWORKS AREA LIGHTS & RECPT.	1	20	8
9	20	1	NORTH BASIN DO METER	120		600		480	W3, FILTER, & UV LIGHTING	1	20	10
11	20	1	SOUTH BASIN DO METER	120			440	320	W3, FILTER, & UV LIGHTING	1	20	12
13	20	1	SPARE	0	380			380	DIGESTER PLATFORM LIGHT & RECPT.	1	20	14
15	20	1	NORTH BASIN RAS & WAS FLOW METERS	240		1740		1500	HEADWORKS SCREEN AIR COMP.	2	20	16
17	20	1	SOUTH BASIN RAS & WAS FLOW METERS	240			1740	1500		-	-	18
19	20	1	EFFLUENT FLOW METER	120	1320			1200	GRIT SYSTEM CONTROL PANEL	1	20	20
21	20	1	SCREEN/CONVEYOR CONTROL PANEL	600		1080		480	W3 (REUSE) WATER LINE HEAT TRACE	1	20	22
23	20	1	ODOR CONTROL W1 & W3 HEAT TRACE	480			600	120	EAST DIGESTER DO METER	1	20	24
25	20	1	HEADWORKS W1 & W3 HEAT TRACE	480	600			120	WEST DIGESTER DO METER	1	20	26
27	20	1	FILTER/UV AREA HEAT TRACE	480		480		0	SPARE <	1	20	28
29	20	1	INFLUENT REFRIGERATED SAMPLER	600			600	0	SPARE	1	20	30
31	20	1	GENERATOR BLOCK HEATER	2000	2000			0	SPARE	1	20	32
33	20	1	GENERATOR BATTERY CHARGER	1200		1200		0	SPARE	1	20	34
35	30	1	NORTH ELECTRIC GATE OPENER	1920			1920	0	SPARE	1	20	36
37	30	1	SOUTH ELECTRIC GATE OPENER	1920	1920			0	SPARE	1	20	38
39	20	1	YARD LIGHTING	760		760		0	SPARE	1	20	40
41	20	1	SPARE	0			0	0	SPARE	1	20	42
	D(VA)/PHASI	L E THIS PANE		1	8460	6360	5800		1	<u> </u>		

TOTAL CONNECTED LOAD(VA) THIS PANEL:

107AL DEMAND LOAD (VA) THIS PANEL:

107AL DEMAND LOAD (VA) THIS PANEL:

107AL DEMAND LOAD (VA) THIS PANEL:

107AL DEMAND LOADS (AMPS):

107AL DEMAND LOADS (AMPS):

107AL DEMAND LOADS (AMPS):

NOTES:

1.

PANEL LV SCHEDULE

SCALE: NONE

Repurpose as a spare

Repurpose circuit breaker to provide power for the headworks air compressor

ALOE BAY WAST | $\pm$ FILE SEE LEFT VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING

1" DATE AUGUST 2024 PROJ. 100200.32 E-0.70

DESCRIPTION CONNECTED LO.	LOAD (HP)	LOAD (NEC FLA)
INFLUENT PUMP 1	30	40
INFLUENT PUMP 2	30	40
INFLUENT PUMP 3	30	40
INFLUENT PUMP 4	30	40
ODOR CONTROL	N/A	30
MIXING PUMP 1	15	21
MIXING PUMP 2	15	21
MIXING PUMP 3	15	21
MIXING PUMP 4	15	21
NRCY PUMP 1	7.5	11
NRCY PUMP 2	7.5	11
RAS PUMP 1	7.5	11
RAS PUMP 2	7.5	11
MECH SCREEN CONVEYOR	1.5	3
CLARIFIER 1	0.5	1.1
CLARIFIER 2	0.5	1.1
FILTER SLUGE PUMP	3	4.8
UV VESSEL	35 KW	53
W3 PUMP 1	15	21
W3 PUMP 2	15	21
SCREW PRESS	25	33.7
SCREW CONVEYOR 1	5	7.6
SCREW CONVEYOR 2	5	7.6
SCREW CONVEYOR 3	5	7.6
PANEL DEWATERING HV	N/A	15
BLOWER 1	125	156
BLOWER 2	125	156
BLOWER 3	125	156
RO PLANT	30	40
WATER WELL	30	40
PANEL HV	N/A	103
LV TRANSFORMER	N/A	36
OPS BUILDING	N/A	82
HEADWORKS COMPRESSOR	5	7.6
TOTAL CONNECTED LOAI	D .	1271
25% OF MAX LOAD		39
MINMUM SERVICE SIZE		1310

