

March 18, 2024

Attention: Water Facilities Permitting Division
South Carolina DHEC, Bureau of Water
2600 Bull Street
Columbia, SC 29201

SLR Project No.: 108.V02047.00002

RE: Construction Permit Application for Wastewater Facilities
Silfab Solar, Inc. – Project Borealis

To Whom It May Concern,

This letter of transmittal has been prepared on behalf of Silfab to meet the following requirements of a Standard Submittal for a wastewater treatment system (WWTS):

- 1) A transmittal letter (this document), outlining the submittal package
- 2) The signed and sealed plans are included as Attachment 1 (Process Flow Diagram, PFD), Attachment 2 (Process and Instrumentation Diagram, P&ID), and Attachment 3 (Process Equipment Layout).
- 3) The WWTS design basis is described below. Design calculations are provided in Attachment 4, which includes a simplified PFD and process mass balance and Attachment 5, which includes a pump list, including pump design calculations and pump curves. Pump calculations are also discussed below.
- 4) Equipment and instrumentation (other than the pumps) is identified on the P&ID, with details (i.e. specification of specific equipment) provided on the equipment list (Attachment 6). Piping specifications are provided on the P&ID. Manufacturer cut sheets are available by request for all equipment.
- 5) Construction easements are not applicable since all wastewater treatment system construction is occurring on Silfab Solar Inc., leased property. Construction drawings and specifications for the sanitary sewer connection are provided by the project Civil Engineer under separate cover.
- 6) A letter from Brice Sodorff, City of Rock Hill Pretreatment Program Coordinator, indicating that the Manchester Creek Wastewater Treatment Plant's (POTW), to which Silfab's treated wastewater will be discharged, stating their willingness and ability to serve the project, including pretreatment permits, if applicable (Attachment 7).

- 7) A letter from the Silfab Solar, Inc., agreeing to be responsible for the operation and maintenance (O&M) of the WWTS (Attachment 8).

Wastewater Treatment System Design Basis

The wastewater treatment system is designed to treat acidic wastewater from the Silfab production process. The primary components of the wastewater are deionized (DI) water, hydrofluoric acid (HF), hydrochloric acid (HCl), potassium hydroxide (KOH), hydrogen peroxide (H₂O₂), and MonoTex additive. The total wastewater flow is anticipated to average 90 cubic meters per hour (m³/hr) or 400 gallons per minute (gpm) over the course of a day. Peak flows are expected to be higher, as illustrated on the PFD (Attachment 1).

The core treatment process is to remove the fluoride from the wastewater by reacting the fluoride with calcium to form a calcium fluoride precipitate.

Wastewater Treatment System Description

The wastewater treatment system is being provided by ProChem, Incorporated of Elliston, Virginia. ProChem will manufacture and/or procure equipment to be installed for the wastewater treatment system. ProChem prepared the design drawings (PFD, P&ID, and process equipment layout) and equipment submittals for the system for engineer review and approval. Mr. Steven Hammer, a South Carolina-licensed professional engineer has reviewed and stamped for approval the ProChem submittals.

A wastewater treatment system PFD is provided in Attachment 1. As it shows, wastewater from the facility's processes flows from the production building to several lift station tanks. From the lift station tanks, the wastewater is pumped to four equalization tanks. From the equalization tanks, wastewater is pumped through a series of reaction tanks where the calcium reacts with the fluoride and, aided by the coagulant, forms floc, then the polymer flocculant is added immediately at the entrance the clarifier to produce larger, settleable floc that will settle in the clarifier. Sludge from the clarifier is pumped to a sludge holding tank and then through a plate and frame filter press.

Lift Station Tanks

The wastewater treatment system process flow diagram is provided in Attachment 1. As it shows, wastewater from the facility's processes is pumped from the production building to one of three lift station tanks located in the wastewater treatment building (see system layout drawing in Attachment 3): Acidic Wastewater (AWW) Lift Tank, Concentrated Acid Wastewater (ACD) Lift Tank, Caustic Wastewater and Industrial Wastewater (CWW/IWW) Lift Tank. The AWW and ACD Lift Tanks are each 1,120 gallons and the CWW/IWW Lift Tank is 2,240 gallons. Level instrumentation (sensors and switches for redundancy) is installed in the lift station tanks and controls the transfer of water from the lift station tanks to one of four equalization tanks that corresponds with the waste stream. Flow and temperature instrumentation (sensors) is installed on the effluent side of each lift station pump.



Equalization Tanks

The wastewater treatment system includes four 15,500 gallon equalization tanks to buffer out spikes in flows and concentrations from the AWW, ACD, and CWW/IWW lift stations; thereby improving the effectiveness of the reactors downstream. Level instrumentation (sensors and switches) is installed in the Equalization Tanks and controls the transfer of water from these tanks to Reaction Tank 1. Temperature instrumentation is also installed in each Equalization Tank. Flow instrumentation will be installed at each transfer pump, and pump speed will be controlled via variable frequency drive (VFD) by a flow set point. Additionally, conductivity and pH instrumentation will be installed on the effluent side of the AWW and IWW Equalization Tanks, respectively.

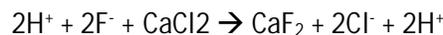
Reaction Tanks

Water will gravity-flow from Reaction Tank 1 through Reaction Tank 2 and 3. An agitator (variable frequency drive (VFD)-controlled), pH instrumentation (sensor), and level instrumentation (switches) will be installed in each Reaction Tank. The following chemicals will be dispensed to the tanks (according to pH and ppm set points) to facilitate the physical/chemical treatment process:

- Reaction Tank 1:
 - 8,800 gallons
 - Alum-based coagulant provided by ProChem (PC-1174 or similar) and Calcium Chloride (35%)
- Reaction Tank 2:
 - 11,800 gallons
 - Anti-scalant (PC-3310 or similar), Potassium Hydroxide (45%), and Sulfuric Acid (96%)
- Reaction Tank 3:
 - 11,800 gallons
 - Potassium Hydroxide (45%), and Sulfuric Acid (96%)

The primary pollutants of concern are fluoride from hydrofluoric acid (HF) and pH associated with the acidic HF and caustic potassium hydroxide (KOH).

Fluoride (F⁻) will be reacted with calcium chloride (CaCl₂) in Reaction Tank 1 under acidic conditions to produce calcium fluoride (CaF₂) per the following chemical reaction:



Under the acidic conditions in Reaction Tank 1, the CaF₂ will not precipitate appreciably. As pH is increased, though, it will begin to precipitate at pH 3.8, and above pH of approximately 4, nearly 100% of the CaF₂ will precipitate.

The pH will be controlled by mixing the acidic wastewater and the caustic wastewater to neutralize each other in Reaction Tank 2, and then any remaining pH adjustment will be completed in Reaction Tank 2 and/or Reaction Tank 3 with either sulfuric acid (H₂SO₄) or KOH. The pH will be adjusted to between 7.5 and 8. At these pH values, the CaF₂ will precipitate. The coagulant added to Reaction Tank 2 will aid in



the precipitation step. The precipitation reaction is rapid, and a 5-minute retention time in Reaction Tank 3 will be adequate for the precipitate to form.

Clarifier

Water will gravity flow from the Reaction Tanks to an inclined-plate clarifier. At the inlet to the clarifier, polymer flocculant (PC-6123 or similar) will be dispensed (according to a ppm set point) to a flash mix chamber containing a mixer, which is followed by a flocculation chamber containing a slower-moving rake mixer. Water will flow from these chambers over the clarifier plates for solids settling. Supernatant from the clarifier will gravity-flow to a Clarifier Lift Tank. Level instrumentation (sensors and switches for redundancy) will be installed in this tank.

Final Filtration and Discharge

VFD-controlled pumps will transfer water from the Clarifier Lift Tank through twin bag filters according to a flow set point. Bag filter effluent will be monitored for pressure, fluoride, flow, pH, and temperature instrumentation; automated valves will facilitate recirculation of water to the Equalization Tanks for retreatment, if necessary. VFD-controlled pumps will transfer bag filter effluent through a sampling flume to the Discharge Tank according to a flow set point. Level instrumentation (sensors and switches for redundancy) will be installed in the Discharge Tank. VFD-controlled pumps will transfer water from the Discharge Tank to the sanitary sewer according to a flow set point. An automated valve will be installed to facilitate directing treated water to a future reuse system.

Sludge Handling

Sludge from the clarifier and the reaction tanks will be directed to a Sludge Holding Tank. Level instrumentation (sensors and switches for redundancy) will be installed in this tank to control the transfer of water from this tank to a plate and frame filter press. A pressure sensor will monitor influent pressure to the press. Automated valves will facilitate directing filter press filtrate to discharge or to the Equalization Tanks for retreatment, if necessary.

Controls

The system will be controlled by an Alan Bradley (Rockwell) Compactlogix 5069-L320ER PLC with a Snyder 15" HMI. It will also be remotely monitored using Ignition RM software. An HMI will be located in the catwalk area and at the operator's workstation.

The calcium feed rate will be controlled by collecting samples of the wastewater to be treated in the buffer tank and performing fluoride precipitation bench tests. Sample will be jar tested using the calculated feed rate to assess if the permit limit is met. A final fluoride sensor, prior to discharge, will confirm that the wastewater meets the permit limit. If not, the water will be transferred back to the AWW buffer tank for retreatment.



Mass Balance

The fluoride mass balance included in Attachment 4 was developed for two phases of planned production at Silfab Solar, Inc. Phase 1 production will be lower than Phase 2 production. The mass balance focuses on the reaction of calcium with fluoride since fluoride is the primary component being treated by the system. The mass balance calculates the amount of calcium chloride (35% solution) required per day to remove the fluoride, with a safety factor of 25%. The mass balance also calculates the mass of calcium fluoride (50% moisture) sludge generated.

The system is also designed to control pH, but a mass balance has not been developed. The caustic and acidic waste streams will partially neutralize each other, and then a simple pH control scheme will be used to control pH to 7.5 to 8 in Reaction Tanks 2 and 3 using H₂SO₄ and KOH.

Pump Design Calculations

Wastewater transfer pumps are equipped with VFDs to allow for automated flow control based on tank level indicators. The VFDs allow the pumps to operate at lower frequencies, below their normal pump curve flow conditions. The wastewater treatment system VFD pumps were selected to accommodate surges of flow and; therefore, may appear to be undersized on the pump curves. The VFDs of these pumps will simply operate at lower frequencies most of the time.

Closure

If you have any questions regarding this submittal, please contact us at the email addresses below.

Regards,
SLR International Corporation



Dan Fleege
Senior Engineer
dfleege@slrconsulting.com



Steven R. Hammer, P.E.
Principal Engineer
shammer@slrconsulting.com

- Attachments
- Attachment 1 - Process Flow Diagram
 - Attachment 2 - Process and Instrumentation Diagram
 - Attachment 3 - Process Equipment Layout
 - Attachment 4 - Design Calculations
 - Attachment 5 - Pump List and Design Calculations
 - Attachment 6 - Equipment Lists
 - Attachment 7 - Letter from the Local POTW
 - Attachment 8 - O&M Agreement



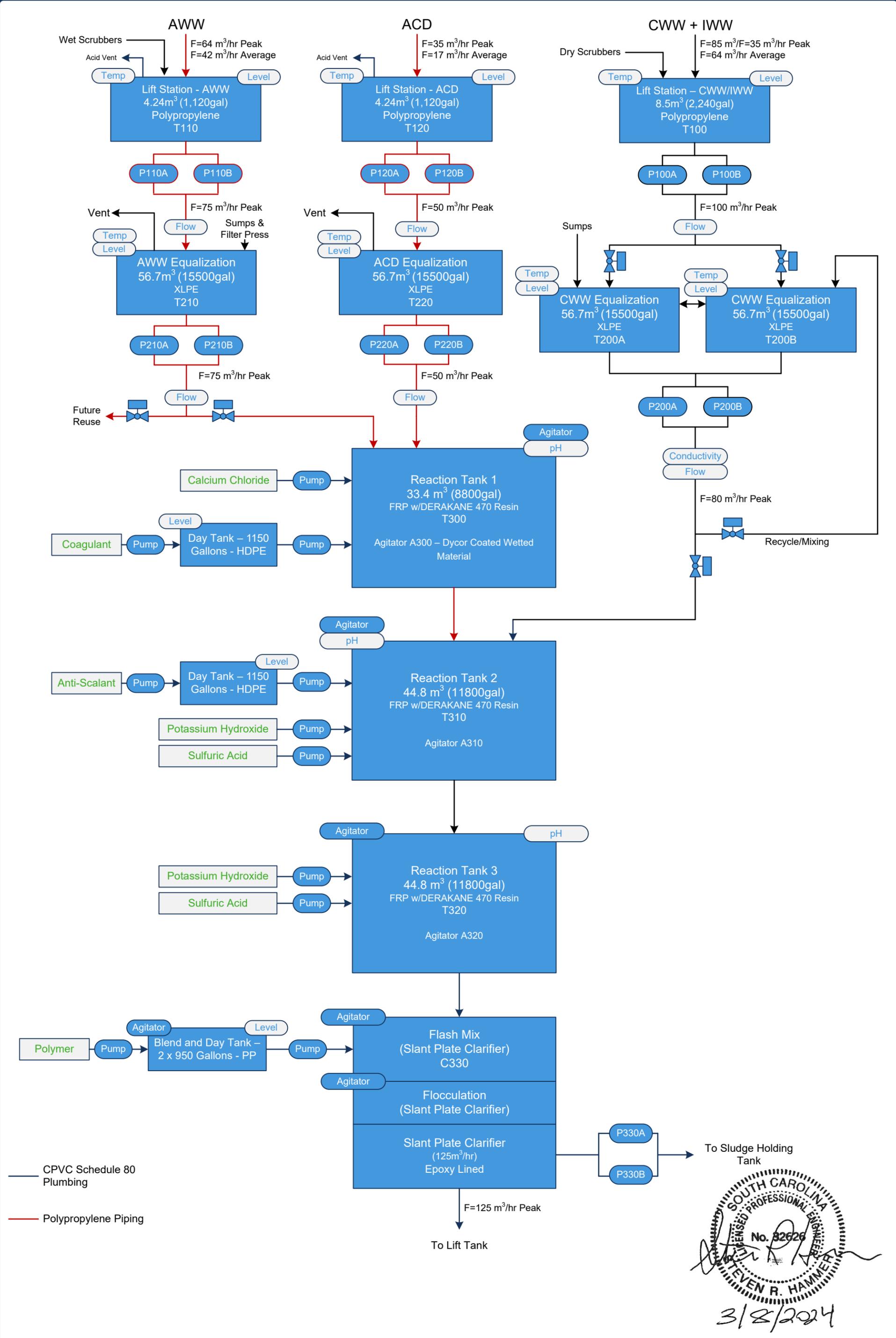
cc Matt Korzelius, Silfab Solar, Inc.
Brian Kidd, ProChem





Attachment 1 - Process Flow Diagram



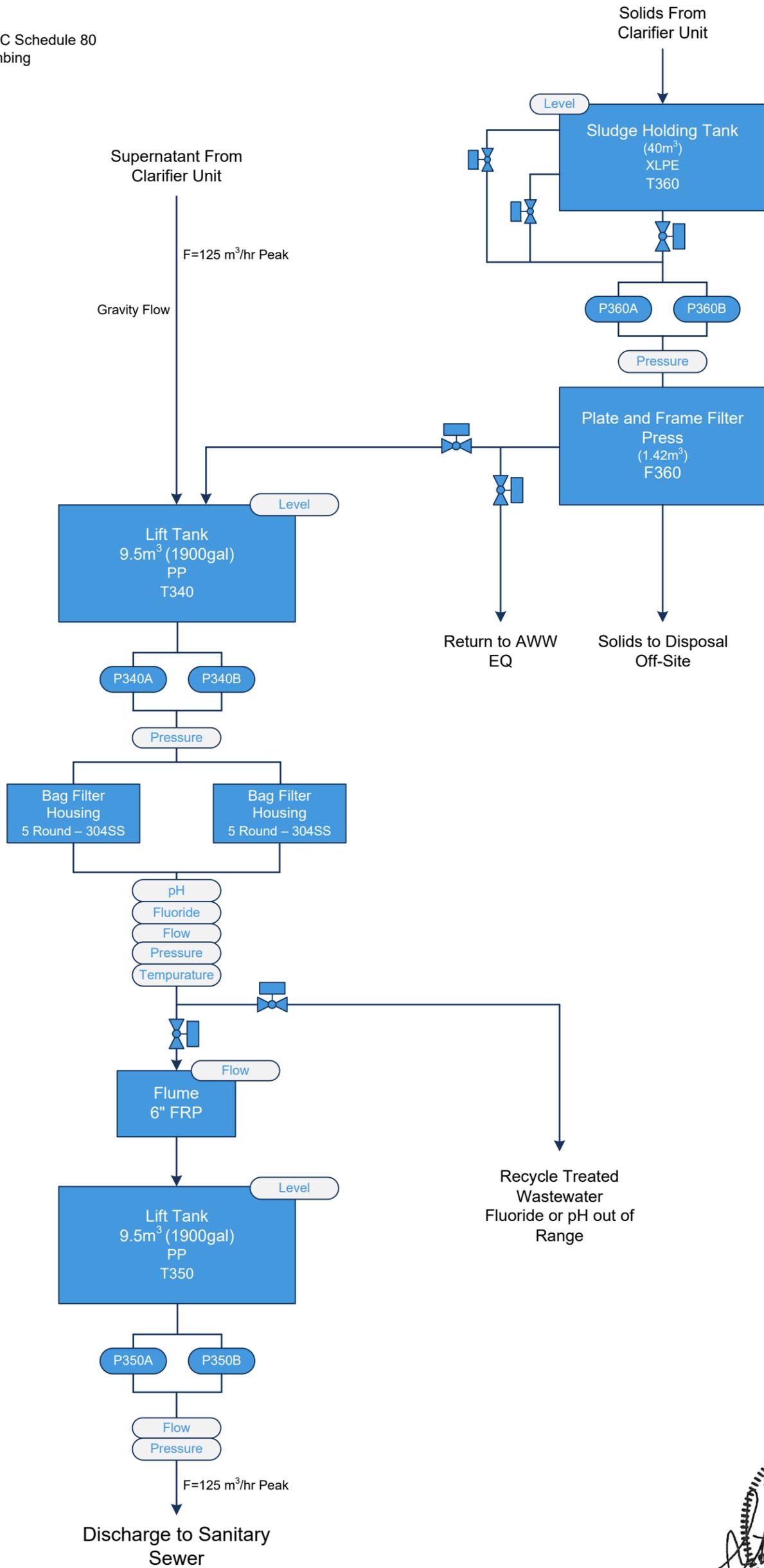


— CPVC Schedule 80 Plumbing
 — Polypropylene Piping

SOUTH CAROLINA
 LICENSED PROFESSIONAL ENGINEER
 No. 32626
 STEVEN R. HAMMER
 3/8/2024

	Client Name:	Silfab Solar	Job Number:	22713	Designed By:	CBK/SRH
	Drawing Title:	CWP System	Drawing Number:	22713-PFD	Date:	03.07.24
			ProChem, Inc. 5100 Enterprise Drive Elliston, VA 24087 540.268.9884 www.prochemwater.com		The information and drawing provided herein is confidential and must not be made public or copied unless authorized and shall not be used except for the purpose for which it was supplied. This drawing and information is subject to return on demand. All rights of invention or design are reserved.	

