

CUSTOMER CONNECTIONS

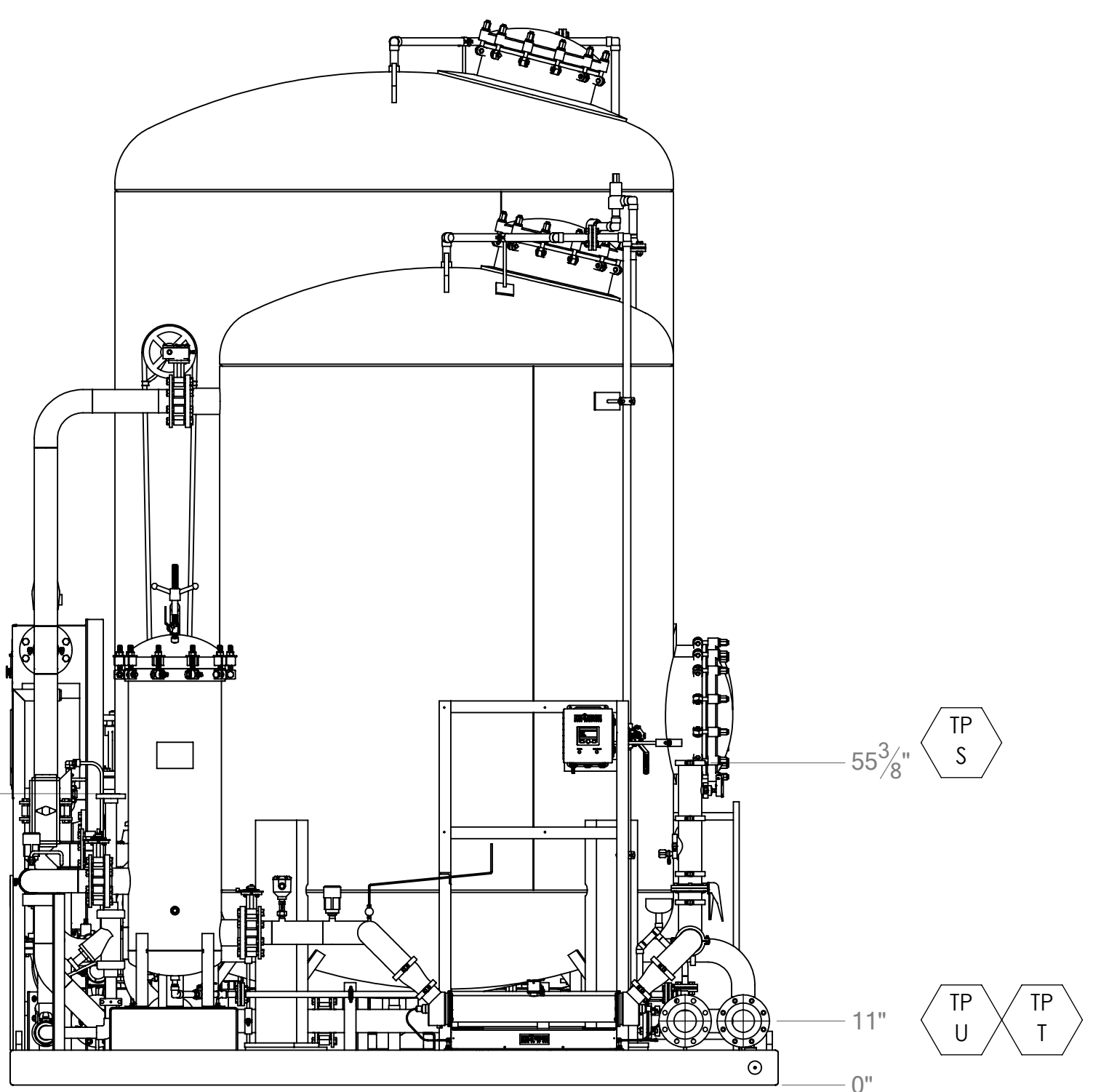
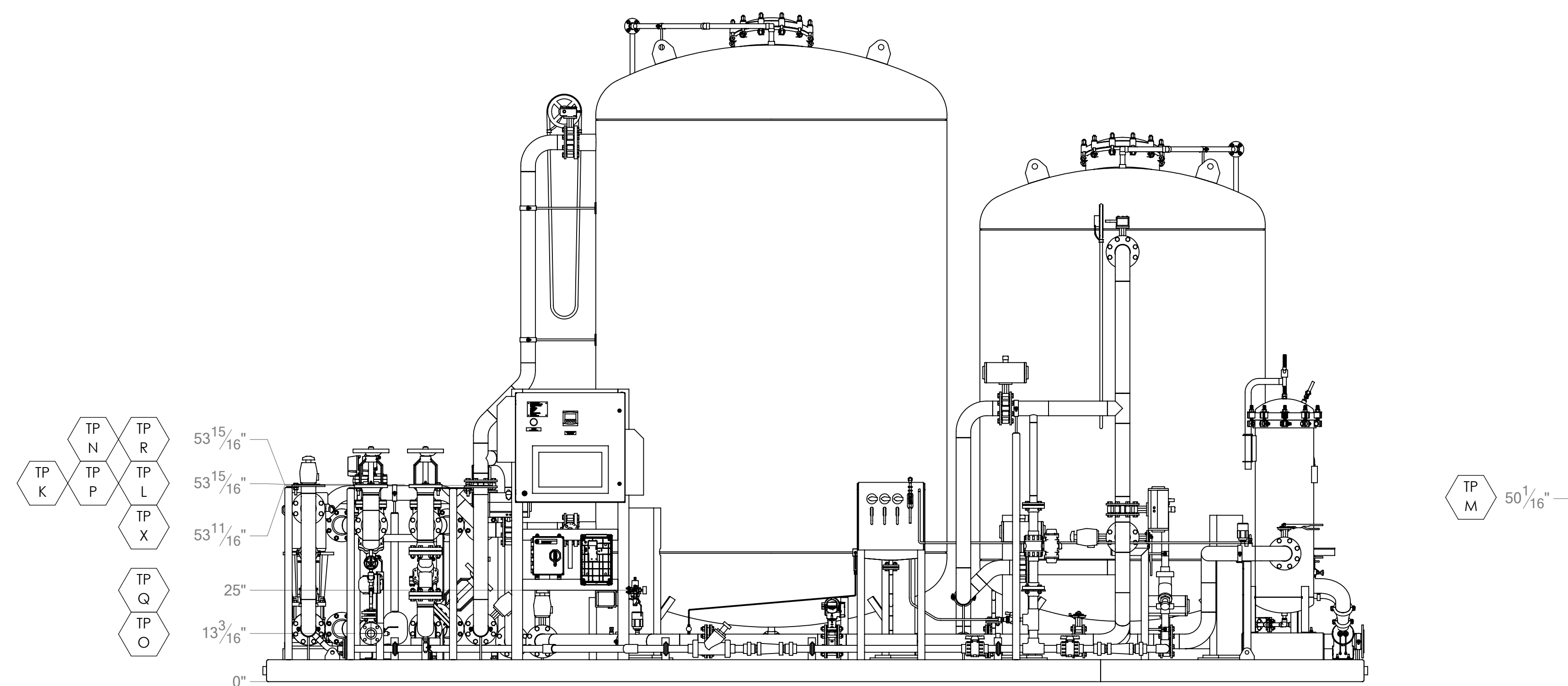
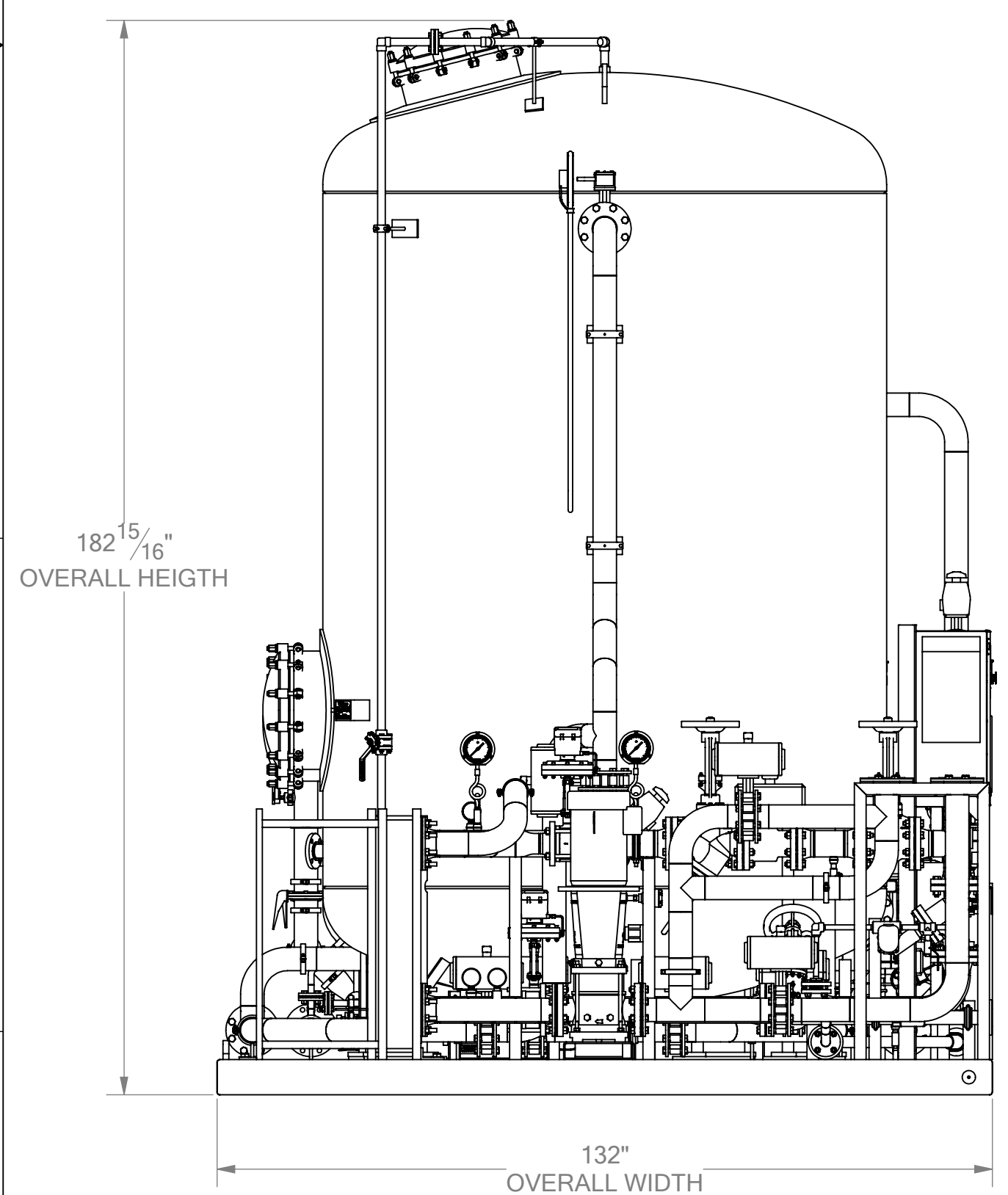
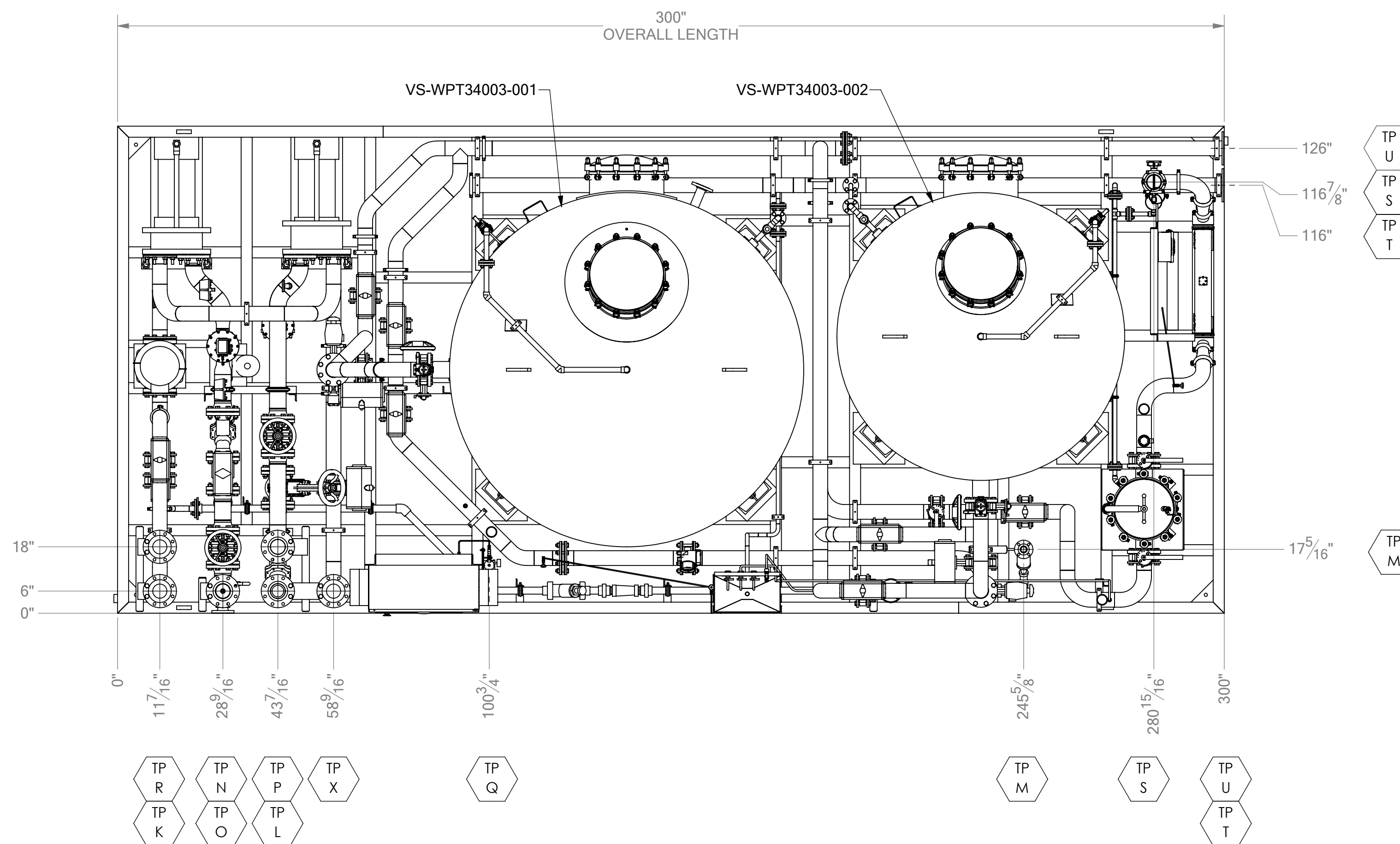
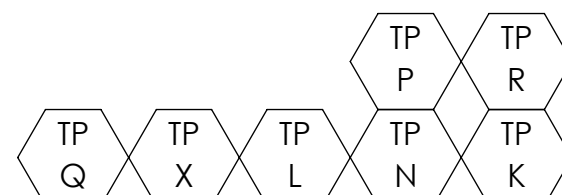
SYMBOL	SERVICE	SIZE	TYPE
K	CARBON/POLISHER WATER INLET	4"	150# RF FLG
L	GLYCOL INLET	4"	150# RF FLG
M	SATURATED BRINE INLET	1 1/2"	150# RF FLG
N	STEAM INLET	4"	150# RF FLG
O	CONDENSATE OUTLET	2"	150# RF FLG
P	GLYCOL RETURN	4"	150# RF FLG
Q	INSTRUMENT AIR	1/4"	FPT
R	RECIRCULATION LOOP RETURN	4"	150# RF FLG
S	SOFT DECHLORINATED WATER OUTLET	4"	150# RF FLG
T	FAST RINSE DRAIN	4"	150# RF FLG
U	BACKWASH DRAIN	4"	150# RF FLG
X	BACKWASH WATER SUPPLY	4"	150# RF FLG

