

April 11, 2019

To: Ridgeland WRF Expansion Plan Holders

From: Paul Lewis

Re: Addendum #1  
 Ridgeland WRF Expansion

Below are the Addendum #1 items for the project. If you have submitted a question or comment and do not see it addressed here, please resubmit it to us.

1. Be reminded that the mandatory pre-bid meeting is at the Ridgeland Town Hall on April 16 at 2:00. A map to the sites is provided as an attachment to this addendum.
  - a. Town Hall: 1 Town Square, Ridgeland, SC 29936
  - b. Jimmy Mixson WRF: 366 Preacher, Ridgeland, SC 29936
2. Attached please find:
  - a. Section 00 41 00 C-410 Bid Form Article 5
  - b. Section 01 53 00 Temporary DAF and Pump
  - c. Section 46 51 13 Floating Mechanical Aerator
  - d. Revisions of the following drawings: G001, G002, G003 G004, G021, G022, M001, M101, M111, M201, M301, M311, M313, M401, M402, M701, M801, M802, M803, M811.
  - e. (There are other related drawings are in the works, but not ready at the time of this release. These are indicated by the asterisks (\*) on the plan cover sheet.)
3. The ICEAS tank has been shifted south 21 ft in order to reduce excavation costs. It will remain at its original elevation. The construction sequence is being revised to show the ICEAS Train #1 being constructed and brought on line, then ICEAS #2 being constructed. We are working on the other drawings that show the details of this change, and will get them to you as soon as possible.

Addendum Reference #	Reference	Question / comment
1.0	Cover sheet	1. The ESC, C, S, E, and CS revised drawings that are impacted by the addendum items below are in progress and will be issued soon.
1.1	Headworks - ESC002, M200s & S200s	2. The discharge pipe from the headworks has been modified.
1.2	ICEAS - ESC002, M300s & S300s	<ol style="list-style-type: none"> <li>1. The pipe coming in from the headworks to the splitter box has been relocated.</li> <li>2. The ICEAS Tank has been shifted south 21 ft.</li> <li>3. The contractor has the option to construct ICEAS Tank #2 in either Phase 2 or Phase 3.</li> </ol>

Addendum Reference #	Reference	Question / comment
1.3	Post-EQ Pond - ESC002, M400s & S400s	<ol style="list-style-type: none"> <li>The shape of the EQ pond has been modified.</li> <li>The headwall has been eliminated. Use a pipe boot for the effluent pipe.</li> </ol>
1.4	Post-EQ Pond - M400s, S400s, E013, CS001 & CS012	<ol style="list-style-type: none"> <li>The post-EQ blowers and diffusers are being replaced with a floating aerator.</li> </ol>
1.5		<ol style="list-style-type: none"> <li>Reserved</li> </ol>
1.6	UV Disinfection -G003 - Hyd profiles, ESC002, M700s & S700s, CS013	<ol style="list-style-type: none"> <li>A second flume, second flow meter and slide gates are added, with 12-inch DIP to the existing effluent pump station.</li> </ol>
1.7	Digester - G004 - Hyd profiles, ESC002, M800s & S800s	<ol style="list-style-type: none"> <li>Base bid: Sludge holding pond, submersible decant pump, pump hoist</li> <li>Adder: Blowers, diffusers, mixers, catwalk, platform, area light</li> </ol>
1.8	Sludge dewatering - G004 – Hyd profile, G012 – Demo, G022 – Phasing, ESC003, M800s, S800s, E002, E011, E012, CS014	<ol style="list-style-type: none"> <li>The sludge dewatering area is being presented as an alternate.</li> <li>The storm drain piping is being modified.</li> </ol>
1.9	LAS Pump Station - G012- Demo, E001 – One line	<ol style="list-style-type: none"> <li>Capability to pump effluent to the existing Land Application System sod farm will remain functional. <ol style="list-style-type: none"> <li>The existing LAS effluent pump station will remain functional.</li> </ol> </li> </ol>
1.10	ESC002	<ol style="list-style-type: none"> <li>The Limits of Disturbance have been expanded.</li> </ol>
1.11	Pipe schedule - - M001	<ol style="list-style-type: none"> <li>The following pipes shall be P-401 epoxy lined: <ol style="list-style-type: none"> <li>14" DIP forcemain from influent pump station to headworks</li> <li>14" DIP from headworks bypass valve to splitter box</li> <li>18" DIP from headworks to splitter box</li> <li>18" DIP from splitter box to ICEAS</li> </ol> </li> <li>General revisions to pipe schedule</li> </ol>
1.12	Influent pump station - M101	<ol style="list-style-type: none"> <li>The existing pump station is 17.5' x 8' x 18.5' (Top of wetwell to bottom of wetwell). You may use a 20' x 10' x 17' box if that helps you with excavation costs.</li> </ol>

Addendum Reference #	Reference	Question / comment
1.13	Influent pump station - M101 - ESC002, ESC003, C001, C011, C012, M111	1. The valve box has been eliminated and the valves will be placed above ground.
1.14	ICEAS details - M313	1. M313 has been reissued with better quality images.
1.15	Section 00 41 00 Bid Form	<ol style="list-style-type: none"> <li>1. Eliminate adders #3 &amp; #4 for concrete lining of post-EQ and digester.</li> <li>2. An alternate #3 is added for the digester and sludge processing area.</li> <li>3. Eliminated separate lines for taxes. The project is tax exempt for items related to the construction of process related equipment.</li> <li>4. A new Article 5 – Bid Form is provided.</li> </ol>
1.16	Section 01 53 00 Rental DAF unit	<ol style="list-style-type: none"> <li>1. Paragraph 1 General. Change North Lagoon to South Lagoon.</li> <li>2. Paragraph 2.1 Change 250 gpm to 450 gpm.</li> <li>3. Paragraph 2.2 Change 250 gpm to 450 gpm.</li> <li>4. Add Paragraph 6, which presents information regarding potential suppliers.</li> <li>5. A new spec sheet is provided.</li> </ol>
1.17	<i>Purchase Agreements for Pre-selected Equipment</i>	1. The purchase agreements for the ICEAS and the Effluent Filters have been added to the website.
1.18	Section 43 25 01, 01.1, 01.2 Influent and effluent pumps	<ol style="list-style-type: none"> <li>1. ABS is included as an approved vendor. Pete Duty Associates is the representative. Chris Caldwell <a href="mailto:chris@petedutysc.com">chris@petedutysc.com</a>, 864-918-1619.</li> <li>2. The spec calls for dual rail guide rail systems. The ABS standard is single rail, but we can supply dual rail if necessary. Must we provide dual rail? A. Single rail is fine if it works with your pump.</li> <li>3. The influent and effluent control panels are two separate panels, correct? A. Yes</li> <li>4. The control enclosures are to be indoor or outdoor, and painted steel or stainless steel? A. Outdoor under canopies (by others). Use stainless steel.</li> <li>5. If these are indoors, will the room have air conditioning? If outdoors or in a non-air conditioned room, should we add AC units to the controls (probably required for VFDs in the SC summer heat). A. They are outside and will need AC.</li> </ol>

Addendum Reference #	Reference	Question / comment
		<p>6. The primary level detection device is not defined in the spec, but could be a submersible pressure transducer or an ultrasonic sensor. Do you have a preference? I would recommend the ultrasonic for this application.  <b>A.</b> Ultrasonic is fine.</p> <p>7. Section 14 of the control spec discussed full voltage NEMA contactors for motor starting, yet the I think you intend all pumps to be VFD controlled. Do you want an integrated bypass system using the full voltage contactors for operating the pumps across the line in the event of VFD failure?  <b>A.</b> Yes. Please include them.</p> <p>8. No dry contacts for connection to a SCADA system are mentioned in the spec. For these panels, I would recommend dry contacts for pump 1-2 run, pump 1-2 failure, pump 1-2 seal failure, high level, low level, phase failure. Shall we include these?  <b>A.</b> Please include them. Also see controls and electrical diagrams.</p> <p>9. Provide a spare impeller if necessary with the spare pump if the pumps have different impellers.</p> <p>10. What is the static head for the two pump stations?  <b>A.</b> Influent PS – 23 ft from Pump off to discharge. Effluent – 15 ft from Pump off to discharge high point.</p> <p>11. The specified Flygt pump selection is a 12” pump, but a much better selection for Sulzer-ABS is a 10” selection. Are you OK with us using the 10” pump?  <b>A.</b> Yes.</p> <p>12. The control spec includes some Flygt proprietary control components. Can we quote the equivalent?  <b>A.</b> Yes.</p> <p>13. The VFD spec hints at 18 pulse drivers, but never comes out and says it. Should we quote the much less expensive and perfectly suitable 6 pulse drives?  <b>A.</b> Yes.</p>
1.19	Section 46 51 13 - Floating Aerator	1. A specification is provided. This aerator will replace the proposed Post-EQ blowers and diffusers.
1.20	00 21 13 C-200 Instructions to Bidders	1. Add the following as Paragraph 3.01.E “The contractor shall have completed at least two projects of similar scope in the last six years.”



Addendum Reference #	Reference	Question / comment
1.21	Section 31 05 19 – Pond Liner	1. Change Paragraph 1.09 Material Warranty to say:  The Geomembrane manufacturer shall guarantee the geomembrane material to perform for a minimum of 10 years commencing with the date of final acceptance.
1.22	Section 40 71 69	1. Change the first paragraph to reflect that 2 flumes are needed.
1.23	Section 40 60 00 – Instrumentation and Controls	1. Change Paragraph 1.7 to read: “The approved CSIs are: Southern Flow (Alpharetta, GA), Lord & Company (Fort Mill, SC) and MR Systems (Norcross, GA).” 2. Change Section 22.9 Post-EQ Pond as shown below. 3. Change Section 22.13 Effluent flow meters as show below. 4. Section 22.14. Though the digester is being bid as an alternate, the decant pump will be included as a base bid item. Also, if the digester blowers and mixers are not utilized, the pond will be equipped with two surface aerators which will function in the same way that the mixers do. Run status, run times, and motor faults from these aerators will be tied to the SCADA system. The surface aerators will be run by timers.

## 22.9 Post-EQ Pond

### 22.9.1 Operation

**22.9.1.1** The Post-EQ pond receives treated water from the ICEAS. The water is aerated by ~~two blowers and diffusers~~ a floating aerator prior to discharge to the Effluent Pump Station.

**22.9.1.2** The ~~blowers have~~ aerator has the functionality to be controlled ~~off of~~ by timers.

**22.9.1.3** An HOA switch shall be provided.

~~**22.9.1.4** Blowers shall alternate each cycle.~~

~~**22.9.1.5** Blower shall operate by VFD drives.~~

### 22.9.2 Functionality

Ref. #	Functionality	Provided by:
<del>22.9.2.1</del>	<del>Blowers will alternate based ends of cycles or on a timed basis.</del> <u>Aerator will operate based on timer.</u>	Vendor LCP
<b>22.9.2.2</b>	The <del>blowers each aerator has</del> <u>have</u> a hand-off-automatic (HOA) switch.	Vendor LCP
	Items to be displayed on SCADA system	

<b>22.9.2.3</b>	Run status of motors	CSI
<b>22.9.2.4</b>	Motor faults	CSI
	Items for remote control	
<b>22.9.2.5</b>	No remote control items.	
	Reports / trends	
<b>22.9.2.6</b>	Run time trends	CSI
<del><b>22.9.2.7</b></del>	<del>DO trends</del>	<del>CSI</del>
	Alarms	Operator Notification
<b>22.9.2.8</b>	Motor fault	No

## 22.13 Effluent flow meters

### 22.13.1 Operation

22.13.1.1—~~A Two~~ flow meters measure the effluent flow in a two Parshall flumes. One measures the flow to the stream; the other measures the flow to the LAS Pump Station.

22.13.1.2 The flow meters pace the UV intensity and the effluent flow ~~meter~~ sampler. A switch shall be provided so that the active flow meter can pace the UV.

## ~~22.17—Generator for Influent Pump Station and Buildings~~ LAS Pump Station

### ~~22.17.1 Operation~~

~~22.17.1.1 This generator is existing and will furnish power to the influent pump station, influent flow meter and the operator buildings.~~

### ~~22.17.1.2 ———— Functionality~~

Functionality Table deleted.

### 22.17.2 Operation

22.17.2.1 The existing LAS Pump Station will continue to function from its existing control panel.

### 22.17.3 Functionality

<b>Ref. #</b>	<b>Functionality</b>	<b>Provided by:</b>
22.17.1.3	Pumps operate according to the following levels: <ul style="list-style-type: none"> <li>• Alarm</li> <li>• Lag pump 1 on</li> <li>• Lag pump 2 on</li> <li>• Lead pump on</li> </ul>	Pump vendor LCP

	• Pumps off	
	<b>Items to be displayed on SCADA system</b>	
22.17.1.4	Pump run status	CSI
22.17.1.5	Run time hours	CSI
	<b>Reports / trends</b>	
22.17.1.6	Pump run time trends for each pump and collectively	CSI
	<b>Items for remote control</b>	
22.17.1.7	None.	CSI
	<b>Alarms</b>	<b>Operator Notification</b>
22.17.1.8	Wetwell high level	Yes

If you have any questions, comments, or need further information, please email me at paul@goldieassociates.com.

Sincerely,  
**Goldie Associates**



Paul Lewis, PE  
Project Engineer

**ARTICLE 5 - BASIS OF BID**

Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

<b>Bid for The Jimmy Mixson WRF Plant Expansion</b>					
<b>Lump Sum Items</b>					
<b>Item</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Price</b>	<b>Total Price</b>
1.	Mobilization (not to exceed 3% of bid)	LS	1	\$	\$
2.	Sediment and Erosion Control	LS	1	\$	\$
3.	Sitework & Demolition	LS	1	\$	\$
	Grading, earthwork, paving, etc.				
4.	Operations Building				
	Construct the operations building, including appliances.				
	Allowances:				
	- Dishwasher	EA	1	\$700	\$700
	- Microwave	EA	1	\$300	\$300
	- Refrigerator	EA	2	\$2500	\$5000
	- Washer / dryer	EA	1	\$1400	\$1400
	- Furniture	EA	1	\$2000	\$2000
	- Tax on allowances	LS	1	\$756	\$756
	Balance of Operations Building	LS	1	\$	\$
5.	Division A – Influent Area				
	Description: Purchase and install Influent Pump Station, Flow Meter and associated piping and				

	forcemain, concrete work, electrical and controls. Purchase and install the bulk storage tanks, transfer pump, concrete work, piping at the tanks and to the influent pump station, canopy, and all appurtenances related to the Bulk Chemical Storage tanks.					
	Influent Area	LS	1	\$		\$
6.	Division B – Headworks					
	Purchase and install the headworks (influent screen and grit removal system), with blower, vendor supplied controls, associated piping, concrete work, canopy and appurtenances. Taxes on headworks equipment.					
	Assigned purchase of headworks (taxes not included)	LS	1	\$182,402.00		\$182,402.00
	Balance of Division B	LS	1	\$		\$
7.	Division C – ICEAS biological treatment system and Post – EQ basin					
	Description: Purchase and install the ICEAS with blowers, pumps, vendor supplied controls, flow junction boxes, associated piping, concrete work, and blower area canopy. Construct Post EQ Basin with blowers, liner and blower area canopy. Taxes on ICEAS equipment.					
	Assigned purchase of ICEAS (taxes not included)	LS	1	\$345,085.00		\$345,085.00
	Balance of Division C	LS	1	\$		\$
8.	Division D- Effluent Pump Station, UV disinfection and Effluent Pipe.					
	Construct Effluent PS, UV, canopy, effluent pipe, creek discharge and all appurtenances.					
	Assigned purchase of UV equipment (taxes and import duties not included)	LS	1	\$121,000.00		\$121,000.00
	Balance of Division D	LS	1	\$		\$
9.	Electrical					

	Purchase and install electrical panels (not supplied with equipment), conduit, wiring and emergency generator.				
	Electrical	LS	1	\$	\$
10.	Instrumentation, monitoring and controls				
	Purchase and install instrumentation and controls, samplers, and all associated wiring, programming and appurtenances related to the instrumentation and control system				
	Instrumentation	LS	1	\$	\$

Unit Price Items					
11.	Excavate unsuitable material	CY	300	\$	\$
12.	Replace unsuitable material with stone underneath structures	Ton	200	\$	\$
13.	Replace unsuitable material with soil from off-site borrow pit underneath structures	CY	150	\$	\$
14.	Removal of rock	CY	50	\$	\$
15.	Mobilization for removal of sludge to landfill	EA	1	\$	\$
16.	Removal of sludge to landfill	DRY TONS	175	\$	\$
17.	Fencing	LF	165	\$	\$
18.	Paving	SY	1214	\$	\$
19.	Total Bid Price (Items 1-19)			\$	\$
				<i>Bid price (in numerals)</i>	\$

<i>Bid price (in words)</i>					
	Quantities provided are estimates only. The Bidder must satisfy themselves with the accuracy of the estimated quantities listed in the bid by examination of the site and a review of the drawings and contract documents.				
	5.02 Alternates. Provide a cost for each of the alternates below				
1.	DAF and Pump Rental during construction of ICEAS #1	LS	1	\$	\$
2.	Purchase and install Effluent Filters with associated piping, electrical, controls and expanded canopy				
	Assigned purchase of effluent filters	LS	1	\$224,832.00	\$224,832.00
	Balance of work for effluent filters	LS	1	\$	\$
3.	Division E. - Digester and Geotube area				
	Construct digester, Geotube area and all appurtenances, including purchase of 4 Geotubes.				
	Division E	LS	1	\$	\$
4.	Spare influent / effluent pump	LS	1	\$	\$

**SECTION 01 53 00**  
**TEMPORARY DAF AND PUMP SYSTEM**

Revision #	Date	Comments
1	4/3/19	Added rental information and changed system capacity.

**1. GENERAL**

This section presents the requirements for temporarily installing a Dissolved Air Flotation system and temporary pump at Lagoon 1 (south lagoon) during the construction of the ICEAS.

**2. EQUIPMENT**

2.1. DAF unit shall be capable of 450 gpm and shall be manufactured by FRC or approved equal. The unit shall be capable of producing an effluent quality of <5 mg/L TSS. The DAF should come with the necessary chemical tanks and mixing equipment for coagulant and polymer addition.

2.2. The pump shall be an electric suction lift pump capable of 450 gpm.

**3. INSTALLATION**

3.1. Supply all the necessary temporary piping for the DAF and pump system.

3.2. Provide hook ups to owner supplied power. You will need to supply your own disconnects, etc. The Owner is only providing the capability to tie in to the Owner's system.

3.3. Provide a functional system.

3.4. Make repairs to the system, if required.

**4. OWNER'S RESPONSIBILITIES**

4.1. The Owner will:

4.1.1. Purchase chemicals.

4.1.2. Operate the DAF / pump system.

4.1.3. Provide power for the system.

**5. MEASUREMENT & PAYMENT**

5.1. See Section 01 22 00 – Measurement and Payment for payment terms.



6. RENTAL

6.1. Rental DAF's are available from JWC Environmental Inc. in Cumming, GA.

6.2. For rental details contact     Adriaan van der Beek  
Office: (770) 534-3681  
Cell:   (678) 983-6422  
[adriaanv@jwce.com](mailto:adriaanv@jwce.com)

6.3. Contractor may use approved alternate supplier.

[END OF SECTION]

**SECTION 46 51 13  
FLOATING MECHANICAL AERATOR**

1. GENERAL

Furnish two (2) and install one (1) fully functioning and operable floating aerators. Each aerator shall consist of a motor, a direct drive impeller driven at a constant speed, and an integral flotation unit and capable of oxygenating water to a minimum of 6.0 mg/L.

Submitted bids shall be based on the aerator equipment meeting these specifications. Any other equal must meet the approval of the Engineer through the process as described in Submissions Procedures (Section 00 26 00). Equals must at a minimum be a one-piece stainless steel casting for the diffusion head. Fiberglass will not be accepted. The Supplier must also have a minimum of 10 installations of the same model & horsepower aerator in service.

2. AERATOR DRIVE MOTOR

- 2.1 Aerator shall transfer oxygen to satisfy 6.0 mg/L.
- 2.2 The motor shall be wired for 460 volt, 60 cycle, 3 phase service.
- 2.3 The motor shall be totally enclosed; fan cooled, and generally rated for severe chemical duty, and shall have a 1.15 service factor.
- 2.4 The motor windings shall be non-hydroscopic, and insulation shall equal or exceed NEMA Class "F".
- 2.5 A condensate drain shall be located at the lowest point in the lower end-bell housing.
- 2.6 All motor frame parting surfaces shall be deep registered and Permatex (or equal) sealed.
- 2.7 All through bolts, nuts, and screws shall be of type 18-8 stainless steel.
- 2.8 Each motor will have a raincap constructed of cast iron or non-corrosive 304 stainless steel. Painted or plated carbon steel rain caps will not be acceptable.
- 2.9 A stainless steel nameplate shall be provided with each motor and shall be securely fastened thereto. The voltage, speed, insulation class, amperage, service

factor, wiring diagram, motor serial number, and the manufacturer's name and address shall be steel stamped or otherwise permanently marked.

3. MOTOR SHAFT

Unit shall have a one-piece motor shaft continuous from the top motor bearing, through the lower bearing and down to, and through, the propeller. This shaft will have a minimum diameter of 1-3/4-inch and be manufactured from 17-4 PH stainless steel, or comparable stainless steel having a minimum yield strength of 100,000 psi on units 3 HP and larger.

4. RPM

Units shall operate at the lowest RPM offered in this size by the manufacturer. In no case shall nominal RPM exceed 1800 for units meeting the one-piece shaft specified above. Units featuring one-piece shaft shall operate nominally at 1800 RPM in the size range of 3 to 15 HP, or at a nominal maximum speed of 1200 RPM for units in the 20 to 75 HP size range.

5. MOTOR BEARING

5.1 Motor bearings shall be regreasable. Sealed bearings are not acceptable. Top bearing shall be shielded on the bottom side only. Bottom bearing shall be open.

5.2 The top and bottom motor bearings shall be of the combined radial and axial thrust type and shall be packed at the factory with a "high performance" grease.

5.3 The lower motor bearing inner race shall be locked to the motor shaft via a special washer and locking nut arrangement. The shaft shall be threaded just below the lower bearing and shall have a keyway cut into the motor shaft. This key shall accept a tab from the I.D. of the locking washer, and the locking nut shall have recesses to accept a tab from the O.D. of the locking washer to prevent the nut from backing off. Snap ring type bearing retainers are not acceptable.

6. DIFFUSION HEAD

6.1 The design of the diffusion head shall be such that the liquid spray will discharge at an angle of 90° to the motor shaft, and over a 360° pattern in the horizontal plane, and shall be a stainless steel monolithic casting.

- 6.2 The diffusion head casting shall act as a base for the aerator motor, and alignment of the motor to this base shall be controlled by machined index fittings that engage the P-base of the motor. Diffusion head/motor arrangements that are dependent upon boltholes only for alignment will not be acceptable. All diffusion head hardware will be 304 stainless steel and safety wired.
- 6.3 The diffusion head casting shall act as a thrust block to deflect the high velocity, pumped volume of the aerator from the vertical to the horizontal direction. In order to minimize vibration, and to provide adequate strength, the diffusion head casting shall weigh no less than 85 lbs. The bottom side of this casting shall have a 90°-radiused transition to effect the hydraulic change in direction with a minimum of head loss.
- 6.4 The diffusion head shall absorb all normal and shock loads encountered by the propeller and transmitted to the diffusion head via the motor shaft and lower motor end-bell. The diffusion head shall distribute these forces into the float via webs that terminate in a flange or ring that is an integral part of the diffusion head. This flange shall mate with a similar flange that is an integral part of the float/volute to spread the stresses generated by the propeller uniformly around the float so that no point loading of the float is allowed. These flanges shall be machined flat to provide proper bearing surfaces. The alignment of the diffusion head flange to the float/volute shall be by use of a 360° index pilot.
- 6.5 Specifically, diffusion head designs that employ studs and spacers, shoulder bolts or fiberglass are not allowed. Load bearing, machined flat, flange-to-flange connections will be mandatory.
- 6.6 The diffusion head shall contain an anti-deflection journal insert to limit the radial deflection of the motor shaft.
- 6.7 This anti-deflection journal insert shall be located in the lower extremity of the diffusion head, approximately one-half the distance between the motor base and the lower end of the shaft.
- 6.8 The journal insert shall be machined from Delrin or molded from moly-filled urethane and shall be a minimum of 0.060-inch diameter or larger through the bore than the diameter of the motor shaft.
- 6.9 Units featuring a one-piece unsupported shaft will not be acceptable.

- 6.10 There shall be a fluid deflector located on the motor shaft immediately below the anti-deflection journal, which shall cover completely the anti-deflection journal insert and the lower portion of the diffusion head.
- 6.11 This fluid deflector shall be molded from black neoprene and shall be press fit onto the motor shaft.

## 7. FLOTATION

- 7.1 Each aerator shall have 965 lbs. reserve buoyancy to ensure stability and to provide support flotation required during aerator servicing. Floats shall be one piece, i.e.; segmented floats are not acceptable.
- 7.2 Flotation stability will be mandatory. Under no circumstances will unstable flotation designs requiring counter balancing, liquid ballast, solid mass, or submerged major fabricated assemblies to stabilize the operation of the aerator be allowed. Only aerators demonstrating stable operational characteristics, without rocking or oscillating will be acceptable.
- 7.3 The float shall be a minimum of 71-inch in diameter and 12-inch thick, and shall be fabricated of approved fiberglass construction as later described herein.
- 7.4 All floats shall be constructed so that the internal void can be filled full of closed cell polyurethane foam having a minimum 2.0 lbs/ft<sup>3</sup> density and shall be completely sealed water tight.
- 7.5 All floats shall have six mooring points, spaced for 3 or 4-point mooring around the outer circumference. No mooring connections will be allowed to be attached to the upper or lower float covers. Only tension type connections perpendicular to the outer sidewall will be approved. All mooring connections shall be stainless steel.
- 7.6 Floats shall be constructed of polyester fiberglass resins and shall have a resin/glass content of 70 percent resin and 30 percent glass. A minimum 0.014-inch thick gel coat shall cover the entire outer float shell.
- 7.7 A moisture inhibitor, such a N.P.G. (neopenthal glycol) or equal, and an ultraviolet inhibitor, such a UV9 or equal, shall be used to protect the float from moisture and sunlight damage.

- 7.8 The construction of the float shall be such that no under-water joints shall be used. Joints used to connect the top coverlid shall be overlapped a minimum of 1-1/2-inches, both parts of all joints shall be ground to glass fiber and a resin/glass adhesive shall be applied to complete a 100 percent monolithic glass-to-glass bond.
- 7.9 The float construction shall be such that the volute will distribute the load of the entire motor, drive, diffusion head, and volute static load plus, the entire dynamic load from the propeller thrust and radial forces by spreading these forces uniformly around the full 360° circumference of the float's central core. Point connected joints or point stressed connections will not be accepted.
- 7.10 The minimum flexural strength of the fiberglass construction materials shall be 26,000 psi and the minimum tensile strength shall be 10,000 psi.

## 8. PROPELLER

- 8.1 The propeller shall be a two-blade, left-handed, marine type precision casting of 316 stainless steel, 11-1/2-inch diameter, and shall be specifically designed for the application intended. It shall be a self-cleaning type that will not accumulate fibers, rags, stringy materials, etc. The propeller will have a diameter not allowing a greater clearance with the volute of 1/4-inch.
- 8.2 Each propeller blade shall be pitched so that the pitch angle and rake angle are within  $\pm 2$  percent of the other blade(s).
- 8.3 The propeller shall be pitched so that the drive motor is loaded between 88 percent and 94 percent of full load nameplate horsepower.
- 8.4 Units using inclined screw impellers will not be acceptable.
- 8.5 The propeller must be attached to the motor shaft with a hardened stainless steel pin and set screw. No tapered, threaded shafts with nut fasteners will be acceptable.

## 9. VOLUTE

- 9.1 The propeller shall operate in a volute made of 304 stainless steel and shall be a minimum of 12-inch in diameter. It shall be round and true so that propeller blade tip clearance is uniform within the volute as it rotates. The volute shall have a minimum of 3/16-inch wall thickness, and a minimum of four full-length stainless

steel gussets shall be welded on a 90° spacing around the circumference of the volute between the top and bottom flanges.

- 9.2 The volute shall have a large machined flange at its top extremity that completely encircles the volute, and this flange shall match a similar flange on the bottom of the diffusion head to provide for a bolted, machined flange-to-flange fit to provide uniform distribution of the dynamic loads generated by the propeller and the static weight of the motor and drive. A 360° machined index in the upper flange shall provide concentric alignment of the propeller in the volute by engaging the inside diameter of the mating flange on the diffusion head. Bolt holes alone will not be acceptable to locate the important alignment of the propeller.
- 9.3 Fiberglass volutes, or carbon steel volutes that are fiberglass, steel or stainless steel lined are not acceptable.

## 10. INTAKE CONE

- 10.1 The intake cone shall be fabricated from .075-inch 304 stainless steel having a gradually expanding opening outward to the intake end. The length and inlet diameter shall be sufficient to provide uniform inlet hydraulics so that no increase in vibration is caused due to its shape or size. The minimum acceptable length is 8-inches and minimum inlet diameter is 16-1/4-inches.
- 10.2 The material used to fabricate the intake cone shall be structurally sufficient to support the weight of the entire aerator assembly when the aerator is freestanding on dry ground.
- 10.3 For maximum in-depth mixing efficiency, the intake cone shall be designed so that the suction lift from the aerator propeller is vertical from the liquid depth below the aerator. Unless specifically required for anti-erosion requirements, side or angle entry suction inlets will not be approved. Fiberglass intake cones are not allowed. All aerators 20 HP and larger must provide anti-vortex crosses welded inside the cones. Anti-erosion devices, if required, must be welded to the crosses.

## 11. BALANCING

- 11.1 The entire rotating assembly including the motor rotor, shaft, shaft accessories, and impeller shall be dynamically balanced to within 2.0 mils peak-to-peak horizontal displacement measured at the upper and lower motor bearing. Measurements shall be taken at a frequency equivalent to the motor RPM.

11.2 Measurements shall be taken with the motor in a vertical, shaft down position and with the entire power section mounted on resilient pads.

12. STABILIZER CROSS ASSEMBLY AND ANTI-EROSION ASSEMBLY

12.1 Each unit shall be furnished with a 304 stainless steel stabilizer cross assembly.

12.2 Each unit shall be furnished with an anti-erosion assembly.

13. MOORING

13.1 To allow for water level variation, a 304 stainless steel restrained mooring frame shall be utilized. A triangular, or delta, mooring frame shall be fastened to the bottom of the aerator float, and will consist of 304 stainless steel mooring arms to which are attached removable U-bolts which shall fit around 304 stainless steel posts (posts provided by Contractor/Purchaser) 4-inch diameter, which shall permit the unit to rise and fall with the varying water level. Mooring arms attached to side skins of the float are not acceptable.

13.2 A 304 stainless "J" bolt shall be utilized to connect the frame to the flotation unit. A minimum of three (3) connections is required.

14. ELECTRICAL SERVICE CABLE

14.1 Electrical service cable shall be provided and shall be a continuous length; that is non-spliced. The cable shall have three power conductors and a ground conductor.

14.2 Conductors shall be flexible type annealed copper stranded. Each conductor, including the ground conductor, shall be insulated. Cables containing an uninsulated ground conductor will not be acceptable.

14.3 The insulated conductors shall be assembled together with a non-hygroscopic filler material.

14.4 The outer jacket shall be high quality CPE, PVC, TPE or equal, and shall be rated at a conductor operating temperature of not less than 90°C.

14.5 The cable shall be rated for hard usage, outdoor service and shall be resistant to oil, sunlight, ozone, grease, acids, water, abrasion, and impact.



15. INSTALLATION, OPERATING, AND MAINTENANCE MANUALS

- 15.1 The aerator manufacturer shall provide three copies of a detailed manual that shall include specific instructions for receiving and handling, assembly, mooring, wiring, installation, repair and service, storage, troubleshooting, detailed exploded drawings of the unit, and a full parts list.
- 15.2 In addition, the manual shall contain complete detailed instructions on the balancing procedure to be used for rebalancing to the propeller after it has been in service for an extended period of time. These instructions shall include, a general procedural description, a detailed explanation of preparing the unit for balancing, and the balancing procedure for propellers.
- 15.3 These manuals shall be submitted for review, along with other general submittal information, including detailed drawings, brochures, cut-sheets, motor data sheets, etc., as a part of the approval process.

16. MANUFACTURER

The aerator shall be manufactured by Aqua-aerobics or Aerator Solutions. Equals must be approved by the Engineer as previously specified.

The aerator specified herein shall incorporate design enhancements that provide operation for five years without routine maintenance (greasing).

17. WARRANTY

The aerator shall be warranted for three years for defects in materials and workmanship.

18. SERVICE

In order to provide prompt service response to the owner, a factory-trained technician must be available 24 hours per day within one (1) hour response time to the wastewater treatment plant (WWTP).



# JIMMY MIXSON WASTEWATER RECLAMATION FACILITY (WRF) EXPANSION

TOWN OF RIDGELAND, JASPER COUNTY, SOUTH CAROLINA



Town of Ridgeland  
Joseph N. Malphrus, Mayor  
Josephine Boyles, Councilwoman  
Chris Dubose, Councilman  
Tommy Rhodes, Councilman  
Grady Woods, Councilman  
Dennis Averkin, Town Administrator

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**VICINITY MAP**  
TOWN HALL  
1 TOWN SQUARE  
RIDGELAND, SC 29936  
JIMMY MIXSON WRF  
366 PREACHER STREET  
RIDGELAND, SC 29936  
LAT: 32°29'01.59"N  
LONG: 80°58'22.72"W

The purpose of this project is to replace the existing wastewater lagoons with an SBR treatment system. The capacity of the plant is also being expanded, and a new operator building is being constructed. Presently, the system discharges to a sod farm; the new facility will discharge to nearby Captain Bill's Creek.