CPVC Schedule 80
Plumbing



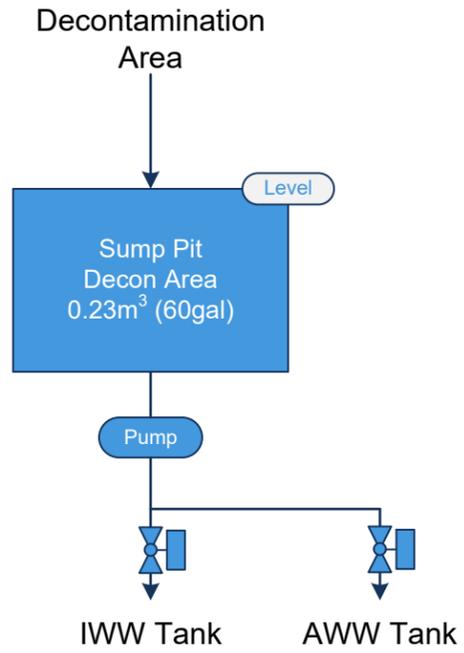
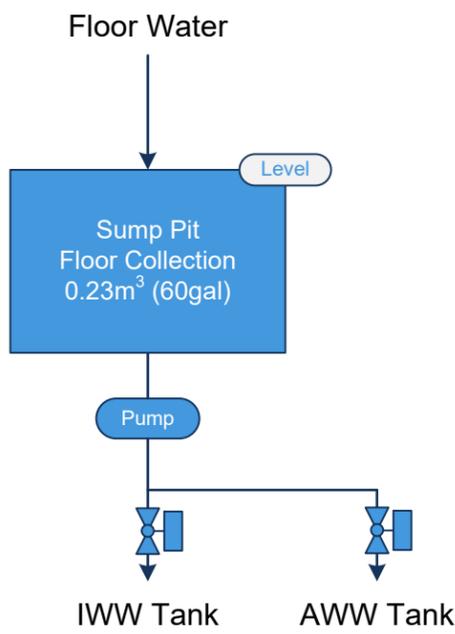
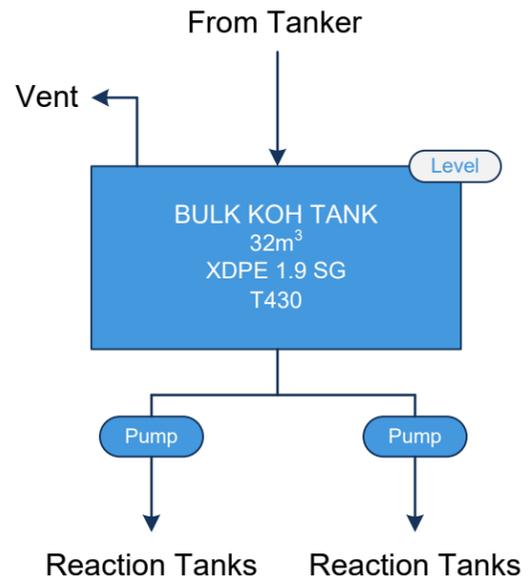
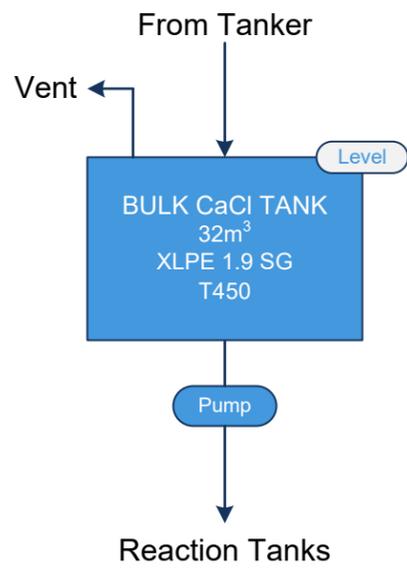
STEVEN R. HAMMER

 3/8/2024



Client Name: Sifab Solar	Job Number: 22713	Designed By: CBK/SRH	ProChem, Inc. 5100 Enterprise Drive Elliston, VA 24087 540.268.9884 www.prochemwater.com	The information and drawing provided herein is confidential and must not be made public or copied unless authorized and shall not be used except for the purpose for which it was supplied. This drawing and information is subject to return on demand. All rights of invention or design are reserved.
Drawing Title: Lift And Sludge Systems	Drawing Number: 22713-PFD	Date: 03.07.24		

CPVC Schedule 80
Plumbing



No. 32626
 STEVEN R. HAMMER
 3/8/2024



Client Name: Sifab Solar	Job Number: 22713	Designed By: CBK/SRH	ProChem, Inc. 5100 Enterprise Drive Elliston, VA 24087 540.268.9884 www.prochemwater.com	The information and drawing provided herein is confidential and must not be made public or copied unless authorized and shall not be used except for the purpose for which it was supplied. This drawing and information is subject to return on demand. All rights of invention or design are reserved.
Drawing Title: Chemical Bulk Storage And REC Buffer Tank	Drawing Number: 22713-PFD	Date: 03.07.24		

PFD Symbols – Uses Explained

Used to depict new tanks, filtration systems and components, pretty much anything but a pump

<Label>

Fill color: 31, 156, 215
Label color: 0,0,0
Outline color: 21, 51, 91
Outline width: .72 pt

Used to depict optional tanks, filtration systems and components

<Label>

Fill color: 31, 156, 215
Label color: 0,0,0
Outline color: 21, 51, 91
Outline width: .72 pt, dash type 02

Used to depict existing tanks, filtration systems and components, pretty much anything but a pump

<Label>

Fill color: 242, 242, 242
Label color: 21, 51, 91
Outline color: 21, 51, 91
Outline width: .72 pt

Used to depict new chemical supplies that are in totes or drums; new chemical supplies stored in tanks should be depicted using Proposed Equipment blue box

<Label>

Fill color: 242, 242, 242
Label color: 63, 174, 42
Outline color: 22, 51, 90
Outline width: .72 pt

Used to depict system piping for standard flow (water and chemicals)

→

Line color: 21, 51, 91
Line width: 1 pt
End arrow type: 05

Used to depict system piping for intermittent flow (water)

- - - - - →

Line color: 21, 51, 91
Line width: 1 pt
Dash style: 02
End arrow type: 05

Used to depict piping continuations (as opposed to tees)

⤿

Line color: 21, 51, 91
Line width: 1 pt

Used to depict new instrumentation and agitators

<Label>

Fill color: 242, 242, 242
Label color: 31, 156, 215
Outline color: 21, 51, 91
Outline width: .72 pt

Used to depict existing instrumentation and agitators

<Label>

Fill color: 242, 242, 242
Label color: 21, 51, 91
Outline color: 21, 51, 91
Outline width: .72 pt

Used to depict new pumps

<Label>

Fill color: 31, 156, 215
Label color: 0,0,0
Outline color: 21, 51, 91
Outline width: .72 pt

Used to depict existing pumps

<Label>

Fill color: 242, 242, 242
Label color: 21, 51, 91
Outline color: 21, 51, 91
Outline width: .72 pt

Used to depict new valves manual (left) automated (right)

⊘ ⊘

Fill color: 31, 156, 215
Outline color: 21, 51, 91
Outline width: .72 pt

Used to depict existing valves manual (left) automated (right)

⊘ ⊘

Fill color: 242, 242, 242
Outline color: 21, 51, 91
Outline width: .72 pt

PFD Legends

Copy and paste into PFDs, as needed

Proposed Equipment

Optional Equipment

Existing Equipment

Proposed Chemical Supplies

Proposed Instrumentation & Agitators

Existing Instrumentation & Agitators

Proposed Pumps

Existing Pumps

General Notes:

Do not use a font size smaller than 8 pt. anywhere on a PFD; this is not legible when copied into a proposal

If you need to deviate from these symbols/legends for a good reason, that's fine – just make sure your legend makes everything clear


 3/8/2024



Client Name: _____
Drawing Title: _____

Job Number: _____
Drawing Number: _____

Designed By: _____
Date: _____

ProChem, Inc.
5100 Enterprise Drive
Elliston, VA 24087
540.268.9884
www.prochemwater.com

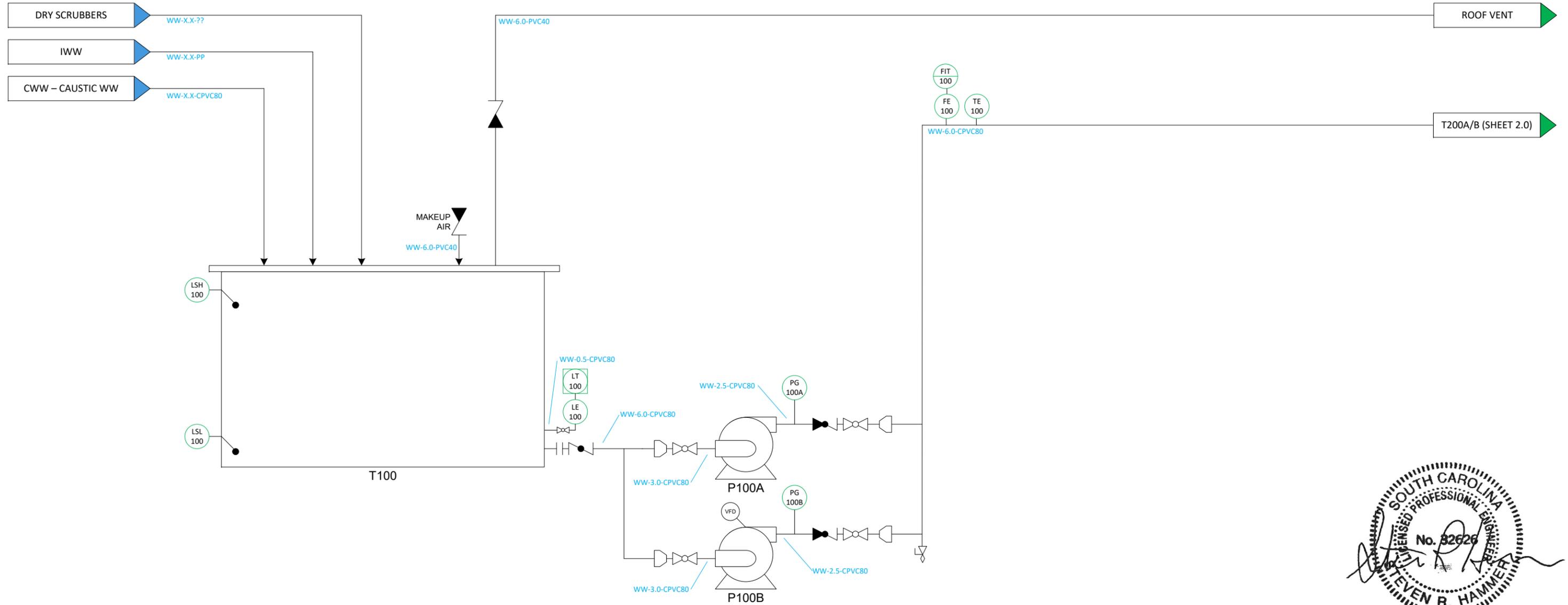
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Attachment 2 - Process and Instrumentation Diagram



T100
 ID: CWW/IWW LIFT TANK
 VOLUME: 2,240 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.9
 MOC: POLYPROPYLENE
 DIMENSIONS: 120"L X 60"W x 72"H

P100A/B
 TYPE: CENTRIFUGAL
 MOC: SS316L, CARBON/SIL-CARB/FKM
 DESIGN FLOW: 440 GPM
 DESIGN HEAD: 115 FT
 INLET/OUTLET SIZE: 3"/2.5"
 INLET/OUTLET TYPE: FLG
 HP/RPM/ENCL: 25/3450/TEFC
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPS: 33.7 A



STEVEN R. HAMMER
 3/8/2024



ProChem Incorporated
 5100 Enterprise Drive
 Elliston, Va. 24087
 540.268.9884
www.prochemwater.com

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Project

DRAWING TITLE:
WASTEWATER TREATMENT SYSTEM

CLIENT:
SILFAB

PROJECT NUMBER:
 22713

DRAWING NUMBER:
 22713-P&ID

SHEET NUMBER:
 1.0

Design

DESIGN BY:
 CBK/SRH

DESIGN DATE:
 03.07.24

Revision

REVISION NUMBER:

REVISED BY:

FINAL REVISION DATE:

Approvals

APPROVED BY:

APPROVAL DATE:

CUSTOMER SIGNATURE:

T110

ID: AWW LIFT TANK
 VOLUME: 1,120 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.9
 MOC: POLYPROPYLENE
 DIMENSIONS: 60"L X 60"W x 72"H

T120

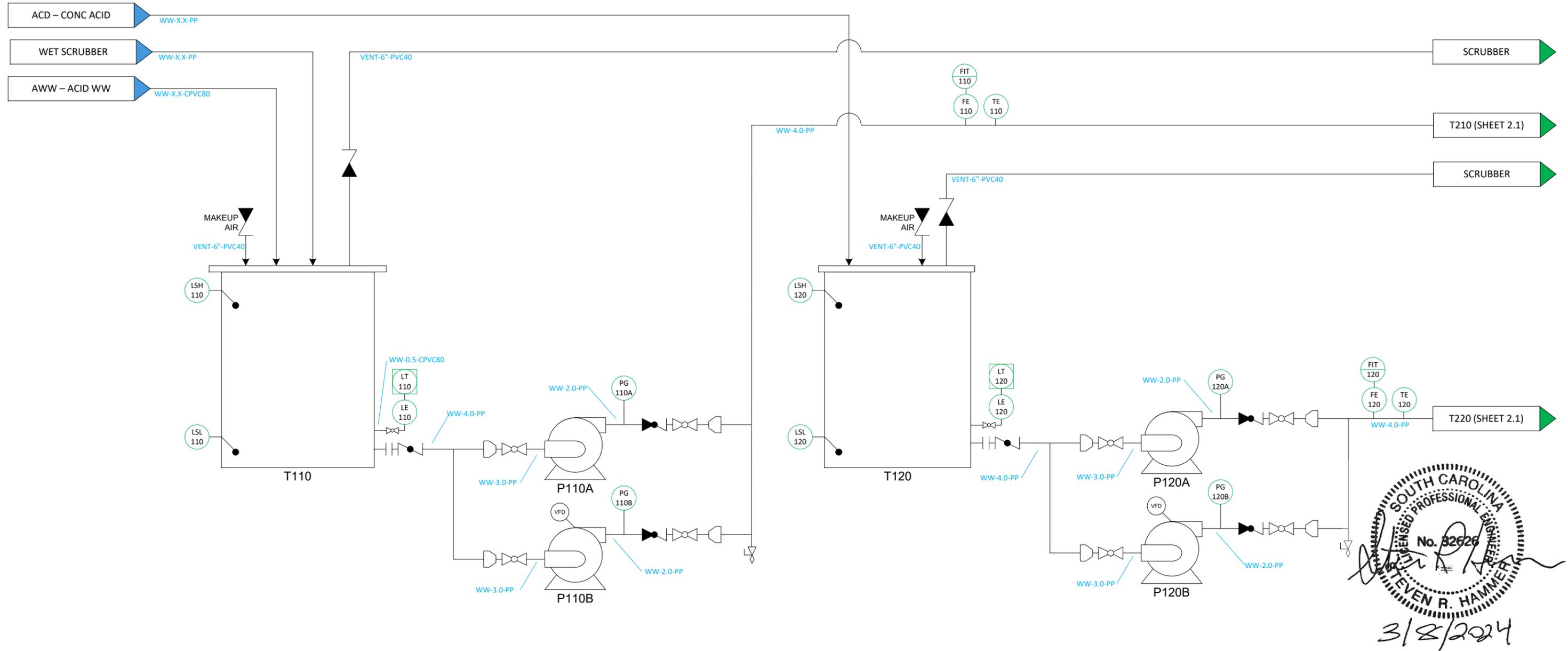
ID: ACD LIFT TANK
 VOLUME: 1,120 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.9
 MOC: POLYPROPYLENE
 DIMENSIONS: 60"L X 60"W x 72"H

P110A/B

TYPE: CENTRIFUGAL/MAG DRIVE
 MOC: SS316L, CARBON/SIL-CARB/FKM
 DESIGN FLOW: 320 GPM
 DESIGN HEAD: 104 FT
 INLET/OUTLET SIZE: 3"/2.0"
 INLET/OUTLET TYPE: FLG
 HP/RPM/ENCL: 15/3450/TEPE
 VOLTAGE: 208-230/460 VAC, 3 ϕ
 AMPS: 26.4 A

P120A/B

TYPE: CENTRIFUGAL/MAG DRIVE
 MOC: SS316L, CARBON/SIL-CARB/FKM
 DESIGN FLOW: 320 GPM
 DESIGN HEAD: 104 FT
 INLET/OUTLET SIZE: 3"/2.0"
 INLET/OUTLET TYPE: FLG
 HP/RPM/ENCL: 15/3450/TEPE
 VOLTAGE: 208-230/460 VAC, 3 ϕ
 AMPS: 26.4 A



STEVEN R. HAMMER
 3/8/2024

 ProChem Industrial Water & Technologies	ProChem Incorporated 5100 Enterprise Drive Elliston, Va. 24087 540.268.9884 www.prochemwater.com	The information and drawing provided herein is confidential and must not be made public or copied unless authorized and shall not be used except for the purpose for which it was supplied. This drawing and information is subject to return on demand. All rights of invention or design are reserved.	DRAWING TITLE: WASTEWATER TREATMENT SYSTEM	PROJECT NUMBER: 22713	DESIGN BY: CBK/SRH	REVISION NUMBER: _____	APPROVED BY: _____
			CLIENT: SILFAB	DRAWING NUMBER: 22713-P&ID	DESIGN DATE: 03.07.24	REVISED BY: _____	APPROVAL DATE: _____
			SHEET NUMBER: 1.1			FINAL REVISION DATE: _____	CUSTOMER SIGNATURE: _____

T200A

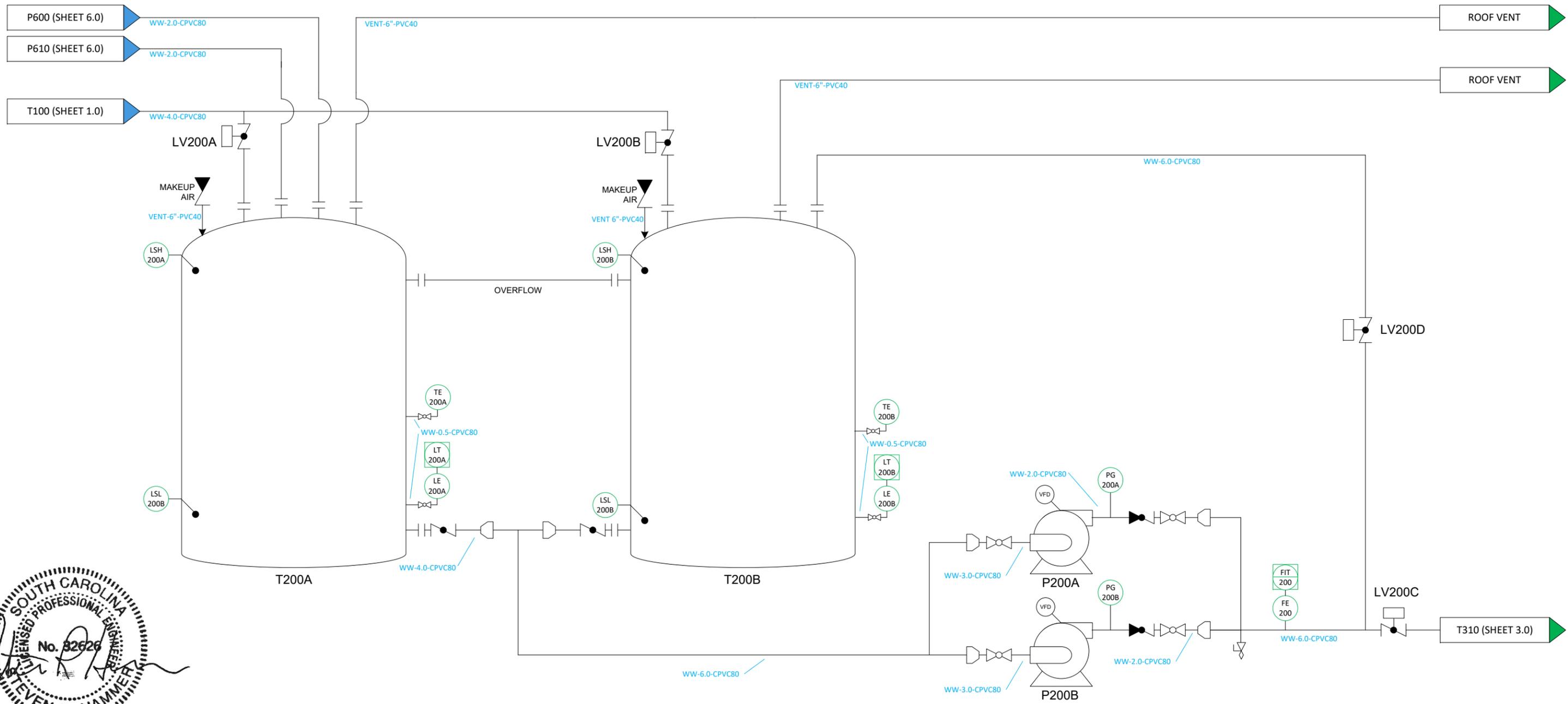
CWW/IWW EQUALIZATION
VOLUME: 15500 GAL
TOP: CLOSED
BOTTOM: FLAT
SG: 1.65
MOC: HDPE
DIMENSIONS: 143" D X 228" H
FITTINGS:

T200B

CWW/IWW EQUALIZATION
VOLUME: 15500 GAL
TOP: CLOSED
BOTTOM: FLAT
SG: 1.65
MOC: HDPE
DIMENSIONS: 143" D X 228" H
FITTINGS:

P200 A/B

TYPE: CENTRIFUGAL
MOC: SS316L, CARBON/SIL-CARB/FKM
DESIGN FLOW: 440 GPM
DESIGN HEAD: 115 FT
INLET/OUTLET SIZE: 3"/2.5"
INLET/OUTLET TYPE: FLG
HP/RPM/ENCL: 25/3450/TEFC
VOLTAGE: 208-230/460 VAC, 3φ
AMPS: 33.7 A



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Project	DRAWING TITLE:	WASTEWATER TREATMENT SYSTEM
	CLIENT:	SILFAB

Design	PROJECT NUMBER:	22713
	DRAWING NUMBER:	22713-P&ID
	SHEET NUMBER:	2.0

Design	DESIGN BY:	CBK/SRH
	DESIGN DATE:	03.07.24

Revision	REVISION NUMBER:	
	REVISED BY:	
	FINAL REVISION DATE:	

Approvals	APPROVED BY:	
	APPROVAL DATE:	
	CUSTOMER SIGNATURE:	

T210

AWW EQUALIZATION
 VOLUME: 15500 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.65
 MOC: HDPE
 DIMENSIONS: 143" D X 228" H
 FITTINGS:

T220

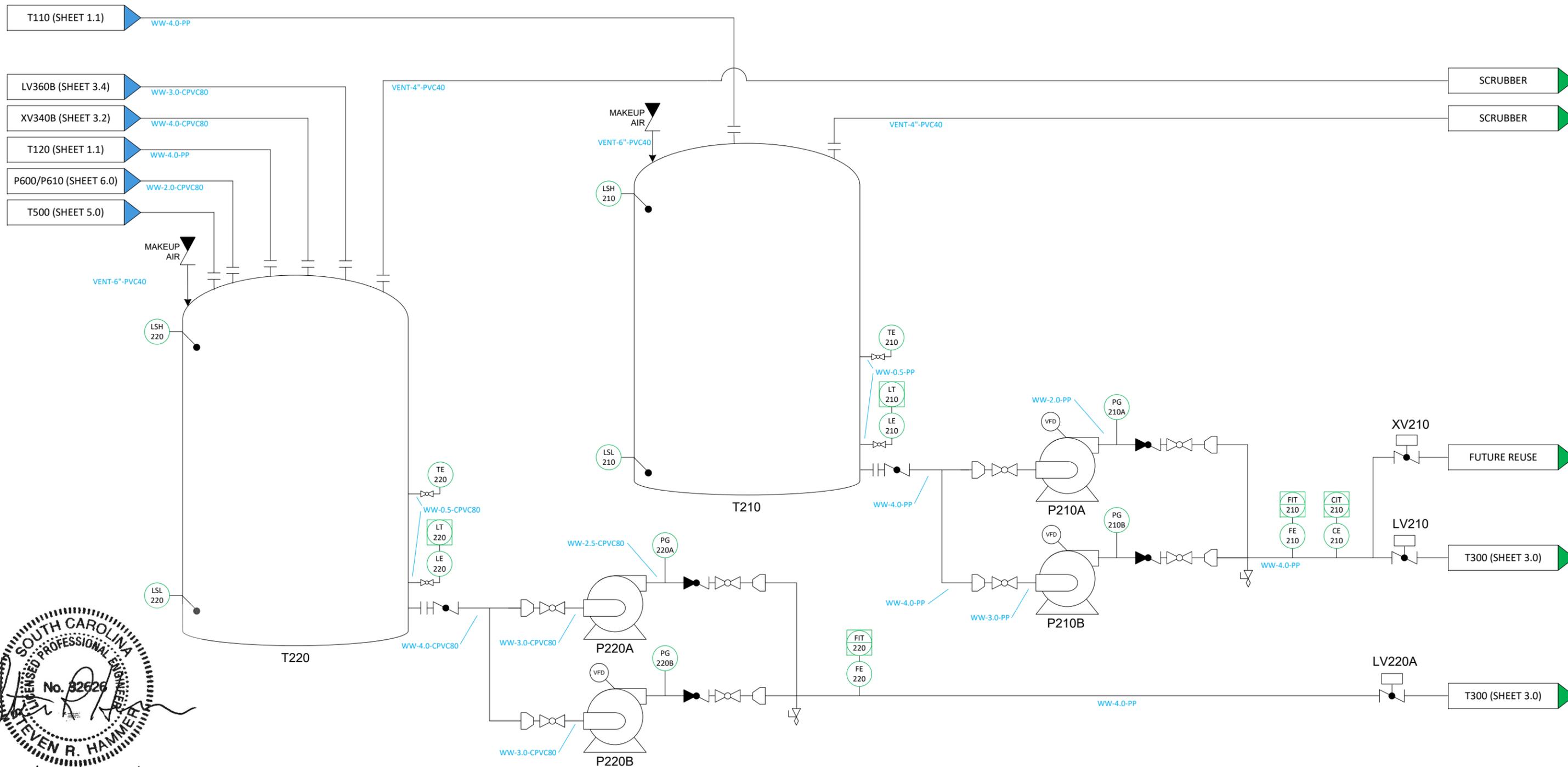
ACD EQUALIZATION
 VOLUME: 15500 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.65
 MOC: HDPE
 DIMENSIONS: 143" D X 228" H
 FITTINGS:

P210A/B

TYPE: CENTRIFUGAL
 MOC: CAST DUCTILE IRON ETFE LINED, CARBON FIBER ETFE
 DESIGN FLOW: 320 GPM
 DESIGN HEAD: 104 FT
 INLET/OUTLET SIZE: 3"/2"
 INLET/OUTLET TYPE: FLG
 HP/RPM/ENCL: 15/3450/TEPE
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPS: 26.4 A

P220A/B

TYPE: CENTRIFUGAL
 MOC: CAST DUCTILE IRON ETFE LINED, CARBON FIBER ETFE
 DESIGN FLOW: 320 GPM
 DESIGN HEAD: 104 FT
 INLET/OUTLET SIZE: 3"/2"
 INLET/OUTLET TYPE: FLG
 HP/RPM/ENCL: 10/3450/TEPE
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPS: 26.4 A



SOUTH CAROLINA
 LICENSED PROFESSIONAL ENGINEER
 No. 32626
STEVEN R. HAMMERY
 3/8/2024



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www.prochemwater.com

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Project	DRAWING TITLE:	WASTEWATER TREATMENT SYSTEM
	CLIENT:	SILFAB

Design	PROJECT NUMBER:	22713
	DRAWING NUMBER:	22713-P&ID
	SHEET NUMBER:	2.1

Design	DESIGN BY:	CBK/SRH
	DESIGN DATE:	03.07.24

Revision	REVISION NUMBER:	
	REVISED BY:	
	FINAL REVISION DATE:	

Approvals	APPROVED BY:	
	APPROVAL DATE:	
	CUSTOMER SIGNATURE:	

T300
 REACTION TANK 1
 VOLUME: 8,800 GAL
 TOP: OPEN
 BOTTOM: FLAT
 SG: 1.5
 MOC: FRP
 DIMENSIONS: 120"D X 180"H
 FITTINGS: 1- 2" FLG NOZZLE, 2 - 10" FLG NOZZLE

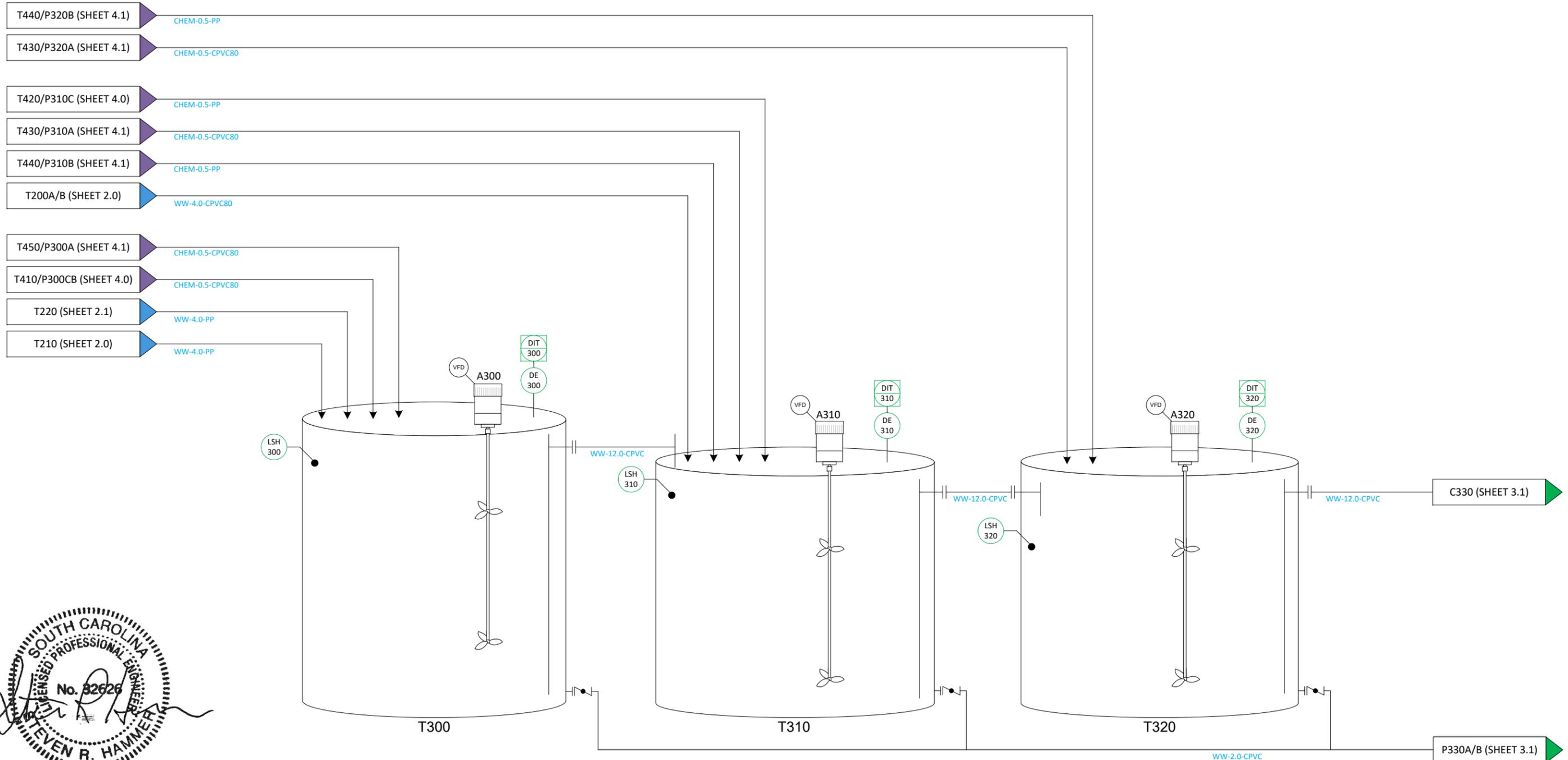
A300
 REACTION TANK 1 AGITATOR
 MOUNT TYPE: BEAM MOUNT
 GEAR REDUCTION: 31:1
 HP/RPM/ENCL: 5/1750/TEFC
 VOLTAGE: 208-230/460 VAC, 3 ϕ
 AMPERAGE: 7.6 A
 SHAFT: 2.5" D X 156" L
 IMPELLERS: 2 X 52" AF-3

T310
 REACTION TANK 2
 VOLUME: 11,800 GAL
 TOP: OPEN
 BOTTOM: FLAT
 SG: 1.5
 MOC: FRP
 DIMENSIONS: 144"D X 168"H
 FITTINGS: 1- 2" FLG NOZZLE, 2 - 10" FLG NOZZLE

A310
 REACTION TANK 2 AGITATOR
 MOUNT TYPE: BEAM MOUNT
 GEAR REDUCTION: 31:1
 HP/RPM/ENCL: 2/1750/TEFC
 VOLTAGE: 208-230/460 VAC, 3 ϕ
 AMPERAGE:
 SHAFT: 2.5" D X 144" L
 IMPELLERS: 2 X 54" AF-3

T320
 REACTION TANK 3
 VOLUME: 11,800 GAL
 TOP: OPEN
 BOTTOM: FLAT
 SG: 1.5
 MOC: FRP
 DIMENSIONS: 144"D X 168"H
 FITTINGS: 1- 2" FLG NOZZLE, 2 - 10" FLG NOZZLE

A320
 REACTION TANK 3 AGITATOR
 MOUNT TYPE: BEAM MOUNT
 GEAR REDUCTION: 31:1
 HP/RPM/ENCL: 2/1750/TEFC
 VOLTAGE: 208-230/460 VAC, 3 ϕ
 AMPERAGE:
 SHAFT: 2.5" D X 144" L
 IMPELLERS: 2 X 54" AF-3



SOUTH CAROLINA
 LICENSED PROFESSIONAL ENGINEER
 No. 32626
 STEVEN R. HAMMER
 3/8/2024



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 5100 Enterprise Drive
 Elliston, Va. 24087
 540.268.9884
 www.prochemwater.com

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Project
 DRAWING TITLE:
 WASTEWATER TREATMENT SYSTEM
 CLIENT:
 SILFAB

Design
 PROJECT NUMBER:
 22713
 DRAWING NUMBER:
 22713-P&ID
 SHEET NUMBER:
 3.0

Revision
 DESIGN BY:
 CBK/SRH
 DESIGN DATE:
 03.07.24

Revisions
 REVISION NUMBER:
 REVISED BY:
 FINAL REVISION DATE:

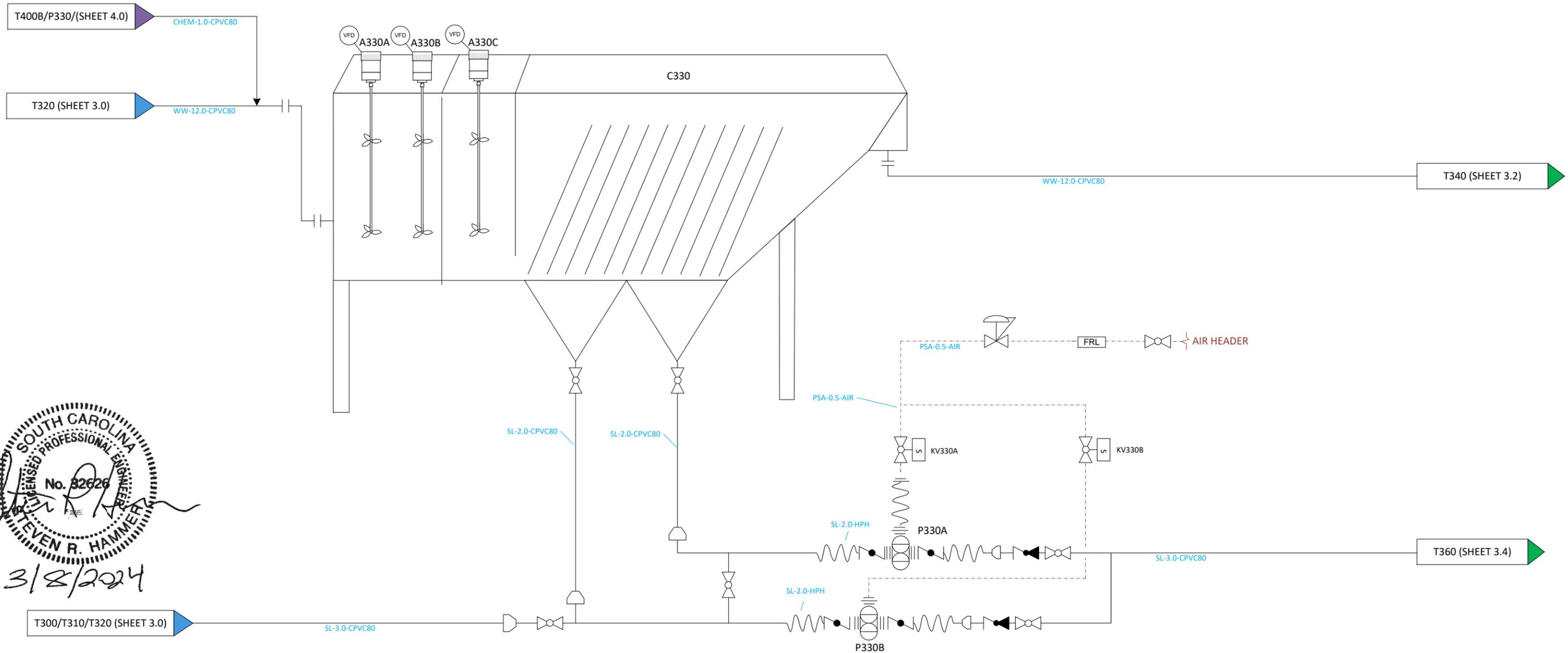
Approvals
 APPROVED BY:
 APPROVAL DATE:
 CUSTOMER SIGNATURE:

C330
 CLARIFIER
 FLOW: 550 GPM
 MOC: STEEL/EPOXY COATED
 DIMENSIONS: 10' x 16' x 14'
 FLASH CHAMBER VOLUME: 590 GALLONS
 FLASH CHAMBER DIM: 90"W x 24"L x 63" H
 FLOC CHAMBER VOLUME: 830 GALLONS
 FLOC CHAMBER: 90"W X 48" L X 63" H
 FITTINGS:
 2 - 12" FLG
 2 - 3" FLG

A330A/B
 FLASH CHAMBER AGITATOR
 MOUNT TYPE: BEAM MOUNT
 GEAR REDUCTION: NONE
 HP/RPM/ENCL: 2/1750/TEFC
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPERAGE: ## A
 SHAFT: 1.25" D X 54"L
 IMPELLERS: 2 - 6.5"

A330C
 FLOCCULATION CHAMBER AGITATOR
 MOUNT TYPE: BEAM MOUNT
 GEAR REDUCTION: 39:1
 HP/RPM/ENCL: 0.5/1750/TEFC
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPERAGE: ## A
 SHAFT: 1.5"D X 60"L
 IMPELLERS: 1 - 38"

P330A/B
 TYPE: AODD
 MOC: POLYPROPYLENE
 DESIGN FLOW: 150 GPM @ 80 PSI
 PROCESS INLET: 2.00" FLG
 PROCESS OUTLET: 2.00" FLG
 DESIGN AIR USE: 80 SCFM @ 20 PSI
 AIR INLET: 0.75" FNPT



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	CLIENT: SILFAB		DRAWING NUMBER: 22713-P&ID	DESIGN DATE: 03.07.24	REVISOR: _____	APPROVAL DATE: _____	
	SHEET NUMBER: 3.1		DESIGN DATE: 03.07.24	FINAL REVISION DATE: _____	CUSTOMER SIGNATURE: _____		

T340

LIFT TANK
 VOLUME: 1900 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.5
 MOC: PP w STEEL SUPPORTS
 DIMENSIONS: 60" W x 60"L x 120"H
 FITTINGS: 1 - 2" FPT

P340A/B

TYPE: CENTRIFUGAL
 MOC: SS316L, CARBON/SIL-CARB/FKM
 DESIGN FLOW: 550 GPM
 DESIGN HEAD: 115 FT
 INLET/OUTLET SIZE: 3"/2.5"
 INLET/OUTLET TYPE: FLG
 HP/RPM/ENCL: 25/3450/TEFC
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPS: 33.7 A