NOTES:

- ALL CONNECTIONS ARE LOCATED WITHIN ±1/2".
- OPERATING AND SERVICE CLEARANCE AREA OF 36" IS DESIRABLE ON ALL SIDES OF THE UNIT.
- A MINIMUM CLEARANCE AREA OF 30" ON ALL SIDES IS REQUIRED.
- HYDROTEST FOR 30 MIN. AT 80 PSI.

WEIGHT:

DRY WEIGHT: 23,623LBS
 OPERATING WEIGHT: 78,100LBS
 FLOODED WEIGHT: 78,100LBS

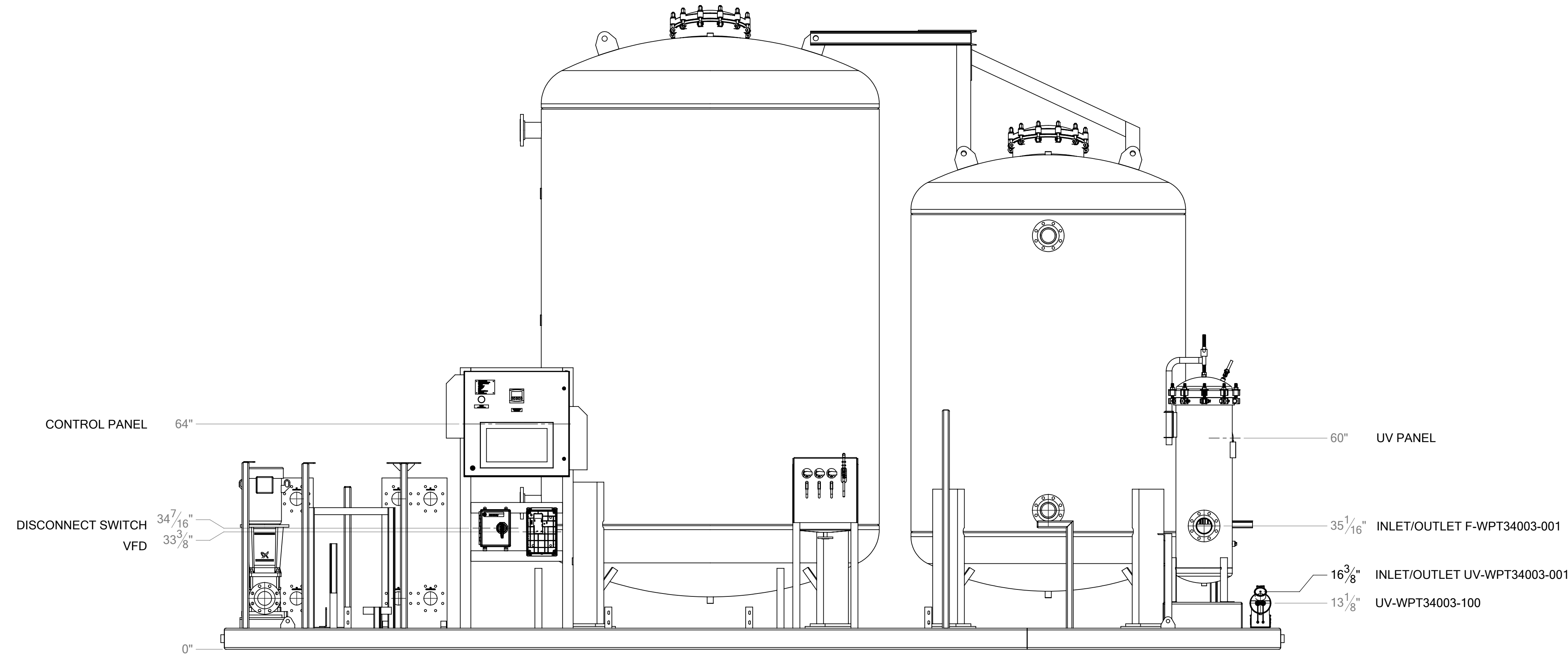
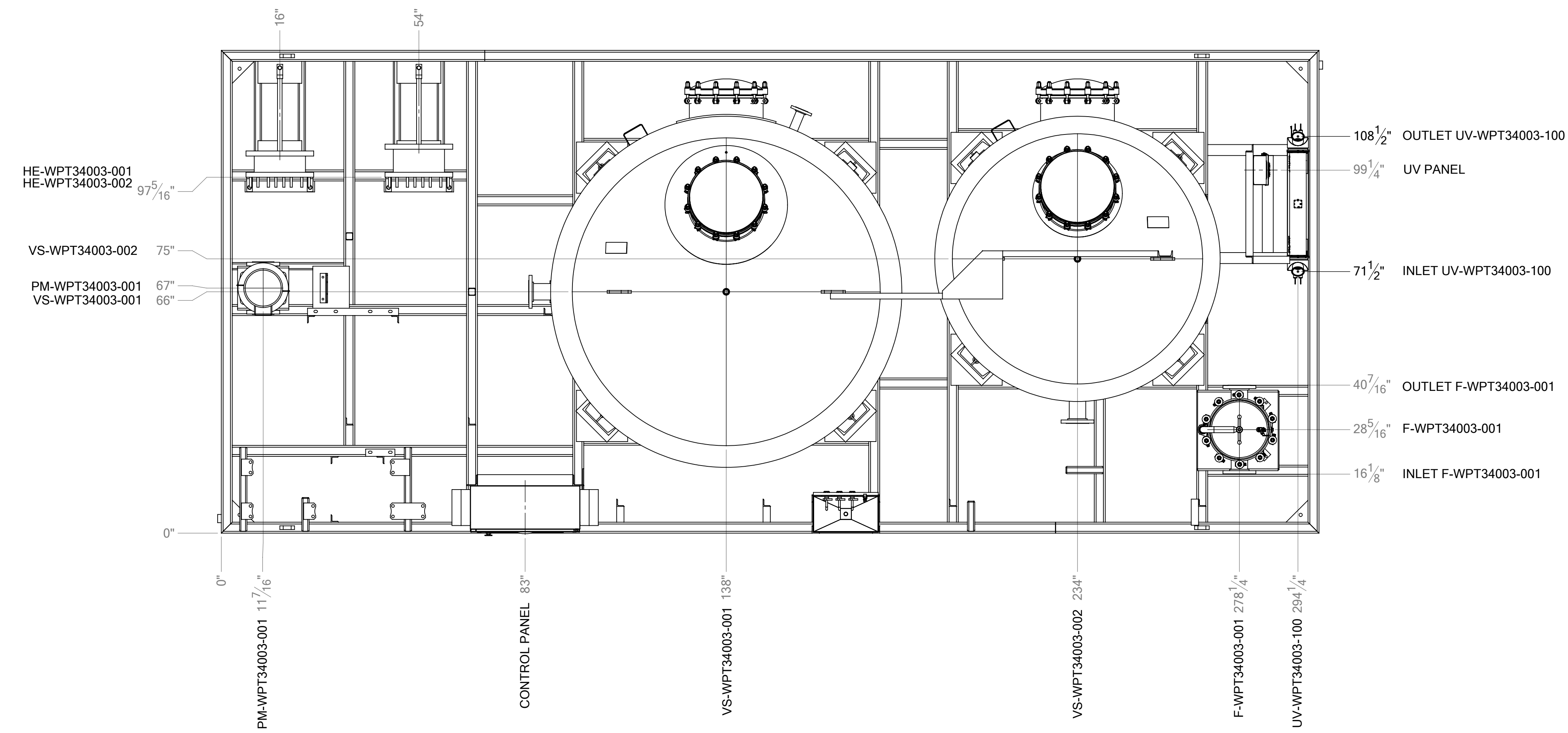


REVISIONS					
REV.	DESCRIPTION	DRAWN	CHECKED	APPROVAL	DATE
1	ISSUED DRAWING	SKE	JL	JL	1/14/2019
2	FAT COMMENTS INCORPORATED	KSW	JL	JL	7/9/2019
3	CORRECTED HEAT EXCHANGER DESCRIPTION	SKE	JL	JL	8/9/2019

UNLESS OTHERWISE SPECIFIED:		SIGNATURES		DATE	CAGE CODE		
DIMENSIONS ARE IN INCHES TOLERANCES:		DRAWN	SKE	03/05/19	0EXU3		
FRACTIONAL: ±1/8"		CHECKED	JL	03/05/19			
MACHINED FRACTIONS: ±1/32"		ENG APPR	JL	03/05/19			
ANGULAR: ±2°		COMMENTS:					
TWO PLACE DECIMAL ±0.010"		THIRD ANGLE PROJECTION					
THREE PLACE DECIMAL ±0.005"							
PROPRIETARY AND CONFIDENTIAL		SIZE		DWG. NO.	REV.		
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.		D		732-08409-000	3		
		SCALE: 1:24		WEIGHT: 23967.31	SHEET 1 OF 4		

HE-WPT34003-001 HE-WPT34003-002

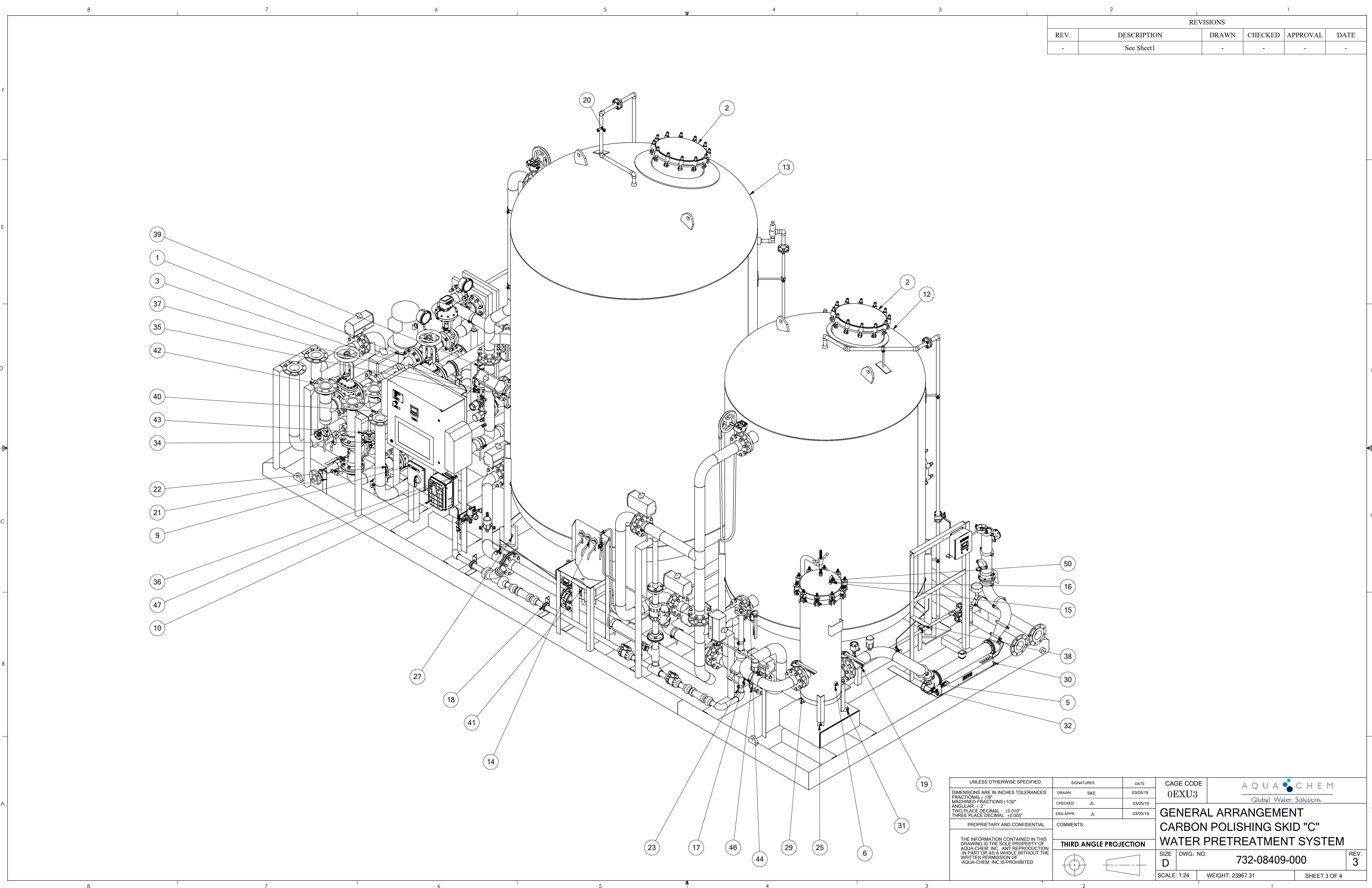
REVISIONS					
REV.	DESCRIPTION	DRAWN	CHECKED	APPROVAL	DATE
-	See Sheet1	-	-	-	-



MAIN COMPONENTS

UNLESS OTHERWISE SPECIFIED:		SIGNATURES		DATE	CAGE CODE		
DIMENSIONS ARE IN INCHES TOLERANCES:		DRAWN	SKE	03/05/19	0EXU3		
FRACTIONAL: 1/8"		CHECKED	JL	03/05/19	GENERAL ARRANGEMENT		
MACHINED FRACTIONS ±1/32"		ENG APPR	JL	03/05/19	CARBON POLISHING SKID "C"		
ANGULAR: ± 2°		COMMENTS:				WATER PRETREATMENT SYSTEM	
TWO PLACE DECIMAL ±0.010"		THIRD ANGLE PROJECTION		SIZE DWG. NO.			
THREE PLACE DECIMAL ±0.005"				D 732-08409-000			
PROPRIETARY AND CONFIDENTIAL		REV. 3		SCALE: 1:24			
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REVISIONS					
REV.	DESCRIPTION	DRAWN	CHECKED	APPROVAL	DATE
-	See Sheet1	-	-	-	-