MCC LOAD SCHEDULE

SCALE: NONE

P1	5 SETS OF 3#400KCMIL, 1#400KCMIL N IN A 3" C EACH
P2	1#4/0 G
P3	5 SETS OF 3#400KCMIL, 1#400KCMIL N, 1#4/0 G IN A 3" C EACH
P3A)	3 SETS OF 3#300KCMIL, 1#300KCMIL N, 1#2/0 G IN A 3" C EACH
P4	3#8, 1#8 G VFD RATED CABLE IN A 1" C
P5	3#3/0, 1#4 G VFD RATED CABLE IN A 2-1/2" C
P6	3#10, 1#10 G IN A 1" C
(P7)	3#12, 1#12 G VFD RATED CABLE IN A 1" C
(P8)	3#4/0, 1#4/0 N, 1#4 G IN A 3" C
(P9)	3#12, 1#12 G IN A 1" C
(P10)	3#1, 1#1 N, 1#6 G IN A 1-1/2" C
(P11)	3#4, 1#8 G IN A 1−1/2" C
(P12)	3#8, 1#8 N, 1#10 G IN A 1" C
(P13)	MANUFACTURER CABLE, CONDUIT AS REQUIRED
(P14)	3#6, 1#10 G IN A 1" C
(P15)	3#12 IN A 3/4" C
P16	3#12, 3#12 N, 2#12 G IN A 1" C
(P17)	3#4, 1#4 N, 1#8 G IN A 1−1/2" C
P18	3#2, 1#2 N, 1#6 G IN A 1−1/2" C
P19	3#4/0, 1#4/0 N, 1#2 G IN A 3" C
P20	3#8, 1#10 G IN A 1" C

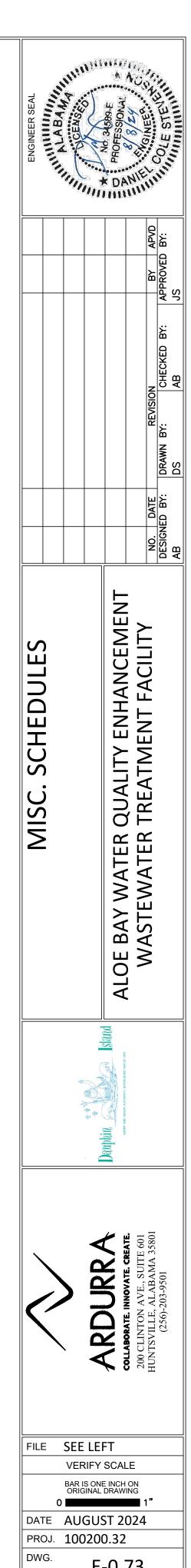
POWER	CONDUIT	AND	CONDUCTOR	SCHEDULE
SCALE: NONE				

C1	CAT6 CABLE, 1" C
C2	2 - 2#18 TSP CABLE IN A 1" C
C3	MANUFACTURER CABLE, CONDUIT AS REQUIRED
C4)	3#14 IN A 3/4" C
(C5)	4#14 IN A 3/4" C
<u>C6</u>	6#14 IN A 3/4" C
(C7)	8#14 IN A 3/4" C
(C8)	4 - 2#18 TSP CABLE IN A 1-1/4" C
<u>C9</u>	20#14 IN A 1-1/4" C
C10	224#14 IN A 3" C
C11)	20 - 2#18 TSP CABLE IN A 3" C
C12)	10#14 IN A 1" C
C13)	6 STRAND FIBER OPTIC MULTIMODE CABLE (OM3) IN A 2" C