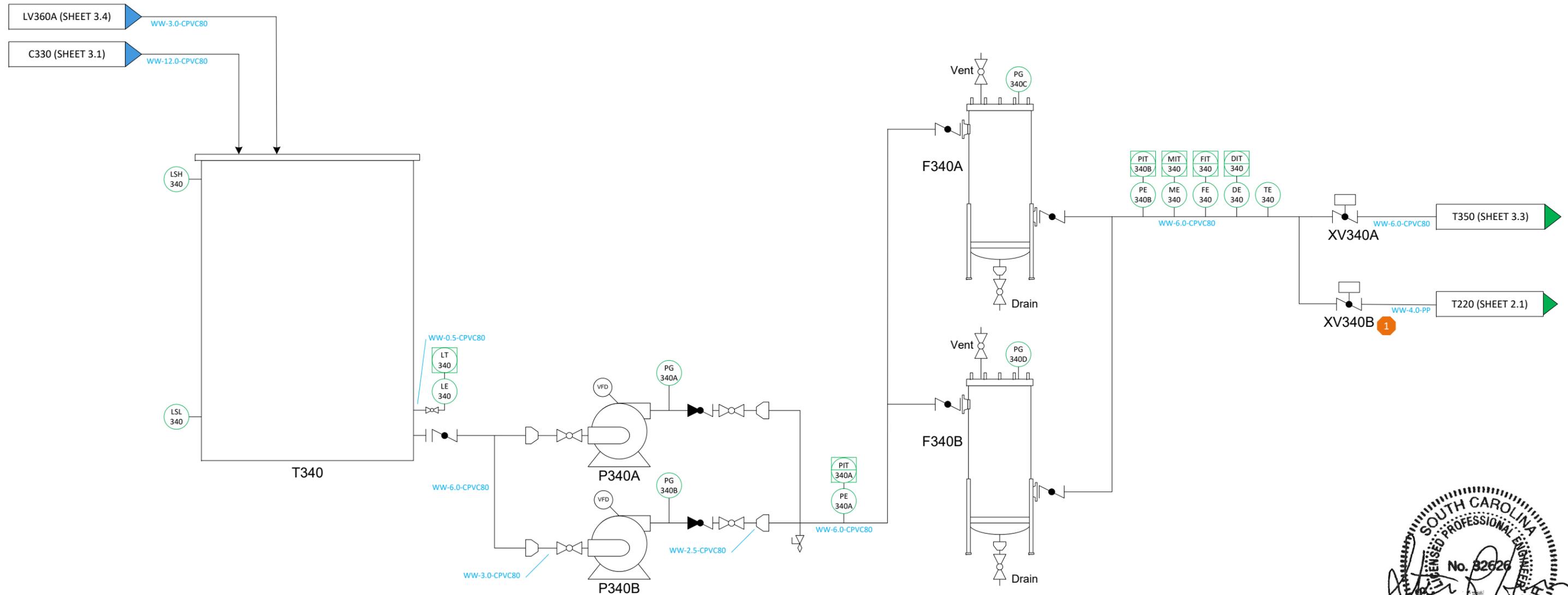
F340A/B

BAG FILTER HOUSING
 MOC: CARBON STEEL/EPOXY COATED/304SS STRAINER VITON SEALS
 FLOW (MAX): 785 GPM
 BAG TYPE/QUANTITY: #2 / 6 EACH
 PRESSURE (MAX): 100 PSI
 TEMPERATURE (MAX): 150°F
 INLET/OUTLET: 6" x 6"
 DRAIN: 1" MNPT
 CONNECTION TYPE: FLG

NOTES

1

1. T220 IS THE PRIMARY FATE FOR REDIRECTING WASTEWATER FOR RETREATMENT FOR OUT OF SPEC pH OR FLUORIDE.



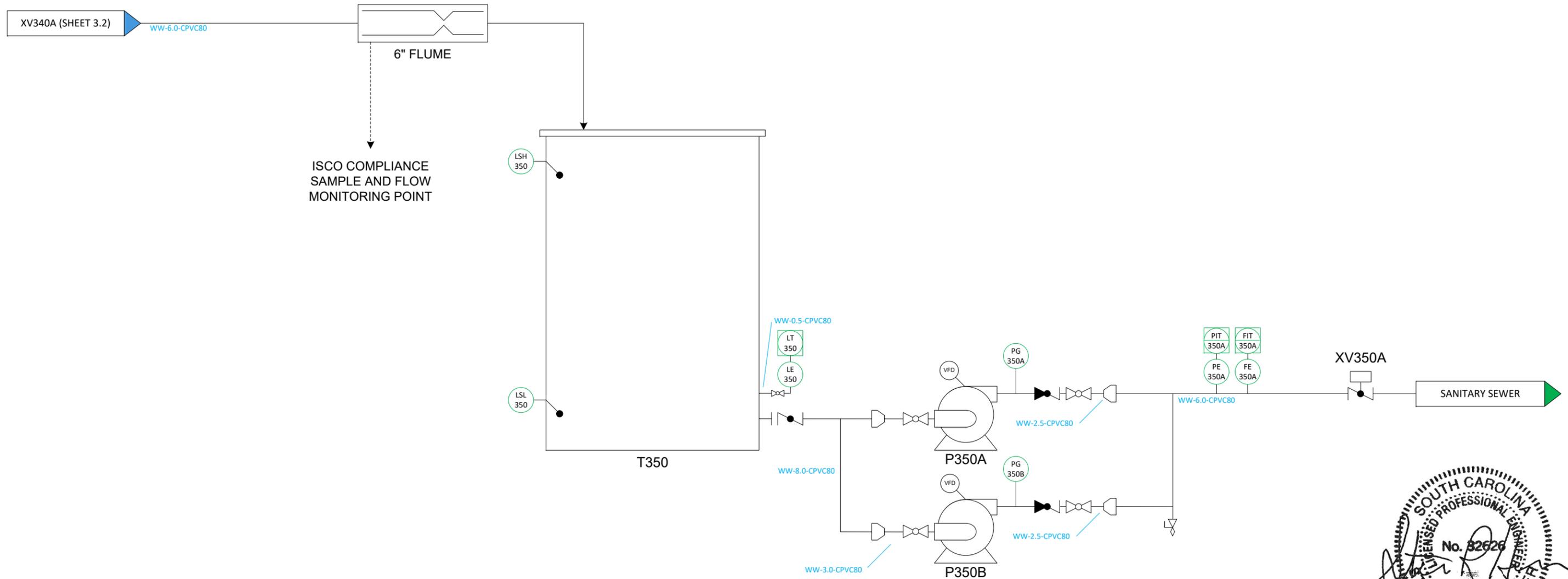
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			CLIENT: SILFAB	DRAWING NUMBER: 22713-P&ID	DESIGN DATE: 03.07.24	REVISED BY: _____	APPROVAL DATE: _____
			SHEET NUMBER: 3.2	FINAL REVISION DATE: _____	CUSTOMER SIGNATURE: _____		

T350
 DISCHARGE TANK
 VOLUME: 1900 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.5
 MOC: POLYPROPYLENE w STEEL SUPPORTS
 DIMENSIONS: 48"W x 96"L x 96"H
 FITTINGS: 1 - 2" FPT

P350A/B
 TYPE: CENTRIFUGAL
 MOC: SS316L, CARBON/SIL-CARB/FKM
 DESIGN FLOW: 550 GPM
 DESIGN HEAD: 115 FT
 INLET/OUTLET SIZE: 3"/2.5"
 INLET/OUTLET TYPE: FLG
 HP/RPM/ENCL: 25/3450/TEFC
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPS: 33.7 A

FLUME
 TYPE: FLOW MONITORING GRAVITY FLUME
 MOC: FPR AND STEEL
 DESIGN FLOW: 550 GPM (0.72 FT)
 MAX FLOW: 1700 GPM (1.5 FT)
 INLET/OUTLET SIZE: 6"/6"
 INLET/OUTLET TYPE: FLG



STEVEN R. HAMMER
 3/8/2024

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			CLIENT: SILFAB	DRAWING NUMBER: 22713-P&ID	DESIGN DATE: 03.07.24	REVISED BY: _____	APPROVAL DATE: _____
			SHEET NUMBER: 3.3	SHEET NUMBER: 3.3	FINAL REVISION DATE: _____	CUSTOMER SIGNATURE: _____	

T360

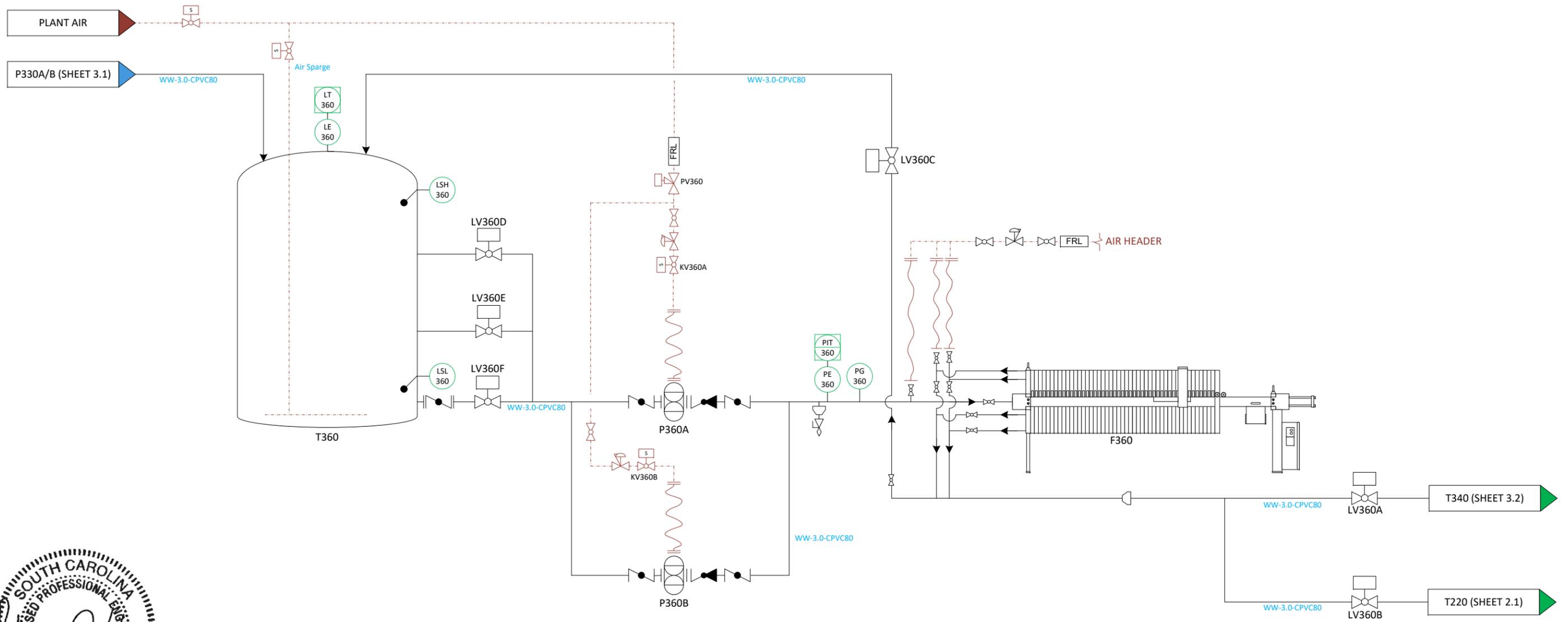
SLUDGE HOLDING TANK
VOLUME: 10,000 GAL
TOP: CLOSED
BOTTOM: FLAT
SG: 1.9
MOC: HDPE
DIMENSIONS: 120"D X 216"H
FITTINGS: 3 x 3" FNPT, 1 x 1" FNPT, 1 x 24" MW

P360A/B

TYPE: AODD
MOC: DUCT. IRON, SANTOPRENE
DESIGN FLOW: 200 GPM @ 80 PSI
PROCESS INLET: 3.00" FLG
PROCESS OUTLET: 3.00" FLG
DESIGN AIR USE: 90 SCFM @ 20 PSI
AIR INLET: 0.75" FNPT

F360

PLATE AND FRAME FILTER PRESS
FRAM MOC: ASTM A36 CARBON STEEL WITH 304SS SIDE RAILS
PLATE MOC: POLYPROPYLENE, EPDM GASKET, RECESSED CHAMBER
COATING: ALIPHATIC ACRYLIC POLYURETHANE
FILTRATION AREA: 1,016 SQFT
PLATE SIZE: 1200 x 1200 mm
EMPTY WEIGHT: 18,455 LBS
INLET/OUTLET SIZE: 4" / 4"
INLET/OUTLET TYPE: NPT/NPT
AIR INLET SIZE:
CAPACITY: 50 CUFT EXPANDABLE TO 100 CUFT
MODEL: FP1200G32L-38/76-50/100ASX



SOUTH CAROLINA
REGISTERED PROFESSIONAL ENGINEER
No. 32626
STEVEN R. HAMMER
3/8/2024



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Project	DRAWING TITLE:	WASTEWATER TREATMENT SYSTEM
	CLIENT:	SILFAB

Design	PROJECT NUMBER:	22713
	DRAWING NUMBER:	22713-P&ID
	SHEET NUMBER:	3.4

Revision	DESIGN BY:	CBK/SRH
	DESIGN DATE:	03.07.24

Approvals	REVISION NUMBER:	
	REVISED BY:	
	FINAL REVISION DATE:	

APPROVED BY:	
APPROVAL DATE:	
CUSTOMER SIGNATURE:	

T400A/B

POLYMER BLEND TANK
 VOLUME: 900 GAL / 900 GAL
 TOP: OPEN
 BOTTOM: FLAT
 SG: 1.9
 MOC: PP SHEETS
 DIMENSIONS: 60"D X 48"L X 72"H
 BOTH SIDES (97" L COMBINED)
 FITTINGS:

A400A

POLYMER BLEND TANK AGITATOR
 MOUNT TYPE: BEAM MOUNT
 GEAR REDUCTION: 5:1
 HP/RPM/ENCL: 2/1750/TEFC
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPERAGE: 3.4 A
 SHAFT: 1.5"D X 84"L
 IMPELLERS: 2- 16" AF-3

P400A

TYPE: AODD
 MOC: POPYPROPYLENE
 DESIGN FLOW: 53 GPM
 PROCESS INLET: 1.0"
 PROCESS OUTLET: 1.0"
 DESIGN AIR USE: 45 SCFM @ 80 PSI
 AIR INLET: 1/4" FNPT

P400B/P410/P420

TYPE: AODD
 MOC: PP/BUNA-N/PP
 DESIGN FLOW: 53 GPM @ 80 PSI
 PROCESS INLET: 1.0" FNPT
 PROCESS OUTLET: 1.0" FNPT
 DESIGN AIR USE: 45 SCFM @ 80 PSI
 AIR INLET: 1/4" FNPT

P330

MOC: PVC, 316SS, HAST-C
 DESIGN: MECHANICAL METERING PUMP
 INLET/OUTLET SIZE: 1"/1"
 INLET/OUTLET TYPE: NPTF/NPTF
 FLOW/PRESSURE: 440GPH / 50PSI
 HP/RPM/ENCL: 1/1725/TEFC
 VOLTAGE: 208-230/460 VAC, 3φ
 AMPERAGE: 2.1 A

T410

COAGULANT DAY TANK
 VOLUME: 1,150 GAL
 TOP: CLOSED/DOME
 BOTTOM: FLAT
 SG: 1.9
 MOC: HDPE
 DIMENSIONS: 64" x 98"
 FITTINGS: 1-1", 1-2"

P300B

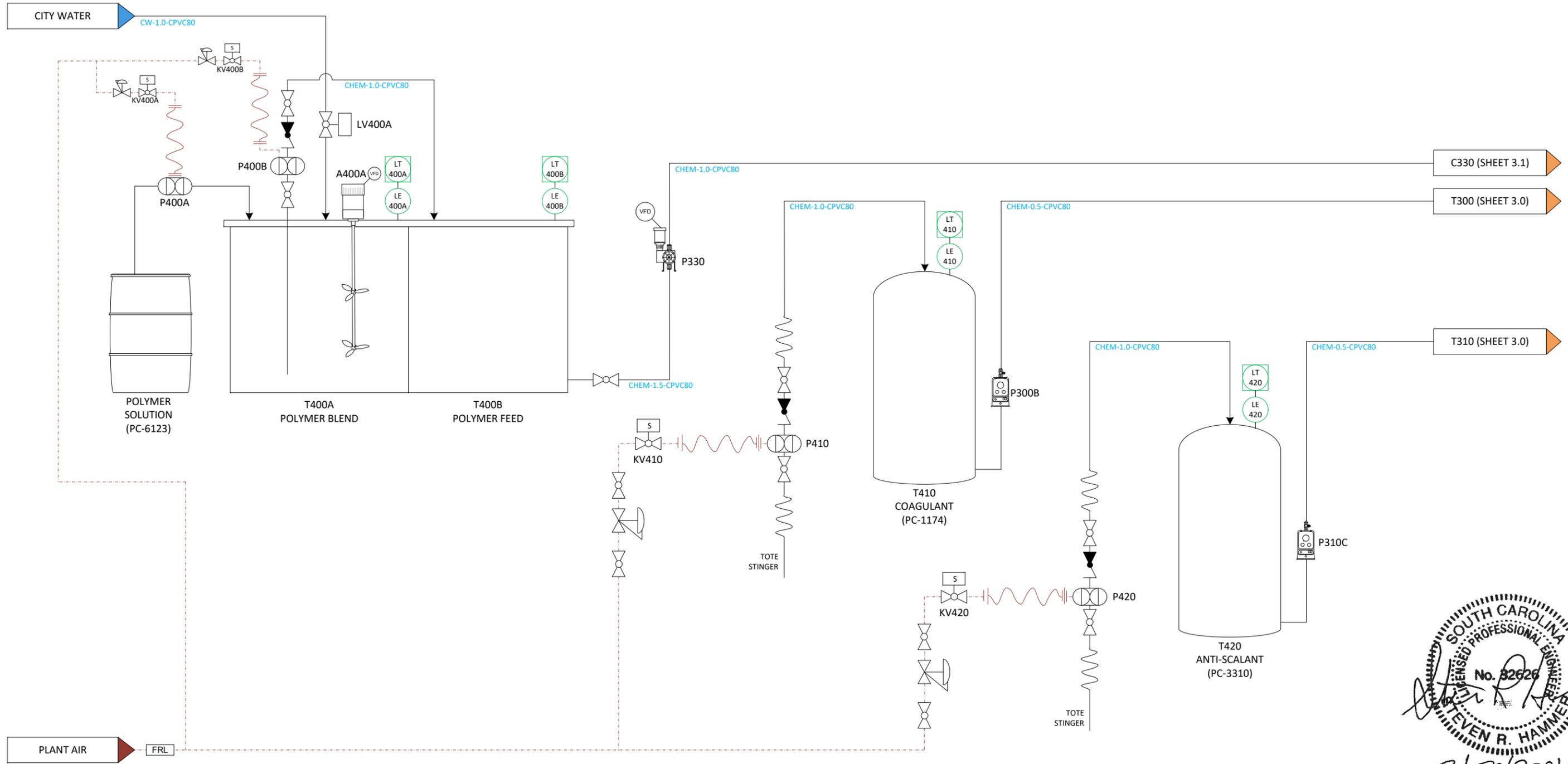
MOC: PVDF, FKM, CE
 DESIGN: MECHANICAL METERING PUMP
 INLET/OUTLET SIZE: 1.0"/1.0"
 INLET/OUTLET TYPE: MNPT/MNPT
 MAX FLOW / PRESSURE: 39 GPH / 50 PSI
 VOLTAGE: 115V VAC, 1φ
 AMPERAGE: 0.6 A

T420

ANTI-SCALANT DAY TANK
 VOLUME: 1,150 GAL
 TOP: CLOSED/DOME
 BOTTOM: FLAT
 SG: 1.9
 MOC: HDPE
 DIMENSIONS: 64" x 98"
 FITTINGS: 1-1", 1-2"

P310C

ANTI-SCALANT FEED PUMP
 MOC: PVDF, FKM, CE
 DESIGN: MECHANICAL METERING PUMP
 INLET/OUTLET SIZE: 1.0"/1.0"
 INLET/OUTLET TYPE: MNPT/MNPT
 MAX FLOW / PRESSURE: 39 GPH / 50 PSI
 VOLTAGE: 115V VAC, 1φ
 AMPERAGE: 0.6 A



Professional Engineer Seal for Steven R. Hammer, No. 82626, State of South Carolina. Signature and date: 3/8/2024.