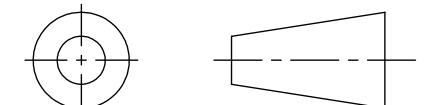


UNLESS OTHERWISE SPECIFIED:		SIGNATURES		DATE	CAGE CODE	AQUACHEM Global Water Solutions	
DIMENSIONS ARE IN INCHES TOLERANCES:		DRAWN	SKE	03/05/19	0EXU3	GENERAL ARRANGEMENT CARBON POLISHING SKID "C" WATER PRETREATMENT SYSTEM	
FRACTIONAL: 1/8"		CHECKED	JL	03/05/19			
MACHINED FRACTIONS: 1/32"		ENG APPR	JL	03/05/19			
ANGULAR: ± 2°		COMMENTS:			THIRD ANGLE PROJECTION		SIZE
TWO PLACE DECIMAL ±0.010"		THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.			DWG. NO.		REV.
THREE PLACE DECIMAL ±0.005"					D		732-08409-000
		SCALE: 1:24		WEIGHT: 23967.31		SHEET 3 OF 4	

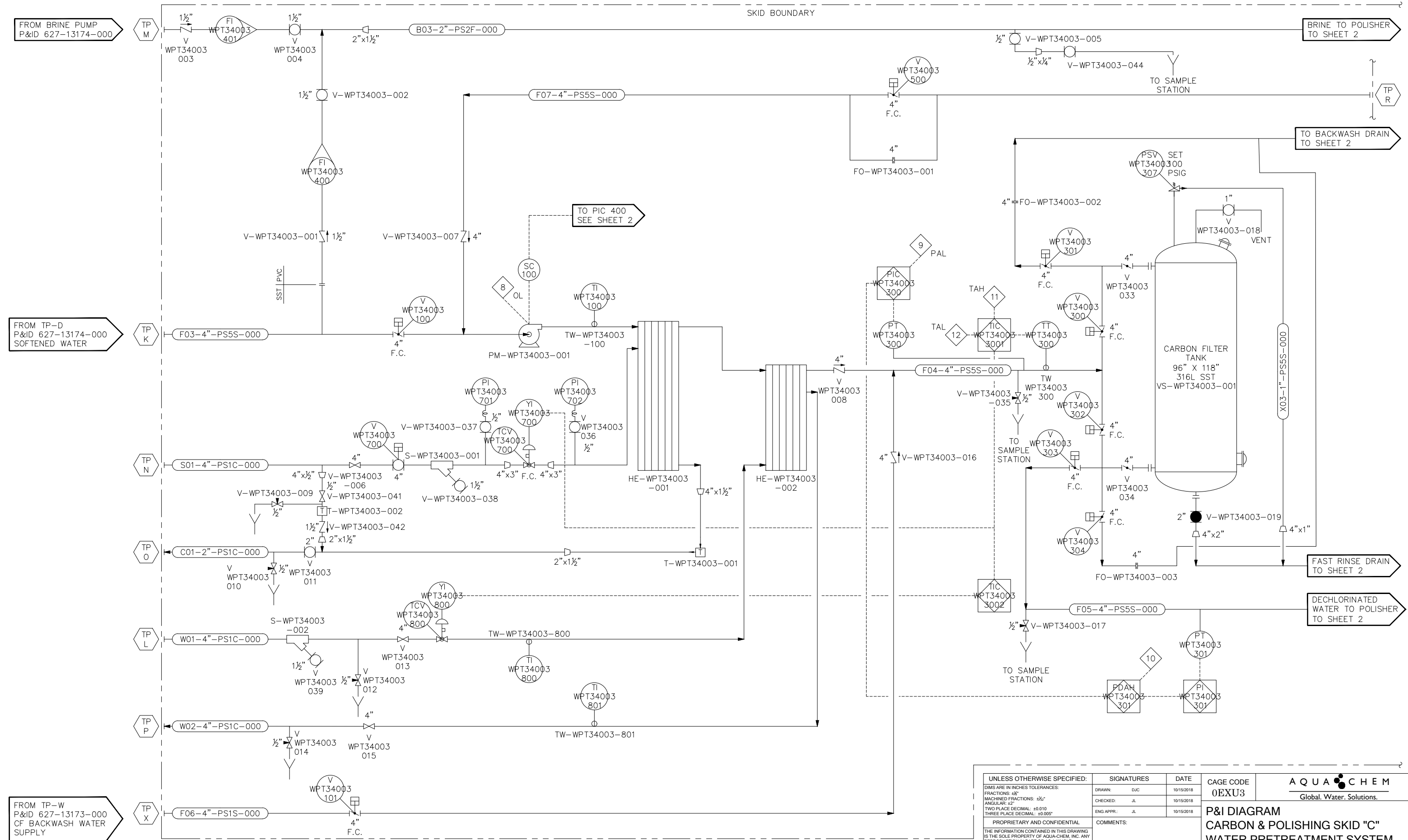
REVISIONS					
REV.	DESCRIPTION	DRAWN	CHECKED	APPROVAL	DATE
-	See Sheet 1	-	-	-	-

39	108	869-08433-000	NUT, HVY HEX SST 316 NC .63 A1948M				
38	8	868-08004-000	CAP SCREW SST 316 NC .75 3.0 ANSI				
37	14	869-07962-000	NUT, HEX SST 316 NC .75 A194 8M				
36	8	868-08074-000	CAP SCREW, 1/4-20 X 1.00			SA-193	B8M
35	6	868-08116-000	CAP SCREW SST 316 .75 X 2.25				
34	24	869-08434-000	NUT, HVY SST 316 NC .50 A194 8				
33	4	007-08398-000	STUD, WELD 1/2"-13 x 3 1/2"				316L
32	7	869-07930-000	NUT, HEAVY HEX, 316 SST, 3/8-16				
31	7	952-00317-000	WASHER, LK, SST 316, 3/8				
30	8	952-07657-000	WASHER, FLAT 316 SST 1/2"				
29	7	007-08400-000	STUD, WELD 3/8"-16 x 1 1/2"				316L
28	14	952-07501-000	WASHER, LK SST 316 .75 NOM STD				
27	28	952-00381-000	WASHER, PL SST 316 .75 NOM AN818				
26	4	952-07838-000	WASHER, LK, SST 316, 1/2				
25	3	952-00315-000	WASHER, FL, SST 316, 3/8				
24	1	976-07505-000	RND, Ø1/2" COML		130"	A-276	316L
23	2	928-07835-000	PIPE SPRT TRI-CL B24FCF-1-1/2 1.5 OD				
22	4	928-08253-000	CLAMP, PIPE SST ZSI UB 4.0 PA SST				
21	2	928-08245-000	CLAMP, PIPE SST ZSI UB 2.0 PA SST				
20	12	928-07834-000	PIPE SPRT TRI-CL B24FCF-1-S 1.0 OD				
19	2	928-08230-000	CLAMP, PIPE SST ZSI UB .75 PA SST				
18	5	928-08227-000	CLAMP, PIPE SST ZSI UB 1.5 PA SST				
17	33	928-07983-000	PIPE SPRT TRI-CL B24FCF-4-S 4.0 OD				
16	1	857-00982-000	NIPPLE, .25 X 1.5" 316L SS TBE SCH40				
15	1	847-08094-000	BUSHING, HX SST 316 150# .5 X .25				
14	1	257-08389-000	MANIFOLD, SAMPLE STATION				
13	1	732-08418-000	TANK ASSEMBLY, Ø96 CARBON TANK				
12	1	732-08417-000	TANK ASSEMBLY, Ø78" POLISHING TANK				
11	1	430-09406-000	FRAME ASSEMBLY				
10	1	833-09345-000	VFD, 15HP, 22A, A-B POWERFLEX				
9	1	836-09376-000	DISCONNECT, NON-FUSED 30A ALLEN BRADLEY				
8	1	613-11655-000	INSTRUMENT SCHEDULE				
7	1	613-11654-000	VALVE SCHEDULE				
6	1	843-08538-000	HOUSING, CART. FILTER,				
5	1	947-07610-000	UV STERILIZER, NEOTECH D438				
4	1	863-08152-000	EXCHANGER, GLYCOL HEAT ALFA LAVAL M10-BDFG				
3	1	863-08151-000	EXCHANGER, STEAM HEAT ALFA LAVAL M10-BDFG				
2	4	821-07645-000	MANWAY, 20", ASME 316				
1	1	905-09597-000	PUMP, CRN 64-1 GRUNDFOS				
ITEM	QTY.	PART NUMBER	DESCRIPTION	WIDTH	LENGTH	MAT'L SPEC	GRADE

50	(1)	941-11321-000	VALVE, BALL, 1/4" FNPT				
49	8	869-00259-000	NUT, HEX 316 SST 1/4-20			SA-194	8M
48	8	952-07638-000	WASHER, LK, SST 316, 1/4			SA-167	316
47	16	952-07575-000	WASHER, FL, SST 316, 1/4				316
46	8	868-10234-000	CAP SCREW SST 316 NC .63 1.25				
45	8	868-08109-000	CAP SCREW SST 316 NC .63 2.5				
44	48	868-08107-000	CAP SCREW SST 316 NC .63 1.75				
43	4	868-08071-000	CAP SCREW SST 316 NC .5 X 2.75				
42	14	868-07989-000	CAP SCREW SST 316 NC .63 3.0				
41	16	868-07987-000	CAP SCREW, 1/2-13 X 2.00			F593 G2	316
40	22	868-00919-000	CAP SCREW SST 316 NC .63 2.75				
ITEM	QTY.	PART NUMBER	DESCRIPTION	WIDTH	LENGTH	MAT'L SPEC	GRADE

UNLESS OTHERWISE SPECIFIED:		SIGNATURES		DATE	CAGE CODE 0EXU3	 Global Water Solutions
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: 1/8" MACHINED FRACTIONS: ±1/32" ANGULAR: ± 2° TWO PLACE DECIMAL ±0.010" THREE PLACE DECIMAL ±0.005"		DRAWN	SKE	03/05/19		
PROPRIETARY AND CONFIDENTIAL		CHECKED	JL	03/05/19	GENERAL ARRANGEMENT CARBON POLISHING SKID "C" WATER PRETREATMENT SYSTEM	
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.		ENG APPR	JL	03/05/19		
THIRD ANGLE PROJECTION		COMMENTS:			SIZE	REV.
					D	3
SCALE: 1:24		DWG. NO.		WEIGHT:		SHEET 4 OF 4
		732-08409-000				