RELEASE	SHEETS INCLUDED IN RELEASE	DATE
A	Cover, General, Civil, Mechanical, and Control Systems to DHEC	8/1/18
B	Cover, G011 & G012, E&S, and Civil to DHEC Stormwater	8/27/18
C	Cover, E&S, and Civil to DHEC Stormwater	10/29/18
D	Complete set to RD for review	12/12/2018
E	Release for Bid - Complete Set	4/2/2019
F	Addendum #1 - As Noted ""	4/11/2019

**GOLDIE ASSOCIATES**  
210 West North Second Street  
Seneca, SC 29678  
www.goldieassociates.com

**FOUR WATERS ENGINEERING**  
324 6th Ave North,  
Jacksonville Beach, FL 32250  
www.4weng.com

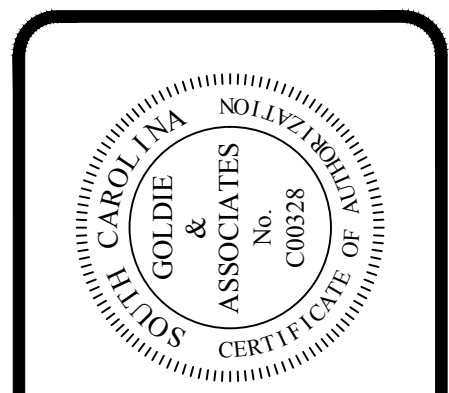
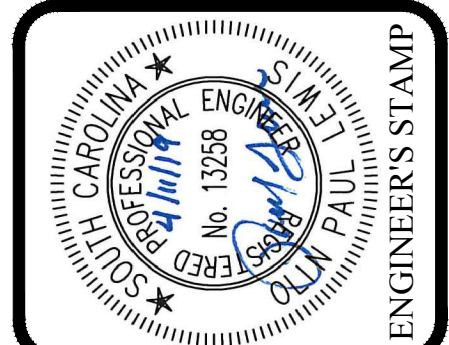
**RIA** South Carolina Rural Infrastructure Authority  
Office of Local Government

**USDA** Rural Development  
Committed to the future of rural communities.

**811** Know what's below. Call before you dig.

## DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA  
THE FIRST NUMBER REFERENCES THE ADDENDUM NUMBER WHILE  
THE SECOND NUMBER REFERENCES THE ADDENDUM ITEM NUMBER

NO.	DATE	DESCRIPTION
5	4/11/19	RELEASE F
4	4/2/19	RELEASE E
3	12/12/18	RELEASE D
2	10/29/18	RELEASE C
1	8/27/18	RELEASE B
0	8/1/18	INITIAL - RELEASE A



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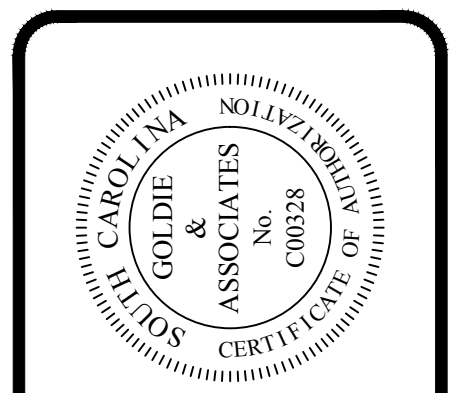
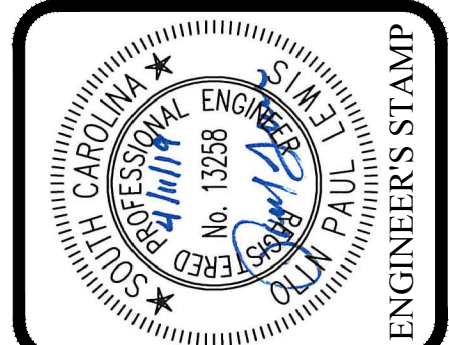
CLIENT: Town of Ridgeland  
PROJECT: Jimmy Mixson WRF Expansion  
SHEET TITLE: Cover

SHEET NO.	OF
Cover	---
FILE NO.	1636.6



CONTROL SYSTEM FUNCTION IDENTIFICATION					CONTROL SYSTEM AND MECHANICAL SYMBOLS		GENERAL ABBREVIATIONS		GENERAL LEGEND	
FIRST LETTER(S)		SUCCEEDING LETTERS							EXISTING	PROPOSED
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER					X 000.00	X 000.00
A	ANALYSIS		ALARM			GATE VALVE	AC	ASBESTOS CEMENT		
B	BURNER (FLAME)					GLOBE VALVE	ARV	AIR RELEASE VALVE		
C	CONDUCTIVITY			CONTROL		PLUG VALVE	ASP	ASPHALT		
D	DENSITY	DIFFERENTIAL				BALL VALVE	AVG	AVERAGE		
E	POTENTIAL (ELEC)		PRIMARY ELEMENT			BUTTERFLY VALVE	B	BLOWER		
F	FLOW RATE	RATIO				CHECK VALVE	BOC	BACK OF CURB		
G	FIRE, SMOKE		GLASS			STRAINER	BW	BACKWASH		
H	HAND			HIGH		REDUCER	CIFG	CURB INLET FRAME & GRATE		
I	CURRENT (ELEC)		INDICATE			PRESSURE REGULATING VALVE	CF	CUBIC FEET		
J	POWER	SCAN				SOLENOID OPERATED VALVE	CMP	CORRUGATED METAL PIPE		
K	TIME	TIME RATE CHANGE		CONTROL STATION		RELIEF VALVE	CP	CONTROL PANEL		
L	LEVEL		PILOT LIGHT	LOW		VARIABLE AREA FLOW METER (ROTAMETER)	CS	CAUSTIC SODA		
M	MOISTURE	MOMENTARY		MIDDLE		AIR INLET FILTER-SILENCER	CV	CONTROL VALVE		
N	HYDROGEN-ION		ORIFICE			VARIABLE FREQUENCY DRIVE (ELEC)	CY	CUBIC YARDS		
O	DISSOLVED OXYGEN					METERING PUMP	D	DRAIN		
P	PRESSURE		TEST CONNECTION			ROTARY LOBE COMPRESSOR	DS	DIGESTED SLUDGE		
Q	QUANTITY	INTEGRATE				CENTRIFUGAL PUMP	DW	DISTILLED WATER		
R	RADIATION		RECORD			CONTINUED ON SHEET CS013	EFF	EFFLUENT		
S	SPEED, FREQUENCY	SAFETY		SWITCH		CONTINUED FROM SHEET CS014	ELEV	ELEVATION		
T	TEMPERATURE			TRANSMIT			EOP	EDGE OF PAVEMENT		
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION			FE	FILTERED EFFLUENT		
V	VIBRATION		VALVE, DAMPER				FF	FINISHED FLOOR		
W	WEIGHT, FORCE		WELL				FG	FINISHED GRADE		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED			FM	FORCE MAIN		
Y	EVENT, STATUS		RELAY, COMPUTE				FOC	FACE OF CURB		
Z	POSITION		MISC ACTUATOR				GICB	GRATE INLET CATCH BASIN		
GENERAL DRAWING SYMBOLS							INV	INVERT		
							IP	IRON PIN		
GENERAL DRAWING SYMBOLS							JB	JUNCTION BOX		
							LAS	LAND APPLICATION SYSTEM		
GENERAL DRAWING SYMBOLS							LCP	LOCAL CONTROL PANEL		
							LF	LINEAR FEET		
GENERAL DRAWING SYMBOLS							MAX	MAXIMUM		
							MCC	MOTOR CONTROL CENTER		
GENERAL DRAWING SYMBOLS							MCP	MASTER CONTROL PANEL		
							MIN	MINIMUM		
GENERAL DRAWING SYMBOLS							MS	MIXED LIQUOR		
							NTS	NOT TO SCALE		
GENERAL DRAWING SYMBOLS							P	PUMP		
							POL	POLYELECTROLYTE		
GENERAL DRAWING SYMBOLS							PP	POWER POLE		
							PS	PRESSURE SWITCH		
GENERAL DRAWING SYMBOLS							PT	PRESSURE TRANSDUCER		
							R/W	RIGHT-OF-WAY		
GENERAL DRAWING SYMBOLS							R/W MRK	RIGHT-OF-WAY MARKER		
							RAS	RETURN ACTIVATED SLUDGE		
GENERAL DRAWING SYMBOLS							RCP	REINFORCED CONCRETE PIPE		
							RR	RAILROAD		
GENERAL DRAWING SYMBOLS							S	SWITCH		
							SF	SQUARE FEET		
GENERAL DRAWING SYMBOLS							SMH	SEWER MANHOLE		
							SS	SANITARY SEWER		
GENERAL DRAWING SYMBOLS							SSL	SANITARY SEWER LATERAL		
							STA	STATION		
GENERAL DRAWING SYMBOLS							SW	SIDEWALK		
							SY	SQUARE YARDS		
GENERAL DRAWING SYMBOLS							TBM	TEMPORARY BENCHMARK		
							TOC	TOP OF CONCRETE		
GENERAL DRAWING SYMBOLS							TOG	TOP OF GRATING		
							TYP	TYPICAL		
GENERAL DRAWING SYMBOLS							V	VALVE		
							WAS	WASTE ACTIVATED SLUDGE		
GENERAL DRAWING SYMBOLS							WICB	WEIR INLET CATCH BASIN		
							WW	WASTEWATER		

APPENDIX #	DATE	DESCRIPTION
1	12/2/18	GENERAL REVISION
2	4/11/19	GENERAL REVISION
0	8/1/18	INITIAL
		NOI
		DATE
		NOI
		DATE
		NOI
		DATE



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Civil and Environmental Engineering  
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Utility Operations  
Environmental Laboratory

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CLIENT: **Town of Ridgeland**

PROJECT: **Jimmy Mixson WRF Expansion**

SHEET TITLE: **Legends, Symbols, and Abbreviations**

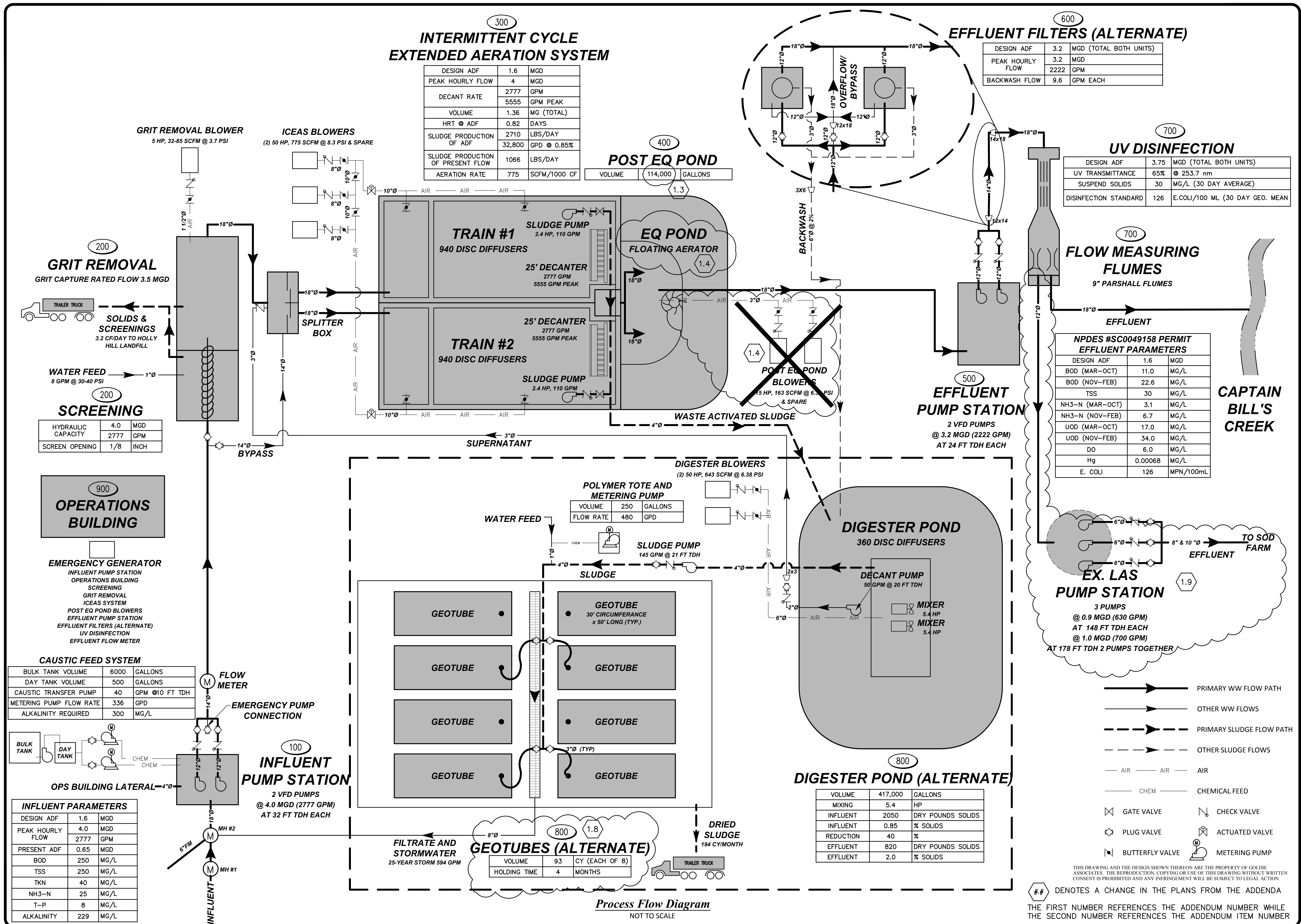
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## DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA

THE FIRST NUMBER REFERENCES THE ADDENDUM NUMBER WHILE THE SECOND NUMBER REFERENCES THE ADDENDUM ITEM NUMBER

SHEET NO.	OF
G001	---
FILE NO.	
1636.6	





**INTERMITTENT CYCLE EXTENDED AERATION SYSTEM**

DESIGN ADF	1.6	MGD
PEAK HOURLY FLOW	4	MGD
DECANT RATE	2777	GPM
	5555	GPM PEAK
VOLUME	1.36	MG (TOTAL)
HRT @ ADF	0.82	DAYS
SLUDGE PRODUCTION OF ADF	2710	LBS/DAY
	32,800	GPD @ 0.85%
SLUDGE PRODUCTION OF PRESENT FLOW	1066	LBS/DAY
AERATION RATE	775	SCFM/1000 CF

**POST EQ POND**

VOLUME	114,000	GALLONS
--------	---------	---------

**EFFLUENT FILTERS (ALTERNATE)**

DESIGN ADF	3.2	MGD (TOTAL BOTH UNITS)
PEAK HOURLY FLOW	3.2	MGD
	2222	GPM
BACKWASH FLOW	9.6	GPM EACH

**UV DISINFECTION**

DESIGN ADF	3.75	MGD (TOTAL BOTH UNITS)
UV TRANSMITTANCE	65%	@ 253.7 nm
SUSPEND SOLIDS	30	MG/L (30 DAY AVERAGE)
DISINFECTION STANDARD	126	E.COLI/100 ML (30 DAY GEO. MEAN)

**NPDES #SC0049158 PERMIT EFFLUENT PARAMETERS**

DESIGN ADF	1.6	MGD
BOD (MAR-OCT)	11.0	MG/L
BOD (NOV-FEB)	22.6	MG/L
TSS	30	MG/L
NH3-N (MAR-OCT)	3.1	MG/L
NH3-N (NOV-FEB)	6.7	MG/L
UOD (MAR-OCT)	17.0	MG/L
UOD (NOV-FEB)	34.0	MG/L
DO	6.0	MG/L
Hg	0.00068	MG/L
E. COLI	126	MPN/100mL

**GRIT REMOVAL**  
GRIT CAPTURE RATED FLOW 3.5 MGD

**SCREENING**

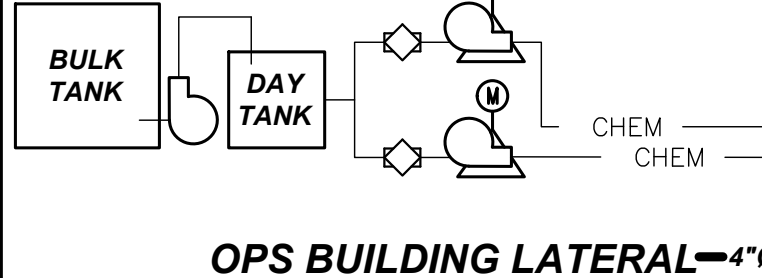
HYDRAULIC CAPACITY	4.0	MGD
	2777	GPM
SCREEN OPENING	1/8	INCH

**OPERATIONS BUILDING**

- EMERGENCY GENERATOR**
- INFLUENT PUMP STATION
  - OPERATIONS BUILDING
  - SCREENING
  - GRIT REMOVAL
  - ICEAS SYSTEM
  - POST EQ POND BLOWERS
  - EFFLUENT PUMP STATION
  - EFFLUENT FILTERS (ALTERNATE)
  - UV DISINFECTION
  - EFFLUENT FLOW METER

**CAUSTIC FEED SYSTEM**

BULK TANK VOLUME	6000	GALLONS
DAY TANK VOLUME	500	GALLONS
CAUSTIC TRANSFER PUMP	40	GPM @10 FT TDH
METERING PUMP FLOW RATE	336	GPD
ALKALINITY REQUIRED	300	MG/L

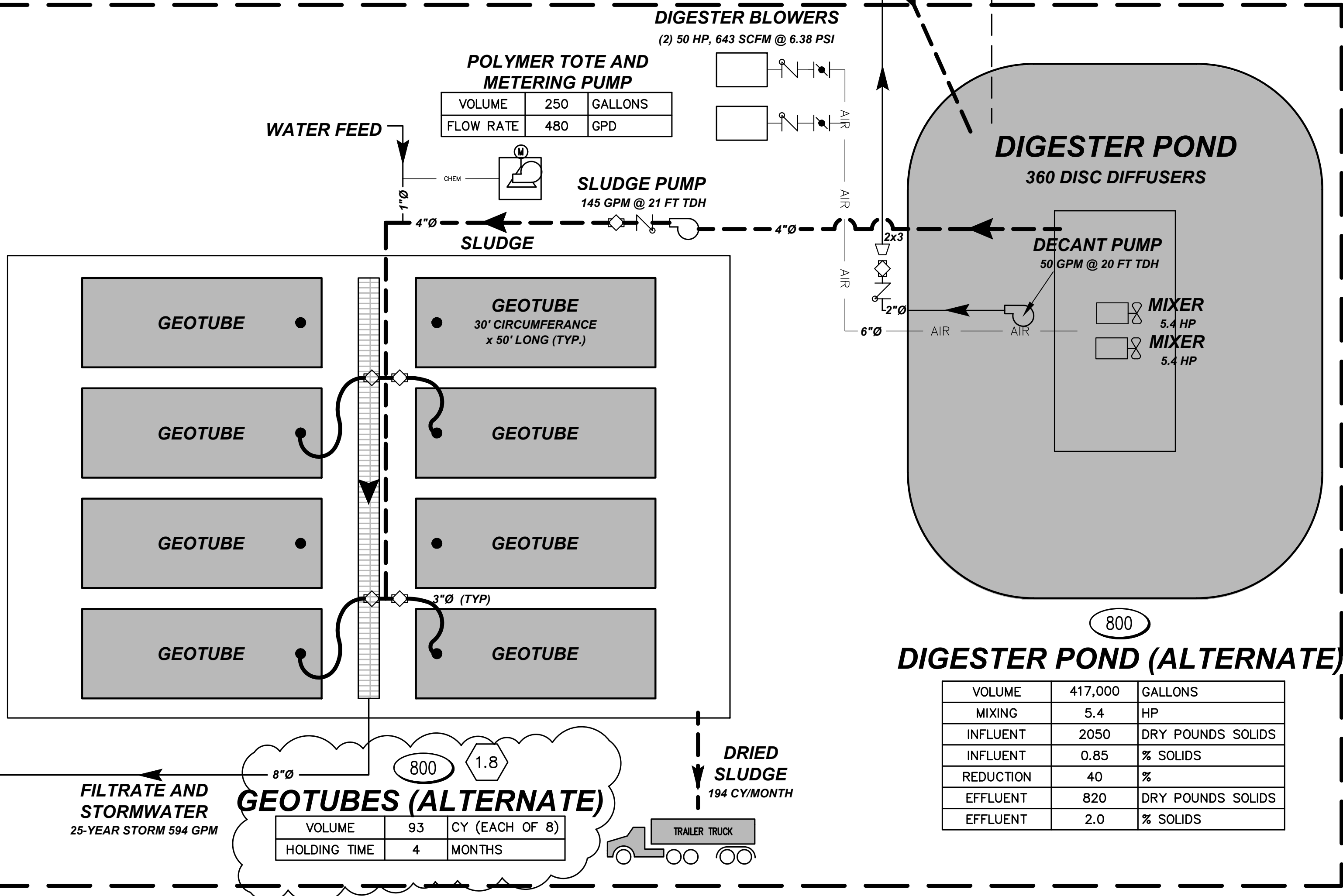
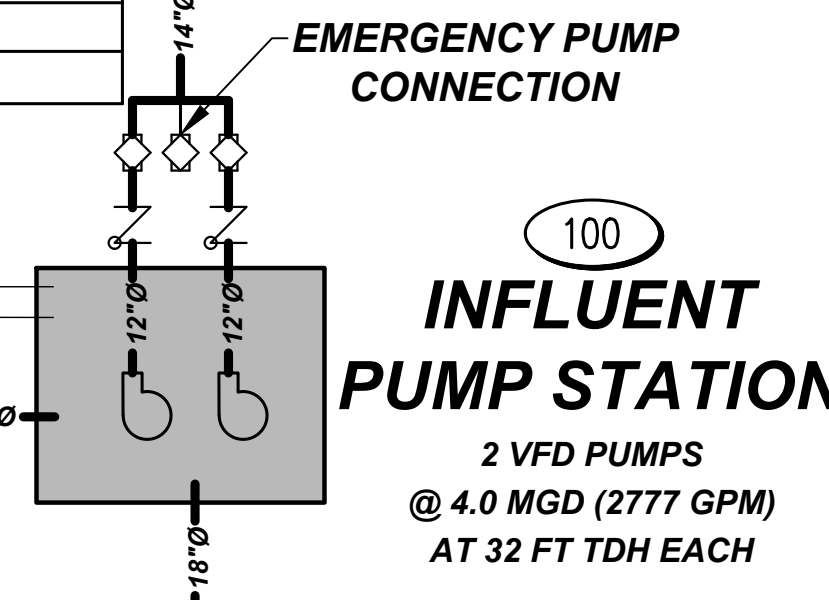


**INFLUENT PARAMETERS**

DESIGN ADF	1.6	MGD
PEAK HOURLY FLOW	4.0	MGD
	2777	GPM
PRESENT ADF	0.65	MGD
BOD	250	MG/L
TSS	250	MG/L
TKN	40	MG/L
NH3-N	25	MG/L
T-P	8	MG/L
ALKALINITY	229	MG/L

**FLOW METER**

CAUSTIC TRANSFER PUMP	40	GPM @10 FT TDH
METERING PUMP FLOW RATE	336	GPD



**DIGESTER POND (ALTERNATE)**

VOLUME	417,000	GALLONS
MIXING	5.4	HP
INFLUENT	2050	DRY POUNDS SOLIDS
INFLUENT	0.85	% SOLIDS
REDUCTION	40	%
EFFLUENT	820	DRY POUNDS SOLIDS
EFFLUENT	2.0	% SOLIDS

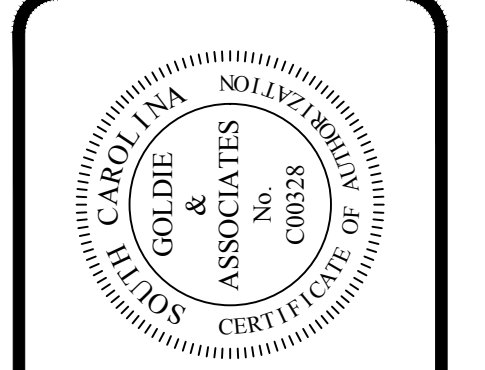
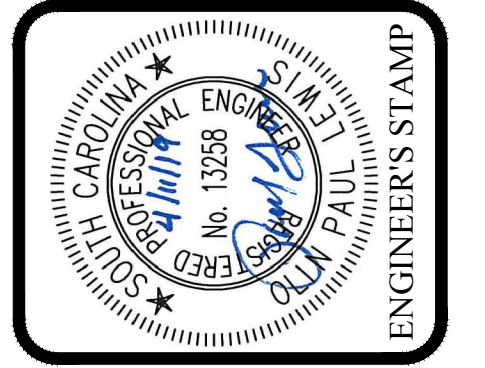
**GEOTUBES (ALTERNATE)**

VOLUME	93	CY (EACH OF 8)
HOLDING TIME	4	MONTHS

- PRIMARY WW FLOW PATH
- OTHER WW FLOWS
- PRIMARY SLUDGE FLOW PATH
- OTHER SLUDGE FLOWS
- AIR
- CHEM
- GATE VALVE
- PLUG VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- ACTUATED VALVE
- METERING PUMP

THE FIRST NUMBER REFERENCES THE ADDENDUM NUMBER WHILE THE SECOND NUMBER REFERENCES THE ADDENDUM ITEM NUMBER

APPENDIX #1	GENERAL REVISION	INITIAL	DATE	DESCRIPTION
2	4/11/19			
1	12/2/18			
0	8/1/18			



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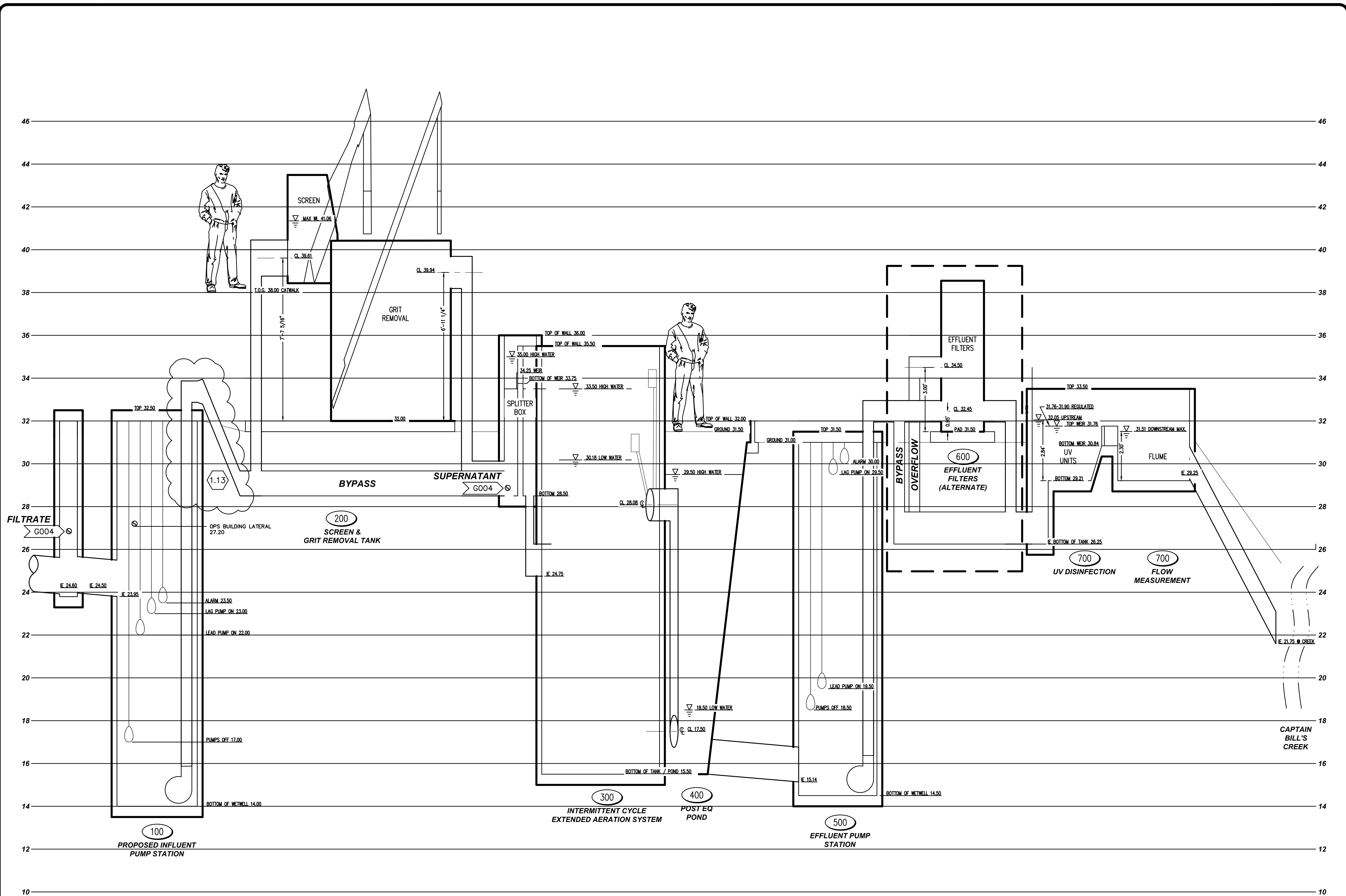
CLIENT: **Town of Ridgeland**

PROJECT: **Jimmy Mixson WRF Expansion**

SHEET TITLE: **Process Flow Diagram**

SHEET NO.	OF
G002	---
FILE NO.	1636.6

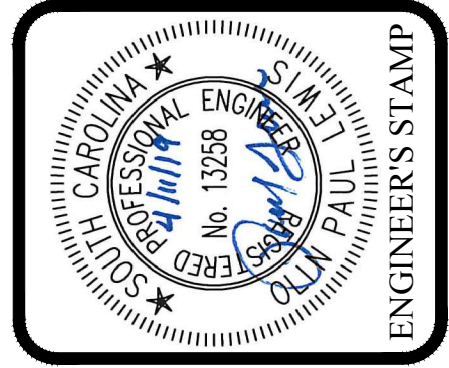




**Hydraulic Profile**  
 VERTICAL SCALE: 1"=2'  
 HORIZONTAL SCALE: NTS

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NO.	DATE	BY	DESCRIPTION
2	4/11/19	OPJ	ADDENDUM #1
1	12/2/18	OPJ	GENERAL REVISION
0	8/1/18	OPJ	INITIAL
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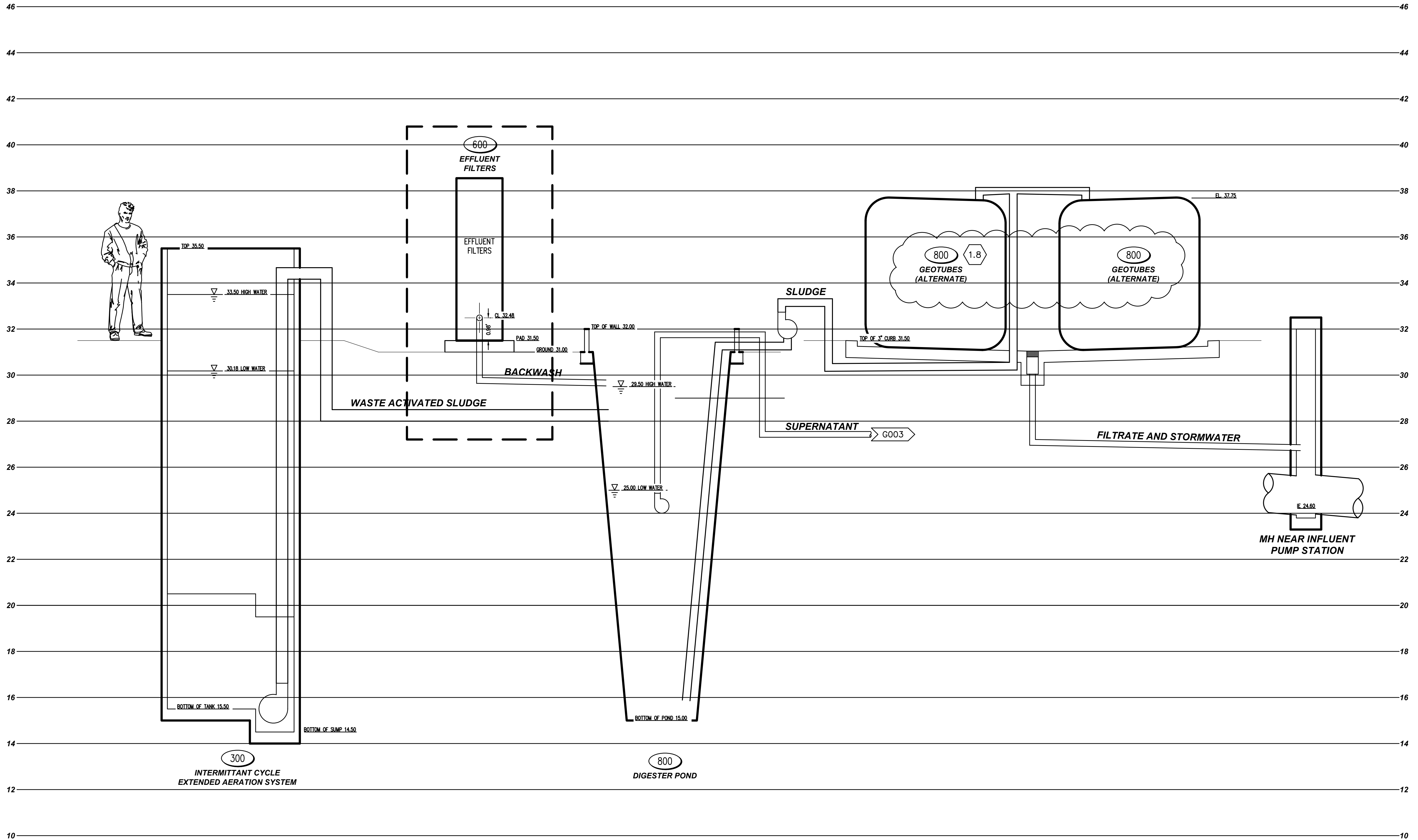
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 PROJECT: **Jimmy Mixson WRF Expansion**  
 SHEET TITLE: **Wastewater Hydraulic Profile**

SHEET NO.	OF
G003	---
FILE NO.	1636.6

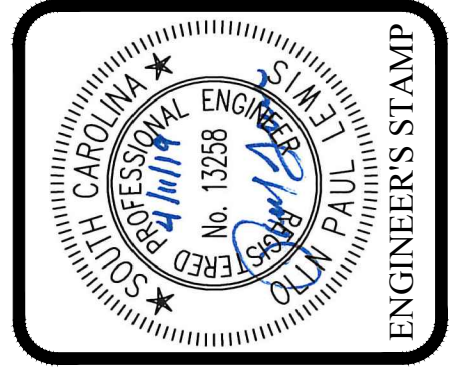


**Sludge Hydraulic Profile**  
 VERTICAL SCALE: 1"=2'  
 HORIZONTAL SCALE: NTS

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0	8/1/18	INITIAL
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 PROJECT: **Jimmy Mixson WRF Expansion**  
 SHEET TITLE: **Sludge Hydraulic Profile**