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Project	DRAWING TITLE:	WASTEWATER TREATMENT SYSTEM
	CLIENT:	SILFAB

Design	PROJECT NUMBER:	22713
	DRAWING NUMBER:	22713-P&ID
	SHEET NUMBER:	4.0

Revision	DESIGN BY:	CBK/SRH
	DESIGN DATE:	03.07.24

Approvals	REVISION NUMBER:	
	REVISED BY:	
	FINAL REVISION DATE:	

APPROVED BY:	
APPROVAL DATE:	
CUSTOMER SIGNATURE:	

T430

POTASSIUM HYDROXIDE (45%) TANK
 VOLUME: 8,500 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.9
 MOC: XLPE
 DIMENSIONS: 120"D X 203"H
 FITTINGS:
 3" SIDEWALL FITTING
 1" SIDEWALL FITTING
 2" DOME FITTING
 1" DOME FITTING

P310A, P320A

MOC: PVDF, Aflas, CA20, CA20
 DESIGN: MECHANICAL METERING PUMP
 INLET/OUTLET SIZE: 1.5"/1"
 INLET/OUTLET TYPE: MNPT/MNPT
 MAX FLOW / PRESSURE: 298 GPH / 100 PSI
 HP/RPM/ENCL: 1.5/1800/TEFC
 VOLTAGE: 460, VAC, 3 ϕ , 1 HP
 AMPERAGE: 2.9A

T440

SULFURIC ACID TOTE
 VOLUME: 275 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.9
 MOC: HDPE
 DIMENSIONS: 40" x 48" x 36"

P310B, P320B

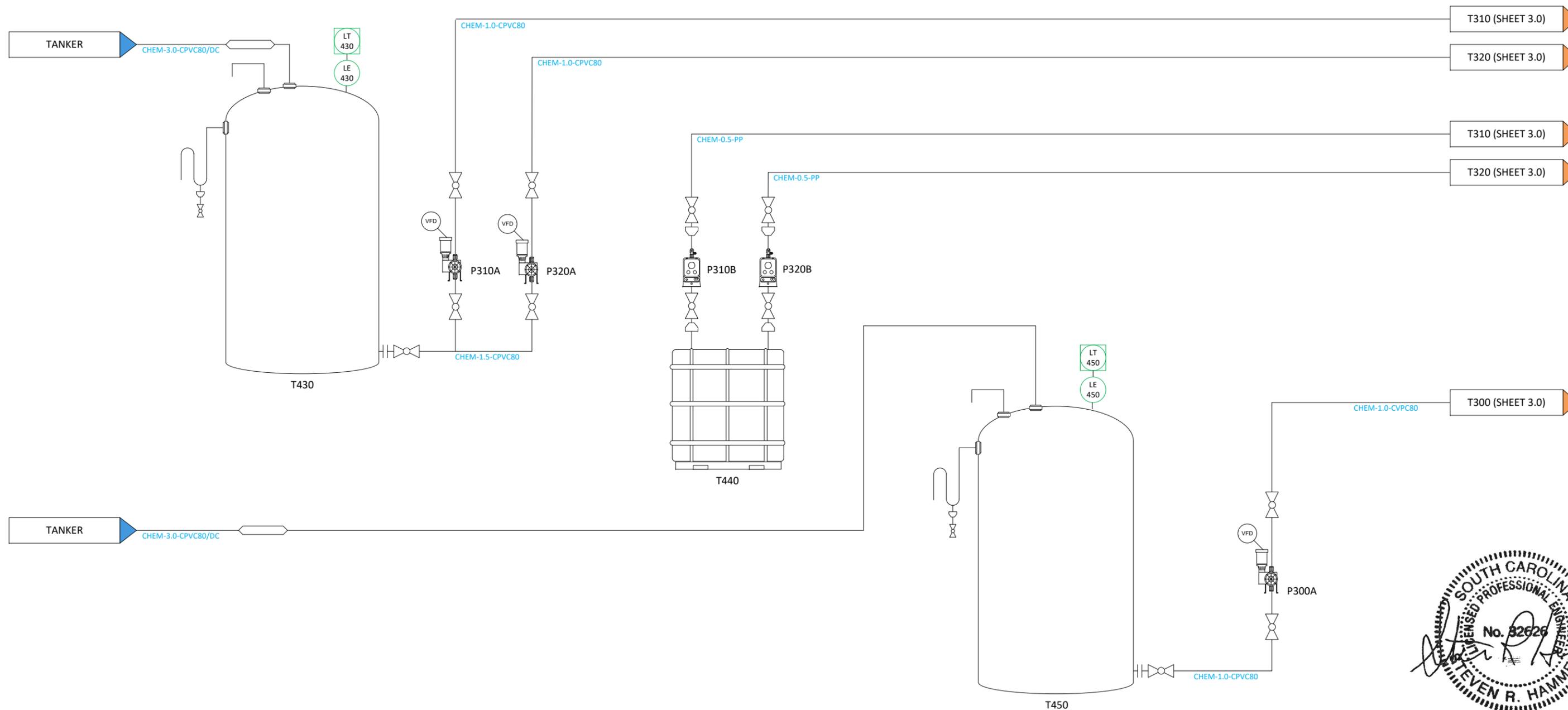
MOC: PVDF, FKM, CE
 DESIGN: MECHANICAL METERING PUMP
 INLET/OUTLET SIZE: 1"/1"
 INLET/OUTLET TYPE: FLG/FLG
 MAX FLOW / PRESSURE: 39 GPH / 73 PSI
 VOLTAGE: 115V VAC, 1 ϕ
 AMPERAGE: 0.6 A

T450

CALCIUM CHLORIDE (32%) STORAGE TANK
 VOLUME: 8,500 GAL
 TOP: CLOSED
 BOTTOM: FLAT
 SG: 1.9
 MOC: HDPE
 DIMENSIONS: 120"D X 203"H
 FITTINGS:
 3" SIDEWALL FITTING
 1" SIDEWALL FITTING
 2" DOME FITTING
 1" DOME FITTING

P300A

CALCIUM CHLORIDE FEED PUMPS
 MOC: PVDF, Aflas, CA20, CA20
 DESIGN: MECHANICAL METERING PUMP
 INLET/OUTLET SIZE: 1"/1"
 INLET/OUTLET TYPE: MNPT/MNPT
 MAX FLOW / PRESSURE: 380 GPH / 50 PSI
 VOLTAGE: 460, VAC, 3 ϕ , 1 HP
 AMPERAGE: 2.9 A

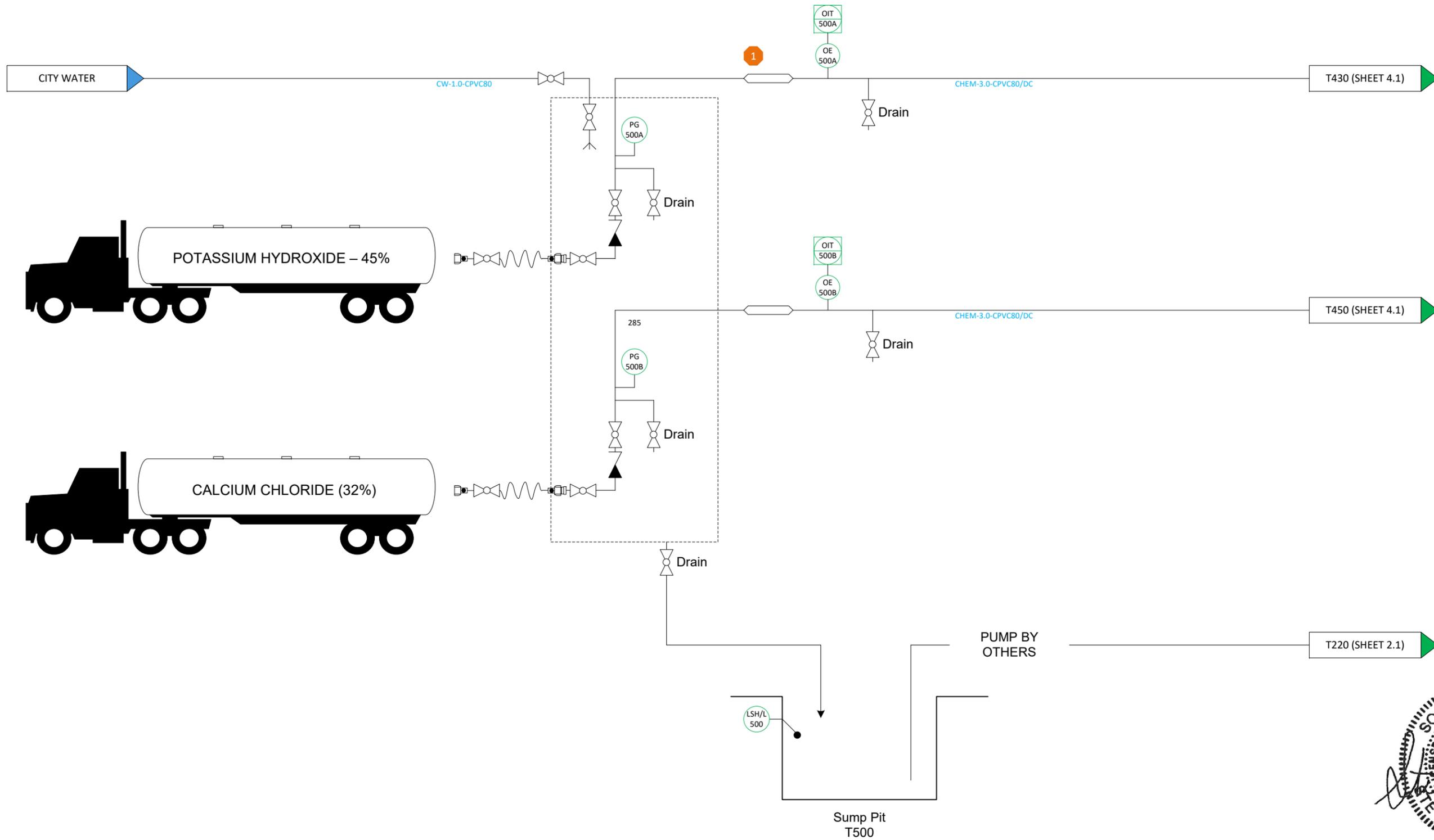


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			CLIENT: SILFAB	DRAWING NUMBER: 22713-P&ID	DESIGN DATE: 03.07.24	REVISOR: _____	APPROVAL DATE: _____
			SHEET NUMBER: 4.1			FINAL REVISION DATE: _____	CUSTOMER SIGNATURE: _____

NOTES

1. WAITING ON ANSWER REGARDING ROOM LOCATION IN BUILDING TO DETERMINE WHERE LEAKS WITHIN DOUBLE CONTAINED PIPING WILL DRAIN.



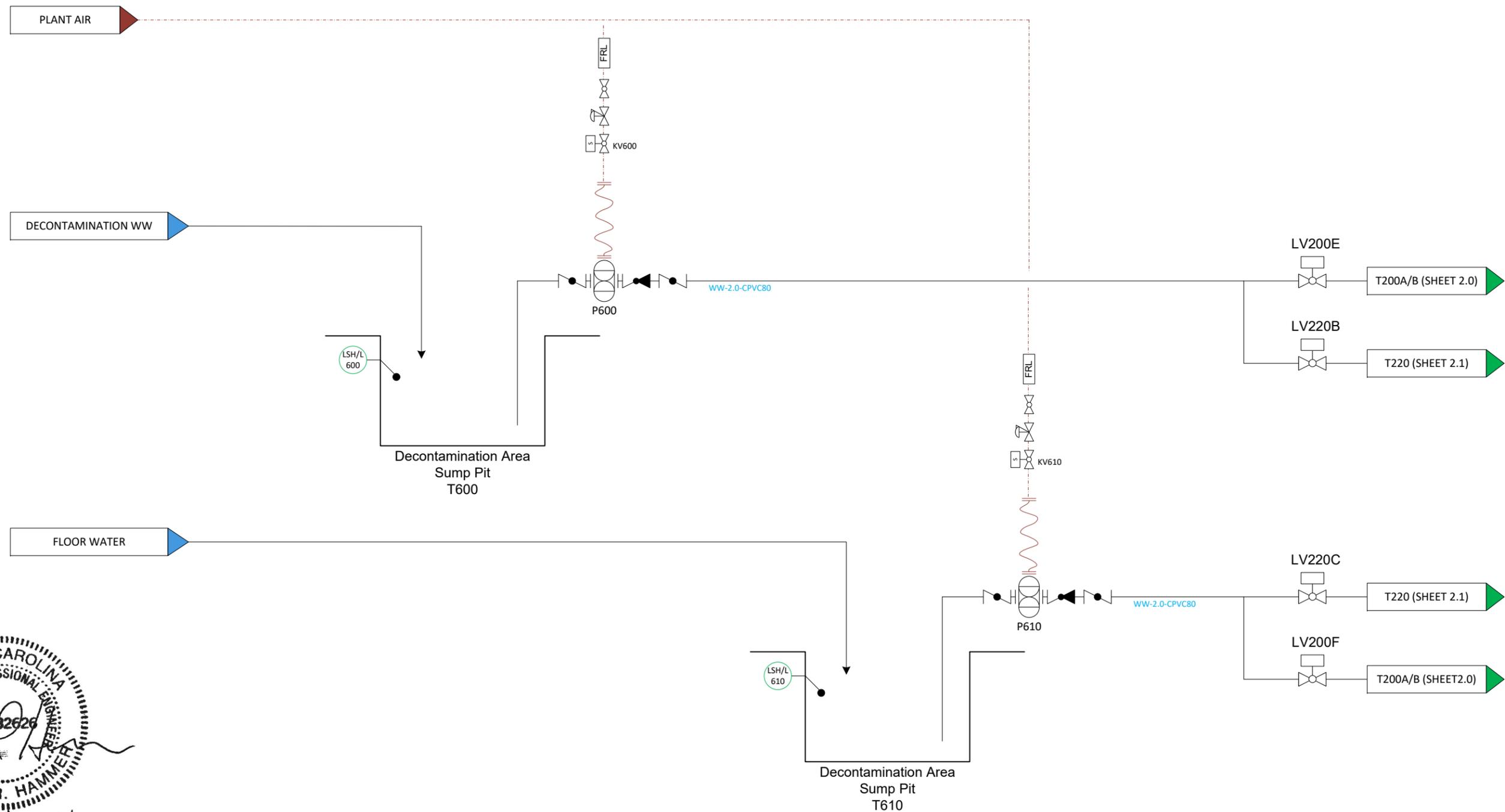
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			CLIENT: SILFAB	DRAWING NUMBER: 22713-P&ID	DESIGN DATE: 03.07.24	REVISOR: 	APPROVAL DATE:
			SHEET NUMBER: 5.0			FINAL REVISION DATE: 	CUSTOMER SIGNATURE:

P600
 TYPE: AODD
 MOC: POLYPROPYLENE
 DESIGN FLOW: 150 GPM @ 80 PSI
 PROCESS INLET: 2.00" FLG
 PROCESS OUTLET: 2.00" FLG
 DESIGN AIR USE: 80 SCFM @ 20 PSI
 AIR INLET: 0.75" FNPT

P610
 TYPE: AODD
 MOC: POLYPROPYLENE
 DESIGN FLOW: 150 GPM @ 80 PSI
 PROCESS INLET: 2.00" FLG
 PROCESS OUTLET: 2.00" FLG
 DESIGN AIR USE: 80 SCFM @ 20 PSI
 AIR INLET: 0.75" FNPT

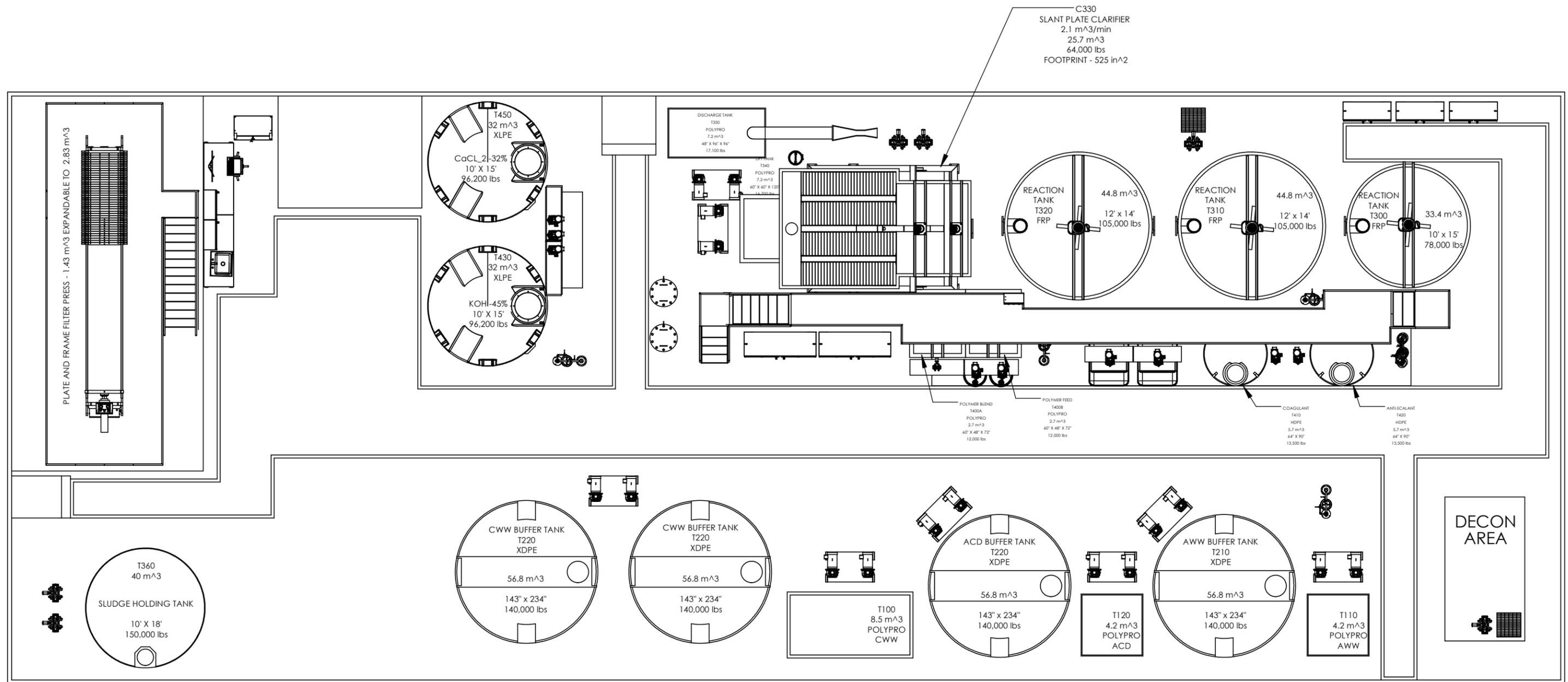



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	CLIENT: SILFAB		DRAWING NUMBER: 22713-P&ID	DESIGN DATE: 03.07.24	REVISION BY: _____	APPROVAL DATE: _____	
			SHEET NUMBER: 6.0	DESIGN DATE: 03.07.24	FINAL REVISION DATE: _____	CUSTOMER SIGNATURE: _____	

Attachment 3 - Process Equipment Layout





NOTE: PE STAMP FOR OVERALL DESIGN AND LAYOUT DOES NOT COVER THE STRUCTURAL COMPONENTS IN THE DRAWING (I.E. CATWALK AND FILTER PRESS PLATFORM)

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STEVEN R. HAMMER
3/8/2024

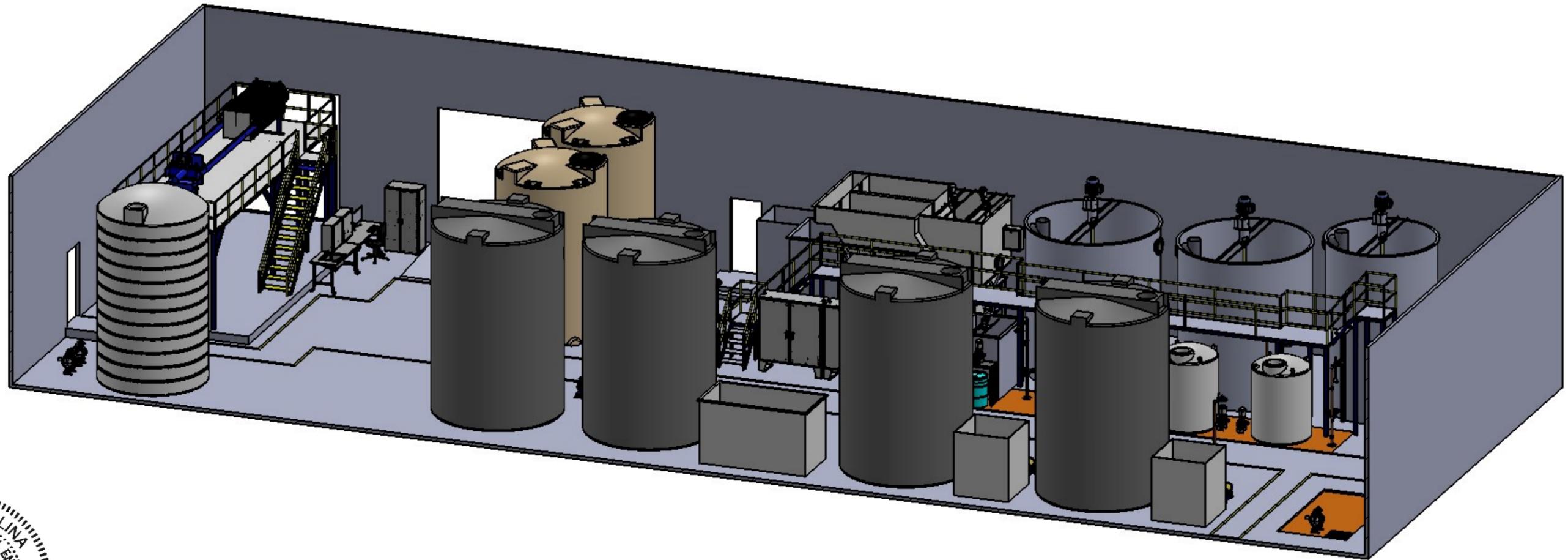


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Rev: 02 Sheet 1 of 3

Design Information	Project
Designed By: J. Alabran	Drawing Title: Silfab Combined 3D GA
Date: 11/10/2023	Project Number: 22713
Sheet Scale: 1:100	Client Name: Silfab
Drawing Number: 22713 3D GA	