REVISIONS		DATE
ZONE	REV.	DESCRIPTION
		SEE SHEET 3



FROM TP-W
P&ID 627-13173-000
CF BACKWASH WATER
SUPPLY

CARBON FILTER
FLOW = 165-330gpm
PRESSURE = 115 PSIG
MATERIAL = 316SST

STEAM HEAT EXCHANGER
FLOW = 165-330gpm
PRESSURE = 150 PSIG
MATERIAL = 316SST

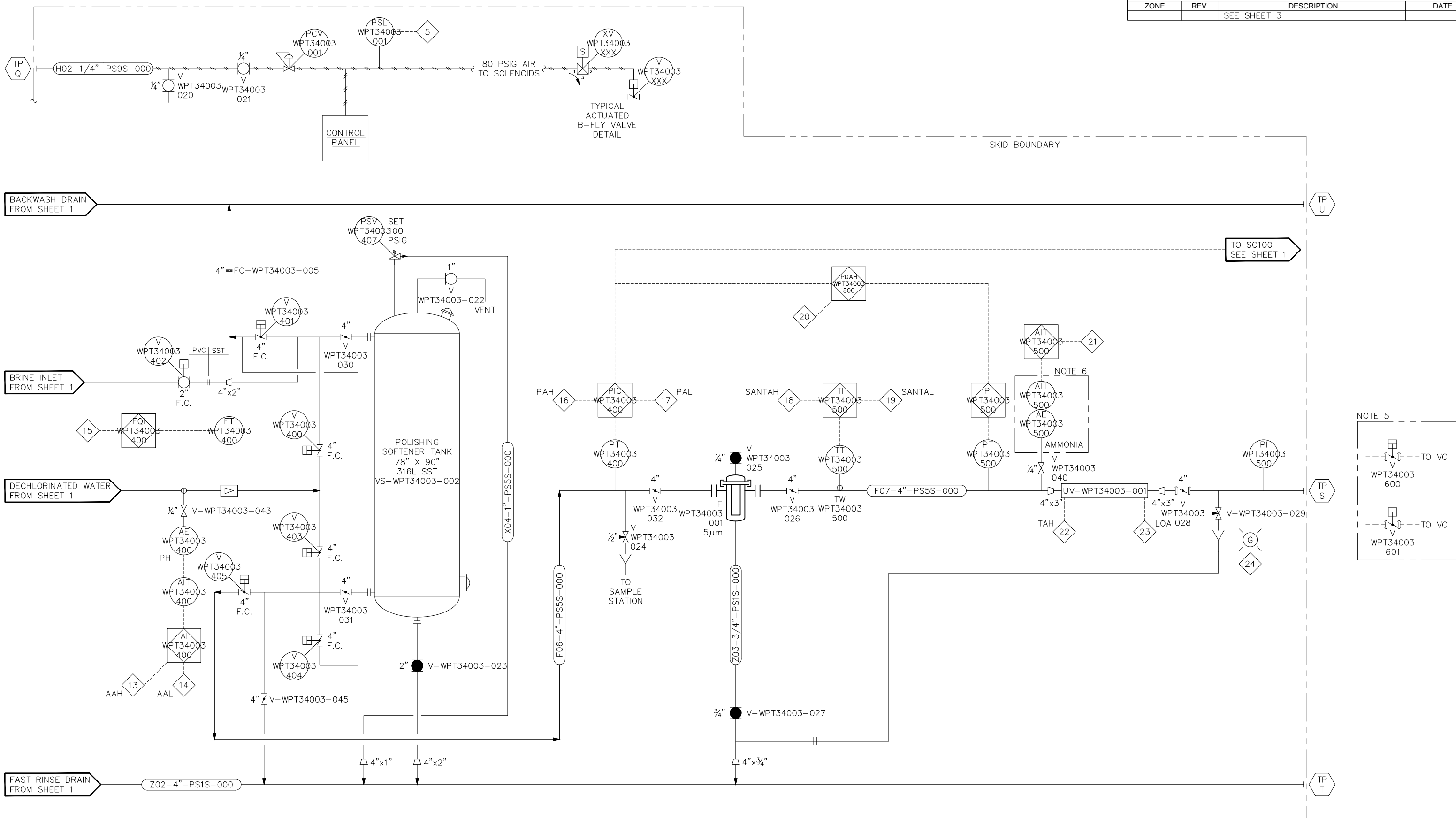
GLYCOL HEAT EXCHANGER
FLOW = 165-330gpm
PRESSURE = 150 PSIG
MATERIAL = 316SST

BOOSTER PUMPS
FLOW = 165-330gpm
HP/RPM = 10/3600
MATERIAL = 316SST

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	DRAWN: DJC	10/15/2018	
	CHECKED: JL	10/15/2018	
	ENG APPR: JL	10/15/2018	
COMMENTS:			

AQUA-CHEM
Global Water Solutions

REVISIONS			DATE
ZONE	REV.	DESCRIPTION	DATE
		SEE SHEET 3	



POLISHING SOFTENER TANK
 FLOW = 165-330gpm
 PRESSURE = 115 PSIG
 MATERIAL = 316SST

FILTERS
 FLOW = 165-330gpm
 PRESSURE = 150 PSIG
 MATERIAL = 316SST

UV UNIT
 FLOW = 165-330gpm
 PRESSURE = 150 PSIG
 MATERIAL = 316SST

UNLESS OTHERWISE SPECIFIED:	SIGNATURES	DATE
DIMS ARE IN INCHES TOLERANCES: FRACTIONS: ±1/16" MACHINED FRACTIONS: ±1/32" ANGULAR: ±2°	DRAWN: DJC CHECKED: JL	10/15/2018 10/15/2018
TWO PLACE DECIMAL: ±0.010 THREE PLACE DECIMAL: ±0.005	ENG APPR: JL	10/15/2018
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.	COMMENTS:	
THIRD ANGLE PROJECTION		

CAGE CODE 0EXU3	AQUA-CHEM Global Water Solutions.	
P&I DIAGRAM CARBON & POLISHING SKID "C" WATER PRETREATMENT SYSTEM		
SIZE D	DWG. NO. 627-13175-000	REV 9
SCALE: NTS	WEIGHT:	SHEET 2 OF 3

LINE NUMBERING			
SEQ #	SIZE	MATERIAL	FINISH
EXAMPLE LINE NUMBER			
F01-1½"-PS5S-020			
SOFT FEED - 1½" - 316L SANITARY TUBE & FITTING - 20RA ID FINISH			

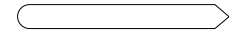
MATERIAL CODE
PS1S - 316L BUTTWELD FITTINGS & THREADED
PS1C - CARBON STEEL SW & BW THREADED 2" IPS & SMALLER SCH 40
PS2F - PVC SCH 80
PS5S - 316L SANITARY TC & BW VITON GASKETS
PS9S - 316L COMPRESSION FITTINGS & THREADED

PROCESS WET FINISH CODE
000 - MILL FINISH
020 - 20RA STANDARD
120 - ELECTROPOLISHED
00W - MILL FINISH/WELD MAPPED
02W - 20RA STD/WELD MAPPED
12W - ELECTROPOLISHED/WELD MAPPED
XXXI - INSULATED


SEQ # SERVICE
F## - FEEDWATER
D## - DISTILLATE
B## - CONCENTRATE
S## - STEAM
C## - CONDENSATE
X## - VENTING
W## - COOLING WATER
H## - INSTRUMENT AIR
Z## - DRAIN


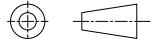
CUSTOMER CONNECTIONS											
TAG	SERVICE	SIZE	CONNECTION	FLOW GPM			PRESSURE PSIG		TEMPERATURE F/C		
				MIN	MAX	NORMAL	MIN	MAX	MIN	MAX	NORMAL
K	CARBON/POLISHER WATER INLET	4"	FLANGE 150# RF	0	330	165	50	70	40°F/4°C	90°F/32°C	70°F/21°C
L	GLYCOL INLET	4"	FLANGE 150# RF	0	200	0	40	80	41°F/5°C	44°F/7°C	41°F/5°C
M	SATURATED BRINE INLET	1 ½"	FLANGE 150# RF	0	20	0	40	70	40°F/4°C	90°F/32°C	70°F/21°C
N	STEAM INLET	4"	FLANGE 150# RF	0	3000 LBS/HR	0	45	45	307°F/153°C	307°F/153°C	307°F/153°C
O	CONDENSATE OUTLET	2"	FLANGE 150# RF	0	3000 LBS/HR	0	45	45	307°F/153°C	307°F/153°C	307°F/153°C
P	GLYCOL RETURN	4"	FLANGE 150# RF	0	200	0	40	40	50°F/10°C	54°F/12°C	50°F/10°C
Q	INSTRUMENT AIR	1/4"	FPT	4 SCFM	6 SCFM	5 SCFM	75	150	N/A	N/A	N/A
R	RECIRCULATION LOOP RETURN	4"	FLANGE 150# RF	0	165	165	50	70	40°F/4°C	182°F/83°C	70°F/21°C
S	SOFT DECHLORINATED WATER OUTLET	4"	FLANGE 150# RF	0	330	165	50	70	40°F/4°C	182°F/83°C	70°F/21°C
T	FAST RINSE DRAIN	4"	FLANGE 150# RF	0	350	0	30	50	40°F/4°C	90°F/32°C	70°F/21°C
U	BACKWASH DRAIN	4"	FLANGE 150# RF	0	350	0	30	50	40°F/4°C	90°F/32°C	70°F/21°C
X	BACKWASH WATER SUPPLY	4"	FLANGE 150# RF	0	350	0	40	60	40°F/4°C	90°F/32°C	70°F/21°C

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	1	ISSUED DRAWING.	11/5/2018
	2	PER CUSTOMER COMMENTS	12/14/2018
	3	PER CUSTOMER COMMENTS	2/12/2019
	4	UPDATED VC FEED VALVE TAGS	4/16/2019
	5	UPDATED PER WALKDOWN	7/02/2019
	6	AS BUILT	7/09/2019
	7	UPDATED PER CUSTOMER COMMENTS	7/16/2019
	8	AS BUILT	7/29/2019
	9	FAT CUSTOMER COMMENTS	8/01/2019

 LINE BALLOON POINTS IN DIRECTION OF FLOW

NOTES:

- FOR SYMBOL LEGEND REFER TO 389-08257-0000.
- DASHED LINE SYMBOLS ARE CUSTOMER SUPPLIED EQUIPMENT.
EXAMPLE:  -
- ALL PIPE SIZES PIPING TYPE PS5S OD TUBE WITH TRI-CLAMP OR BW ENDS.
ALL PIPE SIZES PIPING TYPE PS1C STANDARD WALL PIPE WITH NPT OR SW ENDS.
- D.H. INDICATES DIAMETER HOSE SIZE.
- VALVES UPSTREAM OF VC STILLS CONTROLLED BY PRETREATMENT SHIPPED LOOSE.
- AMMONIA ANALYZER PRESENT ON TRAINS "D" AND "E".