SHEET NO.	OF
G004	--
FILE NO.	
1636.6	

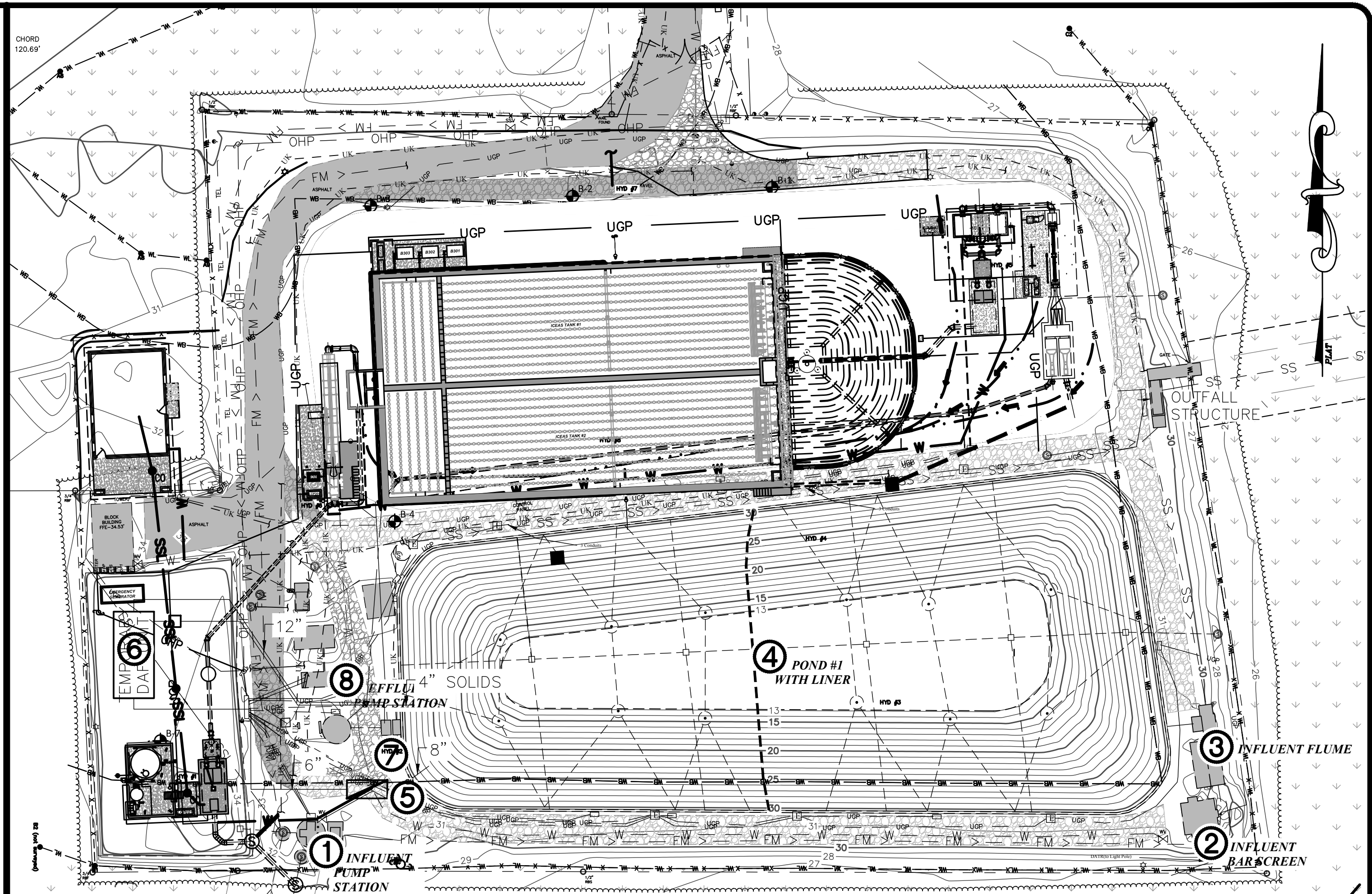
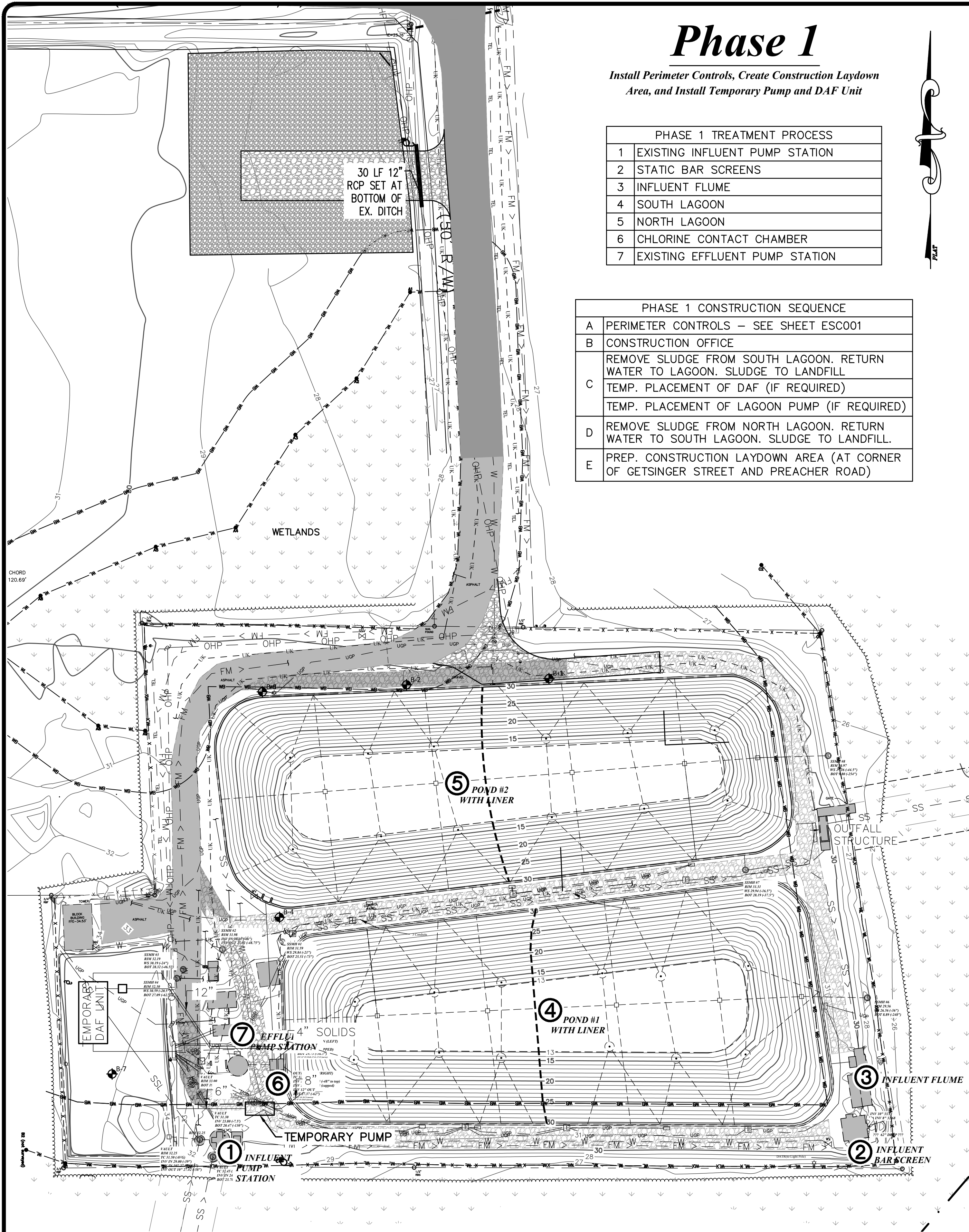


# Phase 1

Install Perimeter Controls, Create Construction Laydown Area, and Install Temporary Pump and DAF Unit

PHASE 1 TREATMENT PROCESS	
1	EXISTING INFLUENT PUMP STATION
2	STATIC BAR SCREENS
3	INFLUENT FLUME
4	SOUTH LAGOON
5	NORTH LAGOON
6	CHLORINE CONTACT CHAMBER
7	EXISTING EFFLUENT PUMP STATION

PHASE 1 CONSTRUCTION SEQUENCE	
A	PERIMETER CONTROLS - SEE SHEET ESC001
B	CONSTRUCTION OFFICE REMOVE SLUDGE FROM SOUTH LAGOON. RETURN WATER TO LAGOON. SLUDGE TO LANDFILL
C	TEMP. PLACEMENT OF DAF (IF REQUIRED) TEMP. PLACEMENT OF LAGOON PUMP (IF REQUIRED)
D	REMOVE SLUDGE FROM NORTH LAGOON. RETURN WATER TO SOUTH LAGOON. SLUDGE TO LANDFILL.
E	PREP. CONSTRUCTION LAYDOWN AREA (AT CORNER OF GETSINGER STREET AND PREACHER ROAD)



# Phase 2

Flow to Temporary Pump and DAF Unit With Existing North Lagoon Off-line

PHASE 2 TREATMENT PROCESS	
1	EXISTING INFLUENT PUMP STATION
2	STATIC BAR SCREENS
3	INFLUENT FLUME
4	SOUTH LAGOON
5	LAGOON PUMP (IF REQUIRED)
6	DAF (IF REQUIRED)
7	CHLORINE CONTACT CHAMBER
8	EXISTING EFFLUENT PUMP STATION

PHASE 2 CONSTRUCTION SEQUENCE	
A	DIVERT FLOW FROM SOUTH LAGOON TO EFFLUENT PUMP STATION. STARTUP DAF / PUMP SYSTEM (IF REQUIRED) REMOVE NORTH LAGOON LINER REMOVE OUTFALL STRUCTURE
B	ICEAS #1 CONSTRUCTION OPS BUILDING GRADE DOWN PROPOSED INFLUENT AREA PREPARE CRANE ACCESS FOR INFLUENT AREA
C	EQ POND FILL AND GRADE AROUND ICEAS #1 INFLUENT PUMP STATION ALKALINITY ADDITION FACILITY OPS BUILDING
D	HEADWORKS ICEAS BLOWERS EFFLUENT FACILITY INSTALL NEW GENERATOR
E	PIPING FROM INFLUENT PS TO ICEAS TO OPS TO CREEK TEMPORARY SLUDGE HANDLING FOR ICEAS #1

NOTE:  
SLUDGE SEEDING APPROVED BY MANUFACTURER

1.2 1.3 1.4 1.13 BACKGROUND PLAN REVISED

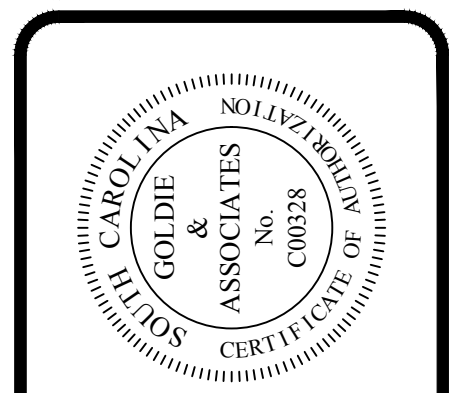
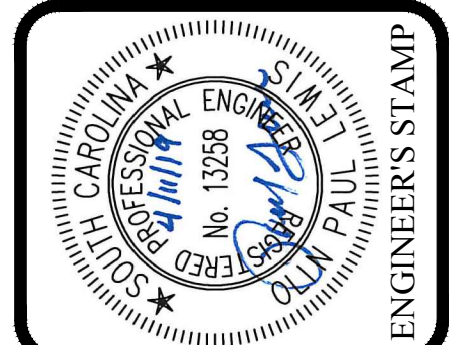
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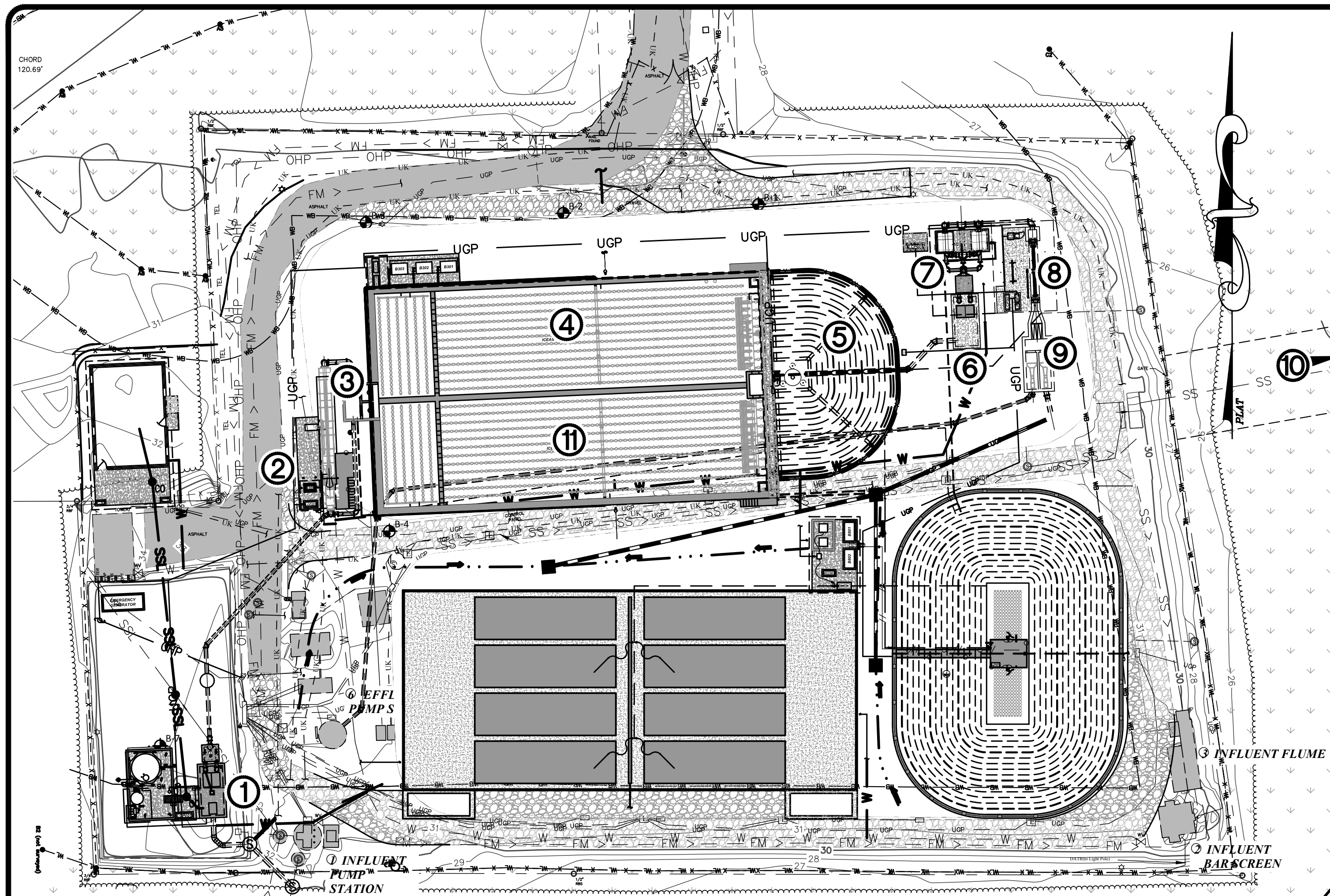
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PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **Project Phasing - Phases 1 & 2**

SHEET NO.	OF
G021	---
FILE NO.	1636.6





### Phase 3

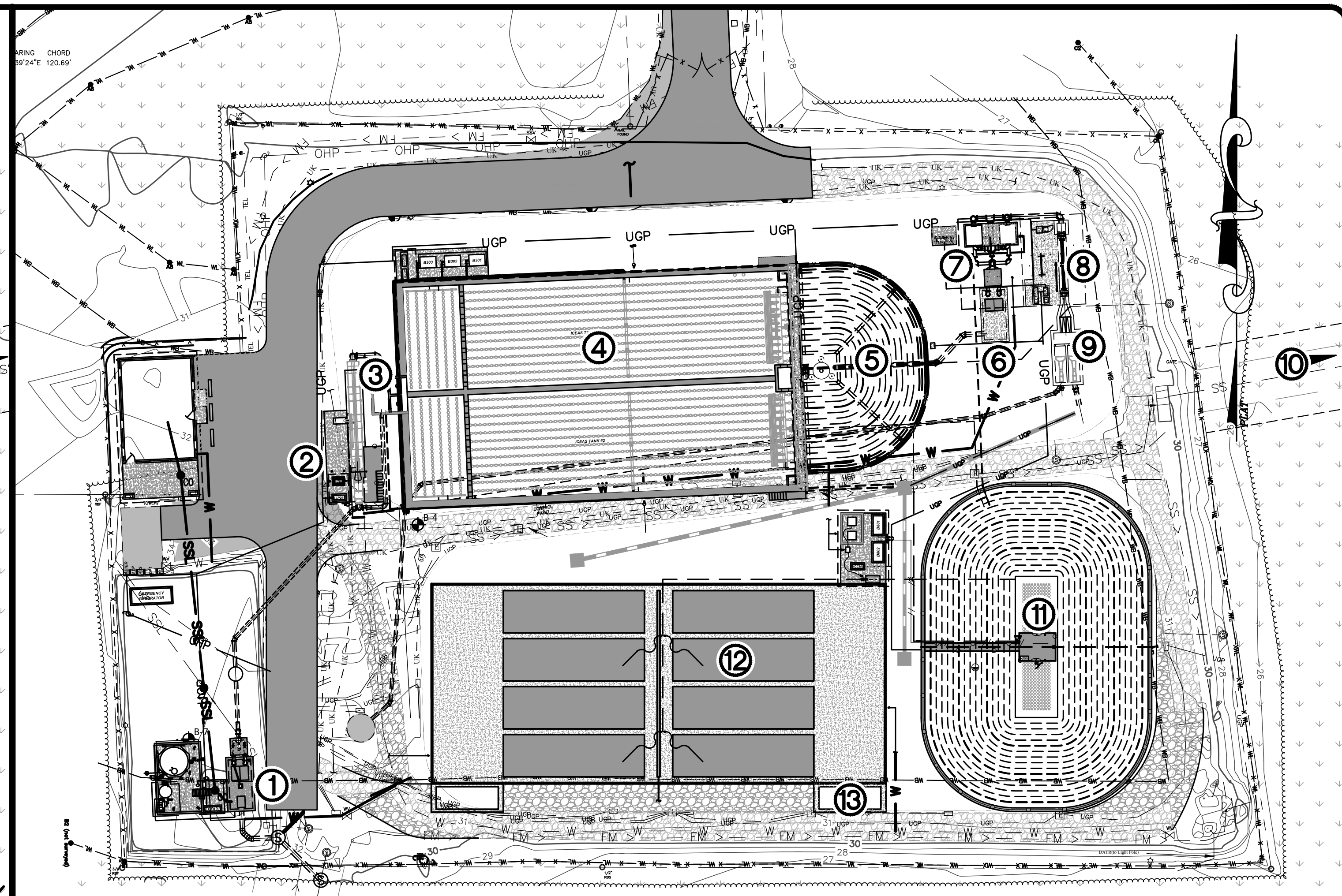
ICEAS On-line and Existing South Lagoon Off-line

PHASE 3 TREATMENT PROCESS	
1	PROPOSED INFLUENT PUMP STATION
2	HEADWORKS
3	SPLITTER BOX
4	ICEAS TANK #1
5	EQ POND
6	PROPOSED EFFLUENT PUMP STATION
7	EFFLUENT FILTERS (IF APPLICABLE)
8	UV
9	PARSHALL FLUME
10	CREEK OUTFALL
11	WASTED SLUDGE TO TEMPORARY STORAGE OR HAUL

1.2

PHASE 3 CONSTRUCTION SEQUENCE	
A	CONVERT EXISTING OPS BUILDING TO STORAGE
	DRAIN SOUTH LAGOON
	CONSTRUCT ICEAS #2 (1.2)
	DECOMMISSION DAF AND TEMP PUMPS
	REMOVE EX. INFLUENT PUMP STATION
B	REMOVE EX. INFLUENT SCREEN
	REMOVE EX. INFLUENT FLUME
	REMOVE EX. CHLORINE GAS STORAGE
	REMOVE EX. GENERATOR, DIESEL STORAGE TANK, AND APPURTANCES. STORE AS DIRECTED BY OWNER.
C	DIGESTER
	POLYMER SHED
	DIGESTER BLOWERS
	SLUDGE PUMP
	POLYMER SYSTEM
D	TRANSFER STORED SLUDGE TO DIGESTER
E	GEOTUBE LAYDOWN AREA PIPING
	DIGESTER SUPERNATANT PIPING TO HEAD OF PLANT
	GEOTUBE LAYDOWN AREA

1.2 1.3 1.4 1.13 BACKGROUND PLAN REVISED



### Phase 4

Completion of Construction and Start-Up of All Operations

PHASE 4 TREATMENT PROCESS	
1	PROPOSED INFLUENT PUMP STATION
2	HEADWORKS
3	SPLITTER BOX
4	ICEAS
5	EQ POND
6	PROPOSED EFFLUENT PUMP STATION
7	EFFLUENT FILTERS (IF APPLICABLE)
8	UV
9	PARSHALL FLUME
10	CREEK OUTFALL
11	WASTED SLUDGE TO DIGESTER
12	THICKENED SLUDGE TO GEOTUBES
13	DRIED SLUDGE TO LANDFILL

PHASE 4 CONSTRUCTION SEQUENCE	
A	STARTUP FULL FACILITY
B	PAVING
C	REMOVE TEMPORARY EROSION CONTROL MEASURES WHEN AREAS ARE STABILIZED

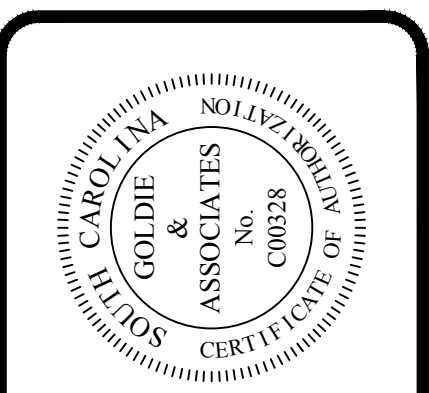
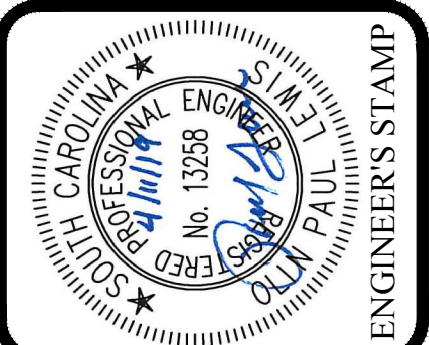
1.2 1.3 1.4 1.13 BACKGROUND PLAN REVISED



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 PROJECT: **Jimmy Mixson WRF Expansion**  
 SHEET TITLE: **Project Phasing - Phases 3 & 4**

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G022	---
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1636.6	



# VALVE SCHEDULE

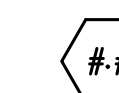
Mark	Spec	Size	Supplier	Service	Type	Actuator	Dwg Ref
<b>Influent Pump Station</b>							
V101	33 31 23	12"	Contractor	Inf pump P101 discharge	Check		CS011
V102	"	12"	Contractor	Inf pump P101 discharge	Plug	Handwheel	CS011
V103	"	12"	Contractor	Inf pump P102 discharge	Check		CS011
V104	"	12"	Contractor	Inf pump P102 discharge	Plug	Handwheel	CS011
V105	NOT USED	1.11	Contractor	Inf pump station bypass	Plug	Handwheel	CS011
V106	NOT USED	1.11	Contractor	Inf pump station bypass	Plug	Handwheel	CS011
V107	3/4"	3/4"	Contractor	Caustic Day Tank Shut Off	S/S Ball	Lever	CS011
V108	46 33 42	3/4"	Vendor	Caustic skid P103 shut off	Ball	Lever	CS011
V109	"	3/4"	Vendor	Caustic skid P104 shut off	Ball	Lever	CS011
V110	"	1/2"	Vendor	Caustic skid P103 pressure relief	Pressure Relief		CS011
V111	"	1/2"	Vendor	Caustic skid P104 pressure relief	Pressure Relief		CS011
V112	"	1/2"	Vendor	Caustic skid P103 back pressure	Control		CS011
V113	"	1/2"	Vendor	Caustic skid P104 back pressure	Control		CS011
V114	"	2"	Contractor	Bulk tank shut off	S/S Ball	Lever	CS011
V115	"	2"	Contractor	Caustic transfer pump check	S/S Check		CS011
V116	"	2"	Contractor	Caustic bulk tank shut off	S/S Ball	Lever	CS011
V117	"	2"	Contractor	Caustic bulk tank shut off (fill pipe)	S/S Ball	Lever	M111
V118	"	2"	Contractor	Caustic bulk tank fill pipe	S/S Check		M111
V119	"	2"	Contractor	Caustic bulk tank fill pipe shut off	S/S Ball	Lever	M111
<b>Headworks</b>							
V201	33 31 23	14"	Contractor	Screening shut off	Plug	Handwheel	CS011
V202	33 31 23	14"	Contractor	Screening bypass	Plug	Handwheel	CS011
V203	46 21 00	3"	Vendor	Grit tank drain	Ball	Lever	CS011
V204	"	1"	Vendor	Grit tank air piping shut off	Ball	Lever	CS011
V205	"	1"	Vendor	Blower B201 check	Bronze Check		CS011
V206	"	1"	Vendor	Blower B201 shut off	Bronze Ball		CS011
V207	"	"	Vendor	Blower B201 pressure relief			CS011
V208	"	"	Vendor	Screening water shut off	Ball	Lever	CS011
V209	"	"	Contractor	Screening area hose bib			CS011
<b>ICEAS</b>							
V301	46 53 53	"	Vendor	ICEAS Blower B301 relief			CS012
V302	"	8"	Vendor	ICEAS Blower B301 check	Check		CS012
V303	"	8"	Vendor	ICEAS Blower B301 shut off	Butterfly	Lever	CS012
V304	"	"	Vendor	ICEAS Blower B302 relief			CS012
V305	"	8"	Vendor	ICEAS Blower B302 check	Check		CS012
V306	"	8"	Vendor	ICEAS Blower B302 shut off	Butterfly	Lever	CS012
V307	"	"	Vendor	ICEAS Blower B303 relief			CS012
V308	"	8"	Vendor	ICEAS Blower B303 check	Check		CS012
V309	"	8"	Vendor	ICEAS Blower B303 shut off	Butterfly	Lever	CS012
V310	40 23 00	10"	Contractor	ICEAS Blowers Isolation #1	Butterfly	Lever	CS012
V311	"	10"	Contractor	ICEAS Blowers Isolation #2	Butterfly	Lever	CS012
V312	33 31 23	4"	Contractor	ICEAS #1 Sludge pump check	Check		CS012
V313	"	4"	Contractor	ICEAS #1 Sludge pump shut off	Plug	Lever	CS012
V314	"	4"	Contractor	ICEAS #2 Sludge pump check	Check		CS012
V315	"	4"	Contractor	ICEAS #2 Sludge pump shut off	Plug	Lever	CS012
V316	"	1"	Contractor	ICEAS #1 Air Line Purge	Bronze Ball	Lever	CS012
V317	"	1"	Contractor	ICEAS #1 Pre Rxn Air Line Purge	Bronze Ball	Lever	CS012
V318	"	1"	Contractor	ICEAS #2 Pre Rxn Air Line Purge	Bronze Ball	Lever	CS012
V319	"	1"	Contractor	ICEAS #2 Air Line Purge	Bronze Ball	Lever	CS012
CV301	46 53 53	10"	Vendor	ICEAS #1 Air Control	Butterfly	Motorized	CS012
CV302	46 53 53	10"	Vendor	ICEAS #2 Air Control	Butterfly	Motorized	CS012
V320	"	4"	Contractor	ICEAS #1 Air Shut Off	Butterfly	Lever	CS012
V321	"	10"	Contractor	ICEAS #1 Air Shut Off	Butterfly	Lever	CS012
V322	"	4"	Contractor	ICEAS #2 Air Shut Off	Butterfly	Lever	CS012
V323	"	10"	Contractor	ICEAS #2 Air Shut Off	Butterfly	Lever	CS012
V324	"	"	Contractor	ICEAS Sludge Pump ARV	ARV	--	CS012

Mark	Spec	Size	Supplier	Service	Type	Actuator	Dwg Ref
<b>Post-EQ Pond</b>							
V401	NOT USED						
V402	NOT USED						
V403	NOT USED						
V404	NOT USED	1.4					
V405	NOT USED						
V406	NOT USED						
<b>Effluent Pump Station</b>							
V501	33 31 23	12"	Contractor	Effluent pump P501 check	Check		CS013
V502	"	12"	Contractor	Effluent pump P502 check	Check		CS013
V503	"	12"	Contractor	Effluent pump P501 shut off	Gate		CS013
V504	"	12"	Contractor	Effluent pump P502 shut off	Gate		CS013
V505	"	"	Contractor	Effluent pump ARV	ARV		CS013
<b>Effluent Filters (Alternate)</b>							
V601	40 23 00	12"	Contractor	Eff Filter #1 inlet	Butterfly	Handwheel	CS013
V602	"	12"	Contractor	Eff Filter #2 inlet	Butterfly	"	CS013
V603	"	12"	Contractor	Filter bypass	Butterfly	"	CS013
V604	40 61 43	3"	Vendor	Eff Filter #1 Backwash pump shut off valve	Ball		CS013
V605	"	3"	Vendor	Eff Filter #1 Backwash pump check valve	Check		CS013
V606	"	3"	Vendor	Eff Filter #2 Backwash pump shut off valve	Ball		CS013
V607	"	3"	Vendor	Eff Filter #2 Backwash pump check valve	Check		CS013
<b>Digester Pond and Geotubes (Alternate)</b>							
V801	43 11 33	"	Vendor	Digester Blower B801 relief			CS014
V802	"	6"	Vendor	Digester Blower B802 relief			CS014
V803	"	6"	Vendor	Digester Blower B801 check	Check		CS014
V804	"	"	Vendor	Digester Blower B802 check	Check		CS014
V805	"	6"	Vendor	Digester Blower B801 shut off	Butterfly	Lever	CS014
V806	"	6"	Vendor	Digester Blower B802 shut off	Butterfly	Lever	CS014
V807	40 23 00	"	Contractor	Digester Blower Isolation			CS014
V808	NOT USED						
V809	NOT USED						
V810	33 31 23	4"	Contractor	Digester Sludge Pump Shut Off	Plug	Lever	CS014
V811	"	"	Contractor	Digester Sludge Pump ARV	ARV		CS014
V812	33 31 23	4"	Contractor	Digester Sludge Pump P803 Check	Check		CS014
V813	"	4"	Contractor	Digester Sludge Pump P803 Shut Off	Plug	Lever	CS014
V814	"	2"	Contractor	Digester Decant Pump P801 Shut Off	Bronze Ball	"	CS014
V815	"	"	Contractor	Digester Decant Pump P801 ARV	ARV		CS014
V816	"	2"	Contractor	Digester Decant Pump P801 Check	Bronze Check		CS014
V817	NOT USED						
V818	"	1"	Contractor	Polymer Injection Shut Off	S/S Ball	Lever	CS014
V819 A+B	"	3"	Contractor	Geotube Shut Off	Plug	"	CS014
V820 A+B	"	3"	Contractor	Geotube Shut Off	Plug	"	CS014
V821	46 33 42	"	Vendor	Neat Polymer Tote Shut Off			CS014
V822	"	"	Vendor	Polymer Makedown Calibration Column Shut Off			CS014
V823	"	"	Vendor	Polymer Makedown Air Bleed Valve			CS014
V824	"	"	Vendor	Pressure Relief and Backflow Prevent			CS014
V825	"	"	Vendor	Makedown Polymer Outlet			CS014
V826	"	1"	Contractor	Water Supply Shut Off	Bronze Ball	Lever	CS014
V827	"	1"	Contractor	Mixed Sludge Test Port	Bronze Ball	Lever	CS014

# PIPE SCHEDULE

Pipe	Size	Material	Starts	Finishes
<b>Wastewater (WW)</b>				
Ops Bldg Lateral	4"	PVC	Ops Bldg	Inf PS
Foremain	6"	PVC	FM	MH #2
Influent pipe	12"	PVC	Doghouse MH #1	MH #2
Influent pipe	18"	PVC	MH #2	Inf PS
Influent PS forcemain	14"	P401 DIP	Inf PS	Headworks
Headworks discharge	18"	P401 DIP	Headworks discharge	Splitter box
Splitter box bypass	14"	P401 DIP	Bypass Valve	Splitter Box
Splitter box discharge	18"	P401 DIP	Splitter box	ICEAS
Digester Supernatant	3"	PVC	Digester decanter	Splitter box
Eff filters backwash	6"	PVC	Eff filters	Digester
<b>Effluent (EFF)</b>				
ICEAS decant	18"	DIP	ICEAS decanter	Post-EQ pond
Effluent pump influent	18"	DIP	Post-EQ Pond	Effluent PS
Effluent PS forcemain	14"	DIP	Eff PS	Main discharge pipe
Effluent PS forcemain	12"	DIP	Eff PS	Eff filters
Effluent filter discharge	12"	DIP	Eff filters	Main discharge pipe
Main discharge pipe	18"	DIP	Eff filter discharge pipe	UV
UV discharge	48"	PVC	UV	Flume
Flume discharge	12"	DIP	Flume 702	LAS PS
Flume discharge	18"	DIP	Flume 701	Manhole
Flume discharge	24"	DIP	Manhole	Creek
<b>Mixed Liquor (ML)</b>				
WAS discharge	4"	DIP	ICEAS sludge pump	Digester
Sludge suction	4"	DIP	Digester decanter	Sludge pump
Sludge discharge	4"	DIP	Sludge pump	Geotube area
Sludge discharge	4"	Flex	Geotube area	Geotube
<b>Chemicals</b>				
Caustic	2"	304 SS	Fill	Bulk tank
Caustic	3"	PVC	Bulk tank	Overflow
Caustic	2"	304 SS	Bulk tank	Day tank
Caustic	3/4", 1/2"	304 SS	Day tank	Metering pumps
Caustic	1/2"	Tygon Tubing	Petering pumps	Inf PS
Polymer			Tote	Makedown skid
Padedown polymer			Makedown skid	Injection ring
<b>Air</b>				
Grit chamber	1-1/2"	Galvanized	Hdws blower	Headworks
ICEAS Pre Rxn	4"	304 SS Sch 10	ICEAS blower	Pre Rxn Zone Manifold
ICEAS	10"	304 SS Sch 10	ICEAS blower	ICEAS manifold
Post-EQ Pond	3"	Galvanized	Post-EQ blower	Post-EQ manifold
Post-EQ Pond Purge	3/4"	Galvanized	Air line	Top of wall
Digester	6"	304 SS Sch 10	Digester blower	Digester manifold
Digester purge	3/4"	Galvanized	Air line	Platform
<b>Water</b>				
Hdws Screen wash	1"	Galvanized	Main	Headworks
Polymer makedown	1"		Main	Makedown pump
New building	1"	PVC	Main	Building
Hydrant #1/Eye wash	2"	Galvanized	Main	Caustic Feed
Hydrant #2	1"	PVC	Main	Hydrant #2
Hydrant #3	2"	PVC	Main	Hydrant #3
Hydrant #4	1"	PVC	Main	Hydrant #4
Hydrant #5	2"	PVC	Main	Hydrant #5
Hydrant #6	1"	PVC	Main	Hydrant #6
Hydrant #7	1"	PVC	Main	Hydrant #7
Hydrant #8	1"	PVC	Main	Hydrant #8
<b>Drain</b>				
ICEAS foundation	6"	Perforated PVC	Splitter box	Junction box
Degerster underdrain	6"	Perforated PVC	Digester	Junction box
Filtrate	8"	PVC	Geotube area	MH #2
Stormwater at bulk caustic tank	1-1/2"	Galvanized	Sump pump	Splash pad
Stormwater collection	15"	HDPE	Inlets	Discharge Manhole