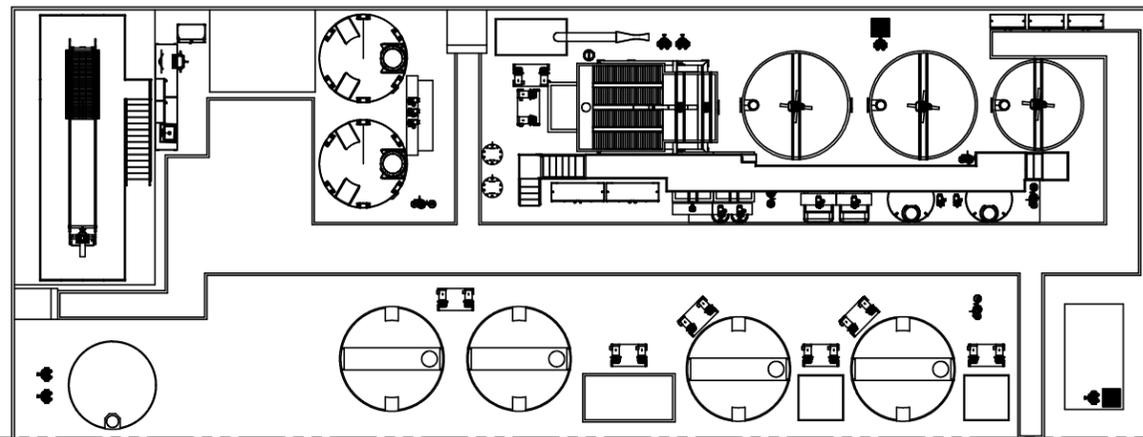
SECTION A-A
SCALE 1 : 120

STEVEN R. HAMMER

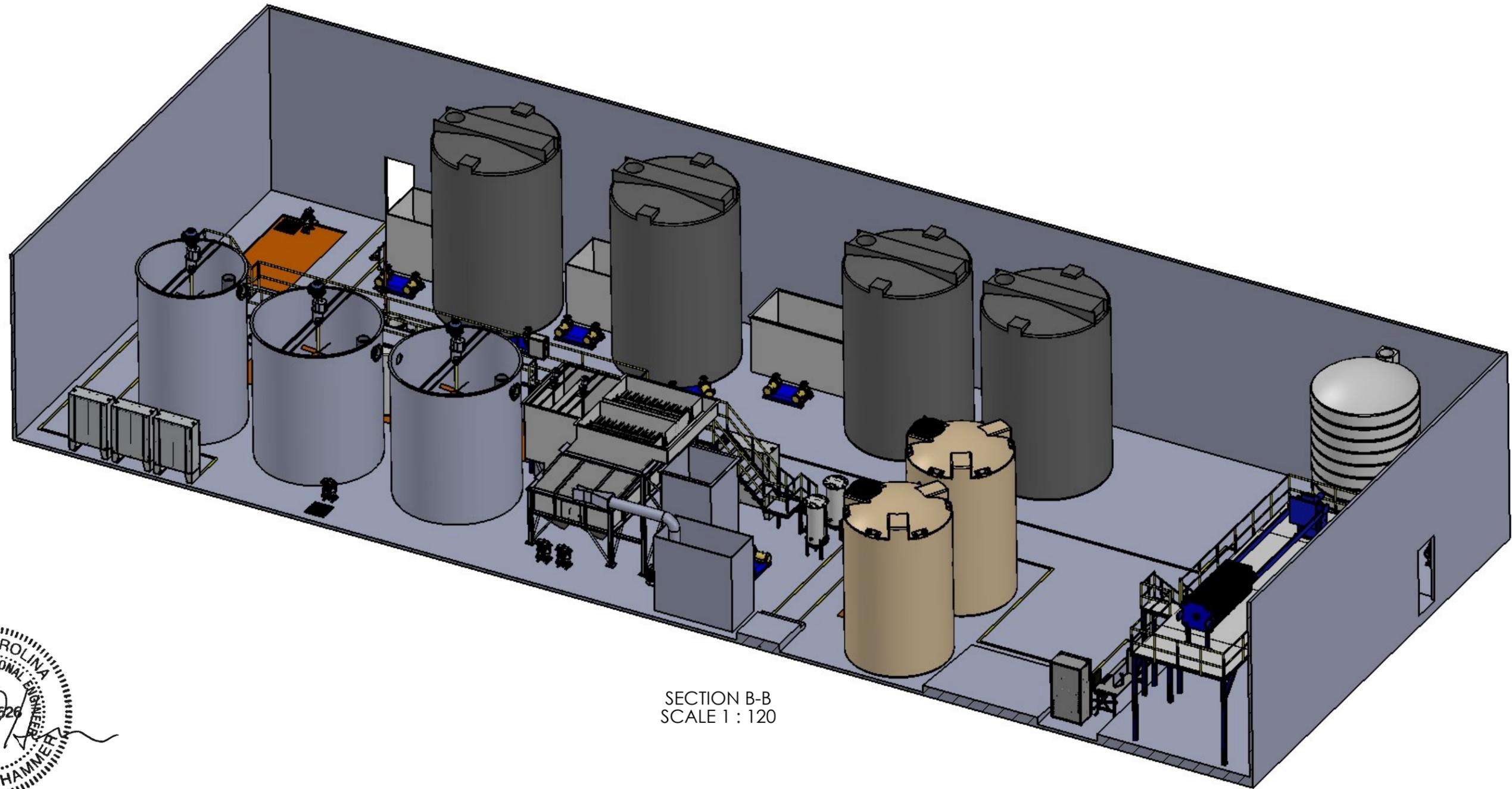
 No. 32626

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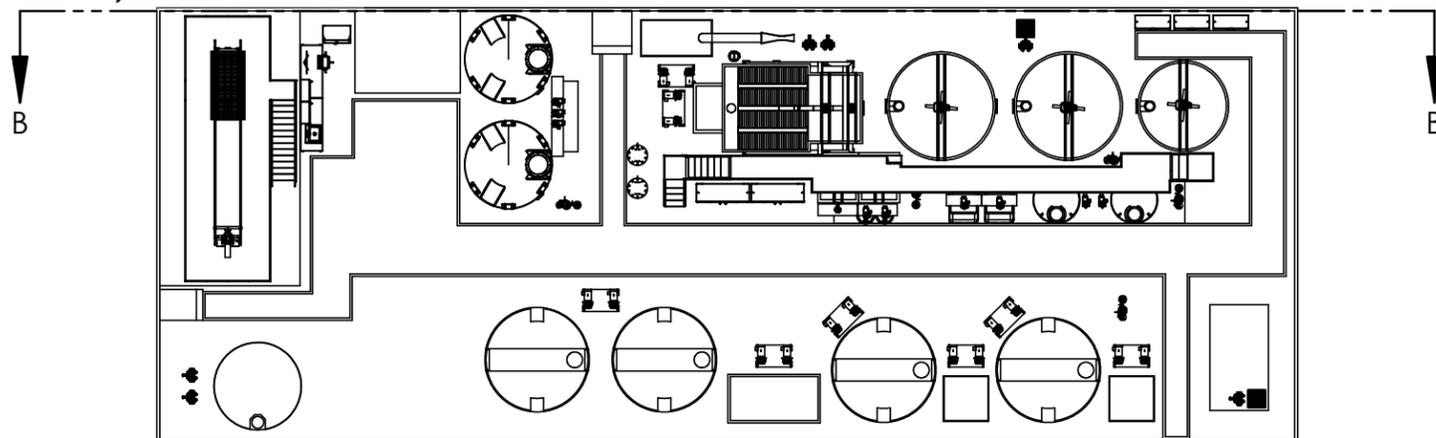


 PROCHEM Incorporated Industrial Water Technologies & Sustainable Solutions	ProChem Incorporated 5100 Enterprise Drive Elliston, Va. 24087 540.268.9884 www.prochemwater.com	Design Information Designed By: J. Alabran Date: 11/10/2023 Sheet Scale: 1:100 Drawing Number: 22713 3D GA	Project Drawing Title: Silfab Combined 3D GA Project Number: 22713 Client Name: Silfab
	The information and drawing provided herein is confidential and must not be made public or copied unless authorized and shall not be used except for the purpose for which it was supplied. This drawing and information is subject to return on demand. All rights of invention or design are reserved.	Drawing Number: 22713 3D GA	
	Rev: 02	Sheet 2 of 3	



SECTION B-B
SCALE 1 : 120


 3/8/2024



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 ProChem Incorporated Industrial Water Technologies & Sustainable Solutions	ProChem Incorporated 5100 Enterprise Drive Elliston, Va. 24087 540.268.9884 www.prochemwater.com	Design Information Designed By: J. Alabran Date: 11/10/2023 Sheet Scale: 1:125 Drawing Number: 22713 3D GA	Project Drawing Title: Silfab Combined 3D GA Project Number: 22713 Client Name: Silfab
	The information and drawing provided herein is confidential and must not be made public or copied unless authorized and shall not be used except for the purpose for which it was supplied. This drawing and information is subject to return on demand. All rights of invention or design are reserved.	Rev: 02 Sheet 3 of 3	

Attachment 4 - Design Calculations



Fluoride Reaction Mass Balance
Silfab Solar, Inc.

	Constants	PHASE 1	PHASE 2
49% HF in L/hr		233	378
L/Gallon	3.785		
49% HF gallons/hr		61.6	99.9
Lbs/gallon of water	8.34		
Specific gravity of 49% HF	1.17		
49% HF lbs/hr		601	975
HF lbs/hr		294	478
HF lbs/day		7,064	11,465
MW H+	1.01		
MW F	19.0		
Weight% of F in HF		95.0%	95.0%
lbs/day of F to neutralize		6,708	10,888
lbmoles/day of F to neutralize		353	573
lbmoles/day of Ca to react with F		177	287
MW of Ca	40.1		
lbs/day of Ca to react with F		7,076	11,484
MW of CaF ₂	78.07		
% Calcium in CaF ₂	0.513		
% Fluoride in CaF ₂	0.487		
MW Cl	45.35		
MW CaCl ₂	130.8		
lbs/day of CaCl ₂ to react with F		23,088	37,475
lbs/day of 35% CaCl ₂		65,967	107,070
Density of 35% CaCl ₂	1.28		
Gallons/Day of 35% CaCl ₂		6,179	10,030
Safety Factor		1.25	1.25
Gallons/Day of 35% CaCl₂ (with Safety Factor)		7,724	12,537
Lbs/day of CaF ₂ created		13,783	22,371
Lbs of CaF ₂ per ft ³ of 50% moisture CaF ₂	100		
Cubic Feet per Day of 50% moisture CaF₂		138	224

Input cells, all other cells are either constants or calculated.

Attachment 5 - Pump List and Design Calculations



ENG-220 Pump Components Table Silfab 22713

	Pump Schedule	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab

P&ID TAG	DESCRIPTION	CLASSIFICATION	MANUFACTURER	MANUFACTURER NUMBER	MOC	CONNECTION (INCHES)			ELECTRICAL SPECIFICATIONS					FLOW (GPM)		HEAD PRESSURE (PSI)		NOTES
						TYPE	INLET	OUTLET	HP	VOLTS	PHASE	RPM	VFD	DESIGN	MAX	DESIGN	MAX	
P100A	CWW/IWW Lift Pump	Centrifugal	Goulds	2SSH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes	440	620	60	75	
P100B	CWW/IWW Lift Pump	Centrifugal	Goulds	2SSH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes	440	620	60	75	
P110A	AWW Lift Pump	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes	320	400	45	75	
P110B	AWW Lift Pump	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes	320	400	45	75	
P120A	ACD Lift Pump	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes	320	400	45	75	
P120B	ACD Lift Pump	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes	320	400	45	75	

ENG-220 Pump Components Table Silfab 22713

	Pump Schedule	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab

P&ID TAG	DESCRIPTION	CLASSIFICATION	MANUFACTURER	MANUFACTURER NUMBER	MOC	CONNECTION (INCHES)			ELECTRICAL SPECIFICATIONS					AIR CONNECTIONS		FLOW (GPM)		HEAD PRESSURE (PSI)		NOTES
						TYPE	INLET	OUTLET	HP	VOLTS	PHASE	RPM	VFD	SIZE (INCHES)	SUPPLY (CFM)	DESIGN	MAX	DESIGN	MAX	
P200A	Transfer Pump - CWW/IWW Equalization	Centrifugal	Goulds	25SH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes			440	620	60	75	
P200B	Transfer Pump - CWW/IWW Equalization	Centrifugal	Goulds	25SH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes			440	620	60	75	
P210A	Transfer Pump - AWW Equalization	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes			320	400	45	75	
P210B	Transfer Pump - AWW Equalization	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes			320	400	45	75	
P220A	Transfer Pump - ACD Equalization	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes			320	400	45	75	
P220B	Transfer Pump - ACD Equalization	Centrifugal/Mag Drive	Finish Thompson	UC326BECSSVF6002568	Tefzel (ETFE) Lined Ductile Iron Casting	FLG	3"	2"	15	230-460V	3	3500	Yes			320	400	45	75	
P330A	Sludge Pump - Clarifier	AODD	Sandpiper	S20B3P1PPUS000	Polypropylene	Flange	2"	2"						.75"	80 SCFM @ 20 PSI		160		100	
P330B	Sludge Pump - Clarifier	AODD	Sandpiper	S20B3P1PPUS000	Polypropylene	Flange	2"	2"						.75"	80 SCFM @ 20 PSI		160		100	
P340A	Clarifier Lift Tank Pump	Centrifugal	Goulds	25SH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes			550	620	49	75	
P340B	Clarifier Lift Tank Pump	Centrifugal	Goulds	25SH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes			550	620	49	75	
P350A	Discharge Pump	Centrifugal	Goulds	25SH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes			550	620	49	75	
P350B	Discharge Pump	Centrifugal	Goulds	25SH08J25T3E2	316SS	Flange	3"	2.5"	25	460	3	3500	Yes			550	620	49	75	
P360A	Sludge Pump - Filter Press	AODD	Sandpiper	S30B3P2PPAS00	Polypropylene	Flange	3"	3"						.75"	90 SCFM @ 20 PSI		280		100	
P360B	Sludge Pump - Filter Press	AODD	Sandpiper	S30B3P2PPAS00	Polypropylene	Flange	3"	3"						.75"	90 SCFM @ 20 PSI		280		100	

ENG-220 Pump Components Table Silfab 22713

	Pump Schedule	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab

P&ID TAG	DESCRIPTION	CLASSIFICATION	MANUFACTURER	MANUFACTURER NUMBER	MOC	CONNECTION (INCHES)			ELECTRICAL SPECIFICATIONS					AIR CONNECTIONS		FLOW (GPH)		HEAD PRESSURE (PSI)		NOTES
						TYPE	INLET	OUTLET	HP	VOLTS	PHASE	RPM	VFD	SIZE (INCHES)	SUPPLY (CFM)	DESIGN	MAX	MAX	DESIGN	
P440A	Polymer Transfer Pump	AODD	Sandpipier	S10B1P1PPAS000.	Polypropylene	FLG	1"	1"						0.25"		50	1380	100	5	
P440B	Polymer Transfer Pump - Neat Polymer	AODD	Sandpipier	S10B1P1PPAS000.	PP/BUNA-N/PP	FLG	1"	1"						0.25"		500	1380	100	5	
P330	Polymer Feed Pump	ED	Hydra-Cell	P600	PP/EPDM/SS	NPT	1"	1"	1.5	208-230	3				125	300	50	10		
P410	Coagulant Transfer Pump	AODD	Sandpipier	S10B1P1PPAS000.	PP/BUNA-N/PP	FLG	1"	1"						0.25"		1000	1380	100	5	
P300B	Coagulant Feed Pump	ED	WalChem	IX-C150TCN-TB-U	PVDF/FKM (VITON)	MNPT	1"	1"	0.6	115	1		N			15	39	58	10	
P420	Anti-Scalant Transfer Pump	AODD	Sandpipier	S10B1P1PPAS000.	PP/BUNA-N/PP	FLG	1"	1"						0.25"		1000	1380	100	5	
P310C	Anti-Scalnt Feed Pump	ED	WalChem	IX-C150TCN-TB-U	PVDF/FKM (VITON)	MNPT	0.75"	0.75"	0.6	115	1		N			15	39	58	10	
P310A	Potassium Hydroxide Feed Pump	ED	WalChem / IWAKI	LK-C76VS4-15S	PVC/EPDM/304SS BALLS	FLG	2"	2"	2	460	3		Y			117	380	72	15	
P320A	Potassium Hydroxide Feed Pump	ED	WalChem / IWAKI	LK-C76VS4-15S	PVC/EPDM/304SS BALLS	FLG	2"	2"	2	460	3		Y			117	380	72	15	
P300A	Calcium Chloride Feed Pump	ED	WalChem / IWAKI	LK-C76VC-15S	PVC/CE/FKM	FLG	2"	2"	1	460	3		Y			126	380	86	15	
P310B	Sulfuric Acid Feed Pump	ED	WalChem	IX-C150TCN-TB-U	PVDF/FKM (VITON)	MNPT	0.75"	0.75"	0.6	115	1		N			5	39	58	10	
P320B	Sulfuric Acid Feed Pump	ED	WalChem	IX-C150TCN-TB-U	PVDF/FKM (VITON)	MNPT	0.75"	0.75"	0.6	115	1		N			5	39	58	10	

Silfab Solar, Inc. - Project Borealis

Centrifugal and AOD Pump Head Pressure Calculations												
Pump	ID	Pipe Size (inches)	MOC	Max Flow (gpm)	Length of Pipe for Head Loss Calculation			Fittings Equivalent Length (ft)	Other (ft)	Headloss (ft/100 ft)	Total Headloss (ft)	Headloss (ft)
					Length (ft)	Height (ft)	Fittings (#)					
P100AB	Lift From T100 to T200	6"	CPVC	440	50	30	7	105.7		1.2	31.9	13.8
P110AB	Lift From T110 to T210	4"	PP	320	50	30	7	70.7		5.0	36.0	15.6
P120AB	Lift From T120 to T220	4"	PP	320	55	30	8	80.8		5.0	36.7	15.9
P200AB	From EQ T200 to RT310	6"	CPVC	440	140	30	9	135.9		1.2	33.4	14.5
P210AB	From EQ T210 to RT300	4"	PP	320	100	30	9	90.9		5.0	39.5	17.1
P220AB	From EQ T220 to RT300	4"	PP	320	100	30	9	90.9		5.0	39.5	17.1
P340AB	From T340 to T350	6"	CPVC	550	75	30	8	120.8	23.1	1.9	56.8	24.6
P350AB	From T350 to Sanitary Sewer	6"	CPVC	550	145	30	5	75.5		1.9	34.1	14.8
P330AB	From Clarifier to T360	3"	CPVC	50	175	30	10	77		0.6	31.6	13.7
P360AB	From T350 to Sanitary Sewer	3"	CPVC	150	110	30	7	53.9		5.0	38.1	16.5
Units?												
P330AB*	From Clarifier to T360	3"	CPVC	50	175	30	10	77		0.6	31.6	13.7
P360AB*	From T350 to Sanitary Sewer	3"	CPVC	150	110	30	7	53.9		5.0	38.1	16.5
P440A*	From Drum to T400	1"	CPVC	5	15	10	4	30.8		1.9	10.9	4.7
P440B*	From T400 to T410	1"	CPVC	5	15	15	4	30.8		1.9	15.9	6.9
P410*	From Tote to T410	1"	CPVC	20	15	15	4	30.8		25.0	26.5	11.5
P420*	From Tote to T420	1"	CPVC	20	15	15	4	30.8		25.0	26.5	11.5