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	DRAWN: DJC CHECKED: JL ENG APPR.: JL	10/15/2018 10/15/2018 10/15/2018		
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	SIZE D	DWG. NO. 627-13175-000	REV 9	
SCALE: NTS	WEIGHT:	SHEET 3 OF 3		

4/26/96

PROCESS PIPING AND EQUIPMENT SYMBOLS

INSTRUMENTATION			
LOCAL/FIELD MOUNTED		MAIN PANEL MOUNTED	
BACK OF PANEL MOUNTED		INTERLOCK DEVICE CAUSE	
INTERNAL SYSTEM LINK (SOFTWARE OR DATA)		ELECTRIC SIGNAL	
CAPILLARY (FILLED SYSTEM)		HYDRAULIC SIGNAL	

EQUIPMENT			
CENTRIFUGAL PUMP		POSITIVE DISPLACEMENT COMPRESSOR/PUMP	
METERING PUMP		VERTICAL PUMP	
PLATE TYPE HEAT EXCHANGER		MOTOR	
CHEVRON MIST ELIMINATOR		MESH PAD MIST ELIMINATOR	
		AIR COOLED EXCHANGER	
		AGITATOR	
		EJECTOR	
		CENTRIFUGAL COMPRESSOR	
		TURBINE	
		AXIAL FLOW PUMP	
		ELECTRIC HEATER	
		HYDROCYCLONE	
		SILENCER	

IN-LINE MEASURING DEVICES			
MAGNETIC FLOWMETER		TURBINE TYPE FLOW ELEMENT	
VORTEX FLOWMETER		LEVEL CONTROLLER MECHANICAL TYPE	
		VARIABLE AREA FLOW INDICATOR	
		ANNUBAR/AVG. PILOT TUBE	
		FLOW ORIFICE (FO)	
		PRESSURE GAUGE LIQUID FILLED	
		FLOW ORIFICE WITH TAPPED FLANGES	

IN-LINE PIPING APPARATUS (GENERAL)			
EXPANSION JOINT		OBSERVATION WINDOW/SIGHT GLASS	
Y-STRAINER		DESUPERHEATER	
CHEMICAL DIAPHRAGM SEAL		RUPTURE DISK VACUUM	
DAMPER		PIPE REDUCING FITTING	
OPEN DRAIN		SIPHON TUBE (PIGTAIL)	
START-UP STRAINER		SIMPLEX STRAINER	
		DUPLEX STRAINER	
		IN-LINE MIXER	
		AUTO-BACKWASH STRAINER	
		ATMOSPHERIC VENT	
		PLUGGED COUPLING	
		STEAM TRAP	
		OIL/AIR FILTER	
		LUBRICATOR	
		SPECTACLE FLANGE OPEN	
		SPECTACLE FLANGE CLOSED	
		SPRAY NOZZLE	
		INJECTION POINT	

MISCELLANEOUS			
TERMINAL POINT DESIGNATOR		EQUIPMENT OR PIPING BY OTHERS	
LINE NUMBER IDENTIFICATION		MAIN PROCESS LINES	
		SECONDARY (MINOR) LINES	
		FLOW ARROW	
		CONTINUATION ARROW	
		TO SHEET X LINE X	
		FROM SHEET X LINE X	

VALVES (GENERAL)							
BALL OPEN/CLOSED		BUTTERFLY OPEN/CLOSED		GLOBE OPEN/CLOSED		CHECK	
PLUG OPEN/CLOSED		NEEDLE		V-BALL		DIAPHRAGM OPEN/CLOSED	
ANGLE		THREE-WAY		FOUR-WAY		PRESSURE RELIEF	
ECCENTRIC DISK		SOLENOID (ON-OFF) TWO-WAY SPRING RETURN		SOLENOID THREE-WAY SPRING RETURN		VACUUM RELIEF	
V-PLUG		STRAINER		NOTE: FLOW ARROW INDICATES SOLENOID VALVE FAIL POSITION.		DOUBLE SOLENOID FOUR-WAY	
SAMPLE		DRAIN					

CONTROL VALVES (ACTUATOR TYPES)									
PRESSURE REDUCING VALVE		SPRING OPPOSED SINGLE ACTING CYLINDER		DIAPHRAGM ACTUATOR SPRING OPPOSED		DIAPHRAGM ACTUATOR WITH POSITIONER		FAIL CLOSE VALVE	
BACK PRESSURE CONTROL VALVE		DOUBLE ACTING CYLINDER		DIAPHRAGM ACTUATOR WITH HANDWHEEL				FAIL OPEN VALVE	
PNEUMATICALLY ACTUATED VALVE WITH 4-20 mA SIGNAL, I/P LOCATED AWAY FROM VALVE, AND POSITIONER				PNEUMATICALLY ACTUATED VALVE WITH 4-20 mA SIGNAL, I/P LOCATED ON THE VALVE, AND POSITIONER				PNEUMATICALLY ACTUATED VALVE WITH 4-20 mA SIGNAL, I/P LOCATED ON THE VALVE, AND POSITIONER	
FILTER/REGULATOR VALVE				PNEUMATICALLY ACTUATED VALVE WITH 4-20 mA SIGNAL, TRANSDUCER/POSITIONER LOCATED ON THE VALVE					

MEASURED OR INITIATING VARIABLES		SUCCEEDING LETTERS	
A	ANALYSIS (pH, OXYGEN, ETC.)	A	ALARM
C	CONDUCTIVITY	C	CONTROLLER
D	DENSITY (SPECIFIC GRAVITY)	D	DIFFERENTIAL
E	VOLTAGE	E	PRIMARY ELEMENT
F	FLOW RATE	F	RATIO
H	HAND (MANUAL)	G	GLASS
I	CURRENT	H	HIGH
J	POWER	I	INDICATOR
K	TIME	J	SCAN
L	LEVEL	K	CONTROL STATION
M	MOISTURE or HUMIDITY	L	LIGHT (PILOT) or LOW
P	PRESSURE or VACUUM	M	MIDDLE or INTERMEDIATE
Q	QUANTITY or EVENT	O	MIDDLE or INTERMEDIATE ORIFICE RESTRICTION
S	SPEED or FREQUENCY	P	POINT (TEST CONNECTION)
T	TEMPERATURE	Q	TOTAL or INTEGRATE
U	MULTIVARIABLE	R	RECORD or PRINT or REDUCING
V	VISCOSITY	S	SWITCH or SAFETY
W	WEIGHT or FORCE	T	TRANSMITTER
X	UNCLASSIFIED	U	MULTIFUNCTION
Y	USER'S CHOICE	V	VALVE
Z	POSITION	W	WELL
		X	RELAY
		Y	DRIVE or ACTUATE
		Z	

REVISIONS		SCALE		DATE		CODE IDENT.		DATE		DATE	
3	DATE: 5/9/91	-NTS-	09647	5-91	09647	5-91	09647	5-91	09647	5-91	09647
4	DATE: 6/28/93	BY: DWO APP: REDRAWN WITH ADDITION OF SYMBOLS.									
5	DATE: 12/12/95	BY: PAW APP: KRM REDRAWN, ADDED/UPDATED SYMBOLS.									
6	DATE: 4/26/96	BY: PAW APP: KRM ADDED/UPDATED SYMBOLS.									

3898257

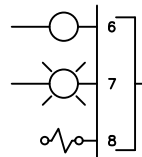
WATER TECHNOLOGIES DIVISION
aqua-chem, Inc.
KNOXVILLE, TENNESSEE, U.S.A.