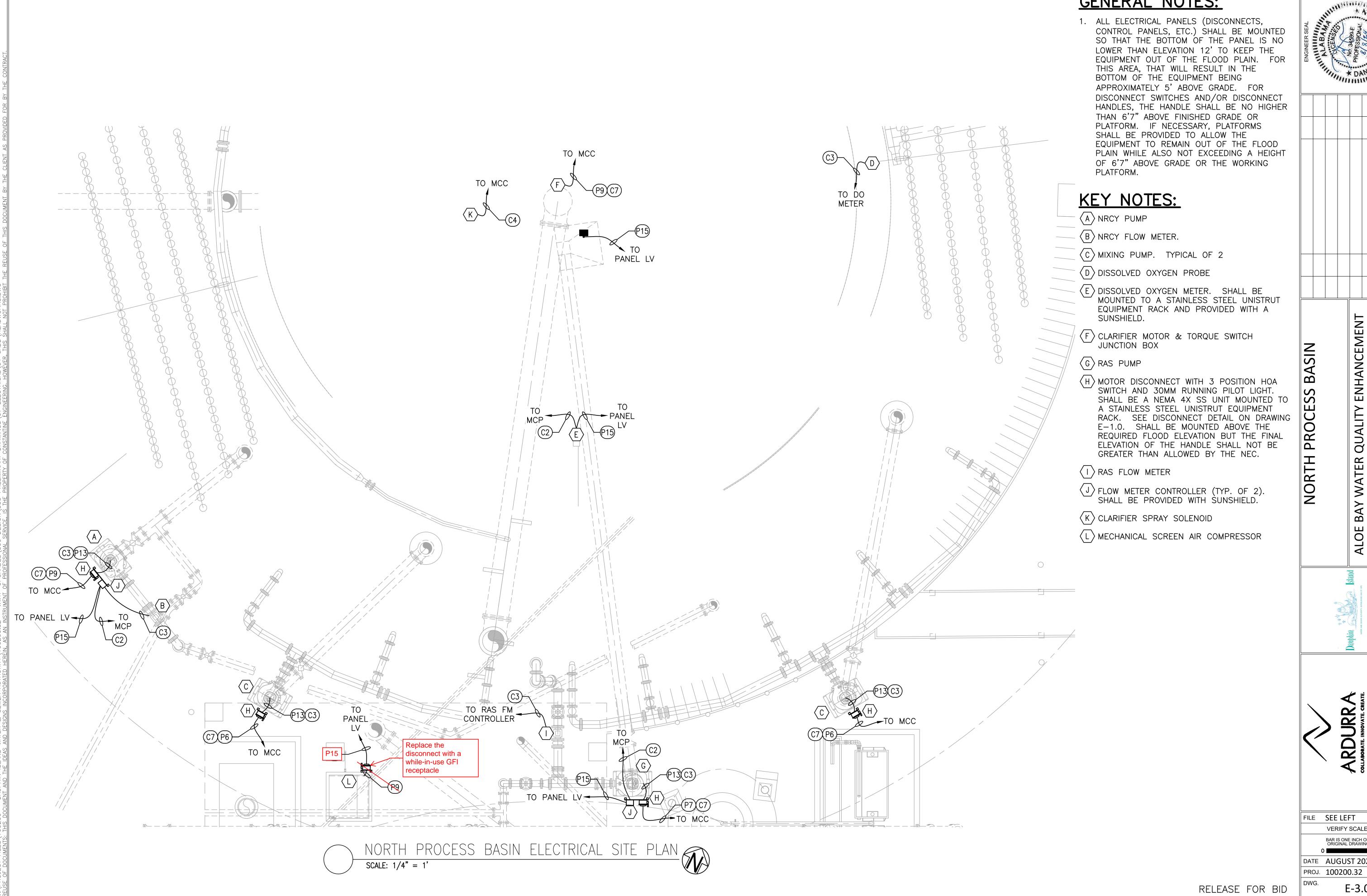
CONTROL	CONDUIT	AND	CONDUCTOR	SCHEDULE
SCALE: NONE				

OVAREL	MANUEL OT UDED OUT NO	MANUEACTURER	DECODIDEION		LAMPS		MOUNTING	MOUNTING	DEMARKS	OPTIONS
SYMBOL	MANUFACTURER CAT. NO.	MANUFACTURER	DESCRIPTION	WATTS	NO. PER FIXTURE	TYPE	MOUNTING	TYPE	REMARKS	OPTIONS
<del>  • •  </del>	EG3-4-LED-4L-DA-S-UNV- DIM-40-8-	LSI	LED ENCLOSED & GASKETED FIXTURE	32 N/A LED		CEILING	SURFACE			
$\simeq$	WSL-LED-1L-UNV-DIM-40- BZA-PC120	LSI	OUTDOOR WALLPACK	13	N/A	LED	WALL	SURFACE		PHOTOCELL
<b>Q</b>	LPRX-R-U-WH-LD11	LSI	EMERGENCY/EXIT LIGHT	1.1	2	LED	WALL	SURFACE		
Ø	GA24-LED-SS-NW-UE	LSI	2'X4' TROFFER	45	N/A	LED	CEILING	RECESSED		
0	GA22-LED-SS-NW-UE	LSI	2'X2' TROFFER	29	N/A	LED	CEILING	RECESSED		
•	SMA-LED-28L-ACR-3-UNV- DIM-40-BRZ-PM	LSI	COMMERCIAL AREA LIGHT	200	N/A	LED	POLE	POLE	SHALL BE PROVIDED WITH 10' POLE, INTEGRATED RECEPTACLE, AND SWITCH	
	WCP-LED-5L-DA-W-UNV-DI M-40-BRZ	LSI	LED CANOPY LIGHT	40	N/A	LED	PENDANT/ CEILING	PENDANT/ CEILING		
0	ADL-FS1-UNV-6R-WHT	LSI	LED RECESSED CAN	19	N/A	LED	CEILING	RECESSED		





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## SECTION 15111 PIPE HEAT TRACING

#### PART 1 GENERAL

#### 1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
  - 1. Factory Mutual.
  - 2. Institute of Electrical and Electronics engineers, Inc. (IEEE): 515, Testing, Design, Installation and Maintenance of Electrical Resistance Heat Tracing for Industrial Applications.
  - 3. National Electrical Manufacturers' Association (NEMA): 250, Enclosures for Electrical Equipment (1,000 Volts Maximum).
  - 4. Underwriters Laboratories, Inc. (UL).

#### 1.02 SUBMITTALS

#### A. Action Submittals:

- 1. Manufacturer's descriptive literature.
- 2. Plastic Pipe Installations: Output adjustment factors for heating tape for the services indicated.
- 3. Pipe heat loss calculations for each pipe size to be heat traced.

#### 1.03 QUALITY ASSURANCE

- A. Authority Having Jurisdiction (AHJ):
  - 1. Provide the Work in accordance with NFPA 70. Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.
  - 2. Materials and equipment manufactured within the scope of standards published by Underwriters Laboratories Inc. shall conform to those standards and shall have an applied UL listing mark.