Does not include chem feed pumps (CaCl, Coag, and KOH)

Ft headloss / 100 ft calculated from: <https://www.omnicalculator.com/physics/friction-loss>

* Plant Compressed Air >80 psi

Attachment 6 - Equipment Lists



Equipment Specifications Silfab 22713

 AGITATOR SCHEDULE	PROJECT NUMBER:	22782
	CUSTOMER NAME:	Silfab

P&ID TAG	DESCRIPTION	CLASSIFICATION	MANUFACTURER	MANUFACTURER NUMBER	PROCHEM NUMBER	SHAFT			ELECTRICAL SPECIFICATIONS					SPEED		IMPELLERS		NOTES
						MOC	LENGTH	DIAMETER	HP	VOLTS	PHASE	RPM	VFD	DESIGN	MAX	A	B	
A300	Reaction Tank 1	Gear Driven	Brawn	4-BTO-5-56		304SS	168"	2.5"	5	460	3	56	Yes	56	56	52"	52"	
A310	Reaction Tank 2	Gear Driven	Brawn	4-BTO-5-45		304SS	144"	2.5"	2	460	3	56	Yes	56	56	54"	54"	
A320	Reaction Tank 3	Gear Driven	Brawn	4-BTO-5-45		304SS	144"	2.5"	2	460	3	56	Yes	56	56	54"	54"	
A330A	Clarifier - Flash Mix Chamber	Gear Driven	Brawn	BDF-200		316SS	54"	1.25"	2	460	3	0-1750	Yes	1750	1750	6.5"	6.5"	
A330B	Clarifier - Flash Mix Chamber	Gear Driven	Brawn	BDF-200		316SS	54"	1.25"	2	460	3	0-1750	Yes	1750	1750	6.5"	6.5"	
A330C	Clarifier - Flocc Chamber	Gear Driven	Brawn	12-BWG-12-45		316SS	60"	1.5"	0.5	460	3	45	Yes	45	45	38"	N/A	
A400A	Polymer Mix Tank	Gear Driven	Brawn	BGMF-150		316SS	72"	1.25"	1.5	460	3	350	Yes	350	350	13.5"	13.5"	

Equipment Specifications Silfab 22713

	FILTER SCHEDULE	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab
		REVISION DATE:	12.12.23

P&ID TAG	DESCRIPTION	MANUFACTURER	PART NUMBER	MATERIAL OF CONSTRUCTION	FLOW RATE (GPM)	DIMENSIONS (INCHES)				WEIGHT (LBS)		PSI		FITTINGS / CONNECTION TYPE								NOTES
						DIA	HEIGHT	LENGTH	WIDTH	EMPTY	FULL	OPERATING	MAXIMUM	Inlet		Outlet		Drain		Gauge Port		
														Size	Type	Size	Type	Size	Type	Size	Type	
F340A	Bag Filter Housing	PRM Filtration	BFHBFM6FCSXV2	CARBON STEEL/304SS STRAINER BASKET/ EPOXY COATED	785	25.6"	61"	N/A	N/A	650	1,450	40	100	6"	FLG	6"	FLG	1"	FPT	1/4"	FPT	#2 size bags; 6 bags per housing
F340B	Bag Filter Housing	PRM Filtration	BFHBFM6FCSXV2	CARBON STEEL/304SS STRAINER BASKET/ EPOXY COATED	785	25.6"	61"	N/A	N/A	650	1,450	40	100	6"	FLG	6"	FLG	1"	FPT	1/4"	FPT	#2 size bags; 6 bags per housing
F360	Plate and Frame Filter Press Unit - 50 cuft expandable to 100 cuft	MW Watermark	MODEL FP1200G32L-38-50AXX	Sidebar design, ASTM A36 carbon steel construction with 304SS side rail caps. Blasted to SSPC-SP6. UV-resistant aliphatic acrylic polyurethane. Color: RAL-5017 Traffic Blue	50 cuft - Expandable to 100 cuft	N/A	81"	232"	72"	18455	30,540	80	100	4"	FLG	4"	FLG	2"	FPT			Pressure staged control by PLC

	TANK SCHEDULE		PROJECT NUMBER:	22713
			CUSTOMER NAME:	Silfab Solar
			REVISION DATE:	

P&ID TAG	DESCRIPTION	MANUFACTURER	MANUFACTURER NUMBER	PROCHEM NUMBER	PURCHASE ORDER NUMBER	MATERIAL OF CONSTRUCTION	VOLUME (GALLONS)	TOP/BOTTOM CONFIGURATION	SPECIFIC GRAVITY	DIMENSIONS (INCHES)				WEIGHT (LBS)		PSI		FITTINGS / CONNECTION TYPE											NOTES												
										DIA	HEIGHT	LENGTH	WIDTH	EMPTY	FULL	EMPTY	FULL	A	B	C	D	E	F	G	H	I	J	K													
T200A	CWW Equalization Tank	Poly Processing	41015500110LA			XLPE	15,500	CLOSED/FLAT	1.35	143"	228"							4"/FLG	1"/FLG	1"/FLG	4"/MNPT	3"/MNPT	1"/MNPT																		
T200B	CWW Equalization Tank	Poly Processing	41015500110LA			XLPE	15,500	CLOSED/FLAT	1.35	143"	228"							4"/FLG	1"/FLG	1"/FLG	4"/MNPT	3"/MNPT	1"/MNPT																		
T210	AWW Equalization Tank	Poly Processing	41015500110LA			XLPE	15,500	CLOSED/FLAT	1.35	143"	228"							4"/FLG	1"/FLG	1"/FLG	4"/MNPT	4"/MNPT	4"/MNPT	4"/MNPT	4"/MNPT	4"/MNPT	1"/MNPT	3"/MNPT													
T220	ACD Equalization Tank	Poly Processing	41008500310LA			XLPE	15,500	CLOSED/FLAT	1.35	143"	228"							4"/FLG	1"/FLG	1"/FLG	4"/MNPT	4"/MNPT	4"/MNPT	4"/MNPT	4"/MNPT	4"/MNPT	1"/MNPT	3"/MNPT													

	VALVE SCHEDULE	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab
		REVISION DATE:	2/6/2024

P&ID TAG	DESCRIPTION	MANUFACTURER NUMBER	MANUFACTURER	PROCHEM NUMBER	TYPE			QUANTITY	PURCHASE ORDER NUMBER	MATERIAL OF CONSTRUCTION	CONNECTION SIZE (INCHES)	CONNECTION TYPE	ACTUATOR TYPE			NOTES
					BALL	BUTTERFLY	OTHER						AIR PSI	ELECTRICAL		
														24V	120V	
DV200	T200 TO T310 BASED OFF OF PH IN T310	199.182.411	GF Signet		x			1		CPVC/EPDM						
DV210A	T210 TO T300 BASED OFF OF PH IN T300	199.180.131	GF Signet		x			1		PP/EPDM						
DV210B	T210 TO FUTURE REUSE SYSTEM	199.180.131	GF Signet		x			1		PP/EPDM						
DV210C	T600 SUMP PIT TO T220	199.127.308	GF Signet		x			1		CPVC/EPDM						
DV210D	T610 SUMP PIT TO T220	199.127.308	GF Signet		x			1		CPVC/EPDM						
DV220	T220 TO T300 BASED OFF OF PH IN T300	199.180.131	GF Signet		x			1		PP/EPDM						
DV230A	T230 TO T310 BASED OFF OF PH IN T310	199.182.411	GF Signet		x			1		CPVC/EPDM						
DV230C	T600 SUMP PIT TO T230	199.127.308	GF Signet		x			1		CPVC/EPDM						
DV230D	T610 SUMP PIT TO T230	199.127.308	GF Signet		x			1		CPVC/EPDM						
KV330A	AIR SOLENOID VALVE TO CONTROL OPERATION OF P330A	JSXD41-CN04N-5DN	SMC		x			1		Brass/NBR						
KV330B	AIR SOLENOID VALVE TO CONTROL OPERATION OF P330B	JSXD41-CN04N-5DN	SMC		x			1		Brass/NBR						
PV360	AIR PRESSURE CONTROL VALVE TO CONTROL AIR PRESSURE TO P360A AND P360B	ITV3050-04N4L4	SMC				x	1		N/A						
LV220	F340A/F340B TO T220 CONTROLS ALTERNATIVE PATH FOR WASTEWATER THAT IS OUT OF SPEC	199.180.131	GF Signet		x			1		PP/EPDM						
XV340A	F340A/F340B TO T350	199.255.792/199.145.167	GF Signet		x			1		CPVC/EPDM						
XV340B	F340A/F340B TO T210 CONTROLS PRIMARY PATH FOR WASTEWATER THAT IS OUT OF SPEC	199.182.411	GF Signet		x			1		CPVC/EPDM						
XV350A	P350A/P350B TO SANITARY SEWER	199.182.411	GF Signet		x			1		CPVC/EPDM						
XV350B	P350A/P350B TO FUTURE REUSE SYSTEM	199.182.411	GF Signet		x			1		CPVC/EPDM						
KV360A	AIR SOLENOID VALVE TO CONTROL OPERATION OF P360A	JSXD41-CN04N-5DN	SMC		x			1		Brass/NBR						
KV360B	AIR SOLENOID VALVE TO CONTROL OPERATION OF P360B	JSXD41-CN04N-5DN	SMC		x			1		Brass/NBR						
LV360A	F360 TO T340 BASED OFF OF LEVEL IN T340	199.182.410	GF Signet		x			1		CPVC/EPDM						
LV360B	F360 TO T210 BASED OFF OF LEVEL IN T210	199.182.410	GF Signet		x			1		CPVC/EPDM						
LV360C	F360 TO T360 BASED OFF OF LEVEL IN T360	199.182.410	GF Signet		x			1		CPVC/EPDM						
LV400	CONTROLS THE ADDITION OF CITY WATER TO T400A	199.182.405	GF Signet		x			1		CPVC/EPDM						
KV400A	AIR SOLENOID VALVE TO CONTROL OPERATION OF P400A	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV400B	AIR SOLENOID VALVE TO CONTROL OPERATION OF P400B	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV410	AIR SOLENOID VALVE TO CONTROL OPERATION OF P410	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV420	AIR SOLENOID VALVE TO CONTROL OPERATION OF P420	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV600	AIR SOLENOID VALVE TO CONTROL OPERATION OF P600	JSXD51-CN06N-5DN	SMC		x			1		Brass/NBR						
KV610	AIR SOLENOID VALVE TO CONTROL OPERATION OF P610	JSXD51-CN06N-5DN	SMC		x			1		Brass/NBR						

	VALVE SCHEDULE	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab
		REVISION DATE:	2/6/2024

P&ID TAG	DESCRIPTION	MANUFACTURER NUMBER	MANUFACTURER	PROCHEM NUMBER	TYPE			QUANTITY	PURCHASE ORDER NUMBER	MATERIAL OF CONSTRUCTION	CONNECTION SIZE (INCHES)	CONNECTION TYPE	ACTUATOR TYPE			NOTES
					BALL	BUTTERFLY	OTHER						AIR	ELECTRICAL		
														PSI	24V	
LV200A	T200A inlet from T100				x					CPVC/EPDM						
LV200B	T200B inlet from T100				x					CPVC/EPDM						
LV200C	P200A/B to T310				x					CPVC/EPDM						
LV200D	Recycle to T200B				x					CPVC/EPDM						
LV200E	P600 to T200A/B				x											
LV200F	P610 to T200A/B				x											
DV210A	P210A/B to T300	199.180.131	GF Signet		x			1		PP/EPDM						
DV220	P220A/B to T300	199.180.131	GF Signet		x			1		PP/EPDM						

	VALVE SCHEDULE	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab
		REVISION DATE:	2/6/2024

P&ID TAG	DESCRIPTION	MANUFACTURER NUMBER	MANUFACTURER	PROCHEM NUMBER	TYPE			QUANTITY	PURCHASE ORDER NUMBER	MATERIAL OF CONSTRUCTION	CONNECTION SIZE (INCHES)	CONNECTION TYPE	ACTUATOR TYPE			NOTES
					BALL	BUTTERFLY	OTHER						AIR	ELECTRICAL		
														PSI	24V	
KV330A	P330A electric solenoid	JSXD41-CN04N-5DN	SMC		x			1		Brass/NBR						
KV330B	P330B electric solenoid	JSXD41-CN04N-5DN	SMC		x			1		Brass/NBR						
XV340A	F340A/F340B to T350	199.255.792/199.145.167	GF Signet		x			1		CPVC/EPDM						
LV220	F340A/F340B TO T220 CONTROLS ALTERNATIVE PATH FOR WASTEWATER THAT IS OUT OF SPEC	199.180.131	GF Signet		x			1		PP/EPDM						
XV350A	P350A/P350B to sanitary sewer	199.182.411	GF Signet		x			1		CPVC/EPDM						
PV360	KV360A/B pressure control valve	ITV3050-04N4L4	SMC				x	1		N/A						
KV360A	P360A electric solenoid	JSXD41-CN04N-5DN	SMC		x			1		Brass/NBR						
LV360A	F360 flow to T340	199.182.410	GF Signet		x			1		CPVC/EPDM						
LV360B	F360 flow to T220	199.182.410	GF Signet		x			1		CPVC/EPDM						
LV360C	F360 flow to T360	199.182.410	GF Signet		x			1		CPVC/EPDM						

	VALVE SCHEDULE	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab
		REVISION DATE:	2/6/2024

P&ID TAG	DESCRIPTION	MANUFACTURER NUMBER	MANUFACTURER	PROCHEM NUMBER	TYPE			QUANTITY	PURCHASE ORDER NUMBER	MATERIAL OF CONSTRUCTION	CONNECTION SIZE (INCHES)	CONNECTION TYPE	ACTUATOR TYPE			NOTES
					BALL	BUTTERFLY	OTHER						AIR	ELECTRICAL		
														PSI	24V	
LV400	City water flow to T400A	199.182.405	GF Signet		x			1		CPVC/EPDM						
KV400A	P400A electric solenoid	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV400B	P400B electric solenoid	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV410	P410 electric solenoid	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV420	P420 electric solenoid	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV600	AIR SOLENOID VALVE TO CONTROL OPERATION OF P600	JSXD51-CN06N-5DN	SMC		x			1		Brass/NBR						
KV610	AIR SOLENOID VALVE TO CONTROL OPERATION OF P610	JSXD51-CN06N-5DN	SMC		x			1		Brass/NBR						

	VALVE SCHEDULE	PROJECT NUMBER:	22713
		CUSTOMER NAME:	Silfab
		REVISION DATE:	2/6/2024

P&ID TAG	DESCRIPTION	MANUFACTURER NUMBER	MANUFACTURER	PROCHEM NUMBER	TYPE			QUANTITY	PURCHASE ORDER NUMBER	MATERIAL OF CONSTRUCTION	CONNECTION SIZE (INCHES)	CONNECTION TYPE	ACTUATOR TYPE			NOTES
					BALL	BUTTERFLY	OTHER						AIR	ELECTRICAL		
														PSI	24V	
LV400	City water flow to T400A	199.182.405	GF Signet		x			1		CPVC/EPDM						
KV400A	P400A electric solenoiud	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV400B	P400B electric solenoid	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV410	P410 electric solenoid	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV420	P420 electric solenoid	JSX31-CN402N-5DN	SMC		x			1		Brass/NBR						
KV600	AIR SOLENOID VALVE TO CONTROL OPERATION OF P600	JSXD51-CN06N-5DN	SMC		x			1		Brass/NBR						
KV610	AIR SOLENOID VALVE TO CONTROL OPERATION OF P610	JSXD51-CN06N-5DN	SMC		x			1		Brass/NBR						

Attachment 7 - Letter from the Local POTW





**SIGNIFICANT INDUSTRIAL USER
WASTEWATER DISCHARGE PERMIT**

PERMIT NO. SIL-XXXXXX

In accordance with all terms and conditions of the City of Rock Hill's Sewer Use Ordinance, the Federal Clean Water Act (PL 95-217), and the Federal and State General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403 and SC R.61-9.403), and any future supplements and/or changes thereto, permission is hereby granted to:

SILFAB SOLAR
(Industry Name)

240 Court Park Dr. E. Mississauga, ON N9E4W1
(Mailing Address)

40 CFR PART 469.17 Electrical and Electronic Components Subpart A, PSNS
(Categorical Standard – New Source)

7149 Logistics Lane Fort Mill, SC 29715
(Location Address)

For the discharge of non-domestic wastewater into the City of Rock Hill's wastewater collection system. This permit is granted in accordance with:

- A. The Industrial User Survey/Discharge Permit Application dated 1/18/2023.
- B. Any plans, specifications, and/or other data submitted to and approved by the City of Rock Hill and on file in the City of Rock Hill's offices; and
- C. The effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on:

December 1, 2023

This permit and authorization to discharge shall expire at midnight on December 31, 2024; unless other conditions supersede, and thus, revoke or modify this expiration date.

Date

City of Rock Hill Pretreatment Representative

Modified August 14, 2020 to include definition of M/R, define an authorized signor, and clarify requirement of notification of planned changes

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I. EFFLUENT LIMITATIONS & MONITORING REQUIREMENTS

Listed below are the wastewater discharge limitations not to be exceeded. The point-of-compliance with the effluent limitations shall be **Sample Point A**, the sampling port after treated process water.

Parameter	Sample Type	Frequency ✓ = number of day(s)	Local Limit		Categorical Limit			
			Max. Daily (mg/L)	Max. Daily (lbs/day)	Max. Daily (mg/L)	Max. Daily (lbs/day)	Max. Monthly Average (mg/L)	Max. Monthly Average (lbs/day)
Metals								
Arsenic	Composite	✓✓	M/R	M/R				
Cadmium	Composite	✓✓	0.089	0.89				
Chromium	Composite	✓✓	10.0	100.08				
Copper	Composite	✓✓	2.20	22.02				
Lead	Composite	✓✓	0.630	6.31				
Mercury	Composite	✓✓	0.30	3.00				
Nickel	Composite	✓✓	4.30	43.03				
Selenium	Composite	✓✓	1.0	10.01				
Silver	Composite	✓✓	0.35	3.50				
Titanium	Composite	✓✓	M/R	M/R				
Non-Metals (Inorganics)								
Chemical Oxygen Demand	Composite	M/R	M/R	M/R				
Cyanide	Grab	✓✓	3.3	33.03				
Fluoride	Composite	✓✓			32.0	320.26	17.4	123.35
pH	Grab	✓✓	6.0 – 12.0 S.U.		6.0 – 9.0 S.U.			
Temperature	Grab	✓✓	104° F or 40° C					
Total Dissolved Solids	Composite	✓✓	M/R	M/R				
Total Suspended Solids	Composite	✓✓	2,466	24,680				
Non-Metals (Organics)								
TTO	Composite/Grab	✓			1.37	13.71		
Other								
Effluent Flow Reading	Measured	✓✓	(See note 1,2)					

*All composites are required to be Flow-Proportional.

All categorical mass limits (lbs/day) calculated using LTA (long term average) flow, and all local mass limits calculated using the permitted flow.

The Permittee is required to meet the MOST stringent limitation listed, denoted in bold type in the above table, when comparing the *Local Limit* column with *Categorical Limit* column.

Categorical Limit = Categorical Standard, 40 CFR Part 469.17 Electrical and Electronic Components Subpart A Semiconductor Subcategory; 469.17 PSNS (Pretreatment Standard for New Source)

Parameters must be analyzed at or below the PQL. For purposes of reporting, the Permittee shall use, where applicable, an analytical test method approved by SCDHEC with a reporting threshold equal to or lower than the SCDHEC accepted PQL.

The term “TTO” shall mean total toxic organics, which is the summation of all quantifiable values greater than 0.01 milligrams per liter (mg/L) as defined by 40 CFR Part 469.12 (refer to schedule V of this permit).

Effluent Limitations & Monitoring Requirements, Notes:

During the period beginning on the effective date of this permit and lasting through the expiration date, discharge shall be limited and monitored by the Permittee as follows:

1. Total Flow Limits – the facility shall not exceed **1,200,000** gallons per day
2. Long Term Average Flow – **0.850** MGD
3. The pH shall not be discharged at less than **6.0** or greater than **9.0** standard units as measured by grab sampling.
4. Temperature shall not exceed **104** degrees Fahrenheit, or **40** degrees Celsius.
5. It is prohibited to ever increase the use of process water, or in any other way attempt to dilute a Discharge as a partial or complete substitute for adequate treatment to achieve compliance with a Pretreatment Standard or Requirement as specified in 61-9.403.6 (e).
6. All facilities with a pretreatment system are required to have an operator of proper grade according to the Construction and Operation Permit issued by SCDHEC.