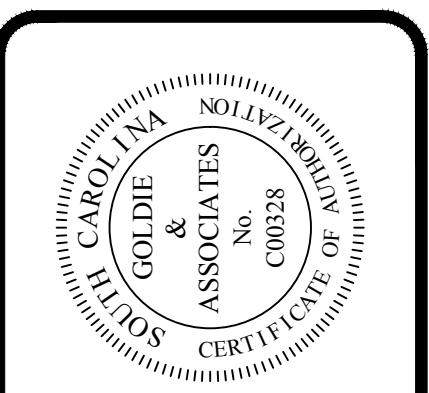
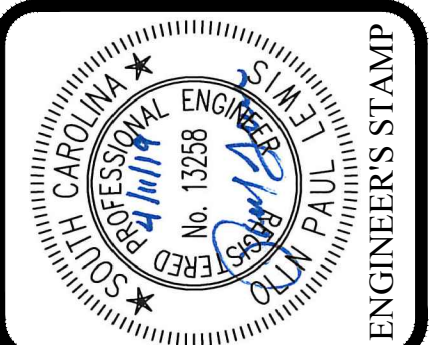
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--- DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA

THE FIRST NUMBER REFERENCES THE ADDENDUM NUMBER WHILE THE SECOND NUMBER REFERENCES THE ADDENDUM ITEM NUMBER

APPENDIX #	GENERAL REVISION	INITIAL	DATE	DESCRIPTION
2	4/11/19		8/1/18	
1	12/2/18		8/1/18	



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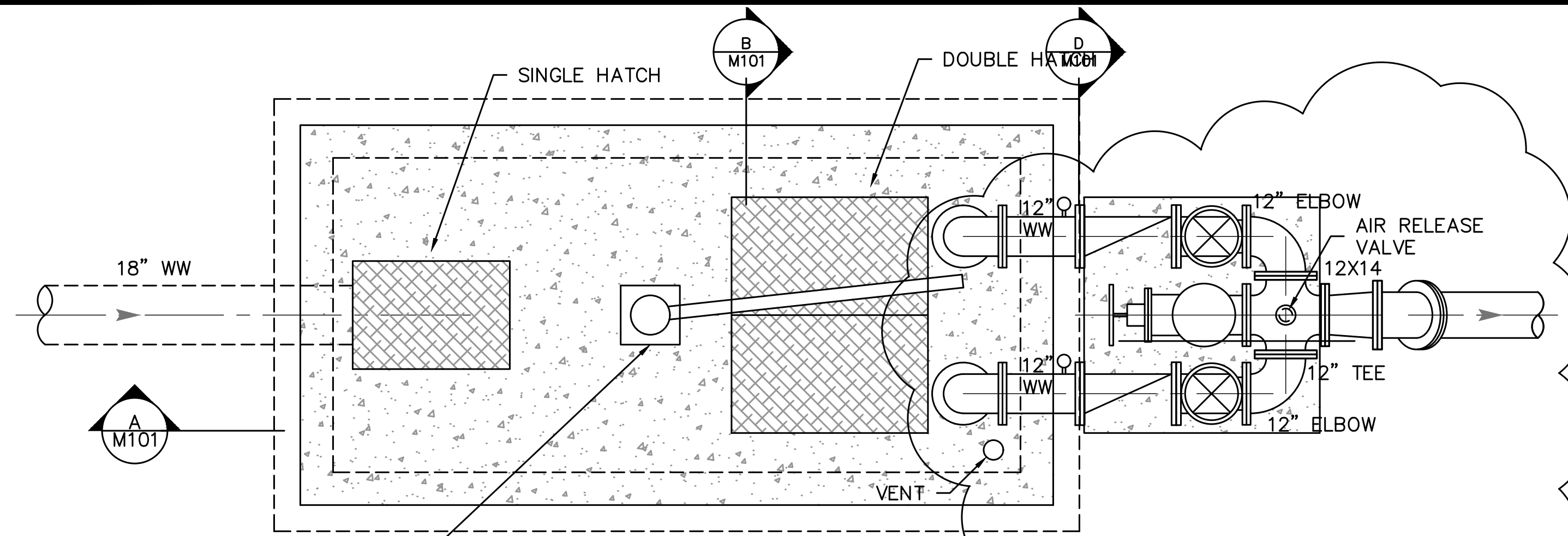
CLIENT: **Town of Ridgeland**

PROJECT: **Jimmy Mixson WRF Expansion**

SHEET TITLE: **Valve and Pipe Schedules**

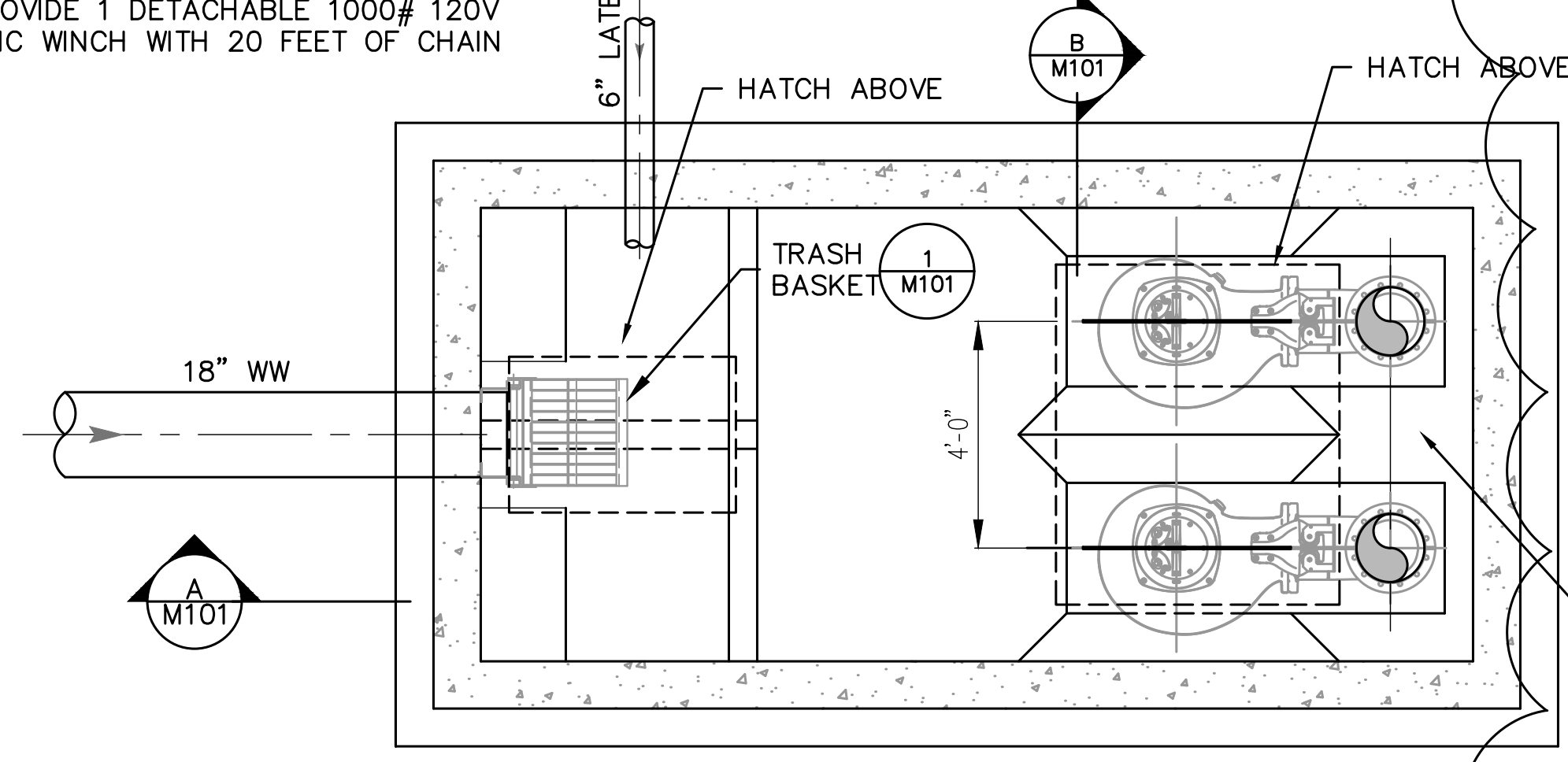
SHEET NO.	OF
M001	---
FILE NO.	
1636.6	





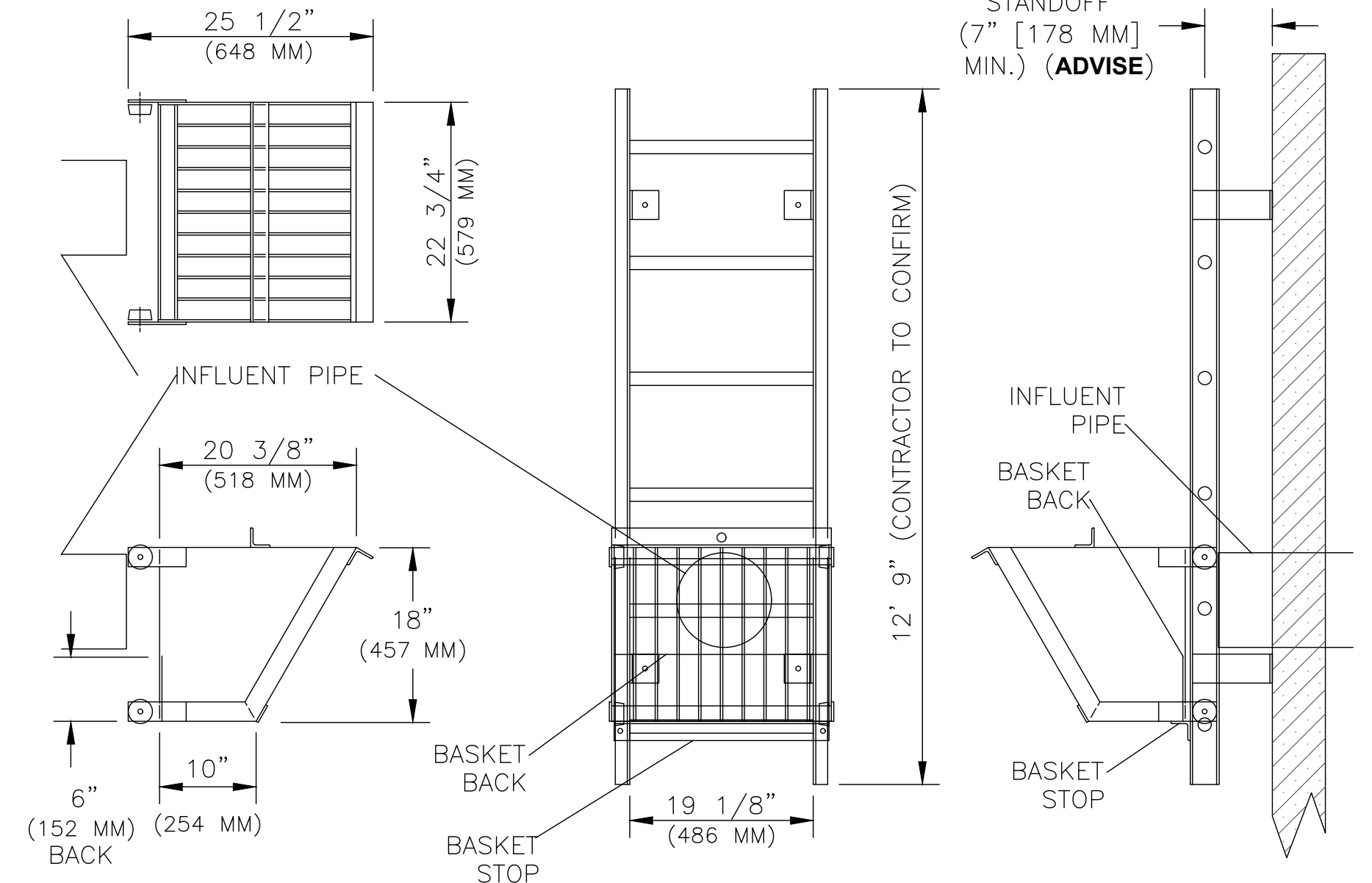
**Influent PS Wet Well Plan**  
SCALE: 3/8" = 1'-0"

1000# CAPACITY JIB BOOM WITH 8 FOOT REACH; GRAINGER #48ZH10 OR APPROVED EQUAL (TYP. 2 - INFLUENT AND EFFLUENT PUMP STATIONS). PROVIDE 1 DETACHABLE 1000# 120V ELECTRIC WINCH WITH 20 FEET OF CHAIN

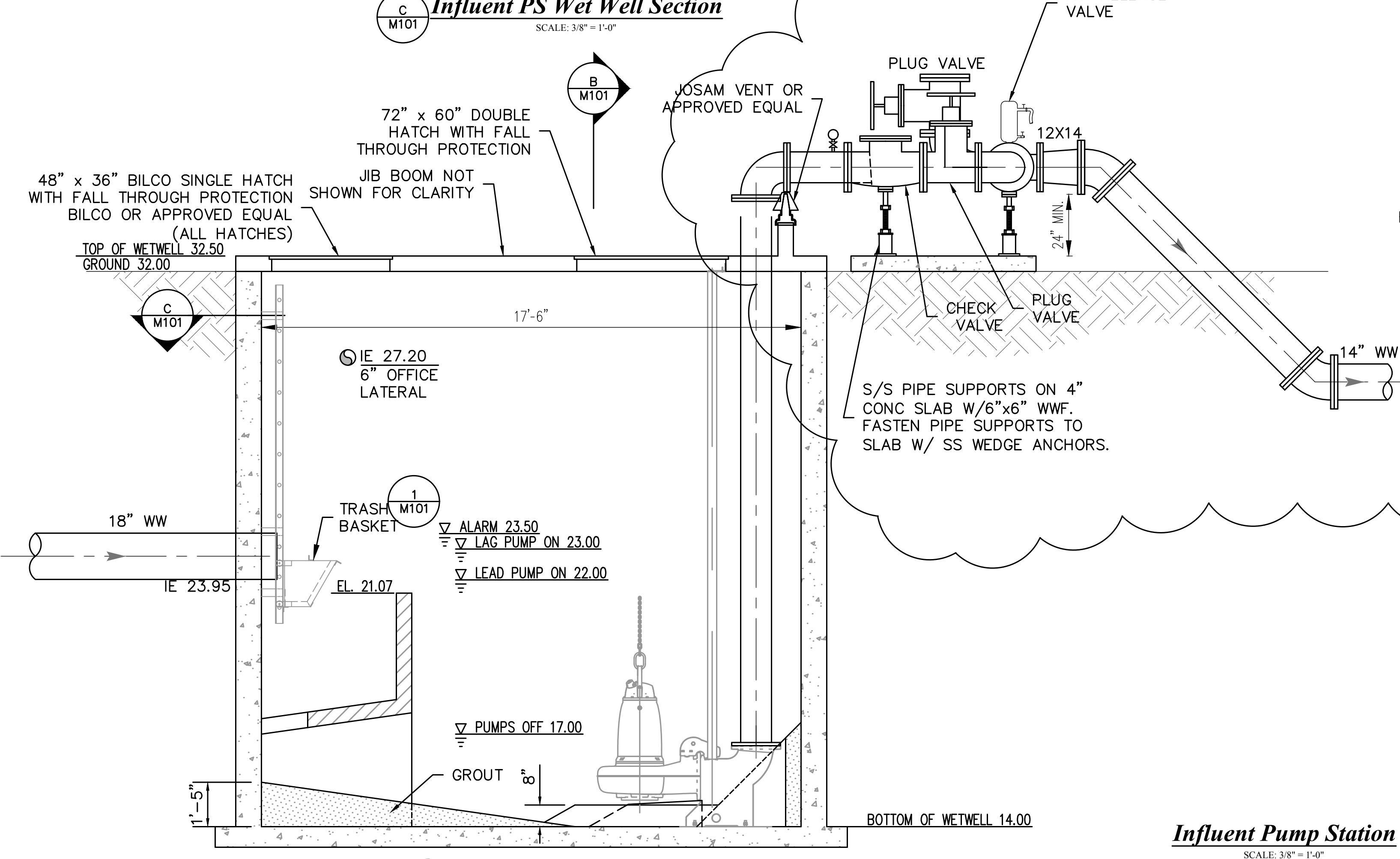


**Influent PS Wet Well Section**  
SCALE: 3/8" = 1'-0"

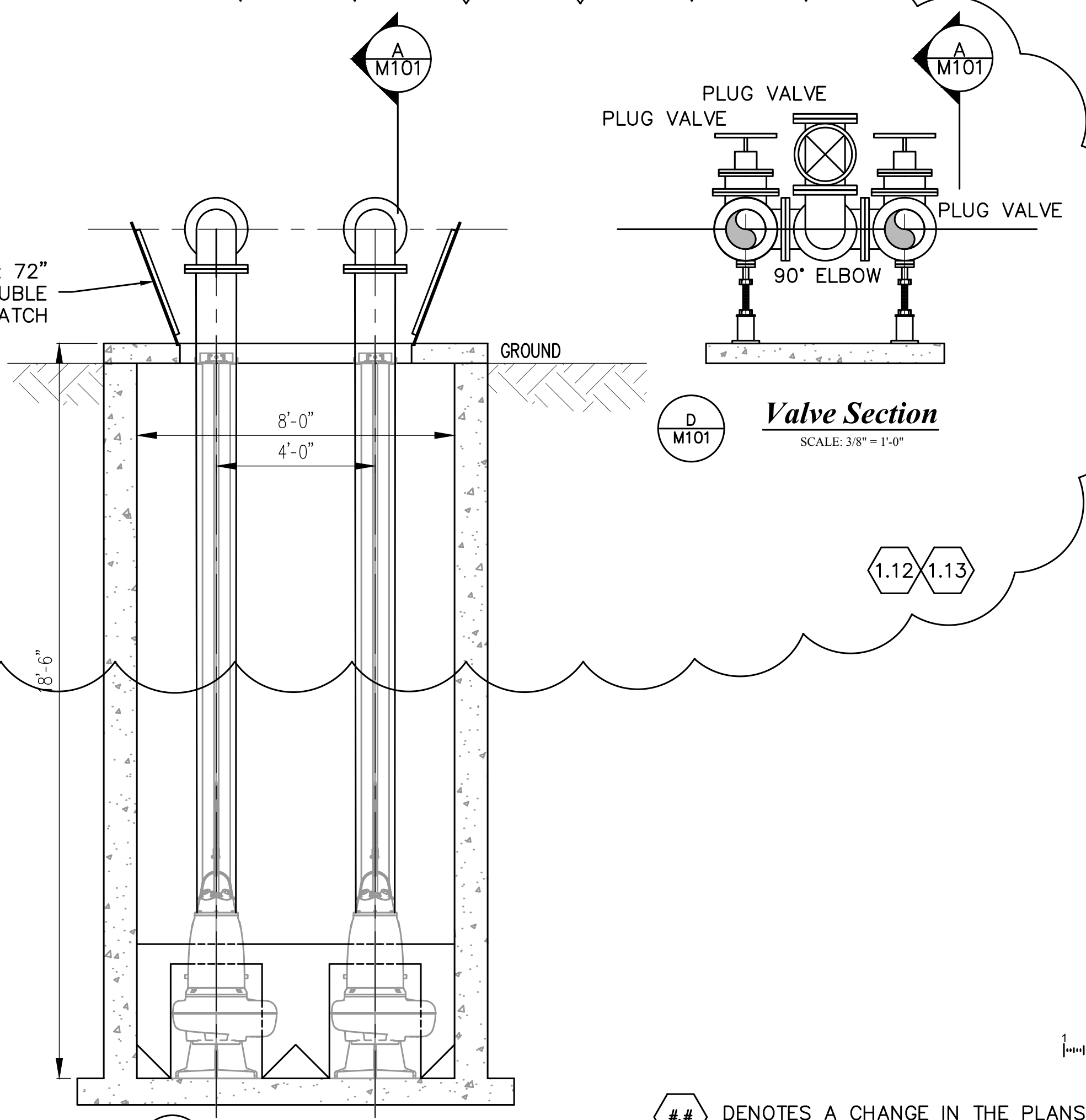
GROUTING PER PUMP MANUFACTURER'S INSTRUCTIONS



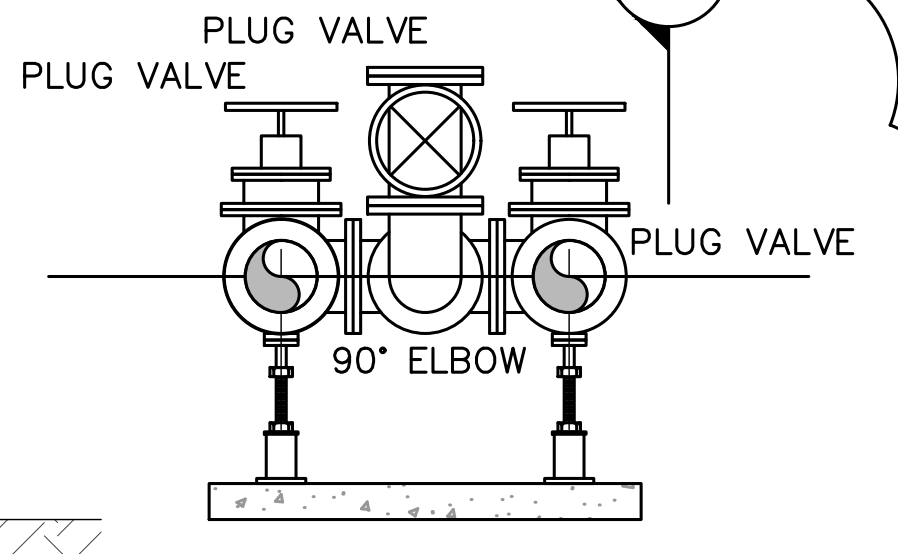
**Aluminum Trash Basket Detail**  
HALLIDAY OR APPROVED EQUAL  
NOT TO SCALE



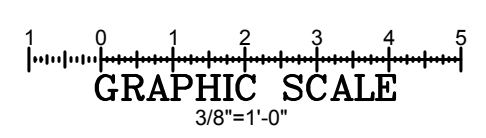
**Influent Pump Station**  
SCALE: 3/8" = 1'-0"



**Wet Well Section**  
SCALE: 3/8" = 1'-0"

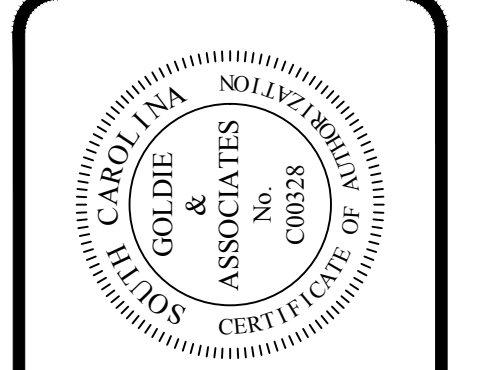
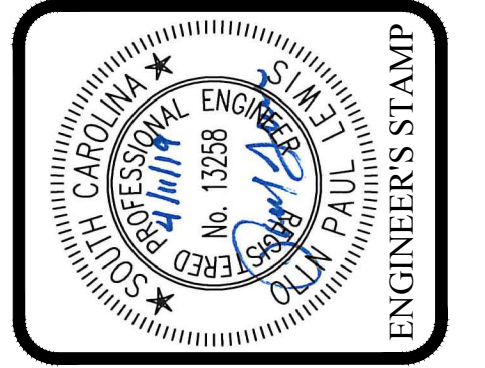


**Valve Section**  
SCALE: 3/8" = 1'-0"



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NO.	DATE	INITIAL	DESCRIPTION
2	4/11/19		
1	12/2/18		GENERAL REVISION
0	8/1/18		INITIAL
			APPENDIX #1



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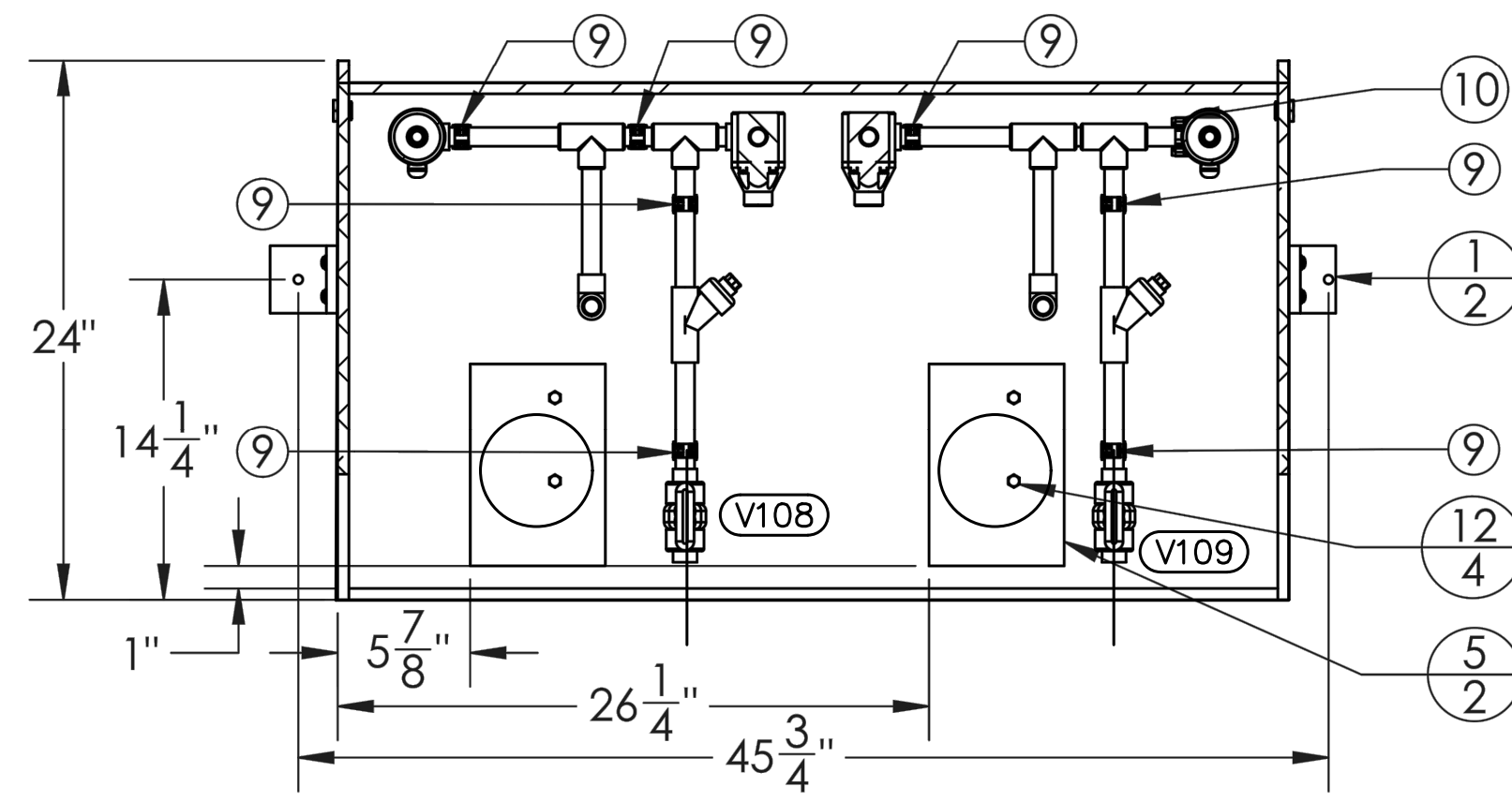


CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **Influent Pump Station**

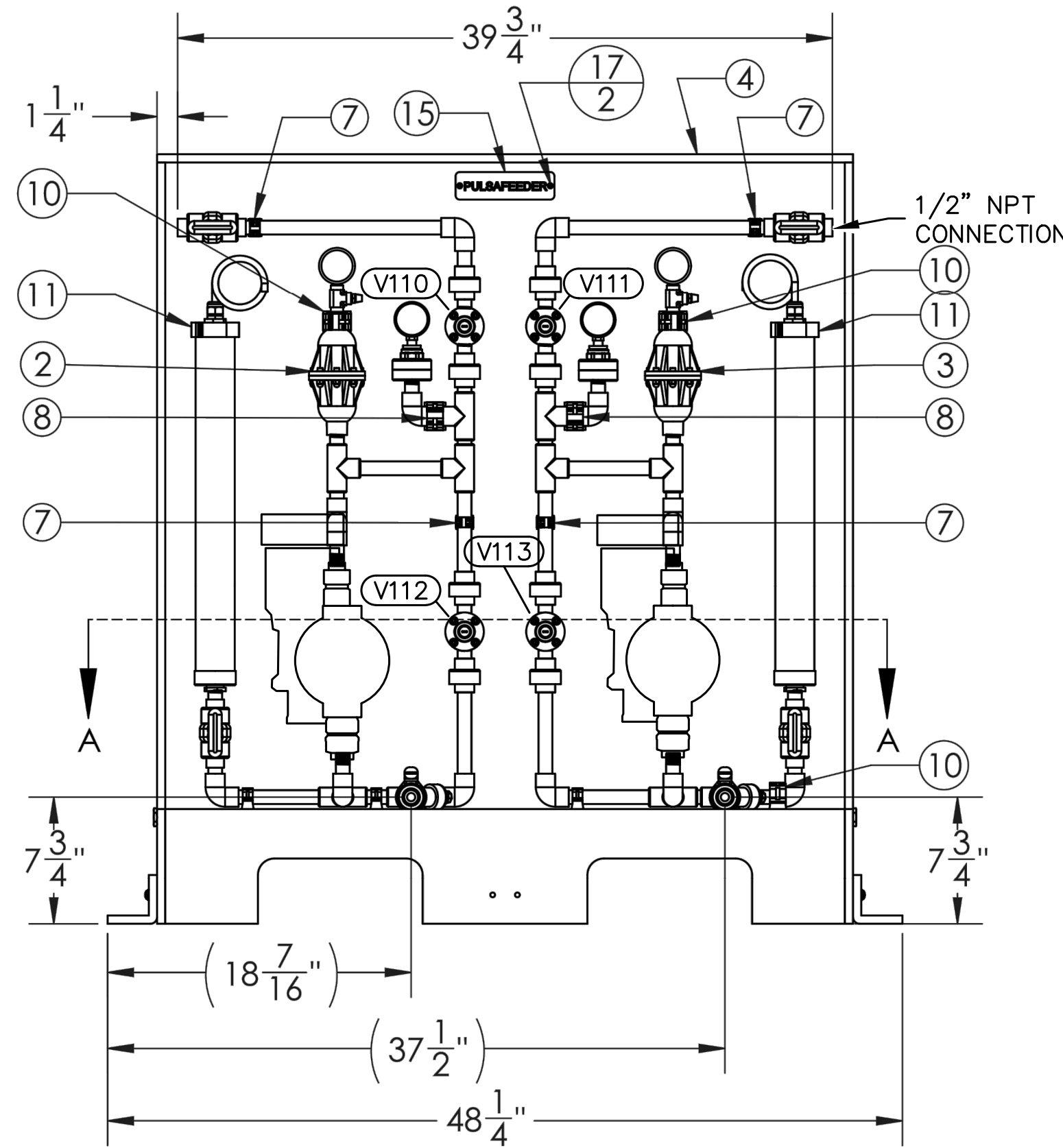
SHEET NO. **M101** OF ---  
FILE NO. **1636.6**



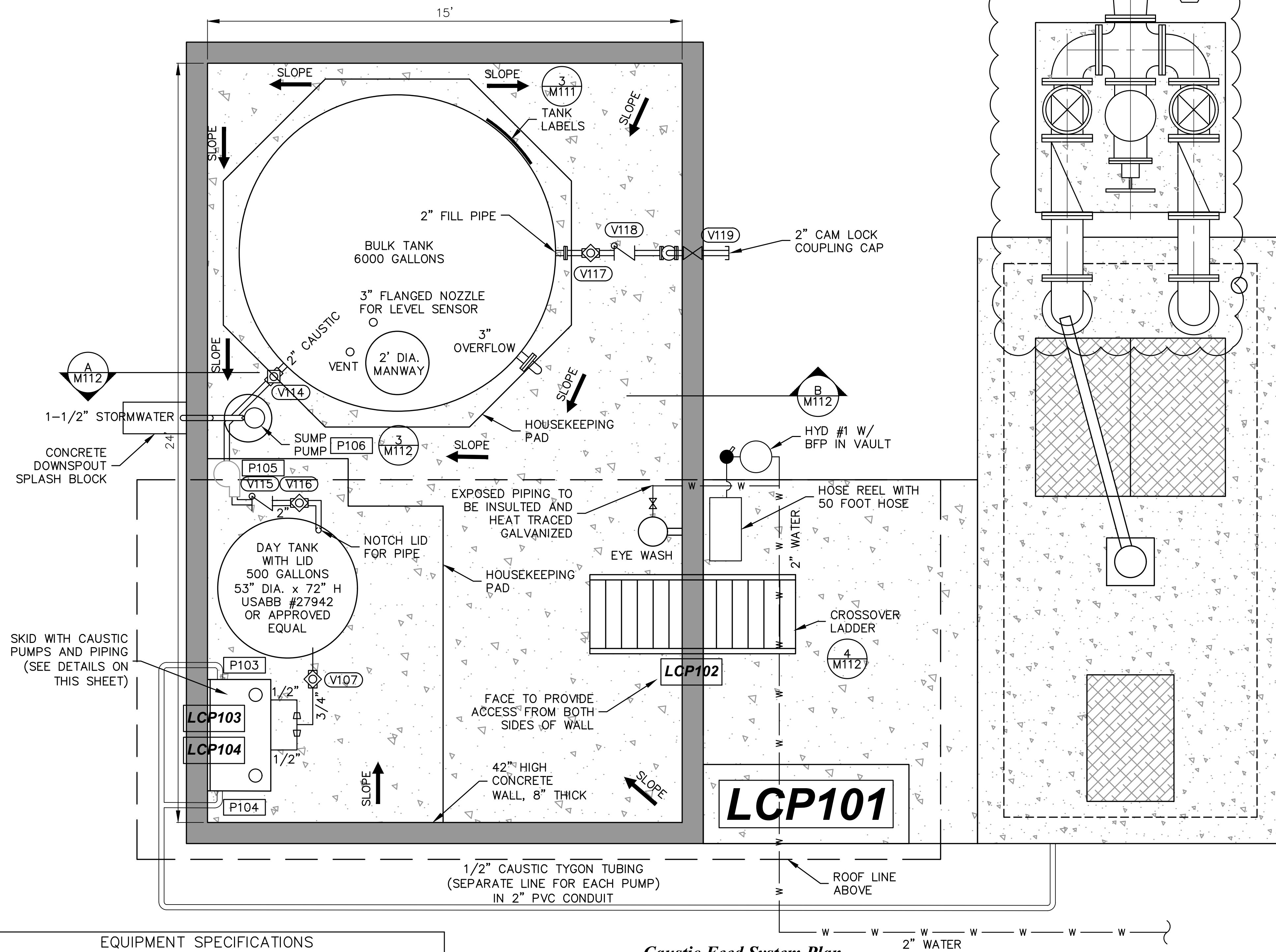
ITEM NO.	PART NUMBER	DESCRIPTION	Deflt Qty.
1	PES00059-000	BRACKET, SKID MOUNTING	2
2	PES00305-PVCV-LHS	PIPING ASSY (PVC), BL, LEFT SIDE	1
3	PES00305-PVCV	PIPING ASSY (PVC), BL, LF, V	1
4	PES00402-000	SKID BASE WELDMENT, BL, PES2S, LF	1
5	PES00805-000	BLACKLINE PUMP MOUNT	2
6	03-043-00	PLUG, PVC-80, 1/2" T	2
7	03-127-00	CLAMP ASSEM, 1" PIPE, BOT PNL	4
8	03-127-01	CLAMP ASSEM, 1" PIPE, BOT PNL	2
9	03-127-02	CLAMP ASSEM, 1" PIPE, BOT PNL	7
10	03-127-03	CLAMP ASSEM, 1" PIPE, BOT PNL	3
11	03-127-04	CLAMP ASSEM, 1000ML CAL COLUMN	2
12	21411	BOLT (SST), .31-18 X 1.0-LG HEX	4
13	32942	NUT (SST), .25-20 X .22	4
14	42022	WASHER (SST), .28X.63X.05 FLAT	4
15	J25334	LABEL (LEXAN), LOGO NAMEPLATE	1
16	L9801800-188	SCREW (SST), .25-20 X 2	4
17	U0900857	SCR (SST), 4-20 X.38 TYPE-BT PHP	2