P & I DIAGRAM
SYMBOL LEGEND

REV 6

NOTES

1. ALL C/B POWER AND CONTROL TRANSFORMER LINES MUST ORIGINATE AT CB-1.
2. ALL STARTER AND CONTACTOR POWER LINES MUST ORIGINATE AT FEEDER DTB-1 & DTB-2.
3. ALL 115 VAC CONTROL CIRCUIT WIRING TO BE A MINIMUM RED 14 GA. STRANDED MACHINE TOOL TYPE 105°C TIN COATED COPPER..
4. DEVICE RETURN WIRE TO BE A MINIMUM WHITE 14 GA. STRANDED MACHINE TOOL TYPE 105°C TIN COATED COPPER.
5. ALL 24 VDC (+) CONTROL CIRCUIT WIRING TO BE A MINIMUM BLUE 14 GA. STRANDED TOOL TYPE 105°C TIN COATED COPPER.
6. ALL 24 VDC (-) CONTROL CIRCUIT WIRING TO BE A MINIMUM WHT/BLUE 14 GA. STRANDED TOOL TYPE 105°C TIN COATED COPPER.
7. GROUND WIRES TO BE GREEN WITH YELLOW TRACER.
8. WIRES WITH VOLTAGE ABOVE 150V WILL BE BLACK AND A MINIMUM OF #14 AWG.
9. ALL WIRES WILL BE IDENTIFIED AT EACH END WITH THE WIRE NUMBER SHOWN ON THE WIRING DIAGRAM EXCEPT WHEN WIRE IS 3" OR LESS, THESE WIRES ARE TO BE IDENTIFIED IN THE MIDDLE.
10. FOR SWITCH SETTINGS, SEE P&I DIAGRAM.
11. BROKEN/DASHED LINES INDICATES ANY WIRING EXTERNAL TO THE ENCLOSURES, AND WIRES TO BE INSTALLED BY CUSTOMER.
12. LOW VOLTAGE WIRING (50V OR LESS) SHALL BE ROUTED SEPARATELY IN THE CONTROL ENCLOSURE FROM HIGHER VOLTAGE WIRING WHEREVER POSSIBLE AND SHALL CROSS AT RIGHT ANGLES WHEN REQUIRED TO DO SO. VOLTAGE HIGHER THAN 50V WILL BE IN THE POWER ENCLOSURE AND WILL NOT ENTER THE CONTROL ENCLOSURE. WIRING MUST BE SEGREGATED FROM THE POWER.
13. APPLY WIRE FERRULES TO THE END OF ALL WIRES UNLESS NOTED.
14. NO MORE THAN 2 WIRES MAY BE TERMINATED AT A SINGLE TERMINAL POINT.
15. ALL POWER RECEPTACLES THAT ARE EXTERNALLY MOUNTED MUST BE MOUNTED WITH HD BOX, AND HD CONTINUOUS USE COVER.



LOCATION NUMBERS OR LETTERS USED AS REFERENCE POINTS, RUNGS.

451-1 GRN (R)

(R) INDICATES COLOR OF CONDUCTOR
GRN INDICATES WHAT COLOR CONDUCTOR IS TO BE CHANGED TO.
ALLOWABLE METHODS ARE TAPE, HEAT SHRINK, OR OTHER SIMILAR COLOR FAST PRODUCTS.
THIS COLOR CHANGE TO BE APPLIED AT POINT OF TERMINATION FOR A MINIMUM OF 1 INCH

- = OPEN CONTACTS
- = THE NUMBERS INDICATED ARE THE LOCATION POINTS WHERE THE CONTACTS CAN BE FOUND
- = CLOSED CONTACTS
- = NUMBERS LOCATED IMMEDIATELY BY A DEVICE ARE TERMINAL NUMBERS ON A DEVICE AS PURCHASED BY AQUA-CHEM.
- = TERMINALS INSTALLED BY AQUA-CHEM.
- = WIRING BY CUSTOMER OR FIELD WIRING
- = THE LAST NUMBER OR LETTER OF A DEVICE IS THE LOCATION OR RUNG NUMBER.
- = WIRE CONTINUATION SYMBOL
(## = DRAWING SHEET NO., ### = RUNG NUMBER)

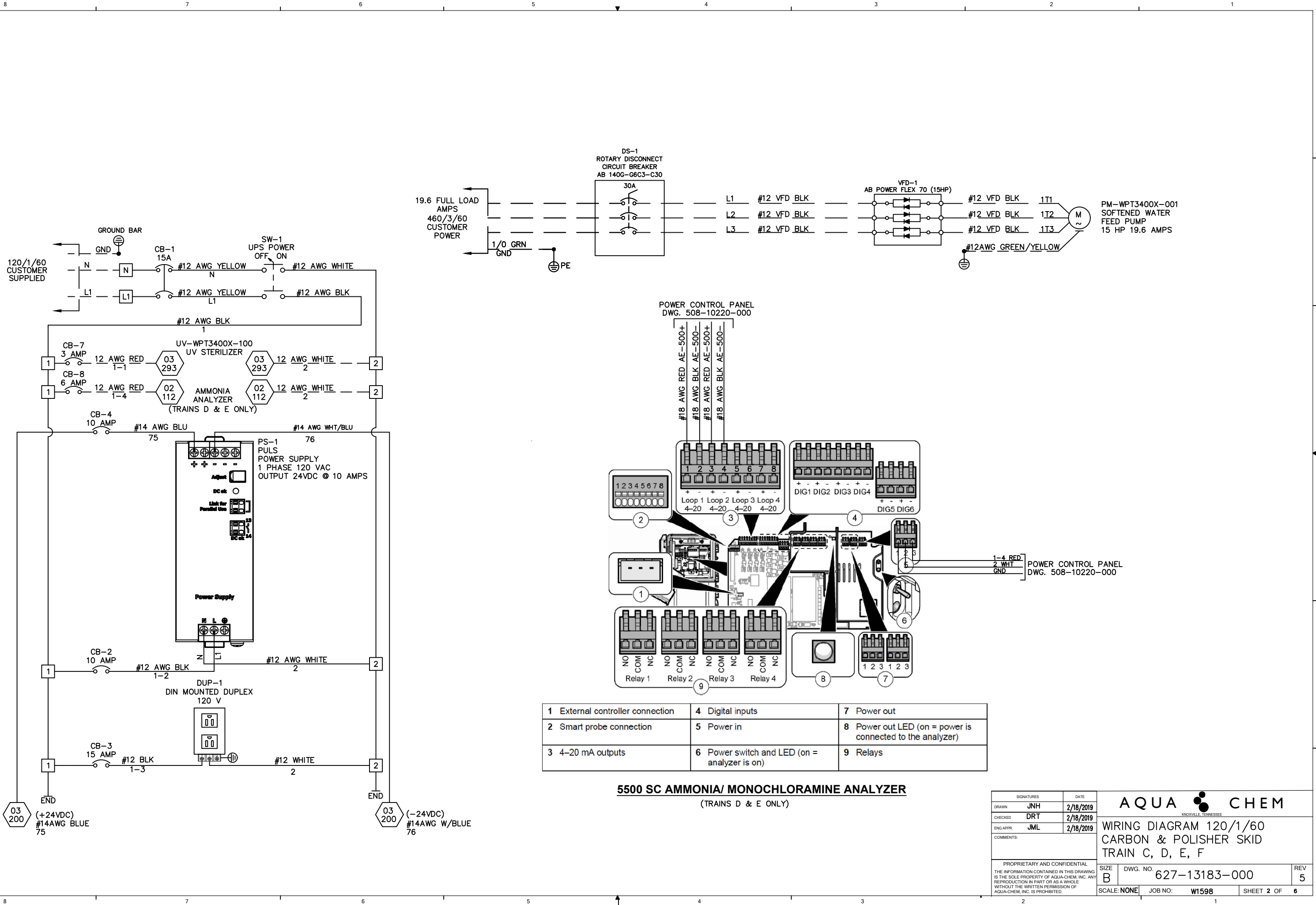
DESCRIPTION	WIRE COLOR	GAUGE	TYPE
120 VAC LINE POWER	BLACK	14 AWG	MTW
120 VAC LINE NEUTRAL	WHITE	14 AWG	MTW
120 VAC CONTROL SIGNAL	RED	14 AWG	MTW
GROUNDS	GREEN	14 AWG	MTW
24+ VDC	BLUE	16 AWG	MTW
24-VDC/COMMON	BLUE/WHITE STRIPE	16 AWG	MTW
24 VDC ANALOG	BLACK (+), CLEAR (-)	18 AWG	BELDEN 8760
INTRINSICALLY SAFE	LIGHT BLUE	16 AWG	MTW
480 VAC L1	BLACK	12 AWG	MTW/THHN/THWN
480 VAC L2	RED	12 AWG	MTW/THHN/THWN
480 VAC L3	BLUE	12 AWG	MTW/THHN/THWN

INSTRUMENT	TRAIN C	TRAIN D	TRAIN E	TRAIN F
WPT3400X	WPT34003	WPT34004	WPT34005	WPT34006
AE-WPT3400X-500		X		
AE-WPT3400X-500			X	

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	1	INITIAL DESIGN	02/18/2019
	2	INITIAL RELEASE	03/14/2019
	3	ADDED UV LIGHT WIRING, UPDATED ESTOP WIRING, AND UPDATE MANIFOLD WIRING	05/13/2019
	4	AS-BUILT / FAT- WALK DOWN	07/8/2019
	5	AS-BUILT / FAT- WALK DOWN UNIT E & F	07/29/2019

CUSTOMER TERMINAL POINTS & CONTACTS – "AQUA-CHEM SUPPLIED"