#### PART 2 PRODUCTS

# 2.01 SYSTEM DESIGN REQUIREMENTS

#### A. Design Heating Load:

- 1. Heating load to be calculated based upon a 40 degree F delta, 20 mph wind if pipes are located outdoors, insulation as specified in Section 40 42 13, Process Piping Insulation 15112, pipe as specified in Section 15110, Process Piping-General, and shall include a 10 percent safety factor.
- 2. Heat loss calculations shall be based on IEEE 515, Equation 1, Page 19.

## 2.02 ELECTRICAL HEATING TAPE

- A. Cable: Self-limiting, parallel circuit construction consisting of continuous inner core of variable resistance conductive heating material between two parallel copper bus wires. Provide tinned copper braid for PVC, FRP, and stainless steel pipe applications.
- B. UL Listing: Listed as self-limiting pipe tracing material for pipe freeze protection application in ordinary conditions.
- C. Maximum Maintenance Temperature: 150 degrees F (65 degrees C).
- D. Maximum Intermittent Temperature: 185 degrees F (85 degrees C).
- E. Service Voltage: As indicated by branch circuits provided for heat tracing on the Drawings.
- F. Manufacturers and Products:
  - 1. Raychem; BTV-CR.
  - 2. Thermon; BSX.
  - 3. Nelson; CLl-Jl or Ll-Jl.

#### 2.03 CONNECTION SYSTEM

- A. Rating: NEMA 250, Type 4 and Factory Mutual approved.
- B. Operating Monitor Light: Furnish with each circuit power connection kit to indicate when heat tracing is energized.
- C. Manufacturers and Products:
  - 1. Power Connection Kit:
    - a. Raychem; JBS-100.
    - b. Thermon; PCA-1-SR or DP-L.
    - c. Nelson; PLT-BC.
  - 2. Splice Kit:
    - a. Raychem; S-150.
    - b. The1mon; PCS-1-SR.
    - c. Nelson; PLT-BS.
  - 3. Tee Kit:
    - a. Raychem; T-100.
    - b. Thermon; DS-S.
    - c. Nelson; PLT-BY.
  - 4. End Seal Kit:
    - a. Raychem; E-150.

- b. The1mon; DE-S.
- c. Nelson; LT-ME.
- 5. Lighted End Seal Kit:
  - a. Raychem; E-100-L.
  - b. Thermon; DLS.
  - c. Nelson; LT-L.

#### 2.04 SECURING TAPE

- A. Plastic Piping Systems:
  - 1. Type: Aluminum foil coated adhesive tape.
  - 2. Manufacturers and Products:
    - a. Raychem; AT-180.
    - b. Thermon; AL-20P.
    - c. Nelson; AT-50.
- B. Metallic Piping Systems:
  - 1. Type: Glass or polyester cloth pressure sensitive tape.
  - 2. Manufacturers and Products:
    - a. Raychem; GS54 or GT66.
    - b. Thermon; PF-1.
    - c. Nelson; GT-6 or GT-60.

#### 2.05 PIPE MOUNTED THERMOSTAT

- A. Type: Fixed, nonadjustable, set at 40 degrees F.
- B. Sensor: Fluid-filled with 3-foot capillary.
- C. Enclosure: Glass-filled nylon, NEMA 250, Type 4X weatherproof with gasketed lid.
- D. Switch: SP-ST, UL listed, rated 22 amps, 120 to 240V ac.
- E. Manufacturers and Products:
  - 1. Raychem; DigiTrace Model AMC-F5.
  - 2. Thermon; E4X-1.
  - 3. Raychem; DigiTrace Model E507S-LS for hazardous areas.
  - 4. Thermon; E7-25325 for hazardous areas.

#### 2.06 AMBIENT THERMOSTAT

- A. Type: Adjustable setting (15 to 140 degrees F).
- B. Sensor: Fluid-filled probe.

- C. Enclosure: Epoxy-coated NEMA 250, Type 4X aluminum closure with exposed hardware of stainless steel.
- D. Switch: SP-DT, UL or FM listed, rated 22 amps, 125 to 250V ac.
- E. Manufacturers and Products:
  - 1. Raychem; DigiTrace Model AMC-IA.
  - 2. Thermon; B4X-15140.
  - 3. Raychem; DigiTrace Model AMC-lH for hazardous areas.
  - 4. Thermon; B7-15140 for hazardous areas.