**Plan View of Skid with Caustic Pumps and Piping**  
SCALE: 1 1/2"=1'-0"



**Section of Skid with Caustic Pumps and Piping**  
SCALE: 1 1/2"=1'-0"

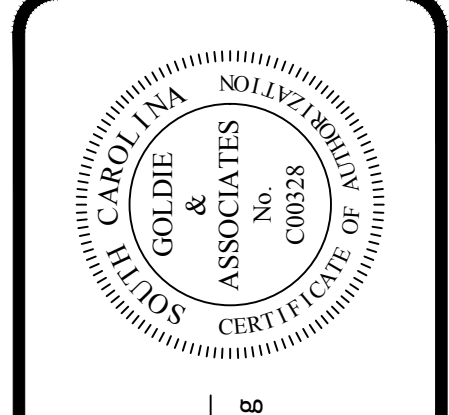
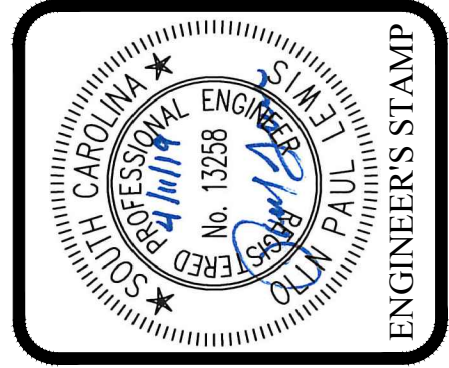


**Caustic Feed System Plan**

EQUIPMENT SPECIFICATIONS	
ITEM	SPECIFICATION AND NOTES
METERING PUMPS	PULSEFEEDER BLACKLINE W/VFD, PVDF, 336 GPD, 150 PSI, MDIBKTPN2C USA BLUEBOOK #85154 OR APPROVED EQUAL
SKID	PULSEFEEDER BLACKLINE SERIES DUAL-PUMP SKID, USA BLUEBOOK #350351 OR APPROVED EQUAL
EYE WASH	PEDESTAL EYEWASH WITH SS WASHBOWL, USA BLUEBOOK #11298 OR APPROVED EQUAL
YARD HYDRANT	FREEZE PROOF, USA BLUEBOOK #89895 OR APPROVED EQUAL
HOSE REEL	FOR 1" HOSE, USA BLUEBOOK #64048 OR APPROVED EQUAL
BACKFLOW PREVENTOR	
HOSE	50' OF 1" RUBBER HOSE, USA BLUEBOOK #60560 OR APPROVED EQUAL
SUMP PUMP	GODWIN GSP10, 1 HP, 70 GPM @ 20 FT TDH OR APPROVED EQUAL

#-# DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA  
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NO.	DATE	INITIAL	DESCRIPTION
2	4/11/19		
1	12/2/18		GENERAL REVISION
0	8/1/18		INITIAL
			NOI



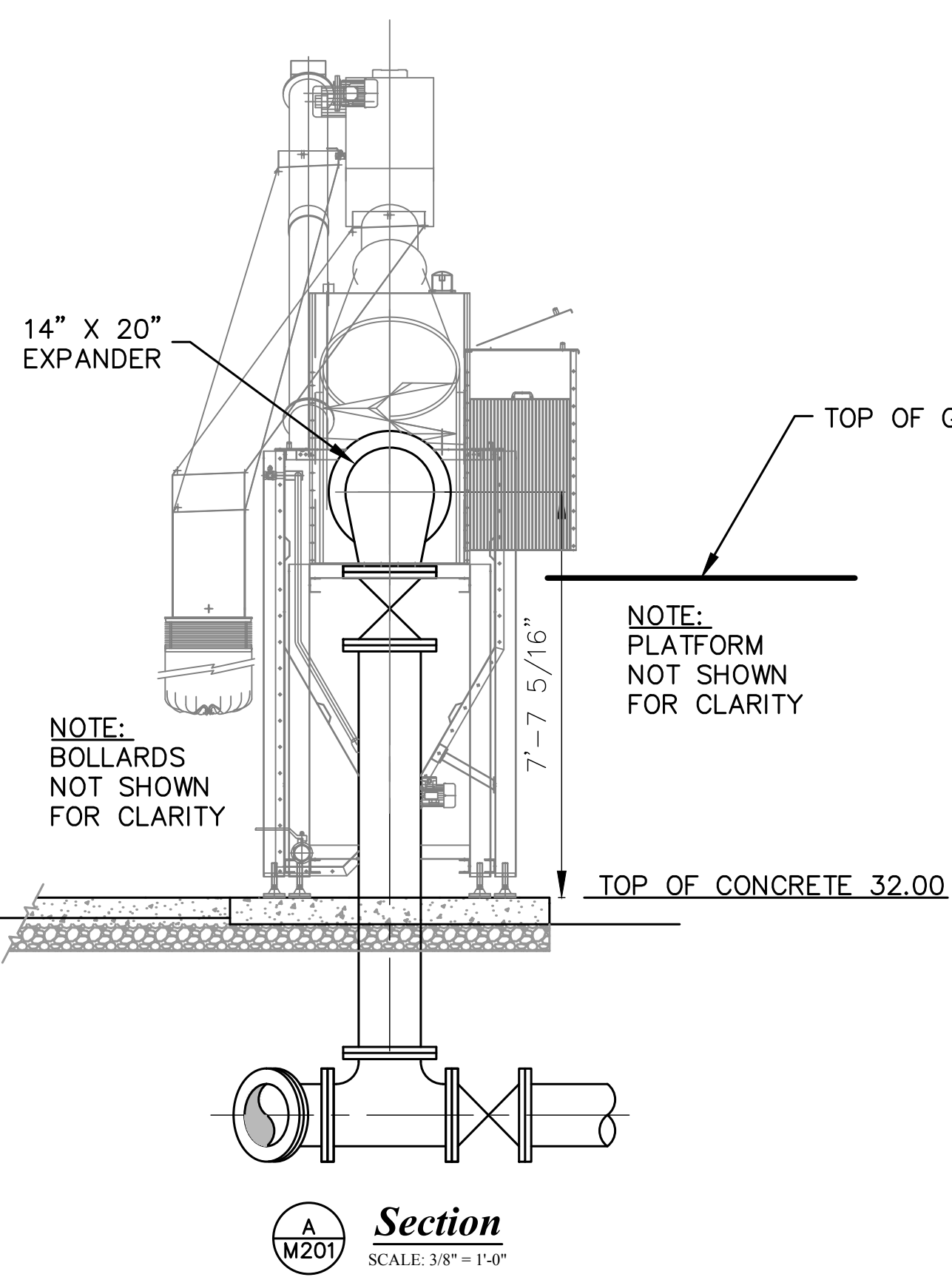
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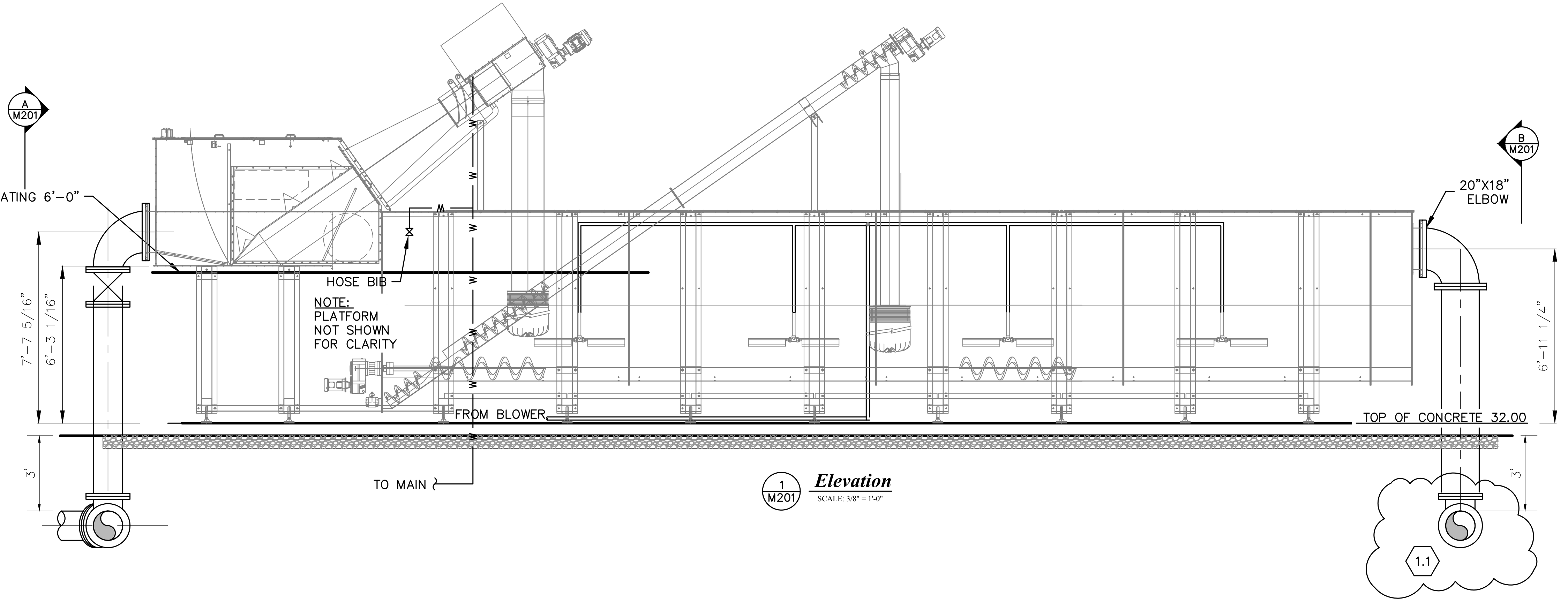
CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **Caustic Feed System and Details**

SHEET NO.	OF
M111	---
FILE NO.	1636.6

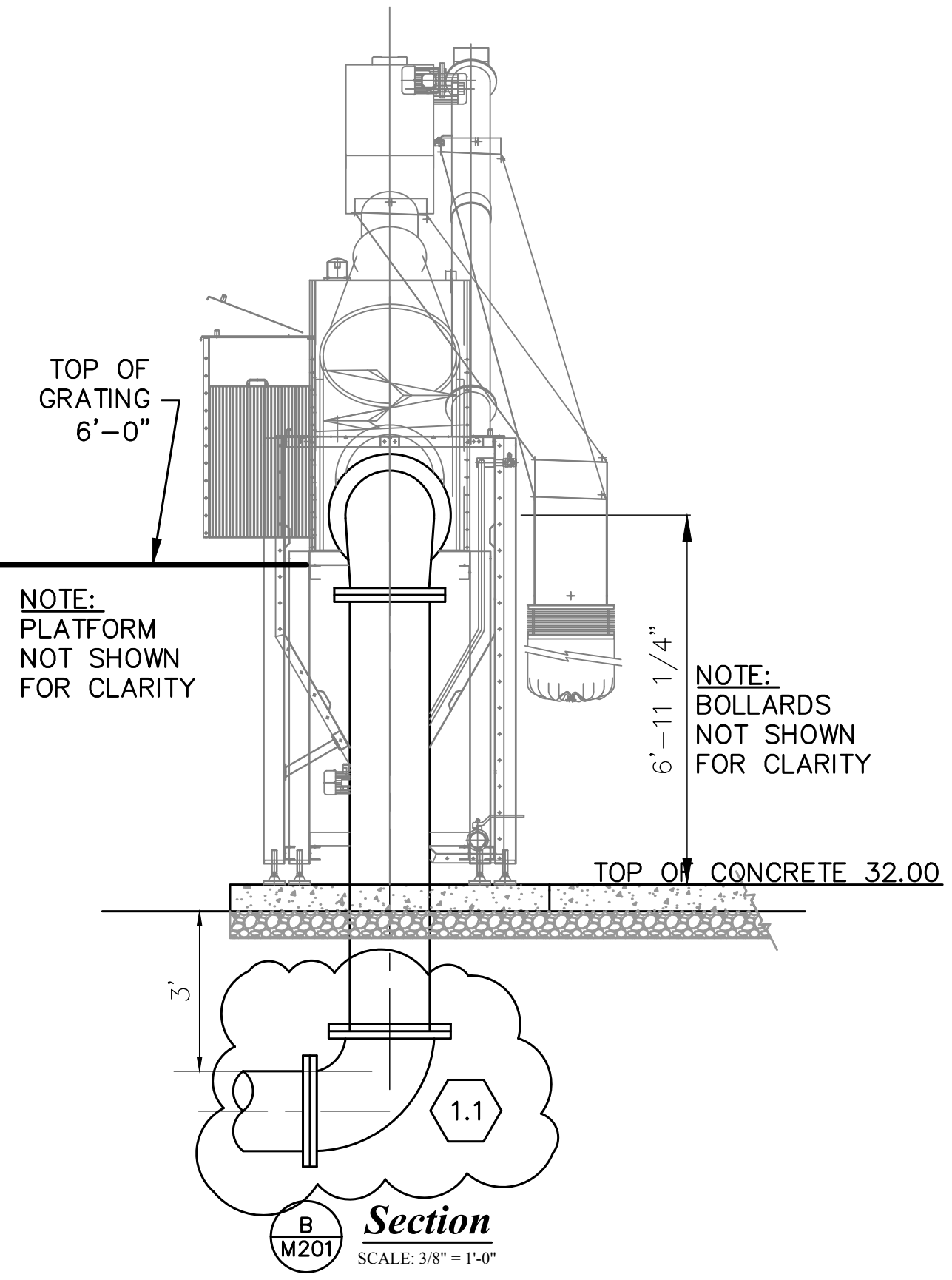




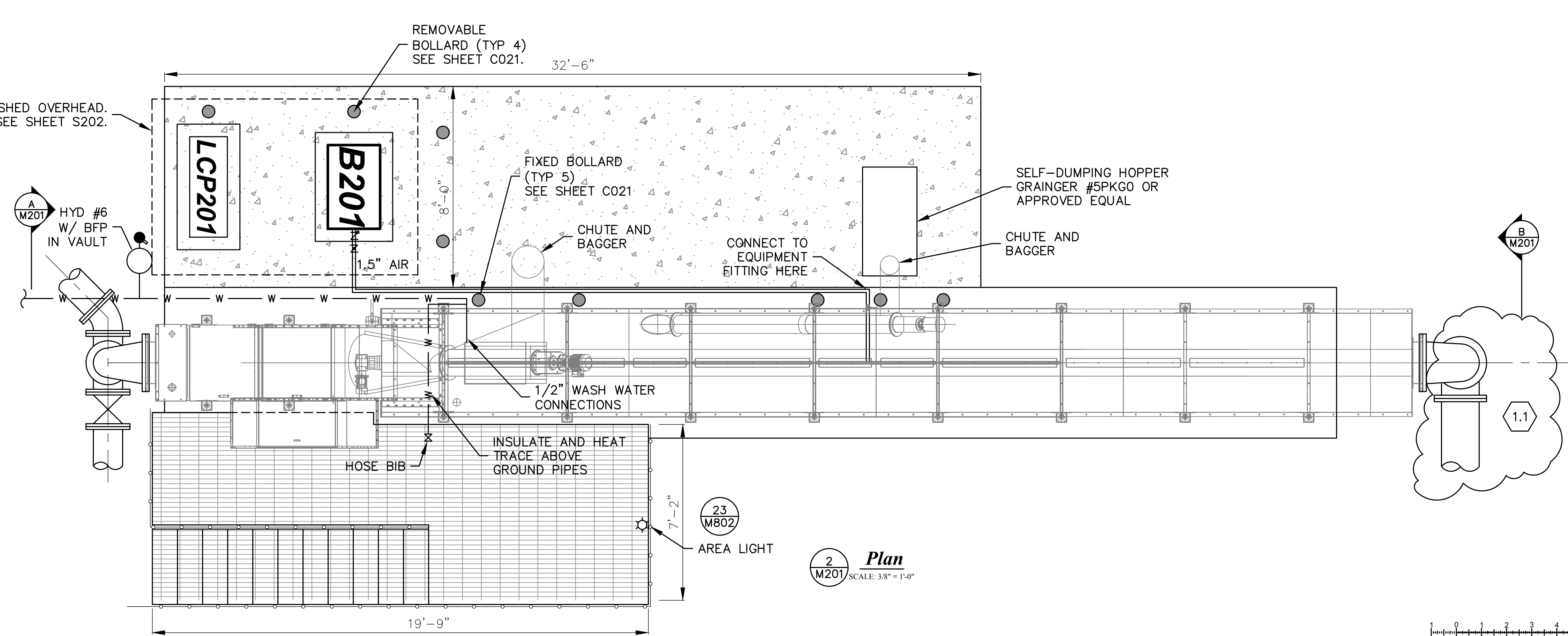
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M201  
**Section**  
SCALE: 3/8" = 1'-0"



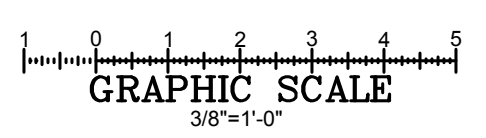
**1**  
M201  
**Elevation**  
SCALE: 3/8" = 1'-0"



**B**  
M201  
**Section**  
SCALE: 3/8" = 1'-0"

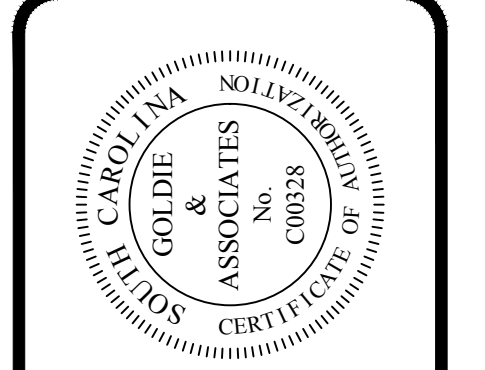
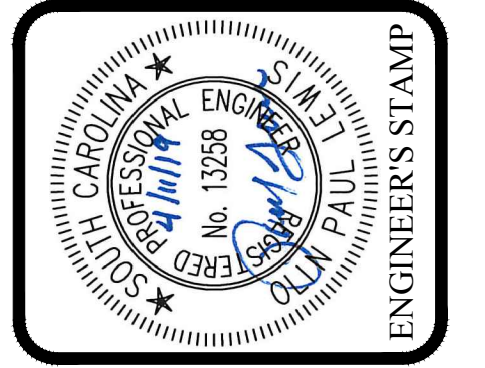


**2**  
M201  
**Plan**  
SCALE: 3/8" = 1'-0"



#.# DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA  
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NO.	DATE	INITIAL	DESCRIPTION
2	4/11/19	OPJ	ADDENDUM #1
1	12/2/18	OPJ	GENERAL REVISION
0	8/1/18	OPJ	INITIAL
			NOI



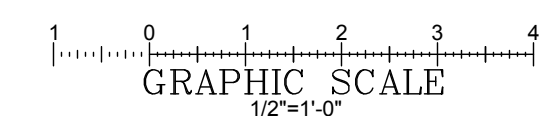
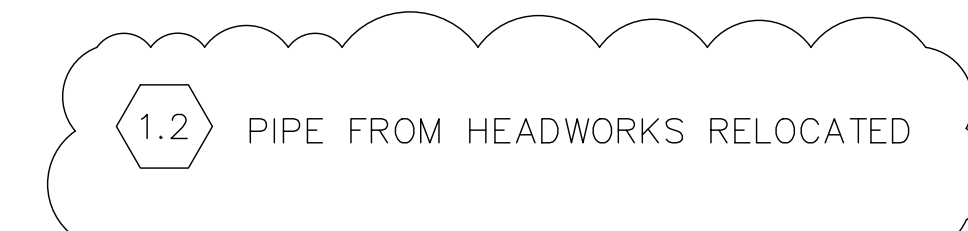
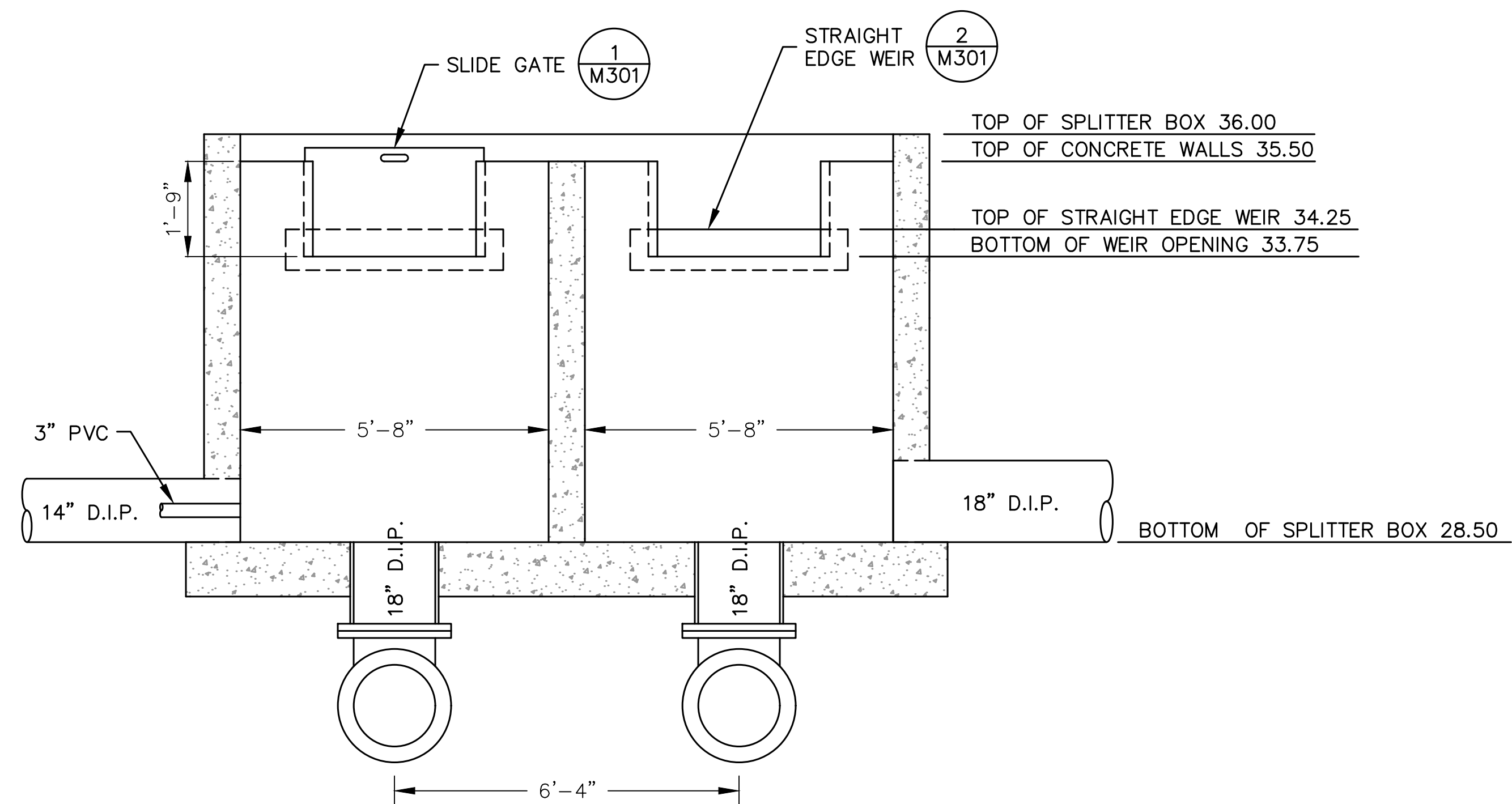
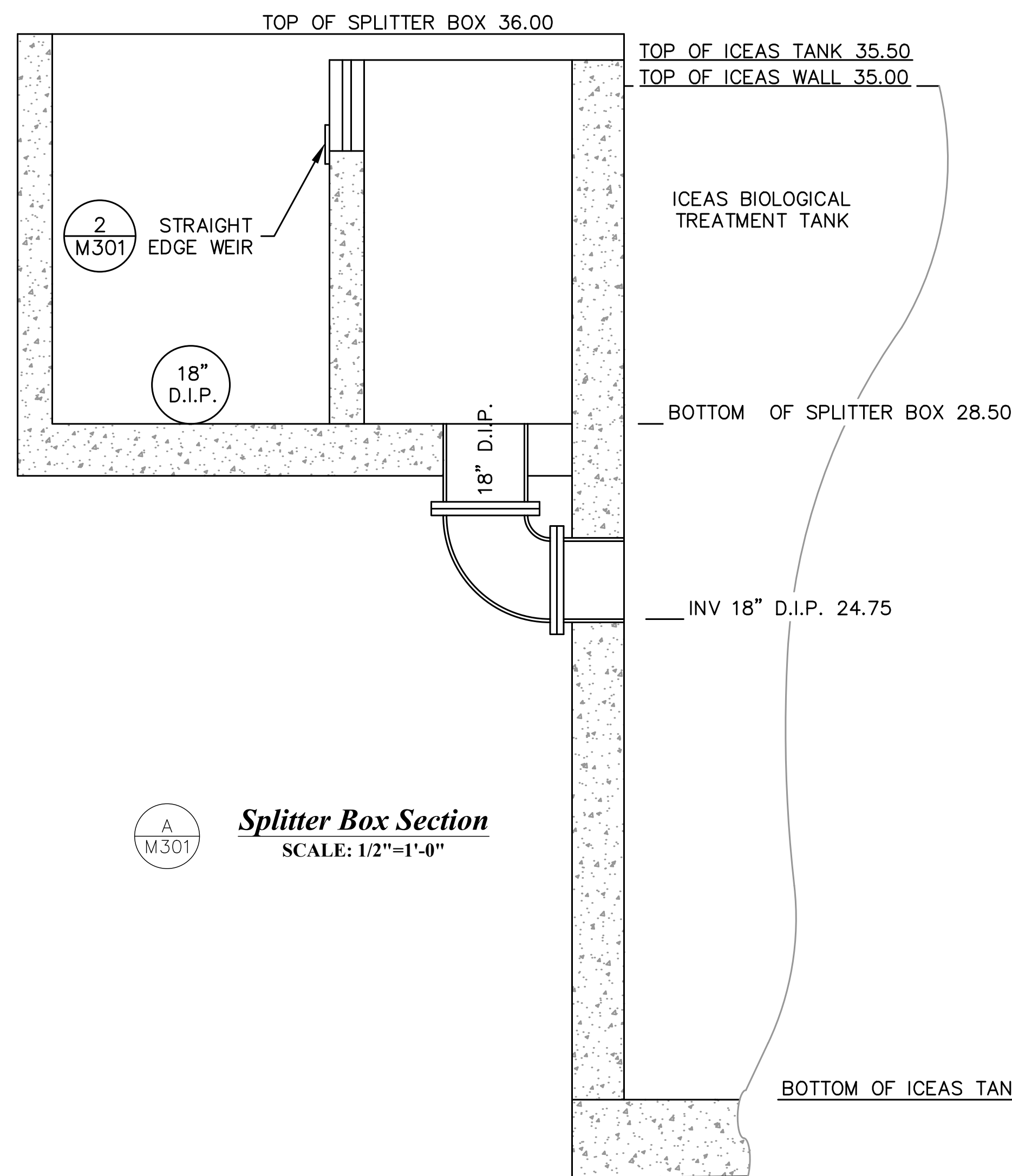
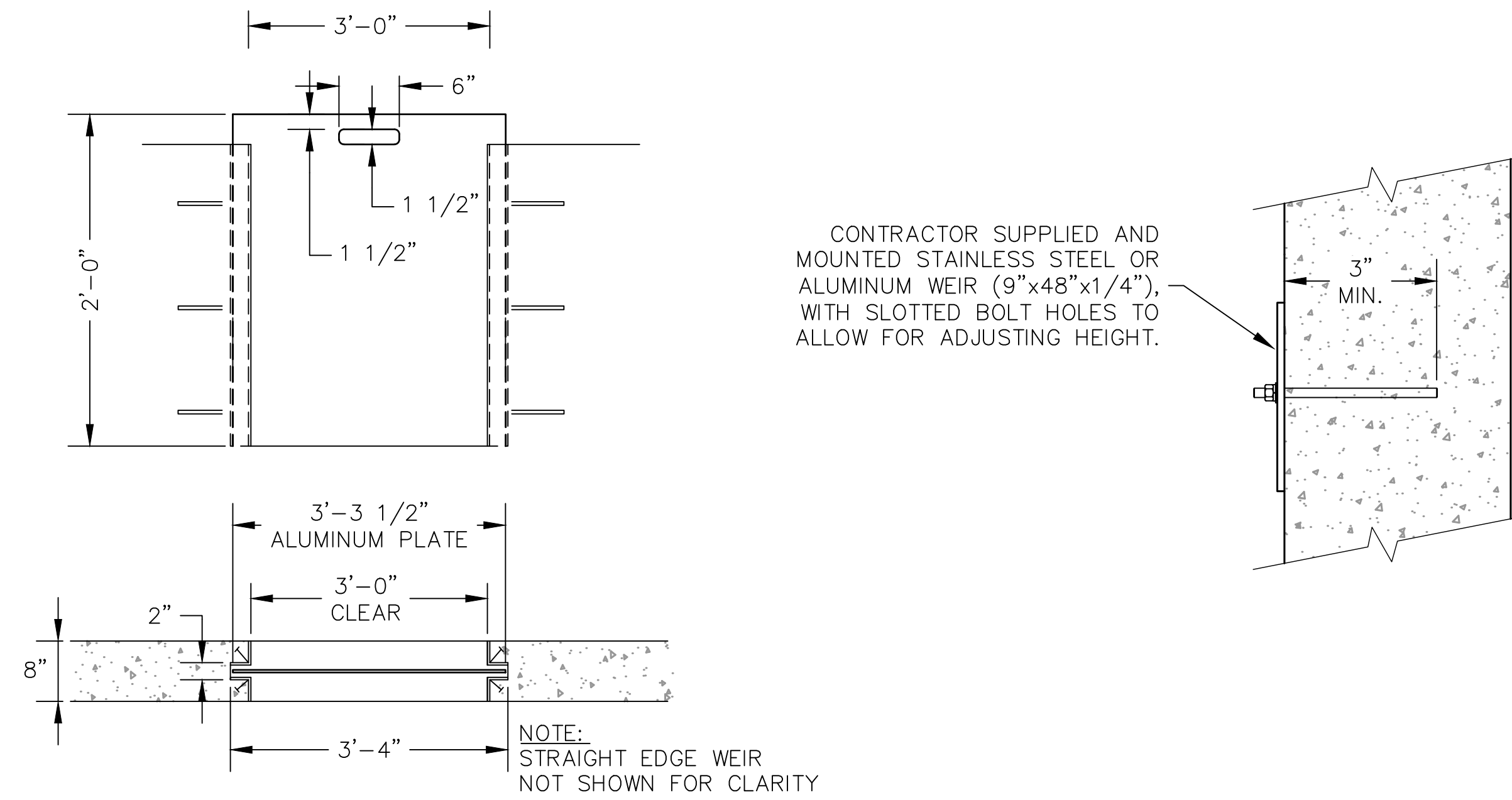
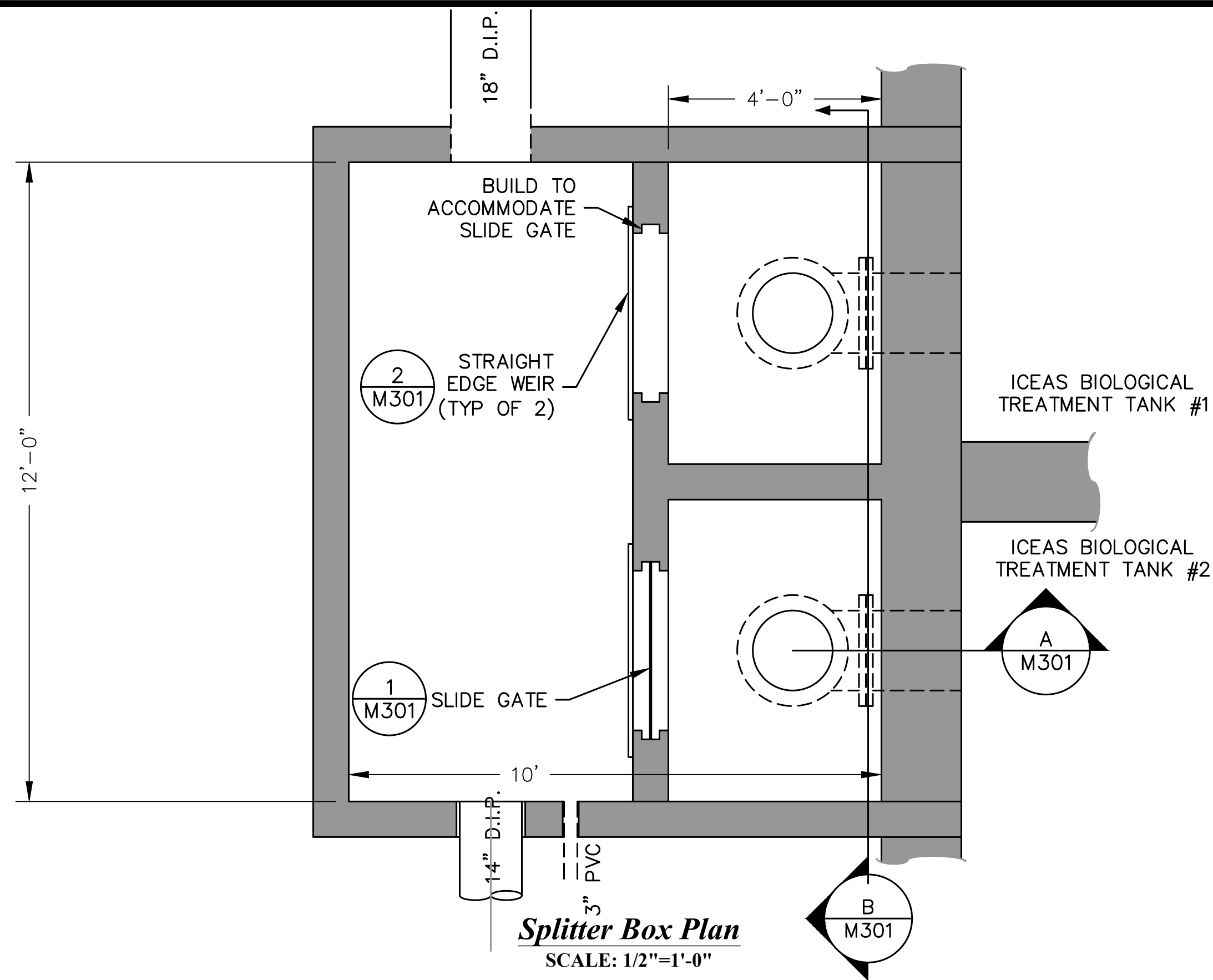
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CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **Headworks**