II. REPORTING REQUIREMENTS

1. The permittee shall collect and analyze samples for all listed parameters.
2. Samples and measurements shall be taken as required in Schedule I and shall be representative of the volume and nature of "normal" daily operations. (See Appendix A: sampling location map.)
3. The Permittee must obtain City of Rock Hill approval of the sampling point location(s) prior to initiation of self-monitoring. Approved sampling point location(s): Sample Points A
4. Self-Monitoring shall be summarized quarterly (Reporting Period) and reported on a Self-Monitoring Report (SMR) Form provided by the City of Rock Hill.
5. Self-Monitoring Reports shall be postmarked no later than the 28th day of the month following the completed reporting period. Sampling, analysis, and monitoring will follow the schedule above.
6. Quarterly averages, for reporting purposes, shall be calculated as follows:
 - a. The quarterly average shall be the arithmetic mean of all samples collected during the report quarter.
 - b. The daily maximum shall be the highest value during that quarter.

- c. The term “TTO” shall mean total toxic organics, which is the summation of all quantifiable values greater than 0.01 milligrams per liter for the toxic organics listed in 40 CFR part 469.12 (a).
7. The arithmetic mean of any set of values is the summation of the individual values divided by the number of individual values.
8. *Flow Measurement device(s)*: Appropriate flow measurement device(s) and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of wastewater flowrate measurements. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ten percent from true discharge rates throughout the range of expected discharge volumes. Annual calibration for all devices is required and a copy of the report submitted each year. City of Rock Hill approval of flow measurement device type and location is required prior to installation.
9. *Composite samples*: Collected over time by continuous sampling and represent the average wastewater characteristics during the compositing period. Per 40 CFR 403.12(g)(3), the Permittee’s composite samples must be obtained through flow-proportional composite sampling techniques. A flow proportional composite sample can be collected using one of two methods. One method consists of collecting a constant sample volume at varying time intervals proportional to the wastewater flow. For the other method, the sample is collected by varying the volume of each individual aliquot proportional to the flow, while maintaining a constant time interval between the aliquots. Flow proportional samples should be collected directly with an automatic sampler that is connected to a compatible flow measuring device. For a flow proportional sample, the sampler shall be programmed to collect a minimum of 100 milliliters for each sample aliquot with the interval predetermined based on the flow of the monitored stream. Additionally, the minimum number of aliquots that are composited during the sampling event shall be 12.
10. *Grab Samples*: An individual discrete or single influent or effluent portion of at least 100 milliliters (unless otherwise specified by Standard Methods) collected at a time representative of the discharge and over a period not exceeding 15 minutes and retained separately for analysis. Instantaneous flow measured at the time of grab sample collection shall be used to calculate quantity.
11. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to 40 CFR Part 136, as amended. All tests must be performed by a SC Department of Health and Environmental Control (SCDHEC) certified laboratory.
12. M/R is defined as monitor and report. Where M/R is identified as a discharge limit, the Permittee shall monitor that parameter and report results to the City on its SMR.

13. For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record, at a minimum, the following information:
 - a. The exact place, date, and time of sampling.
 - b. The dates the analyses were performed.
 - c. The persons who performed the analyses (including lab name and identification number).
 - d. The analytical techniques or methods used.
14. If the Permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using testing procedures prescribed in 40 CFR Part 136 or amendments thereto, or otherwise approved by the U.S. Environmental Protection Agency (EPA) or as specified in this permit, the results of such monitoring shall be included in the calculations and reporting in the Self-Monitoring Report (SMR) form. Monitoring results developed independently by the City of Rock Hill need not be reported by the permittee in accordance with this paragraph. This would include any split samples that the City of Rock Hill gives to the industry to verify analytical accuracy.
15. If any self-monitoring indicates a violation of any condition of this permit, the Permittee shall notify the City of Rock Hill within 24 hours of becoming aware of the violation. The Permittee upon taking investigative and/or corrective action shall re-sample and submit the results of the re-sampling to the City of Rock Hill within 30 days after becoming aware of the violation.
16. Self-Monitoring Report (SMR) Forms, and all other reports required herein, shall be submitted to:

City of Rock Hill
Industrial Pretreatment Program
P.O. Box 11706
Rock Hill, SC 29731
17. Signatory requirements for industrial user reports. The reports required in this permit shall include the certification statement as set forth in 61-9.403.6(b)(2)(ii), and shall be signed as follows:
 - a. By a responsible corporate officer, if the Industrial User submitting reports for a corporation.
 - i. A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or
 - ii. The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or

implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

- b. By a general partner or proprietor if the Industrial User submitting the reports required by this permit is a partnership or sole proprietorship, respectively.
- c. By a duly authorized representative of the individual designated in paragraph 17.a. or 17.b. of this section if:
 - i. The authorization is made in writing by the individual described in paragraph 17.a. or 17.b.
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the facility from which the Industrial Discharge originates, such as the position of plant manager, operator of a well, or well field superintendent, or a position of equivalent responsibility, or having overall responsibility for environmental matters for the company; and
 - iii. The written authorization is submitted to the City.
- d. If an authorization under paragraph 17.c. of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph 17.c of this section must be submitted to the City prior to or together with any reports to be signed by an authorized representative.

III. SPECIAL CONDITIONS

1. **All applicable fees associated with the City of Rock Hill Pretreatment Program:** Includes costs associated with compliance monitoring above the required minimum of once per year, permitting, etc.
2. Schedule of Compliance
 - a. The Permittee shall achieve compliance with Final Limits requirements by the following date:

_____ N/A _____
3. No later than thirty (30) days following a date identified in the above schedule of compliance the Permittee shall submit either a report of progress or, in the case of specific actions being required by the identified dates, a written notice of compliance or noncompliance. In the latter

case, the notice shall include the reason for noncompliance, any remedial actions taken, the date compliance is expected, and steps being taken to return to the compliance schedule as originally set forth.

IV. GENERAL CONDITIONS

1. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility modifications which may result in any substantial change in volume or character of pollutants must be reported by submission of a new Industrial User Survey Questionnaire/Discharge Permit Application or, if such changes will not violate the effluent limitations specified in this permit, by written notice to the City of Rock Hill prior to implementation of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited, to change existing limits, or to add conditions to Part III, "Special Conditions" of this permit.
2. Upon promulgation of Federal Categorical Pretreatment Standards within 180 days after the effective date of Categorical Pretreatment Standard, any non-domestic discharger that will have to meet that new Standard must report to the City as described in 40 CFR Part 403.12 (b), as amended.
3. The Permittee shall not discharge wastewater containing any of the substances listed in the City of Rock Hill's Sewer Use Ordinance at concentrations above those specified in the Ordinance.
4. This permit is issued to SILFAB SOLAR and its specific operation. It shall not be reassigned or transferred or sold to a new owner, new user, different premises, or a new or changed operation without the written approval of the City of Rock Hill. Any succeeding owner or user shall also comply with the terms and conditions of the existing permit.
5. The Permittee shall always maintain in good working order and operate as efficiently as possible all treatment or control facilities, or systems installed or used by the Permittee to achieve compliance with the terms and conditions of this permit.
6. If the Permittee employs the use of evaporators for the purposes of wastewater minimization, resource recovery, or for wastewater treatment, the City of Rock Hill may require that the Permittee:
 - a. Monitor and report flow quantities and characteristics to evaporation units;
 - b. Monitor and report quantities of residues generated by the evaporation processes, including ultimate fate of residues.

The cost of installing flow measuring devices shall be paid by the Permittee.

7. The Permittee is required to report all slug discharges, spills, upsets, malfunctions or bypasses of pretreatment equipment that could cause problems to the City of Rock Hill's wastewater collection and treatment facilities or that result in exceedances of discharge limitations immediately by phone [(803) 329-8789] and followed by a written report to the City of Rock Hill, ATTN: Brice Sodorff Industrial Pretreatment Program, P. O. Box 11706, Rock Hill, SC 29731. The report will be submitted within five (5) working days, and shall include the following:
 - a. Description and cause of the upset, slug load or accidental discharge, and the impact on the Permittee's compliance status. The description should also include location of discharge, type, concentration, and volume of waste.
 - b. Duration of noncompliance, including exact dates and times of noncompliance and, if the noncompliance is continuing, the time by which compliance is reasonably expected to occur.
 - c. All steps taken or to be taken to reduce, eliminate, and/or prevent recurrence of such an upset, slug load, accidental discharge, or other conditions of noncompliance.
8. Bypasses of treatment facilities are prohibited in instances where exceedances of applicable effluent limitations occur. The City of Rock Hill may take enforcement action against an Industrial User (IU) for a bypass, resulting in a permitted effluent limit violation unless:
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage or where no feasible alternative exists.
 - b. If an IU knows in advance of the need for a bypass to occur which does not cause effluent limitations to be exceeded, but only if it is also essential maintenance to assure efficient operation. The permittee must submit written notice to the City of Rock Hill at least ten (10) days before the date of the bypass.
 - c. If an unanticipated bypass occurs, the IU shall submit verbal notice within 24 hours from the time the IU becomes aware of the bypass. A written submission shall also be provided within five days of the time the IU becomes aware of the bypass. The written submission shall contain a description of the bypass, its cause, duration of the bypass, including exact dates and times; and if the bypass has been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the bypass.
9. The Permittee is required to have a Slug Discharge Control Plan. The City of Rock Hill approved the Plan dated November 18, 2022.

10. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for good cause including, but not limited to, the following:
 - a. Violation of any terms or conditions of this permit, the Sewer Use Ordinance and/or the EPA General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403).
 - b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.
 - c. A change in any condition that requires either a temporary or permanent reduction or elimination of the regulated discharge.
 - d. Falsifying self-monitoring reports, tampering with monitoring equipment, or refusing timely access to the facility premises and records.
 - e. Failure to comply with effluent limitations set forth in Part I of this permit.
11. The City of Rock Hill may modify or reissue this permit as local, state or federal regulations change or as needed to prevent pass through or interference of the City of Rock Hill's treatment plant or to prevent violations of the City of Rock Hill's wastewater discharge permits or any permits to operate or manage biosolids regardless of the expiration date or as necessary in the administration of the local Industrial Wastewater Program or to improve operational or maintenance problems at the wastewater treatment plant that are attributed to the discharge of a particular material or pollutant.
12. Penalties for failing to submit the required reports, falsification of reports, tampering with monitoring equipment or tampering with the samples collected are established in the City of Rock Hill's Sewer Use Ordinance.
13. The Permittee shall allow authorized employees of the City of Rock Hill, SCDHEC or the Environmental Protection Agency (EPA), on the premises at any time for the purposes of inspection, records examination (including photocopying of records) and sampling as connected with the City of Rock Hill's industrial wastewater program and operation of the City of Rock Hill's wastewater collection and treatment facilities.
14. The Permittee is required to maintain and make available for inspection upon request all records required by 40 CFR Part 403.12. The Permittee must also maintain for a period of three years and make available for inspection upon request the following records concerning self-monitoring:
 - a. The date, the exact place and time, the method and the name(s) of person(s) taking samples.
 - b. The date and time each analysis was performed.

- c. The name of the person performing the analysis (lab name and identification number).
- d. The analytical techniques and results of analysis.

All of the above records will be made available for copying purposes at the request of the City of Rock Hill. The three-year retention period will be extended during the course of any unresolved litigation regarding the Permittee or when requested in writing by SCDHEC, EPA or the City of Rock Hill.

15. The Permittee must apply in writing for a renewal permit within the period of time not more than 90 days and not less than 60 days prior to expiration of the current permit. Provided further those limitations or conditions of a permit are subject to modification as may become necessary due to changes in applicable water quality standards, the City of Rock Hill's NPDES permit discharge effluent limitations, other applicable law or regulation, or for other just cause. The Permittee will be notified of any proposed changes in this permit by the City of Rock Hill at least 30 days prior to the effective date of the change. Any change or new condition in this permit shall include a provision for a reasonable time schedule for compliance. The Permittee may appeal the decision of the City of Rock Hill in regard to any changed permit conditions. Any change in a permit condition desired by the Permittee may be requested within 90 days of the existing permit expiration date. Permittee requests for permit modifications will not be considered at any other time during the year.
16. This permit is in addition to and does not either directly or indirectly supersede the requirements contained within the City of Rock Hill's Sewer Use Ordinance.
17. The Permittee is required to notify the City of Rock Hill immediately of any changes at its facility affecting the potential for a Slug Discharge.
18. The City of Rock Hill's Sewer Use Ordinance provides that any person who violates a permit condition is subject to a civil penalty up to \$2,000 per day of such violation. Any person who willfully or negligently violates permit conditions is also subject to criminal penalties including fines of up to \$2,000 per day of violation, and/or by imprisonment for 30 days. The Permittee may also be subject to further sanctions imposed under the authority of State and/or Federal law.
19. In addition to civil and criminal liability, the Permittee violating any of the provisions of this permit or the City of Rock Hill Sewer Use Ordinance or causing damage to or otherwise inhibiting the WWTP or collection system shall be liable to the City of Rock Hill for any expense, loss, or damage caused by such violation of discharge. The Permittee shall be billed by the City of Rock Hill for any and all costs incurred by the City of Rock Hill for any cleaning, repair, fines, or replacement work caused by the industrial violation or discharge. Refusal to pay the assessed costs shall be considered grounds for termination of permit and sewer service.

20. Compliance with this permit does not relieve the Permittee from its obligations regarding compliance with any and all applicable local, State and Federal pretreatment standards and requirements including any such standards or requirements that may become effective during the term of this permit.
21. In cases of industrial pretreatment system upset, upon reduction of efficiency of the pretreatment operation, or loss or failure of all or part of the treatment facility, the Permittee shall, to the extent necessary to maintain compliance with its permit, control its production or discharges (or both) until operation of the treatment facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce industrial production in order to maintain compliance with the condition of this permit.
22. The Permittee shall not discharge any water or wastes which directly or indirectly cause the WWTP to violate NPDES whole effluent toxicity test requirements. Users found to be the cause of toxicity will be fined and will be required to reimburse the City of Rock Hill for all costs associated with Toxicity Identification/Evaluation (TIE) and/or Toxicity Reduction Evaluations (TRE).
23. In accordance with the United States Environmental Protection Agency General Pretreatment and National Pollutant Discharge Elimination System regulations (40 CFR Parts 122 and 403), the Permittee is required to report any discharge into our wastewater collection system, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. The specific notification requirements are found in 40 CFR 403.12(p). The Permittee shall notify the City of Rock Hill, the EPA Regional Waste Management Division Director, and the Bureau of Land and Waste Management of the South Carolina Department of Health and Environmental Control.

V. POLLUTANT PROHIBITIONS LIST

1. All quantifiable values greater than 0.01 milligrams per liter (mg/L) for the following toxic organics:

Carbon tetrachloride (tetrachloromethane)	1,1-Dichloroethylene	Pentachlorophenol
1,2,4-Trichlorobenzene	1,2-Diphenylhydrazine	Phenol
1,2-Dichloroethane	Ethylbenzene	Bis (2-ethylhexyl) phthalate
1,1,1-Trichloroethane	Methylene chloride (dichloromethane)	Butyl benzyl phthalate
1,1,2-Trichloroethane	Dichlorobromomethane	Di-n-butyl phthalate
2,4,6-Trichlorophenol	Isophorone	Anthracene
2-Chlorophenol	Naphthalene	Tetrachloroethylene
1,2-Dichlorobenzene	2-Nitrophenol	Toluene
1,3-Dichlorobenzene	4-Nitrophenol	Trichloroethylene
1,4-Dichlorobenzene	2,4-Dinitrophenol	

Sampling and testing procedures for the analysis of pollutants shall conform to regulations published pursuant to 40 CFR Part 136, as amended. All tests must be performed by a SC Department of Health and Environmental Control (SCDHEC) certified laboratory.

APPENDIX

A. DEFINITIONS

1. City, or City of Rock Hill

- a. The municipality of Rock Hill, South Carolina, a municipal corporation of the State of South Carolina, acting through the City Council or any board, committee, body, official, or person to whom the Council shall have lawfully delegated the power to act on behalf of the City. Unless a particular board, committee, official, or person is specifically designated in these rules and regulations, wherever action by the City is explicitly required or implied herein, it shall be understood to mean action by Director of Utilities Water and Sewer of Rock Hill, South Carolina, or that person's duly authorized representative or agent.

2. Compliance Schedule

- a. A schedule of remedial measures, including an enforceable sequence of actions or operations leading to compliance with an effluent limitations or other limitations, prohibitions, standards, or other permit conditions.

3. Daily Maximum Limit

- a. The maximum allowable discharge limit of a pollutant during a calendar day. Where Daily Maximum Limits are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where Daily Maximum Limits are expressed in terms of concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.

4. Industrial Discharge

- a. The discharge or introduction or nondomestic pollutants from any source into the system, including holding tank waste discharge into the system.

5. Instantaneous Limit

- a. The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of any discrete or composited sample collected, and independent of the industrial flow rate and duration of the sampling event.

6. Long Term Average

- a. Based upon a reasonable measure of the industrial user's actual long-term average concentration or rate, such as the average daily flow rate during the representative year.

7. Monthly Average

- a. The highest allowable average of all measurements for a pollutant take in a calendar month.

8. Municipal Wastewater Treatment System

- a. A treatment works as defined by section 212 of the Act (33 USC 1292), which is owned in this instance by the city. This included any sewers that convey wastewater to the treatment plant, but does not include pipes, sewers or other conveyances not connected to a facility providing treatment. The term "system" shall also include any sewers that convey wastewater to the system from persons outside the City who are, by contract or agreement with the City, users of the City's system.

9. National Categorical Pretreatment Standard

- a. Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307(b) and (c) of the Act (33 USC 1347) which applies to a specific category of industrial users.

10. National Pollutant Discharge Elimination System (NPDES)

- a. A permit issued pursuant to section 402 of the Act (33 USC 1342).

11. Pass Through

- a. A discharge which exits the POTW into water of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the city's NPDES permit, including an increase in the magnitude or duration of a violation.

12. pH

- a. The logarithm (base 10) of the reciprocal of the concentration of Hydrogen ions, expressed in grams per liter of solution.

13. Priority Pollutants

- a. A set of chemical pollutants EPA regulates that are an environmental hazard and may be present in water, and for which EPA has published analytical test methods as defined by 40 CFR Part 423, Appendix A.

14. Publicly Owned Treatment Works (POTW)

- a. Treatment works, as defined by section 212 of the Act (33 USC section 1292), which is owned by the City. This definition includes any devices or systems used in collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances, which convey wastewater to a treatment plant.

15. Quarterly Average

- a. The arithmetic mean of all samples collected during the report quarter.

16. Slug Load or Slug Discharge

- a. Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge, which has a reasonable potential to cause interference or pass through, or in any other way violate the POTW's regulations, local limits or permit conditions.

17. Suspended Solids

- a. The total suspended matter that floats on the surface of or is suspended in water, wastewater, or other liquids, and which is removable by laboratory filtering.

18. Toxic Organic Management Plan (TOMP)

- a. To identify sources of toxic organics (111 each) in the facility wastewater and describe controls necessary to ensure that these chemicals are not intentionally or accidentally discharged in the facility wastewater system.

A. SAMPLING LOCATION MAP

Attachment 8 - O&M Agreement





7149 Logistics Ln
Fort Mill SC 29715

January 31, 2024

S.C. Dept. Health and Environmental Control
Domestic Wastewater Permitting Section
1070 Heckle Blvd. Building 302
Rock Hill, SC 29731
Attn: Kayse Jarman

Good morning, Kayse,

I am drafting this letter in compliance with DHEC Form 1970, Section XII, Section A, Part 8, which states that a letter from the entity agreeing to be responsible for the operation and maintenance (O&M) of the system is required, when submitting a Construction Permit Application pertaining to Domestic Wastewater Facilities for SCDHEC review.

This letter is to further inform you that Silfab Solar SC will be responsible for the operation and maintenance of the wastewater pretreatment system for the Silfab Solar process, for which this application is being submitted, located at 7149 Logistics Lane, Fort Mill, SC 29715. The wastewater pretreatment system will be operated and maintained in conformance with all Federal, State and Local rules and regulations.

If you need additional information, please do not hesitate to contact me at 716-949-0241 or via email at m.korzelius@silfabsolar.com.

Best regards,

Matt Korzelius
Plant Facilities Director
Silfab Solar SC