#### PART 3 EXECUTION

#### 3.01 INSTALLATION

#### A. General:

- 1. Install in accordance with the manufacturer's instructions and recommended practices.
- 2. Provide insulation as specified in Section 15112, Process Piping Insulation, over all pipe heat tracing.
- 3. Ground metallic structures or materials used for support of heating cable or on which it is installed in accordance with applicable codes.
- 4. Wiring between power connection points of heat tracing cable branch lines shall be provided by heat tracing system supplier.
- 5. Provide end of circuit pilot lights on heat tracing circuits for buried p1pmg.

## B. Electrical Heating Tape:

- 1. Determine required length of electrical heating tape by considering length of circuit, number and type of fittings and fixtures, design heating load, and heating tape output.
- 2. Where design heating load exceeds heating tape capacity, install by spiraling.
- 3. Derate heating tape capacity when installed on plastic piping.
- 4. Install on services as follows:

Service	Piping Material	Placement	Location
Sludge Piping	DIP		Sludge collection system valves and above grade
			piping. Thickened Sludge Pump Piping.

5. Install additional heating tape at bolted flanges, valves, pipe supports, and other fittings and fixtures as recommended by supplier, but not less than the following:

Item	Heating Tape Length (min. feet)				
Bolted flanges (per pair)	Two times pipe diameter				
Valves	Four times valve length				
Pipe hanger or support penetrating insulation	Three times pipe diameter				

- C. Heat Tracing Circuits: Limit individual lengths of heat tracing circuits such that maximum single circuit capacity is 20 amps when starting the circuit at 40 degrees F. Provide multiple 20-amp circuits as required at individual heat tracing locations.
- D. Thermostats:
  - 1. Install in accordance with manufacturer's instructions and as approved by Engineer.
  - 2. For each group of heat traced circuit, install one ambient thermostat.

# 3.02 FIELD QUALITY CONTROL

- A. Test each circuit with 500-volt insulation tester between circuit and ground with neutrals isolated from ground.
  - 1. Insulation Resistance: Minimum 1,000 megohms per 1,000 feet.

### **END OF SECTION**



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Aloe Bay Water		ement Wastewater - in Sheet	Treatment Facility
Name	Company	Contact Phone number	r Email
Tin Murish	Heuphil	601-530-2475	Tmurvable henphill construction. com
FRANK: LANE	Cleel Co	251-487-0236	EFLOTheCreel
JEFF NECATSE	SOUTHERN EXTERIORS FENCE CO.	228 586 5110	COMPANY.COM JONECOSSE ESERCOS.CON
JOSA CHADICK	HIDRA SERVICE /m	228-337-0418	JCHADICK PHIDAPSEONIE. NET
blanden bodin	Mersino Water Salskie	n 251-293-3593	brandon book. @ Maske
Vaile Fernste	, D.I. wite	751-841.2343	di wsa Deol.com
Zeb Bran	Dorman and Associated	A .	Scottie dormana gmil com Brown Construction Wire
CHUS ALFORA	PRECON CORPORATION	352-328-0A6	CIA @ PRECONTANKS COM MIV @ PRECONTANKS COM
MIKEHILL	Victable	504-508-0192	Michael. Hill@ Victualic con
JACK MOTOPHET	HAREN	423-836-4840	DACK MORPHET C HAREN CONSTRUCTION COM
Kevin Creel	The Cred Co.		cethe creel company, com
Tim Boyne -	Tempton tAssoc	C. 205.500.2168 Him	Atompleton-ASSOCIATION
ERIC Coly	AC5	850.477-8448 ×104 e.	ric. Coley@Autoconserv. Com
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