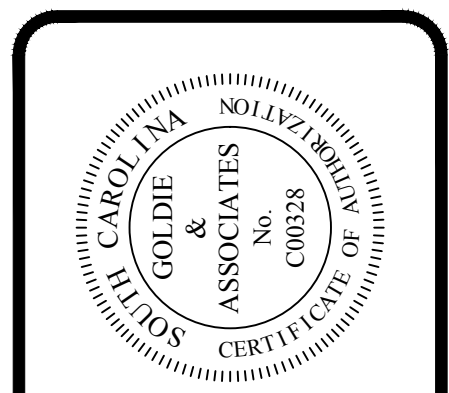
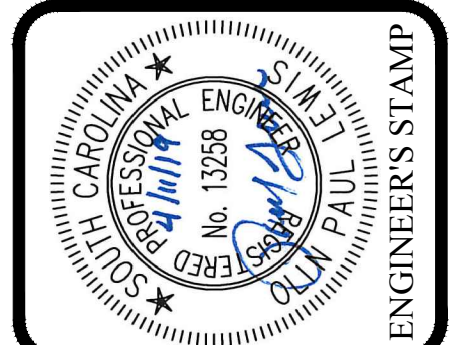
SHEET NO. M201	OF ---
FILE NO. 1636.6	





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NO.	DATE	INITIAL	DESCRIPTION
2	4/1/19	OP	APPENDIX #1
1	12/2/18	OP	GENERAL REVISIONS
0	8/1/18	OP	INITIAL

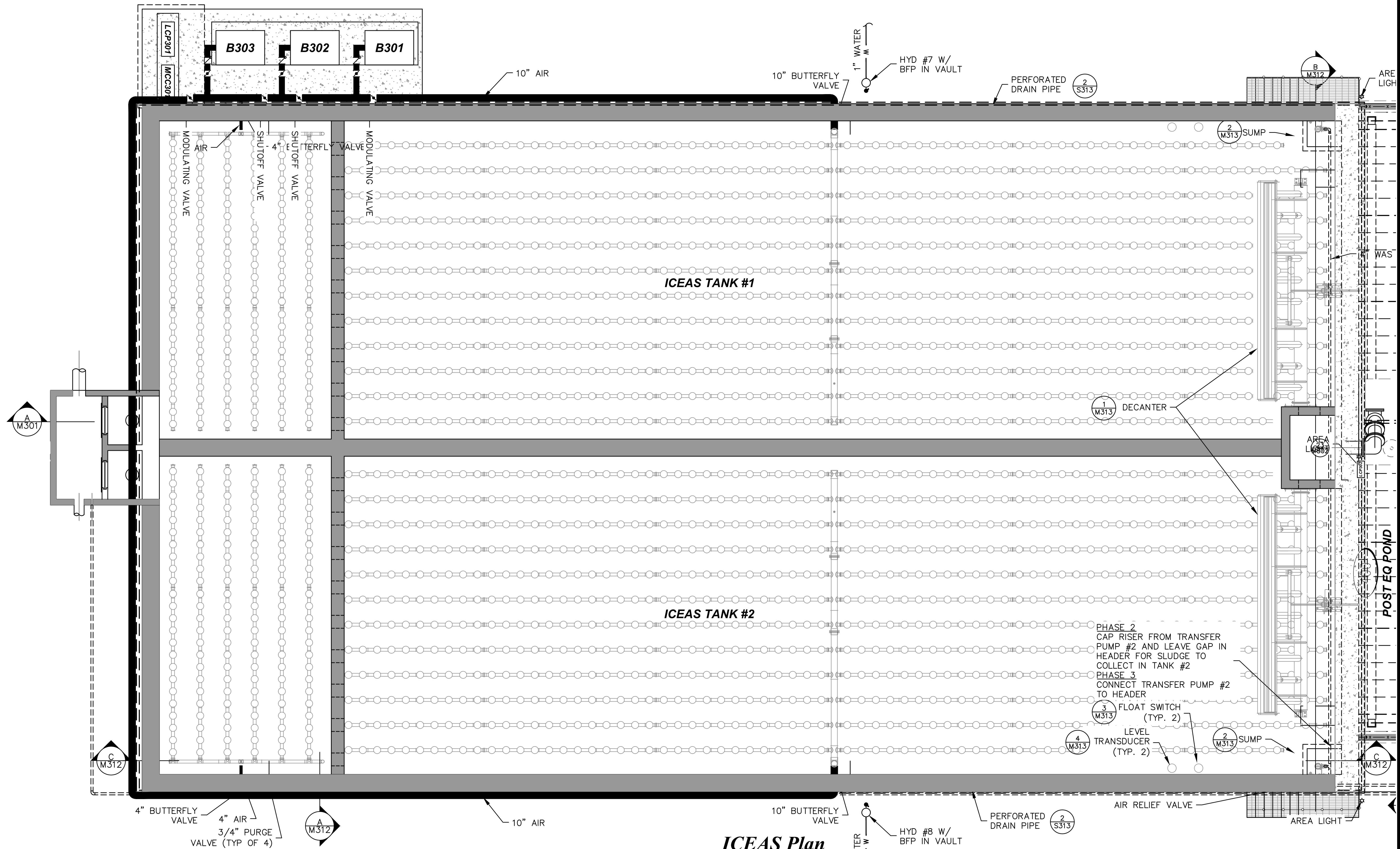


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CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **Splitter Box Plan and Sections**

SHEET NO. **M301** OF **---**  
FILE NO. **1636.6**

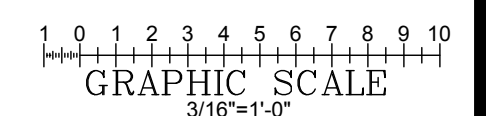


**ICEAS Plan**  
SCALE: 3/16" = 1'-0"

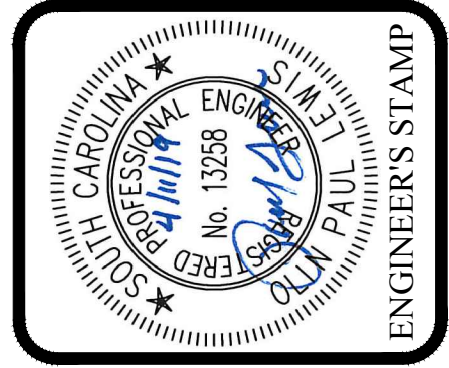
PIPE INTO SPLITTER BOX HAS BEEN RELOCATED AND POST EQ POND HAS BEEN MODIFIED

## DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA

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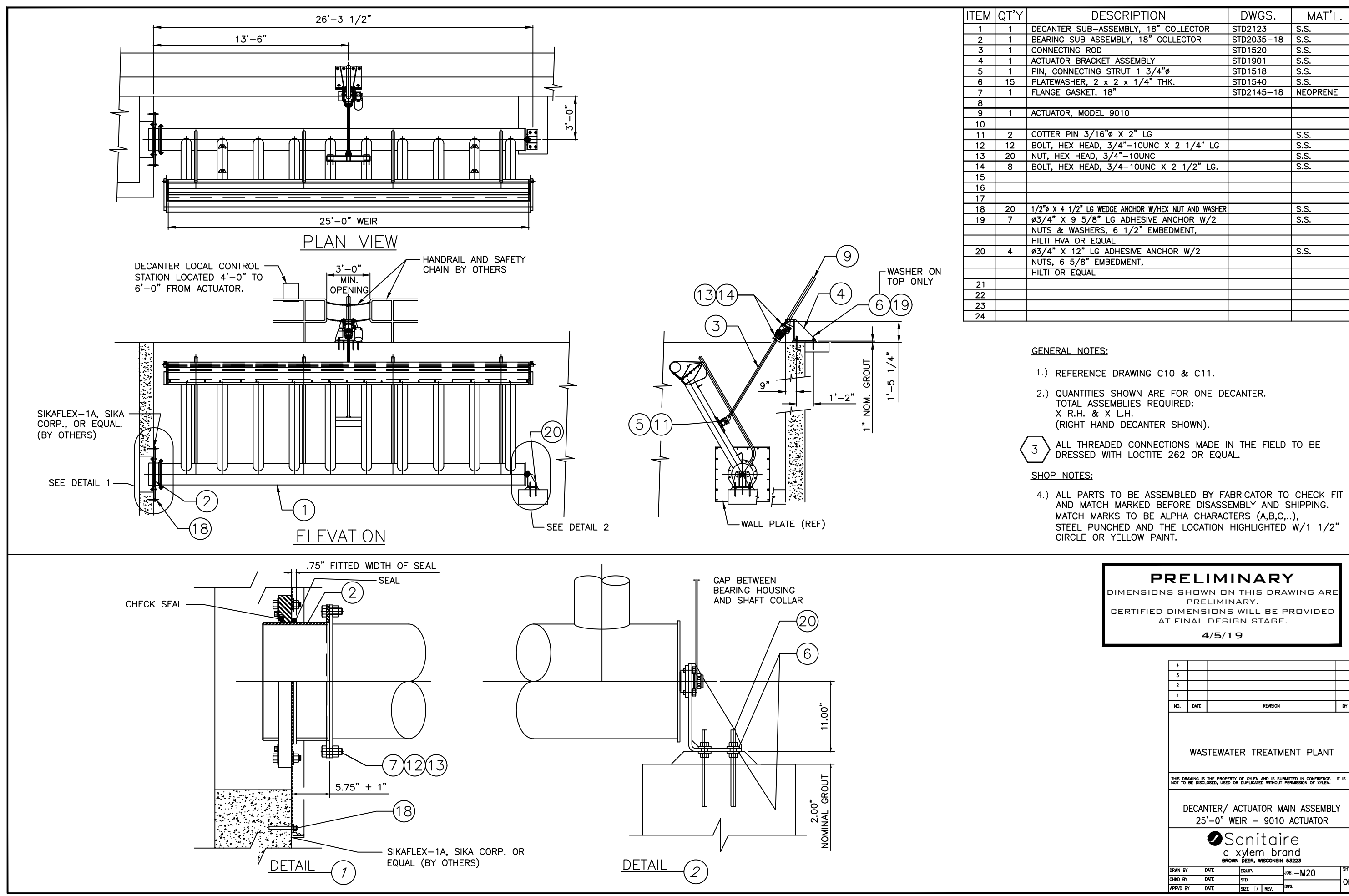
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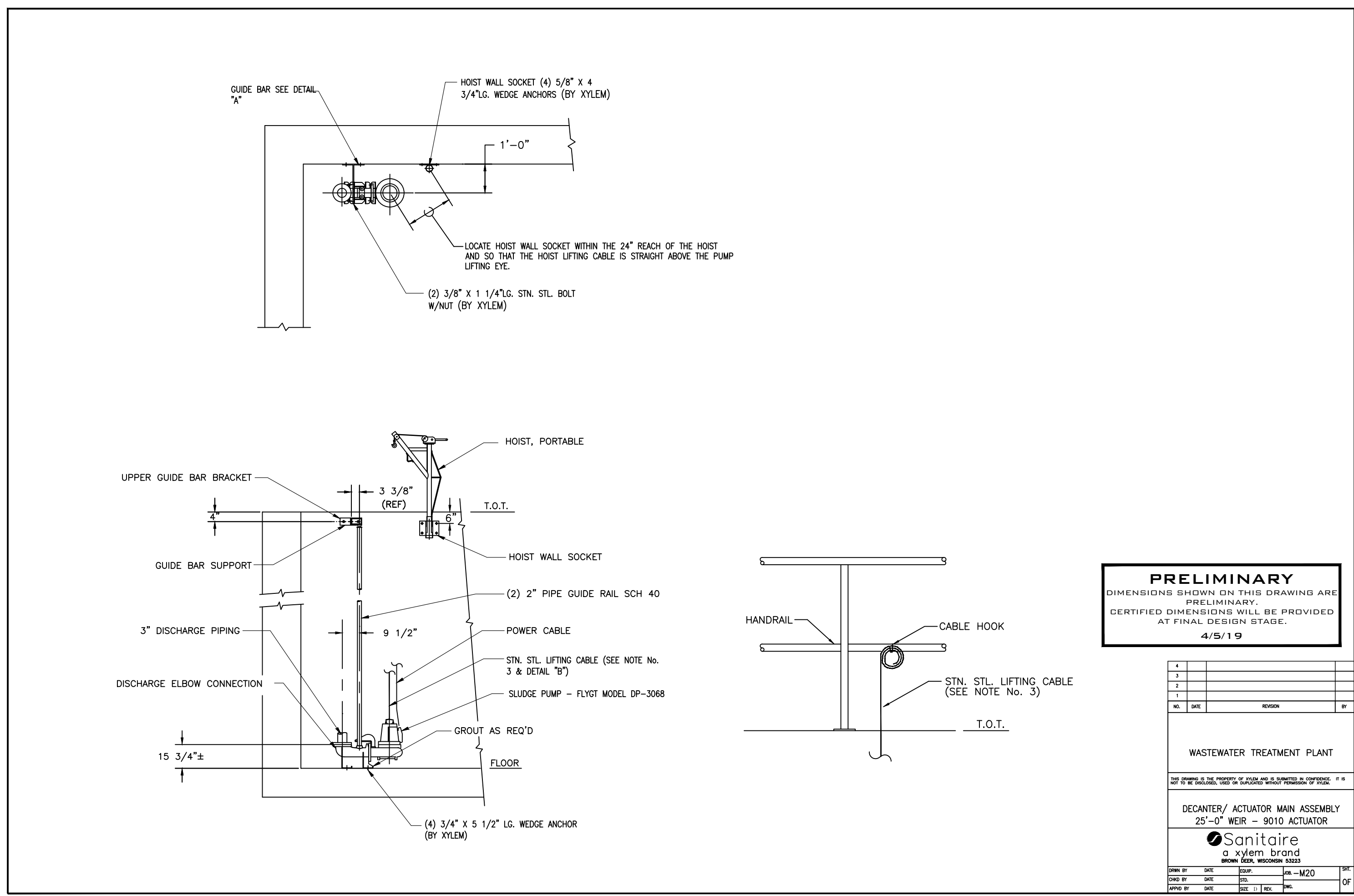
CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **ICEAS Tank Plan**

SHEET NO. <b>M311</b>	OF ---
FILE NO. <b>1636.6</b>	

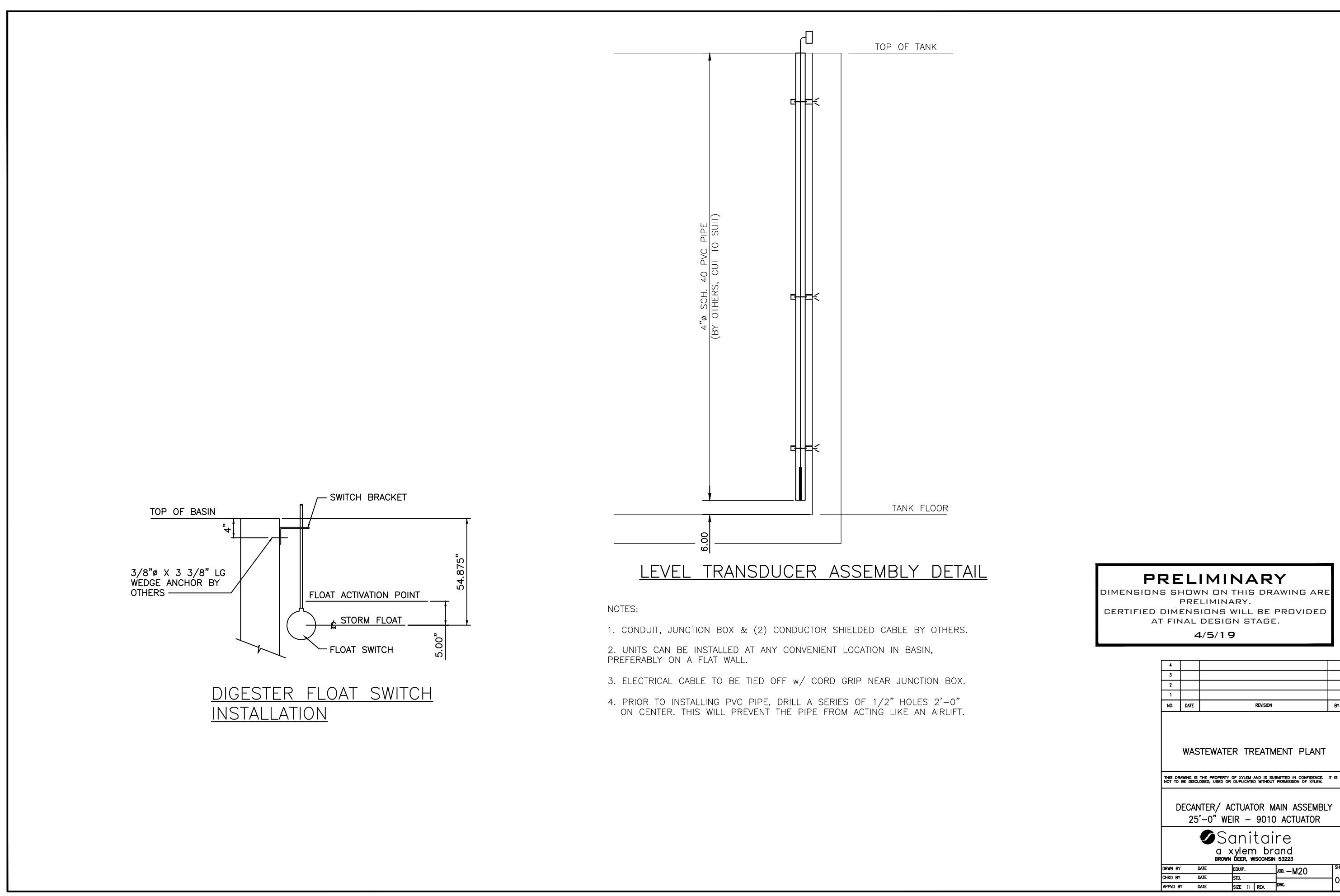




1 M311 1 M312  
**Decanter Details**  
Not to Scale



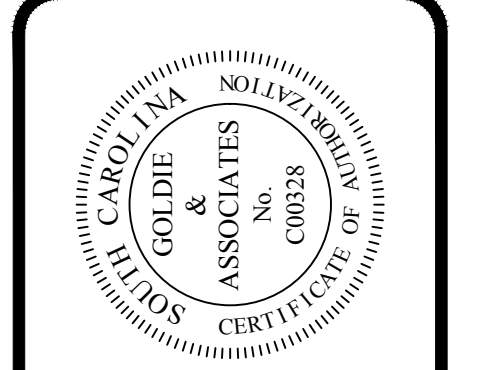
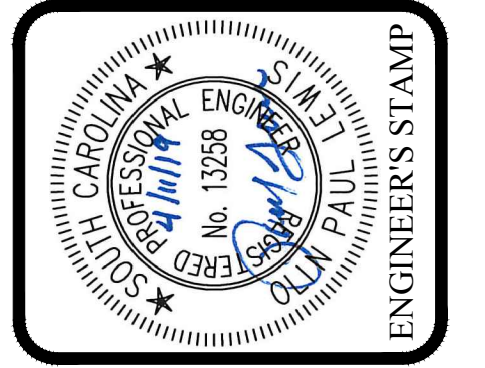
2 M311 2 M312  
**Sump Pump Details**  
Not to Scale



1 M311 1 M312  
**Level Transducer Assembly Detail**  
Not to Scale

1.14 POOR QUALITY IMAGES REPLACED WITH BETTER QUALITY ONES

NO.	DATE	DESCRIPTION



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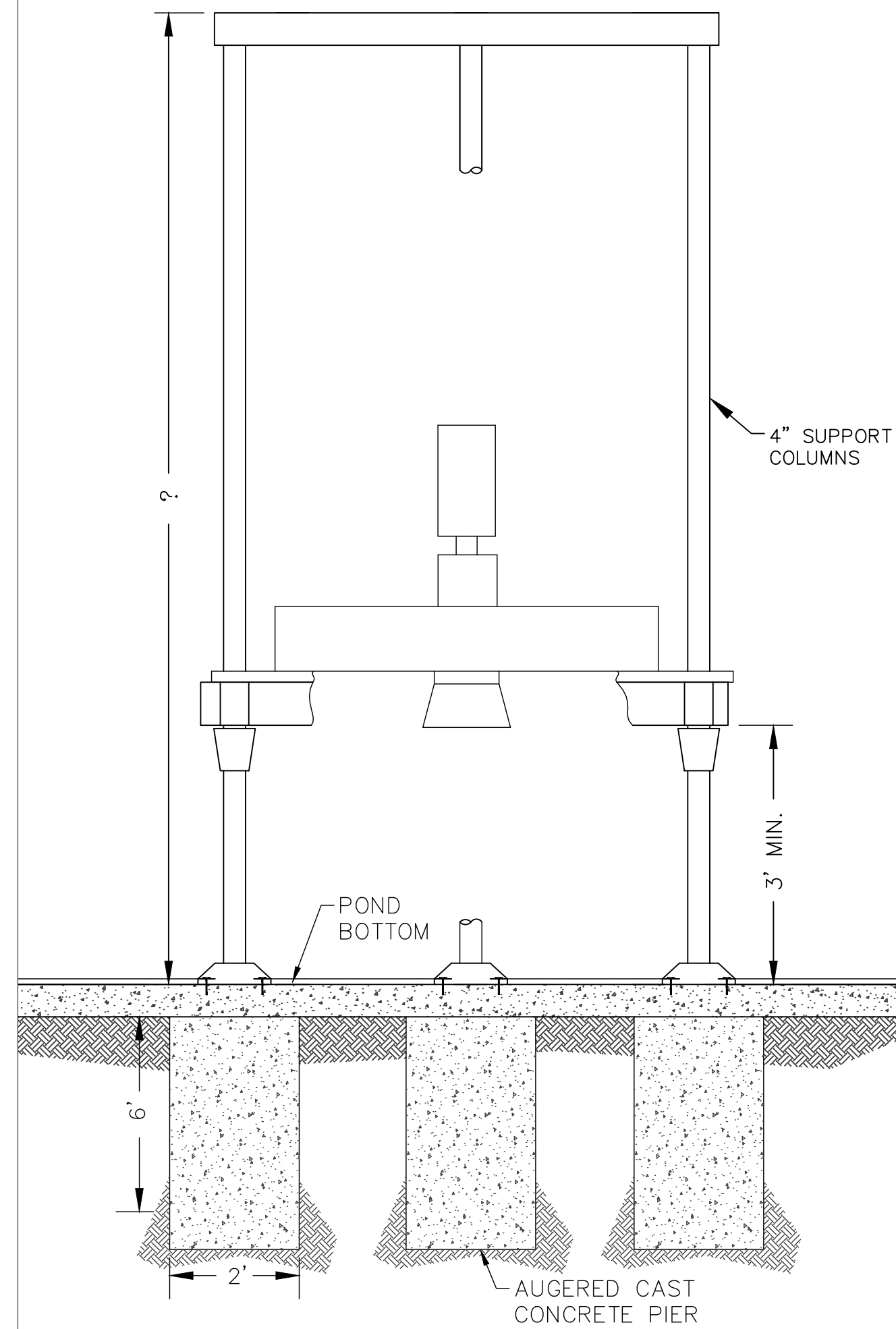


CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **ICEAS Details**

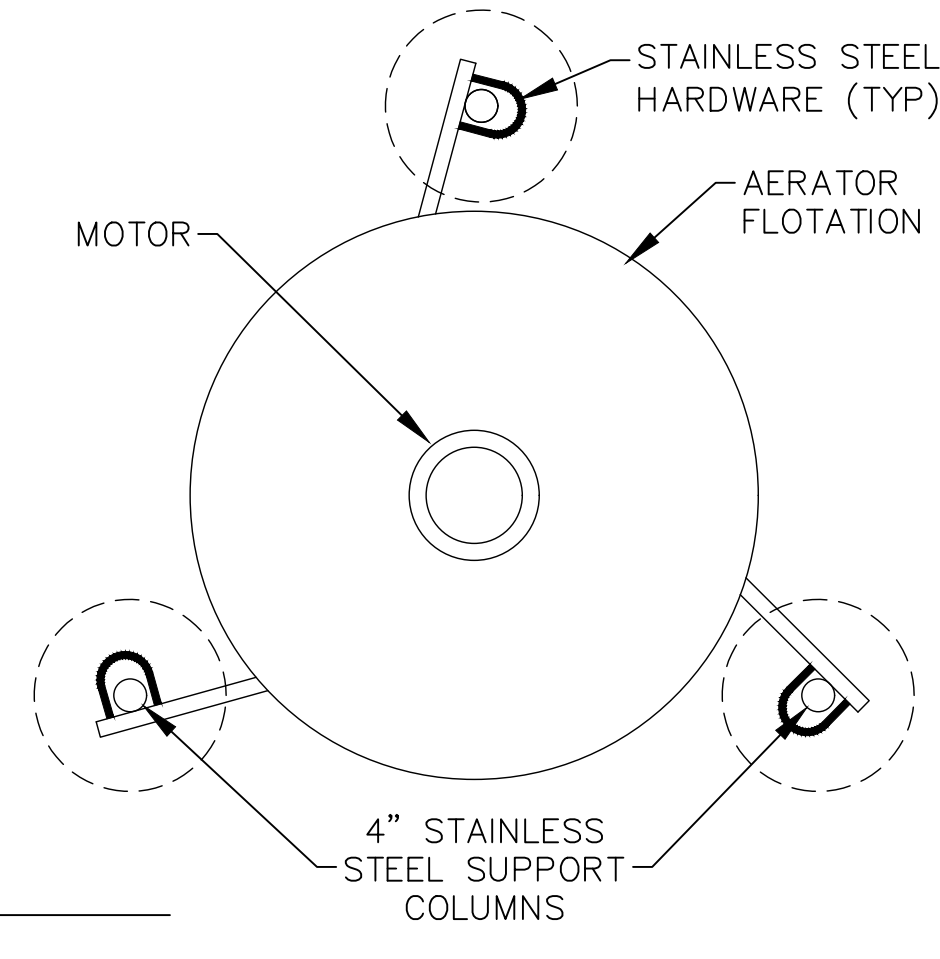
SHEET NO. OF  
M313 ---  
FILE NO.  
1636.6

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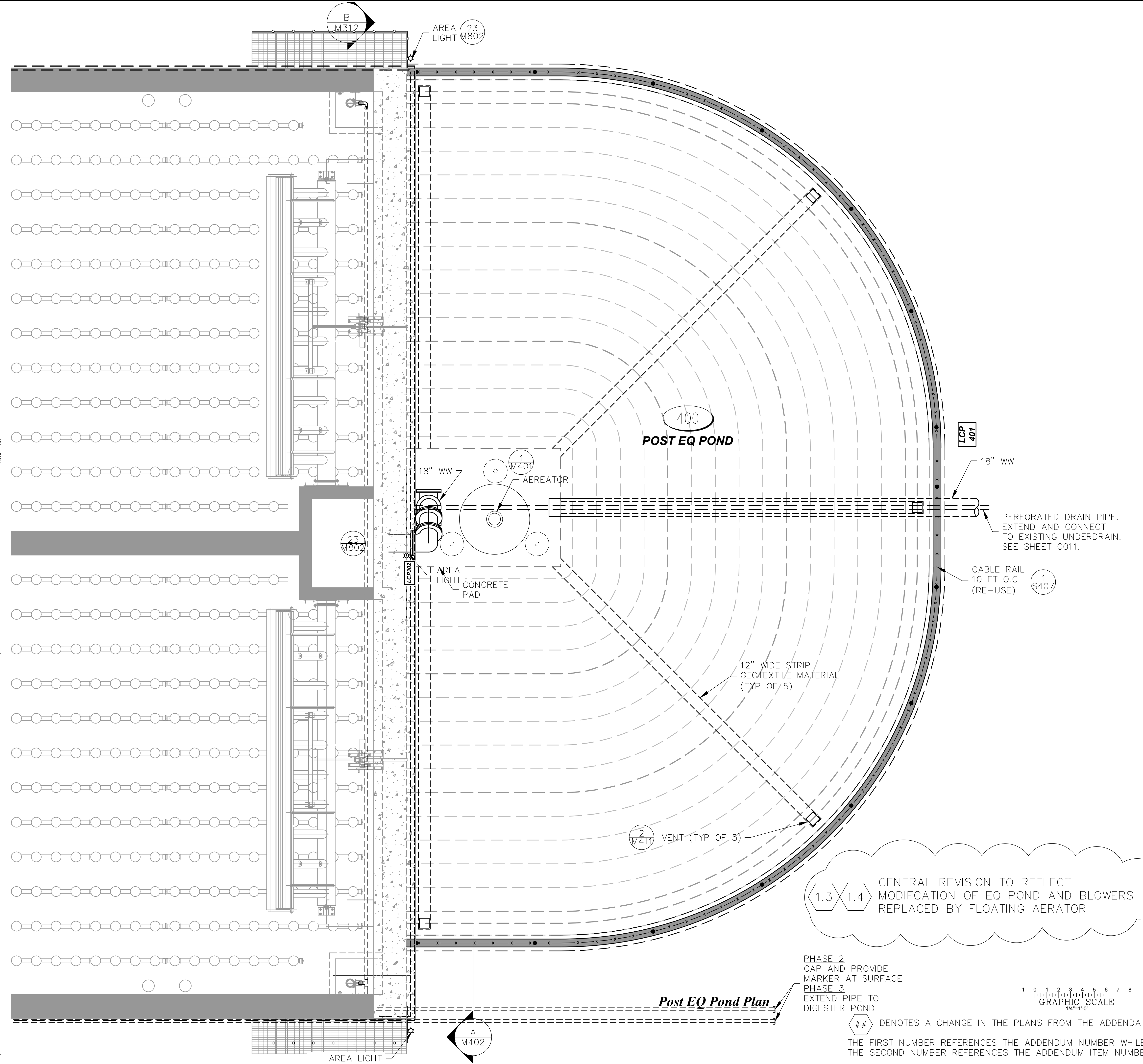




**EQ Pond Aerator Section**  
SCALE: N.T.S.



**EQ Pond Aerator Plan View Detail**  
SCALE: N.T.S.



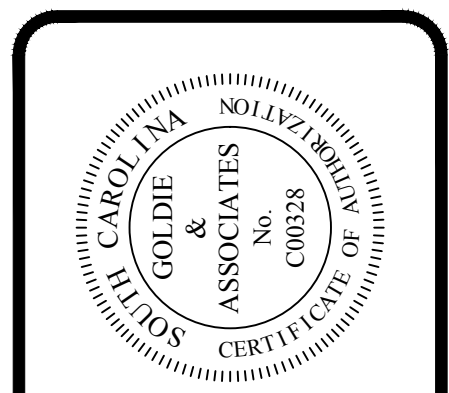
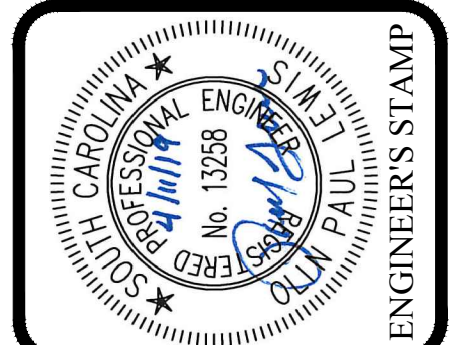
1.3 1.4 GENERAL REVISION TO REFLECT MODIFICATION OF EQ POND AND BLOWERS REPLACED BY FLOATING AERATOR

PHASE 2  
CAP AND PROVIDE MARKER AT SURFACE  
PHASE 3  
EXTEND PIPE TO DIGESTER POND

GRAPHIC SCALE  
1/4"=1'-0"

## DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA  
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2	4/11/19				GENERAL REVISION
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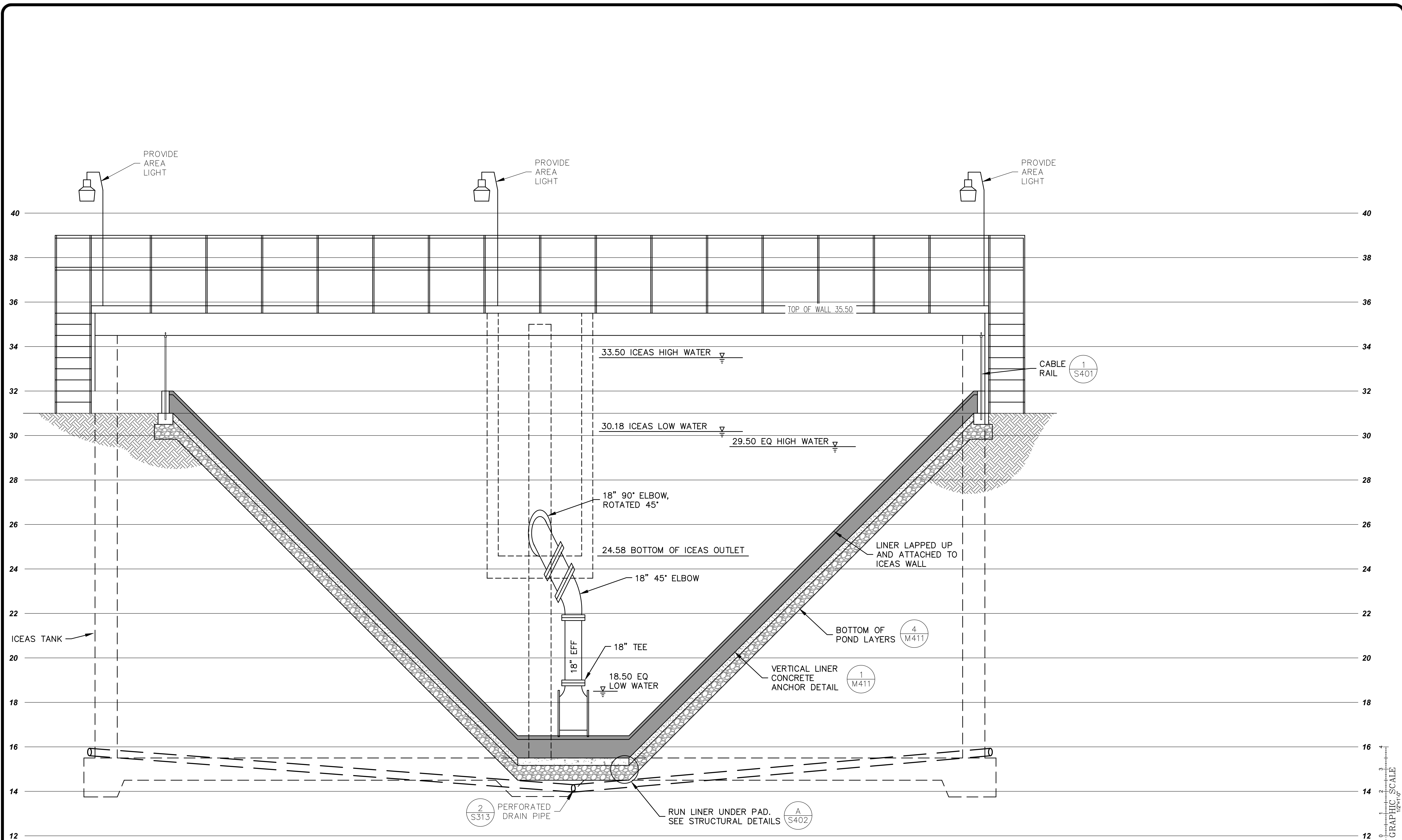
PROJECT  
**Jimmy Mixson WRF Expansion**

SHEET TITLE  
**Post EQ Pond**

SHEET NO. OF  
**M401** ---

FILE NO.  
**1636.6**





**A**  
M401 **Post EQ Pond Section A-A**  
SCALE: 1/4" = 1'-0" (1"=4') HORIZONTAL  
1/2" = 1'-0" (1"=2') VERTICAL

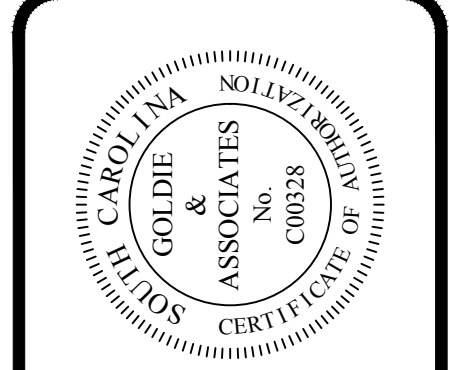
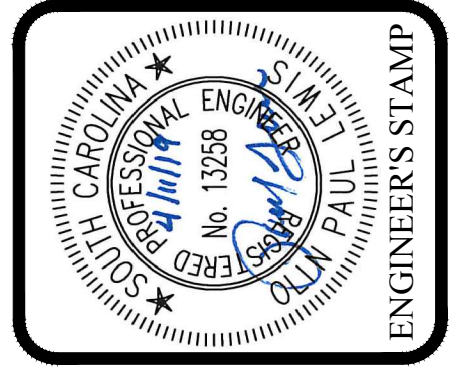
GRAPHIC SCALE  
1/4" = 1'-0"

NOTE: VERTICAL SCALE IS EXAGGERATED

1.3 POST EQ POND HAS BEEN MODIFIED

## DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA  
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1	12/2/18		GENERAL REVISION
0	8/1/18		INITIAL



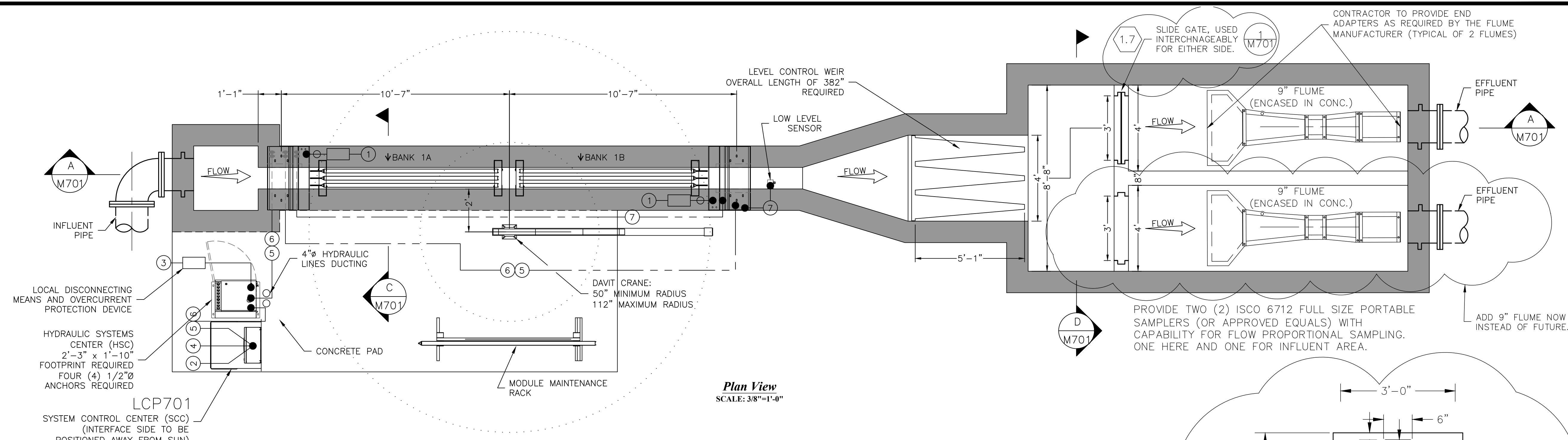
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SHEET TITLE  
**Post EQ Pond Section and Details**

SHEET NO. OF  
**M402** ---  
FILE NO.  
**1636.6**



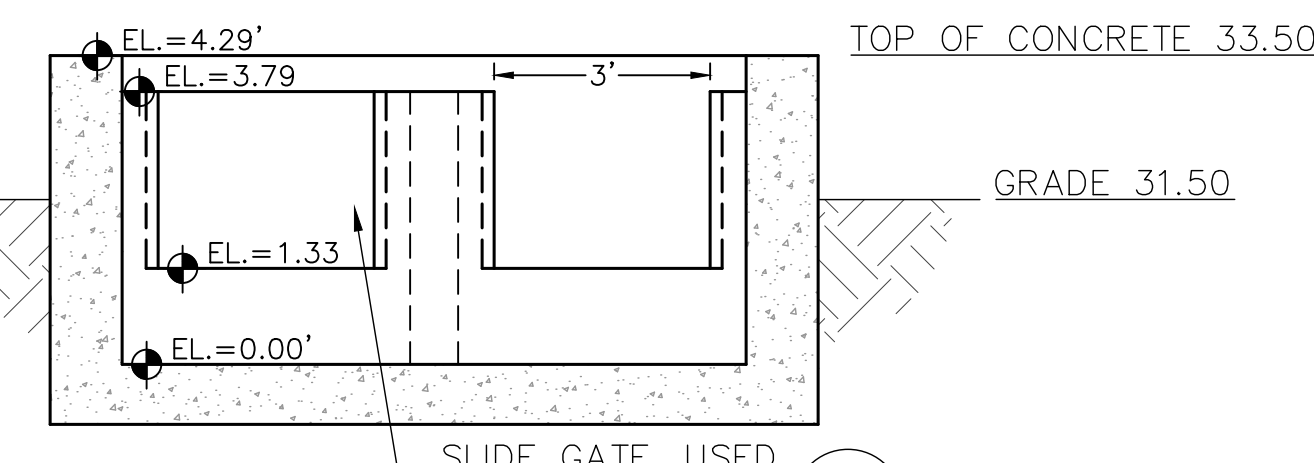


**Plan View**  
SCALE: 3/8"=1'-0"

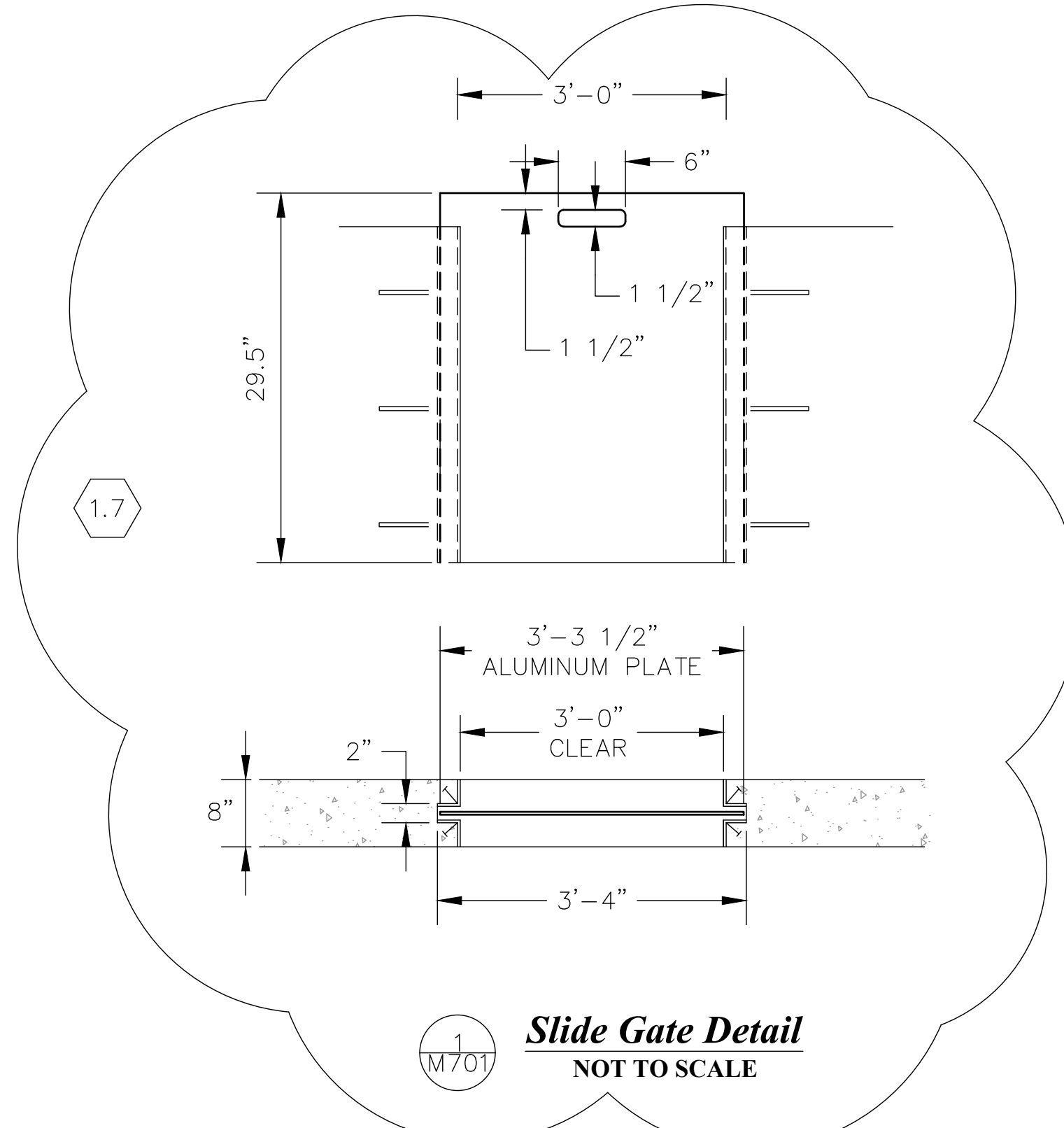
PROVIDE TWO (2) ISCO 6712 FULL SIZE PORTABLE SAMPLERS (OR APPROVED EQUALS) WITH CAPABILITY FOR FLOW PROPORTIONAL SAMPLING. ONE HERE AND ONE FOR INFLUENT AREA.

ADD 9" FLUME NOW INSTEAD OF FUTURE. (1 M30T)

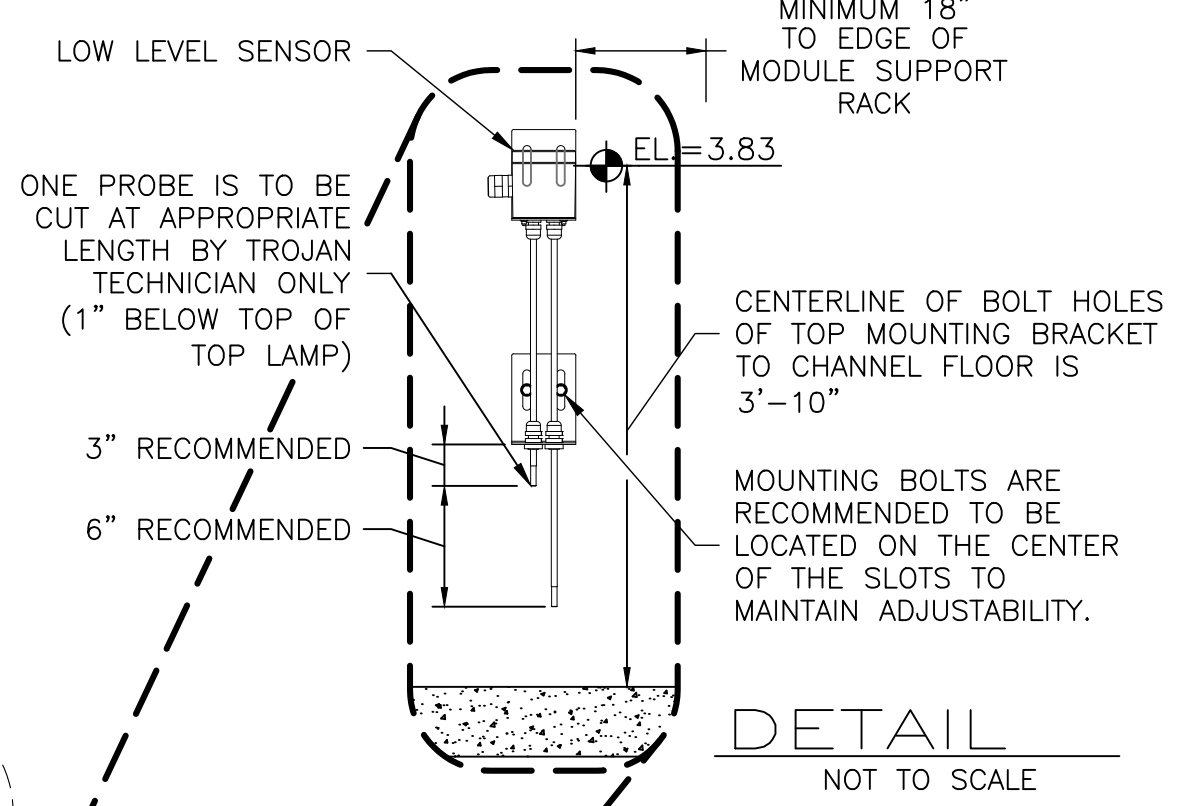
LOCAL DISCONNECTING MEANS AND OVERCURRENT PROTECTION DEVICE  
HYDRAULIC SYSTEMS CENTER (HSC) 2'-3" x 1'-10" FOOTPRINT REQUIRED FOUR (4) 1/2" ANCHORS REQUIRED  
LCP701 SYSTEM CONTROL CENTER (SCC) (INTERFACE SIDE TO BE POSITIONED AWAY FROM SUN)



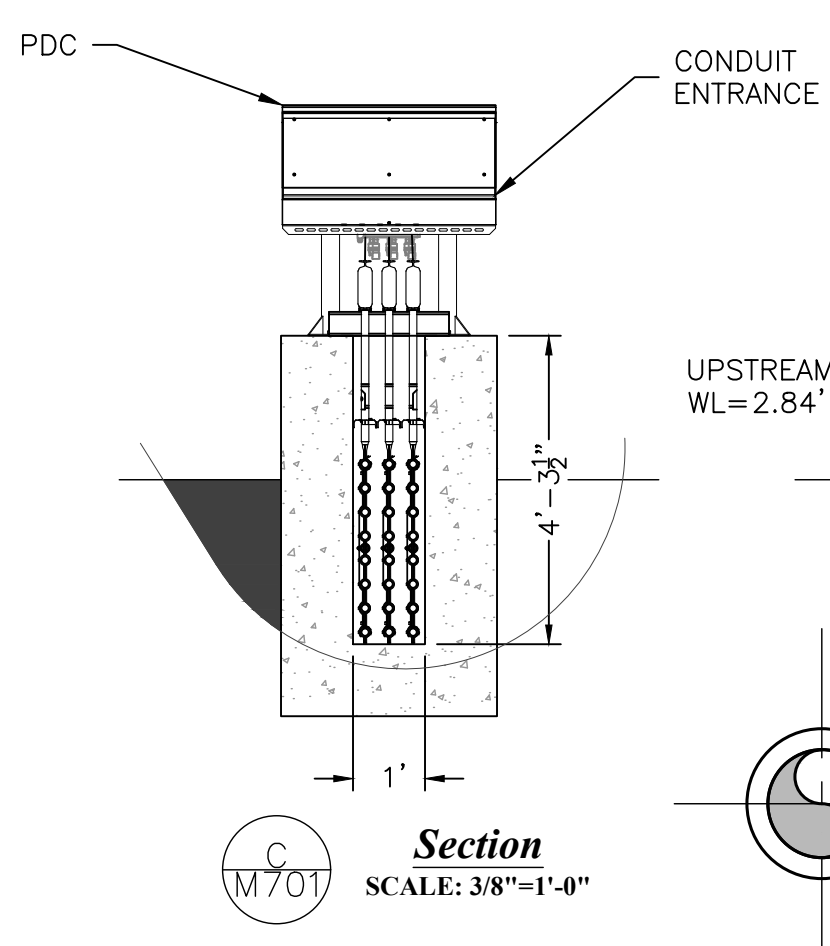
**Effluent Splitter Box Section**  
SCALE: 3/8"=1'-0"



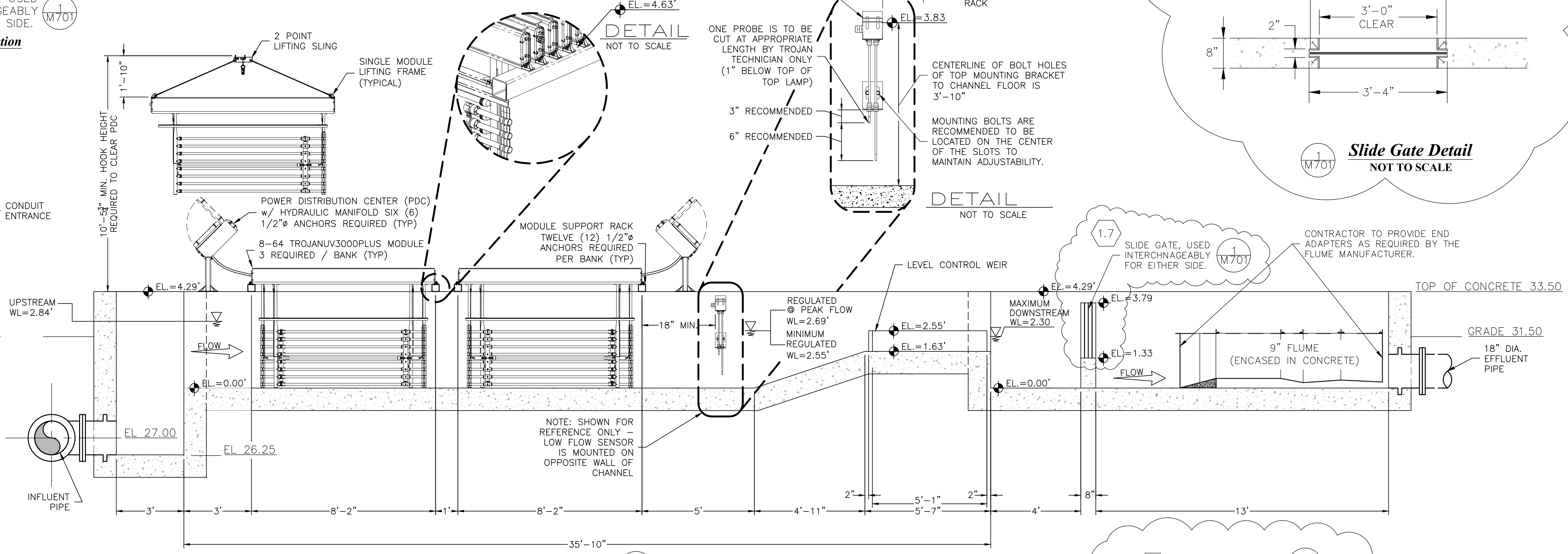
**Slide Gate Detail**  
NOT TO SCALE



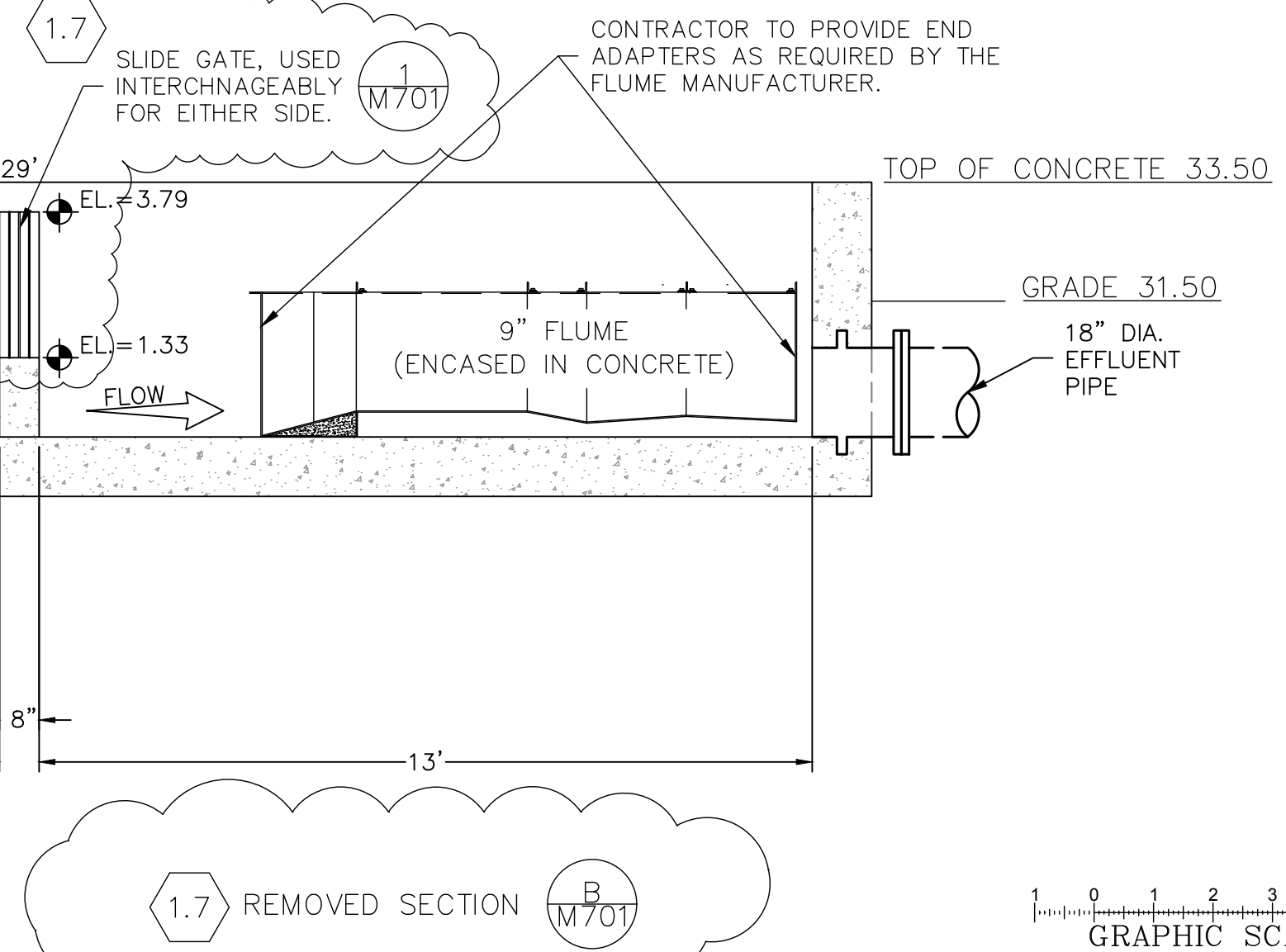
**DETAIL**  
NOT TO SCALE



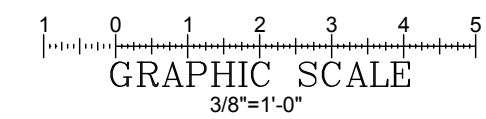
**Section**  
SCALE: 3/8"=1'-0"



**Section**  
SCALE: 3/8"=1'-0"

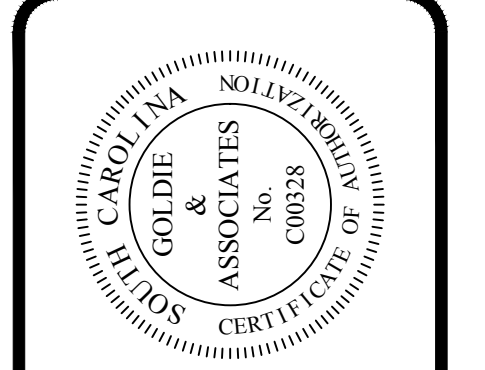
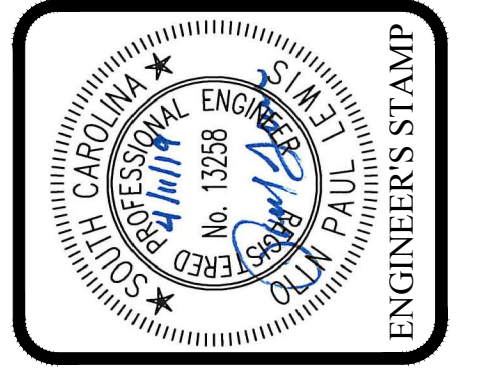


**1.7 REMOVED SECTION B-M701**



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## DENOTES A CHANGE IN THE PLANS FROM THE ADDENDA  
THE FIRST NUMBER REFERENCES THE ADDENDUM NUMBER WHILE THE SECOND NUMBER REFERENCES THE ADDENDUM ITEM NUMBER

NO.	DATE	INITIAL	DESCRIPTION
1	12/21/18		ADD EFFLUENT SPLITTER BOX
2	4/11/19		



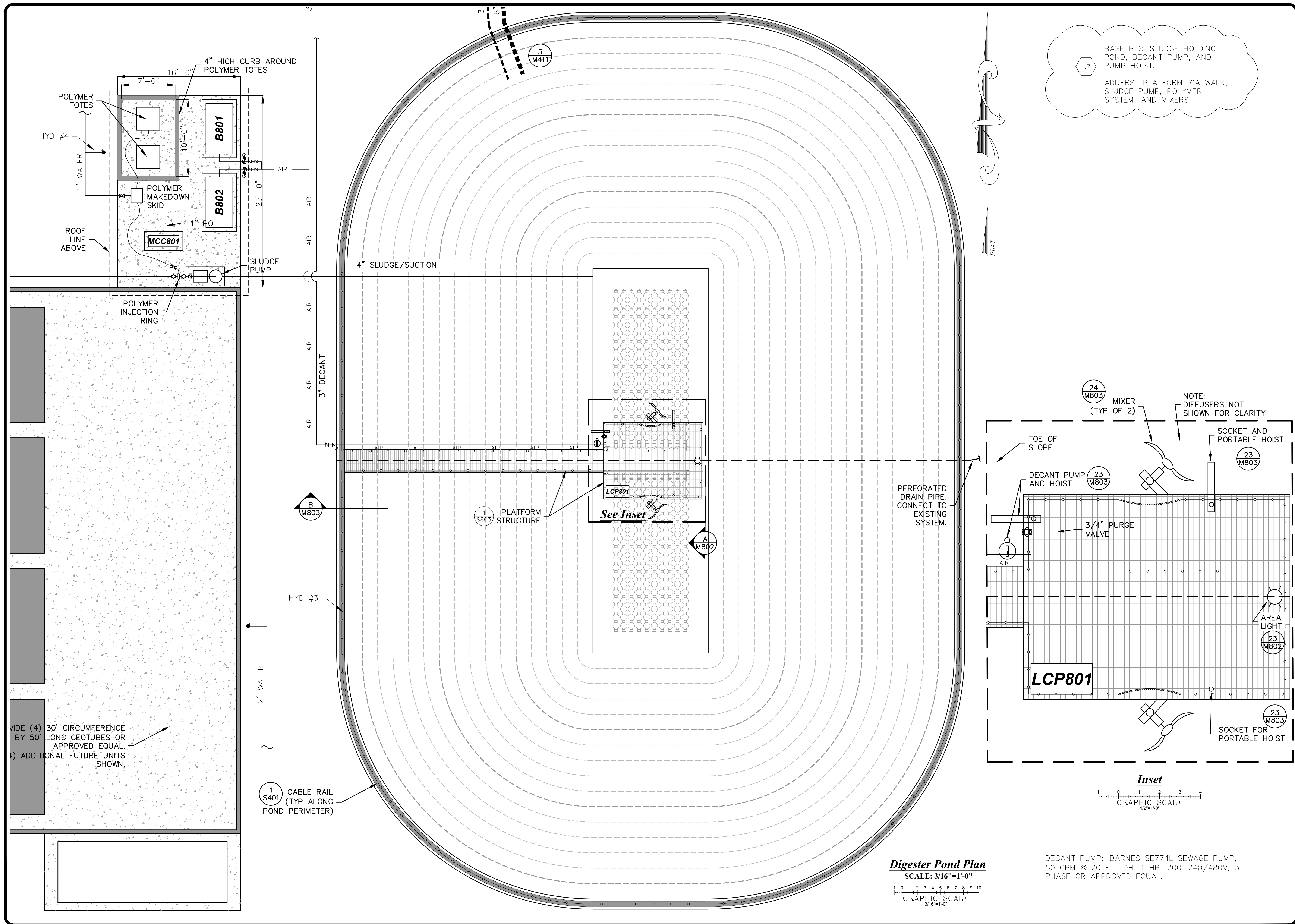
210 W. North Second Street  
Seneca, SC 29678  
Phone: (864) 882-8194  
Civil and Environmental Engineering  
Environmental Consulting  
Utility Operations  
Environmental Laboratory



CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **UV Disinfection and Effluent Flume**

SHEET NO. <b>M701</b>	OF ---
FILE NO. <b>1636.6</b>	

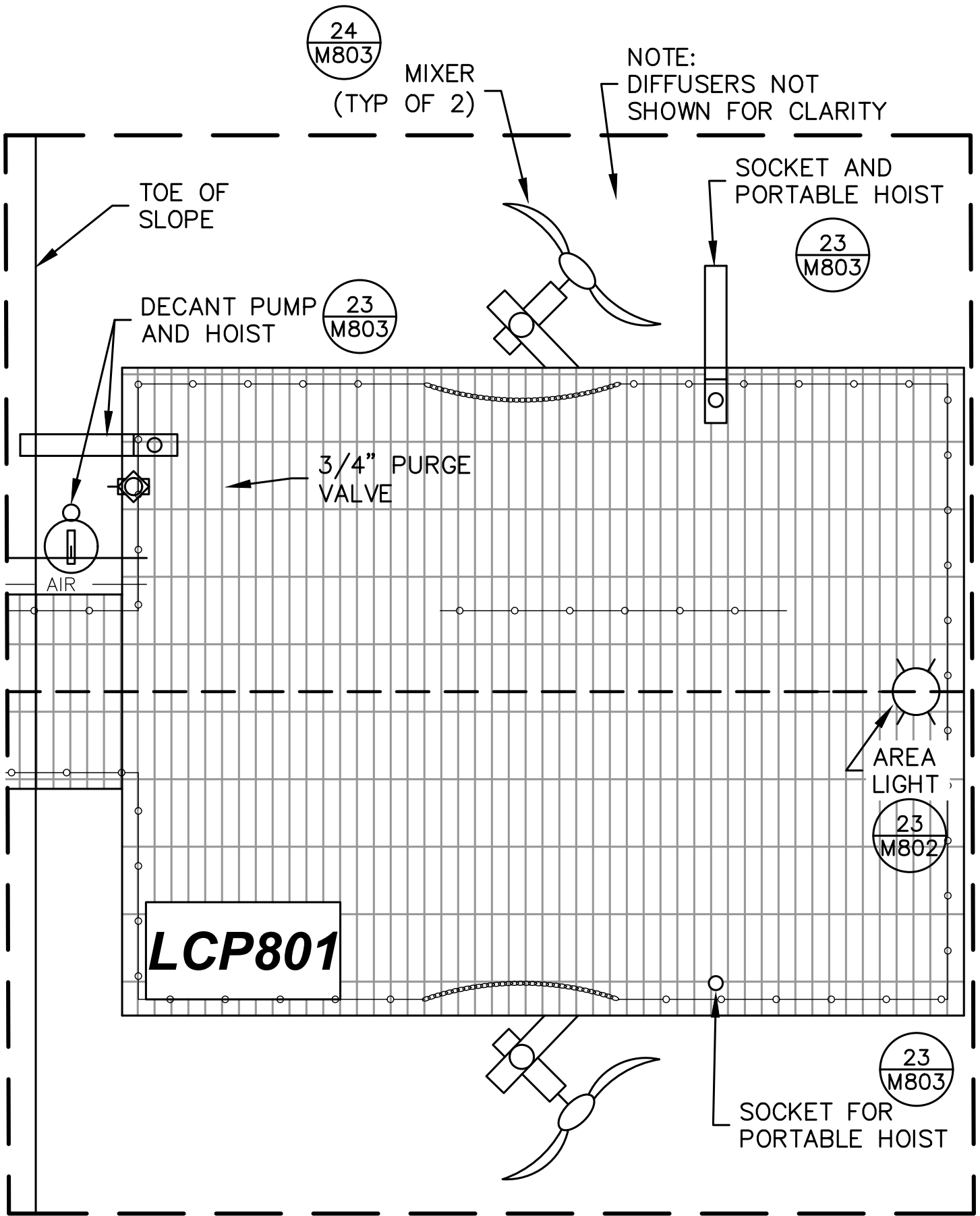




1.7

BASE BID: SLUDGE HOLDING POND, DECANT PUMP, AND PUMP HOIST.

ADDERS: PLATFORM, CATWALK, SLUDGE PUMP, POLYMER SYSTEM, AND MIXERS.



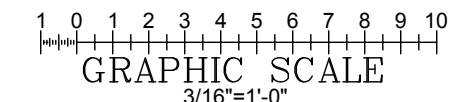
**Inset**

GRAPHIC SCALE

1/2"=1'-0"

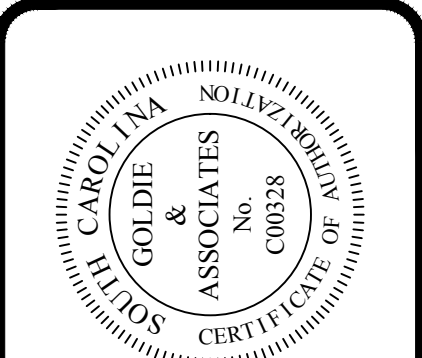
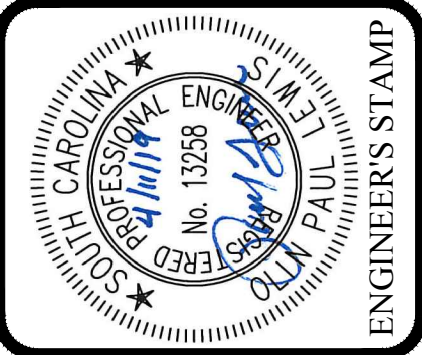
**Digester Pond Plan**

SCALE: 3/16"=1'-0"



DECANT PUMP: BARNES SE774L SEWAGE PUMP, 50 GPM @ 20 FT TDH, 1 HP, 200-240/480V, 3 PHASE OR APPROVED EQUAL.

NO.	DATE	DESCRIPTION
2	4/1/19	APPENDIX #1
1	12/2/18	GENERAL REVISION
0	8/1/18	INITIAL
		OR
		OR
		OR



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CLIENT: **Town of Ridgeland**

PROJECT: **Jimmy Mixson WRF Expansion**

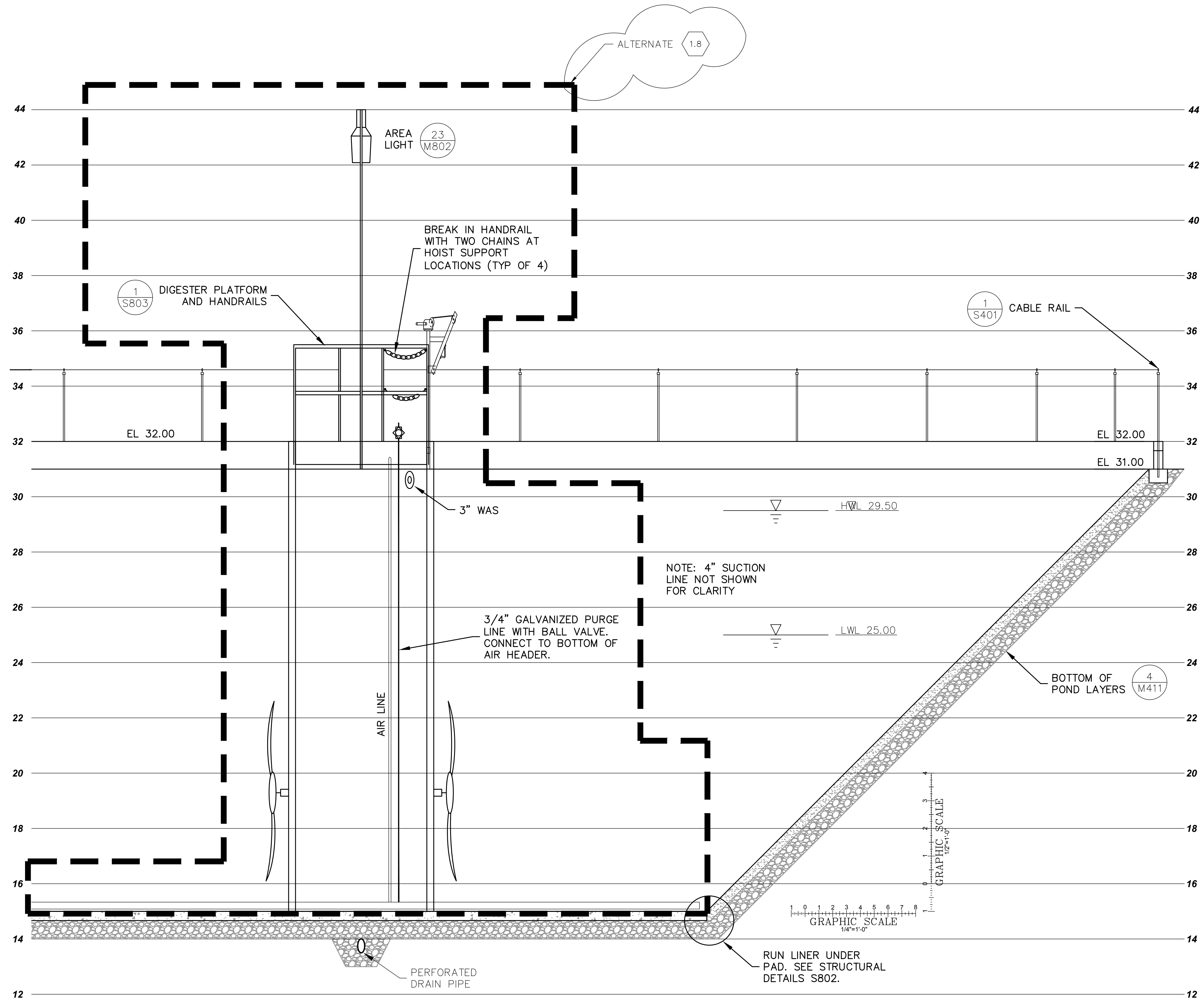
SHEET TITLE: **Sludge Digester Pond Plan**

SHEET NO. **M801** OF ---

FILE NO. **1636.6**



- 1.7 BASE BID: SLUDGE HOLDING POND, DECANT PUMP, AND PUMP HOIST. ADDERS: MIXERS, DIFFUSERS, CATWALK, AREA LIGHT
- 1.8 SLUDGE SUCTION PIPE.

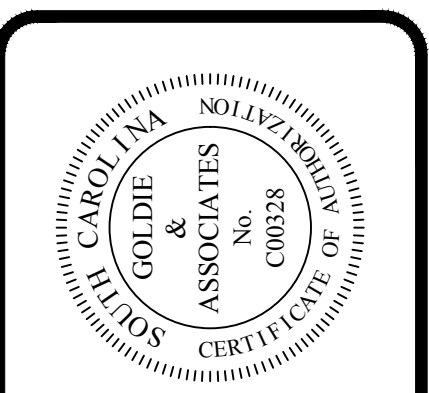
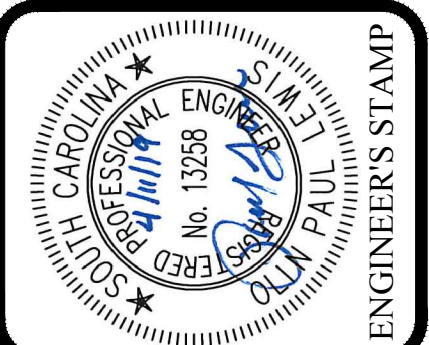


SPECIFICATION: AREA LIGHTS ARE LED, 4700 LUMENS, 41 MAX WATTAGE, GRAINGER 34EW30, DUSK TO DAWN PHOTO CELLS. LIGHT TO BE 12' ABOVE GRATING. OKAY TO MOUNT TO HANDRAILS.

23 M802 **Area Light**  
SCALE: 1 1/2"=1'-0"

A M801 **Digester Pond Section**  
SCALE: 1/4"=1'-0" (1"=4') H  
1/2"=1'-0" (1"=2') V

NO.	DATE	BY	CHKD.	DESCRIPTION
2	4/11/19			
1	12/2/18			GENERAL REVISION
0	8/1/18			INITIAL



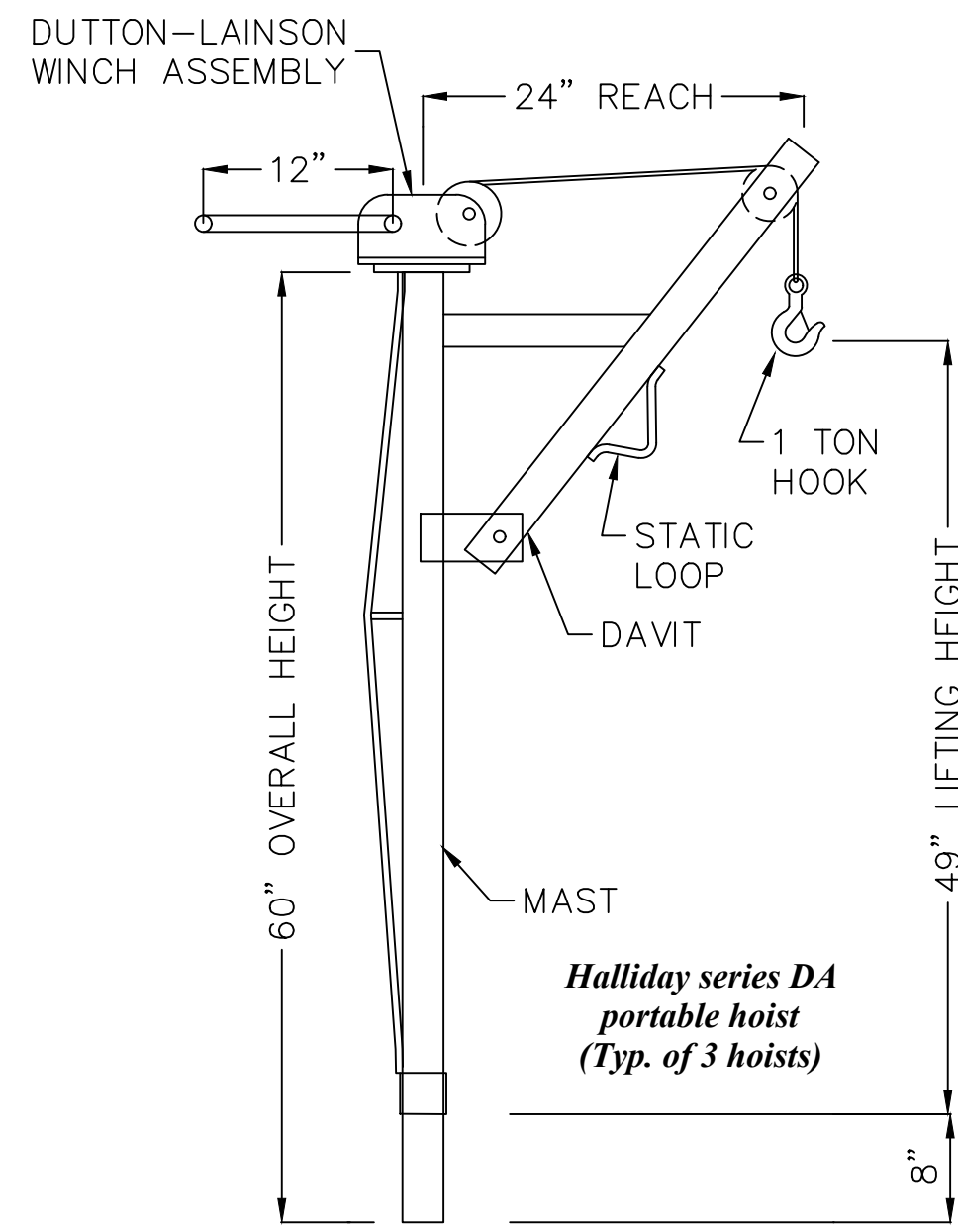
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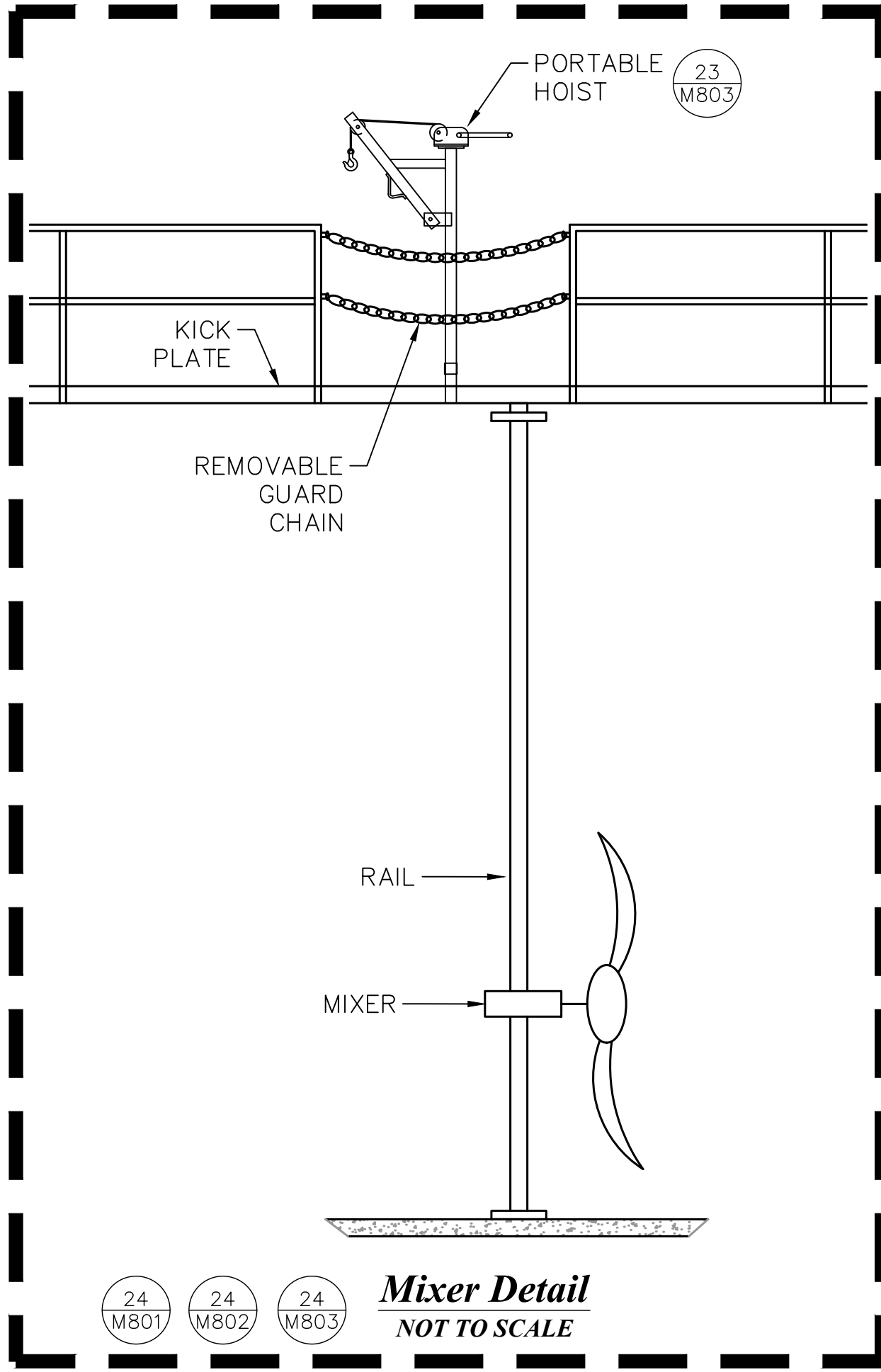
CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **Sludge Digester Pond**

SHEET NO. **M802** OF **--**  
FILE NO. **1636.6**

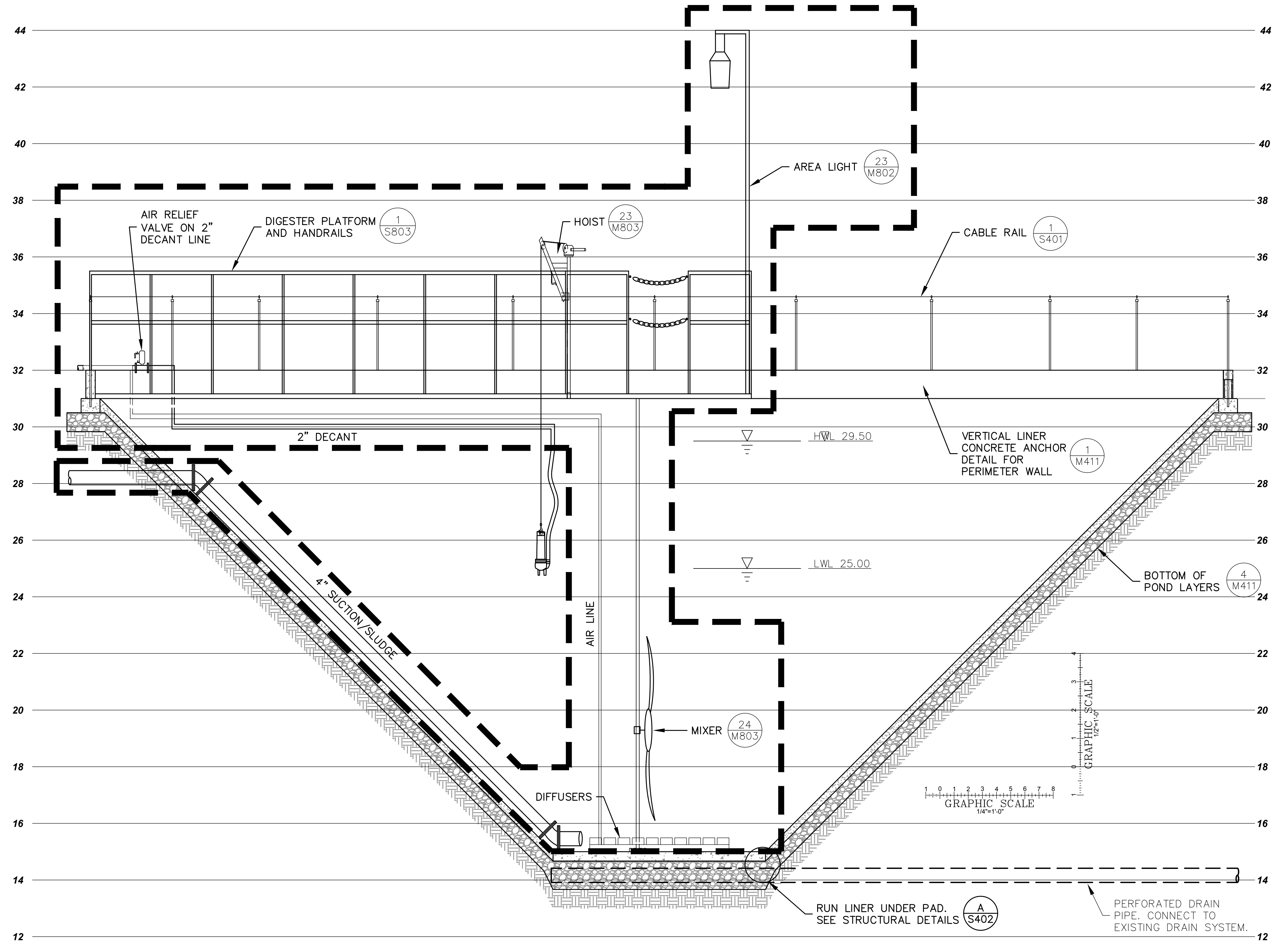
- 1.7 BASE BID: SLUDGE HOLDING POND, DECANT PUMP, AND PUMP HOIST.
- 1.8 SLUDGE SUCTION PIPE.



23 M801 23 M802 23 M803  
**Hoist**  
 SCALE: 1"=1'-0"

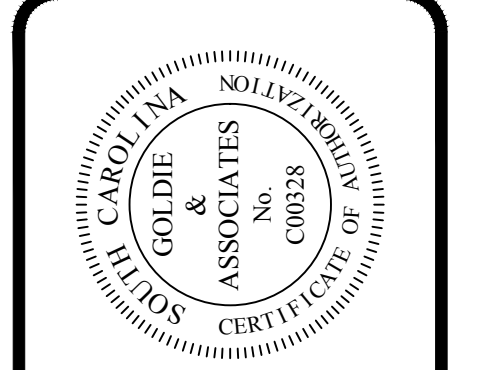
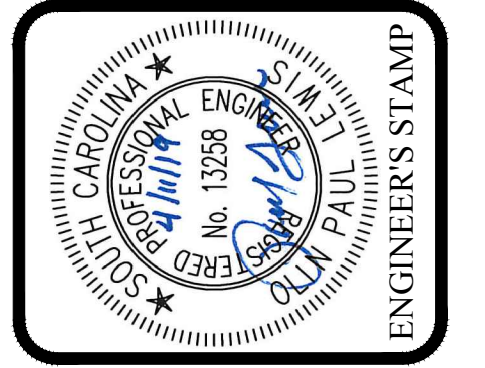


24 M801 24 M802 24 M803  
**Mixer Detail**  
 NOT TO SCALE



B M801  
**Digester Pond Section**  
 SCALE: 1/4"=1'-0" (1"=4') H  
 1/2"=1'-0" (1"=2') V

NO.	DATE	DESCRIPTION
2	4/1/19	APPENDIX #1 GENERAL REVISION
1	12/2/18	OPR
0	8/1/18	OPR INITIAL



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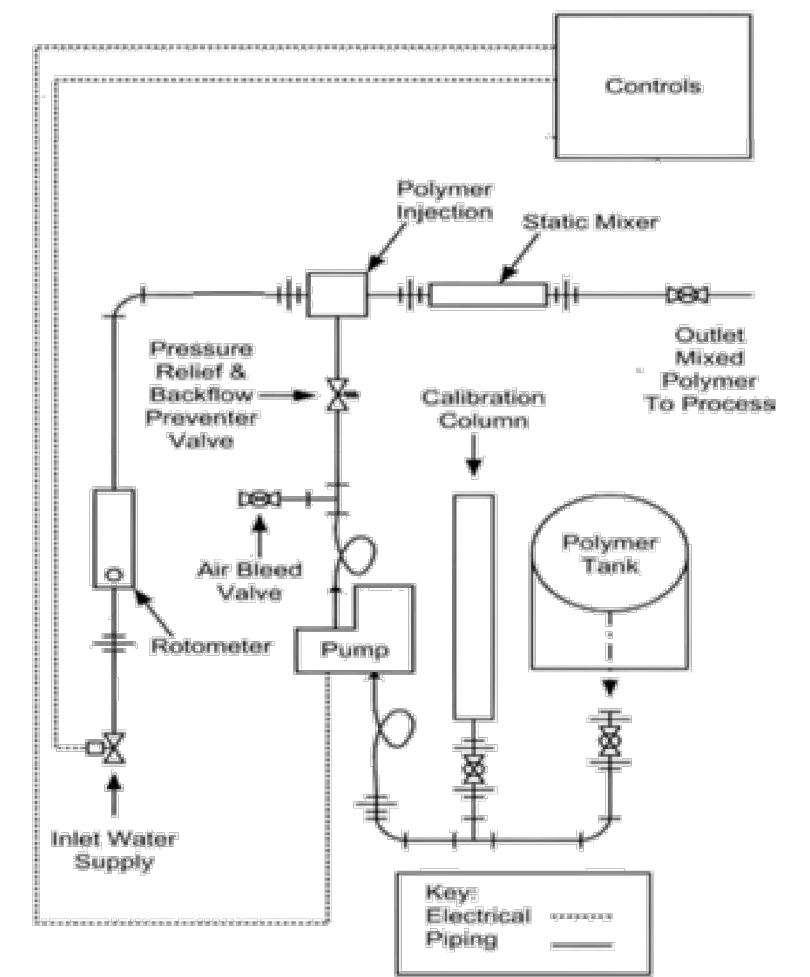


CLIENT: **Town of Ridgeland**  
 PROJECT: **Jimmy Mixson WRF Expansion**  
 SHEET TITLE: **Sludge Digester Pond**

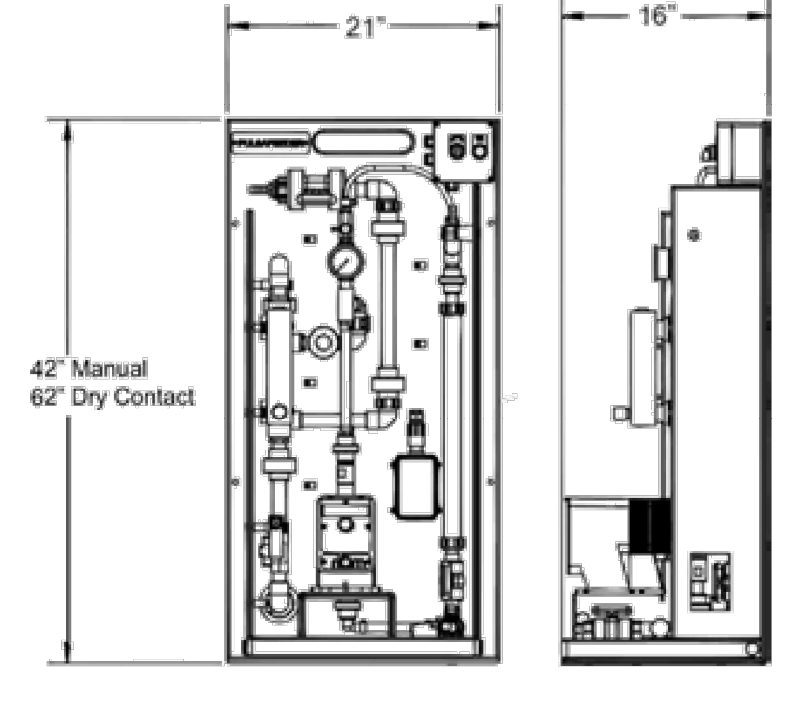
SHEET NO. **M803** OF ---  
 FILE NO. **1636.6**



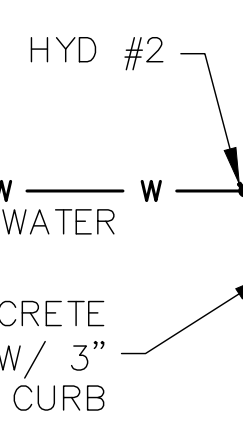
**Manual**



**Dimensions Manual**

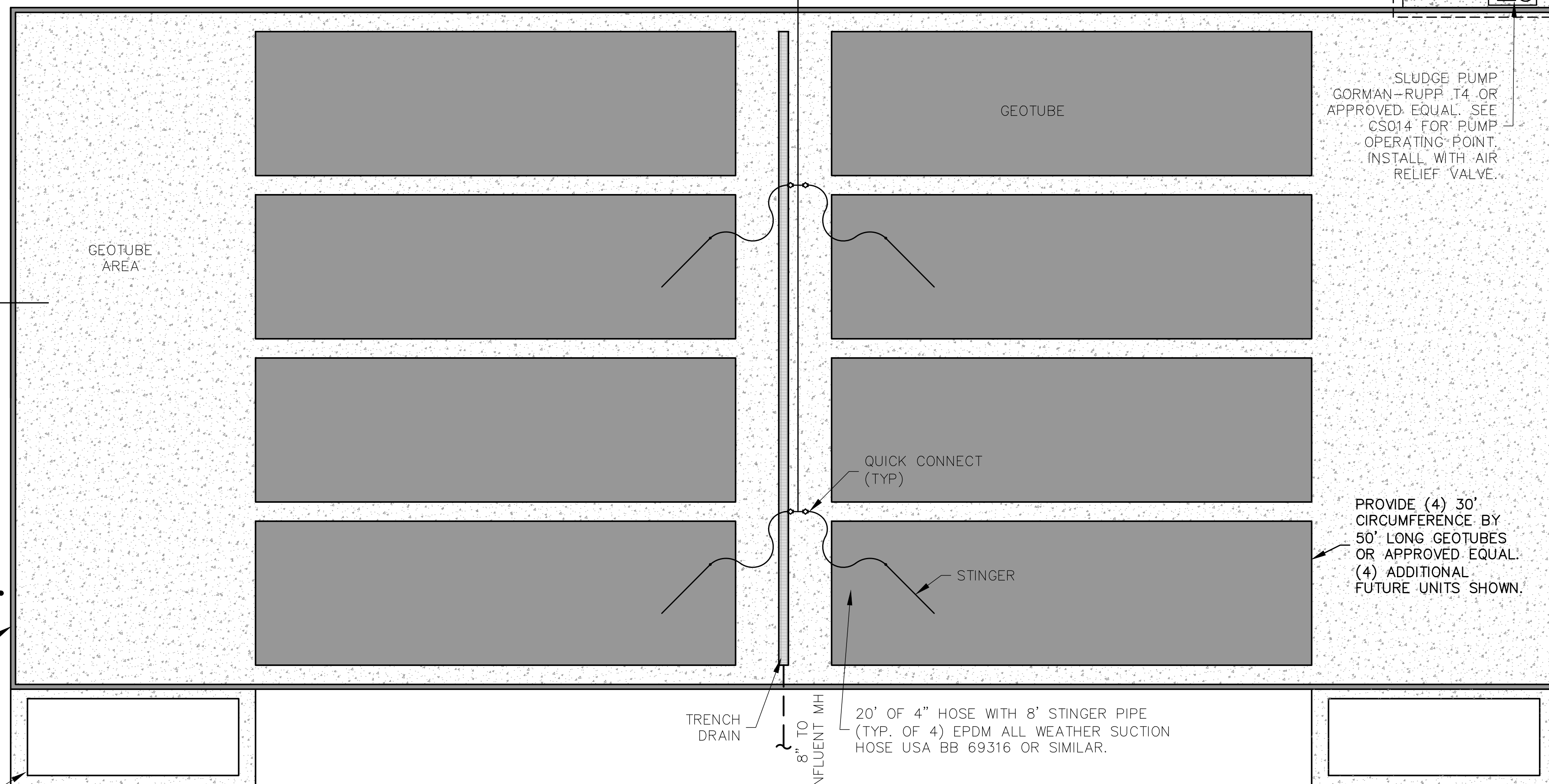
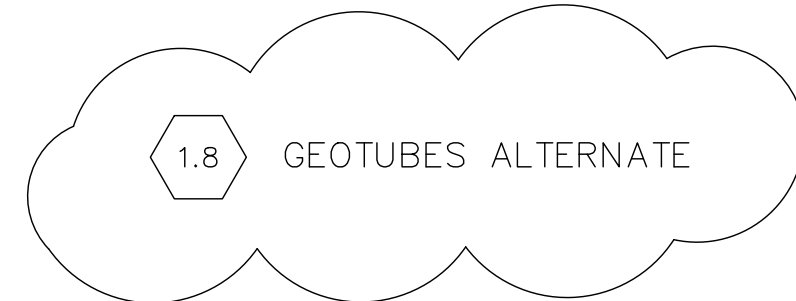


**1 M811 Polymer Makedown System**  
NOT TO SCALE

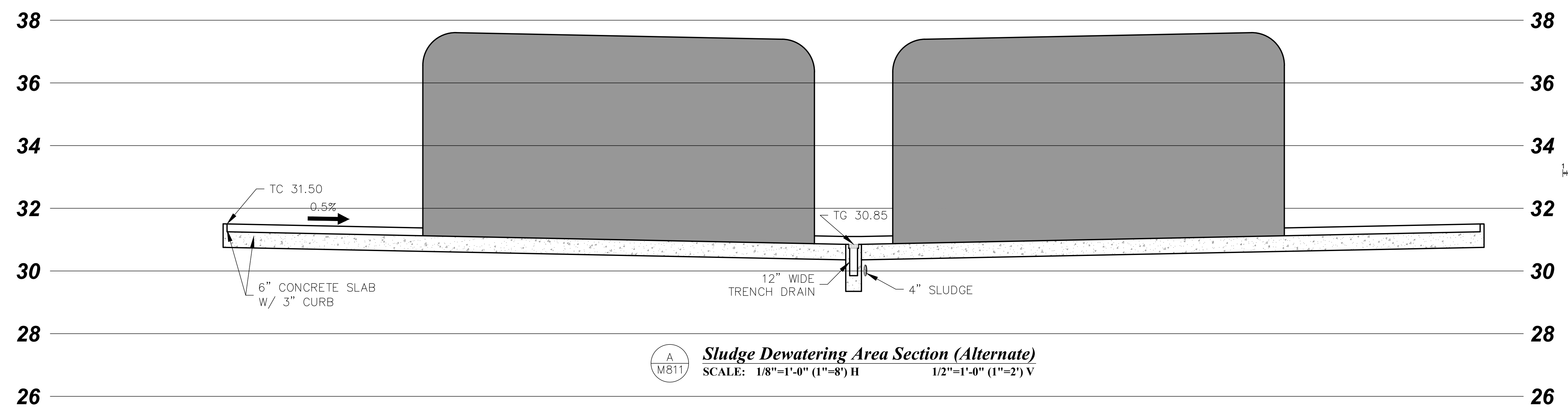


20 CY ROLL-OFF (TYP 2) COORDINATE SELECTION WITH WASTE MANAGEMENT

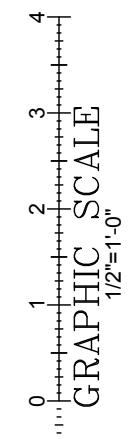
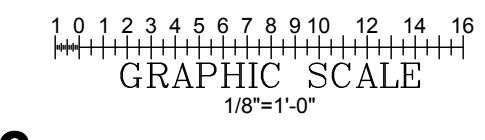
25'6" X 10'0" CONCRETE PAD



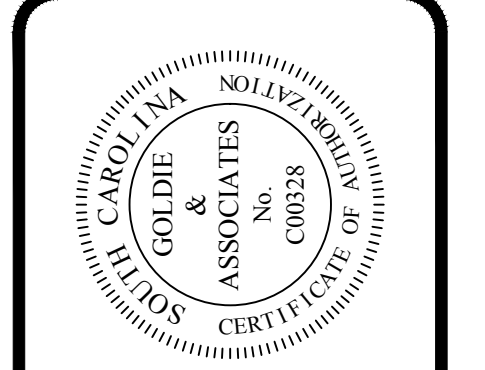
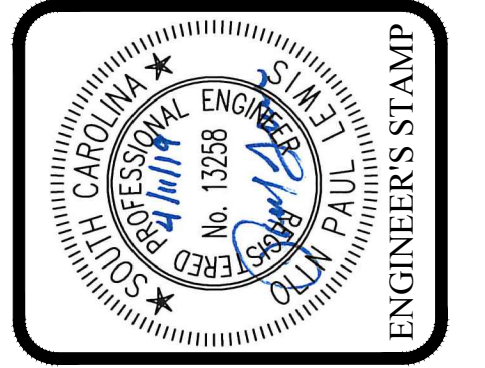
**Sludge Dewatering Area Plan (Alternate)**  
SCALE: 1/8" = 1'-0"



**A M811 Sludge Dewatering Area Section (Alternate)**  
SCALE: 1/8" = 1'-0" (1"=8") H 1/2" = 1'-0" (1"=2") V



NO.	DATE	INITIAL	DESCRIPTION
1	12/2/18		GENERAL REVISION
2	4/11/19		APPENDIX #1



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CLIENT: **Town of Ridgeland**  
PROJECT: **Jimmy Mixson WRF Expansion**  
SHEET TITLE: **Sludge Dewatering (Geotubes) and Drying Plan (Alternate)**

SHEET NO. **M811** OF **---**  
FILE NO. **1636.6**