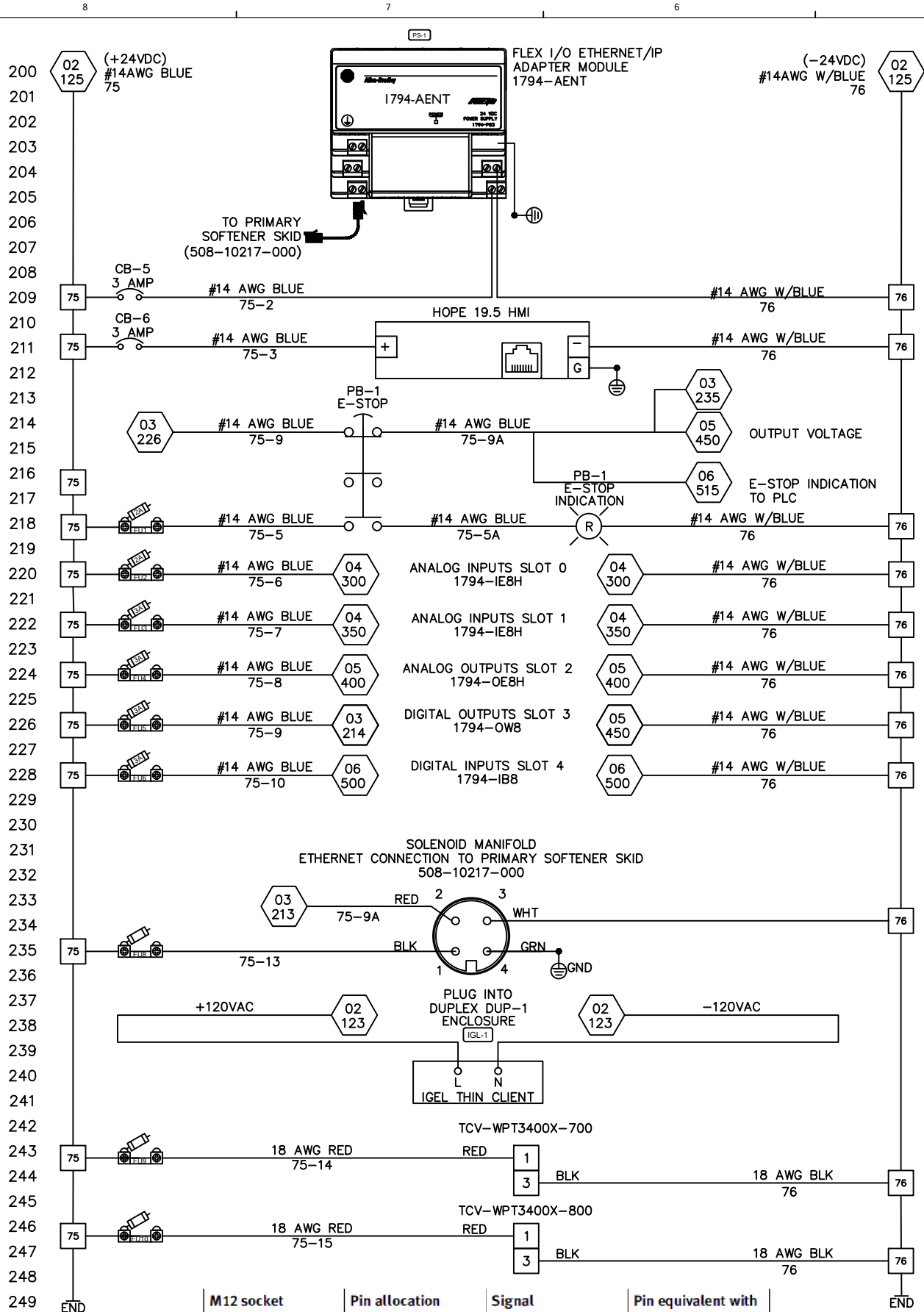
SIGNATURES		DATE		<p>WIRING DIAGRAM 120/1/60 CARBON & POLISHER SKID TRAIN C, D, E, F</p>	
DRAWN	JNH	2/18/2019			
CHECKED	DRT	2/18/2019			
ENG APPR.	JML	2/18/2019			
COMMENTS:				PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.	
SIZE	B	DWG. NO.	627-13183-000	REV	5
SCALE:	NONE	JOB NO.:	W1598	SHEET	1 OF 6



1 External controller connection	4 Digital inputs	7 Power out
2 Smart probe connection	5 Power in	8 Power out LED (on = power is connected to the analyzer)
3 4-20 mA outputs	6 Power switch and LED (on = analyzer is on)	9 Relays

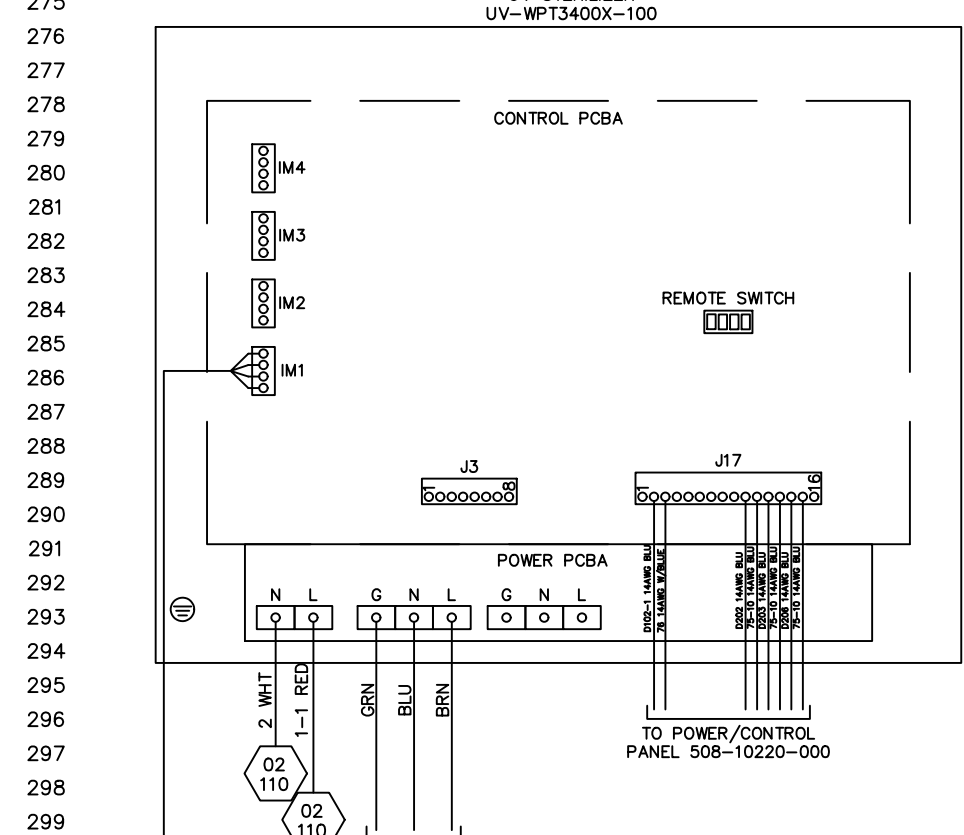
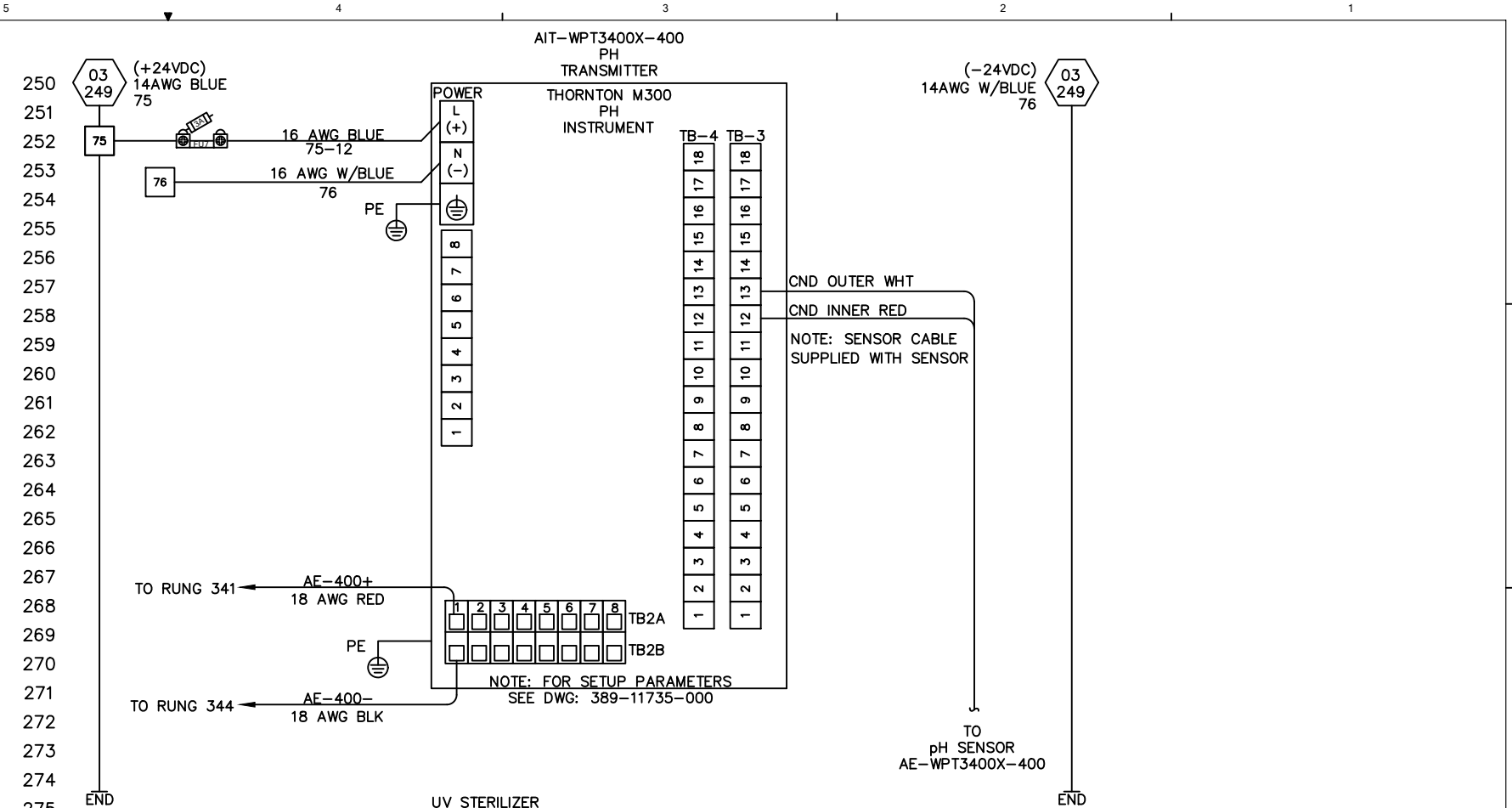
5500 SC AMMONIA/ MONOCHLORAMINE ANALYZER
(TRAINS D & E ONLY)

SIGNATURES		DATE	
DRAWN	JNH	2/18/2019	
CHECKED	DRT	2/18/2019	
ENG APPR.	JML	2/18/2019	
COMMENTS:			WIRING DIAGRAM 120/1/60 CARBON & POLISHER SKID TRAIN C, D, E, F
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.			SIZE B DWG. NO. 627-13183-000 SCALE: NONE JOB NO. W1598 SHEET 2 OF 6



M12 socket EtherNet/IP	Pin allocation	Signal	Pin equivalent with RJ45 plug
1	1. TX+	Transmitted data+	1
2	2. RX+	Received data+	3
3	3. TX-	Transmitted data-	2
4	4. RX-	Received data-	6
	Housing	Screening, FE	

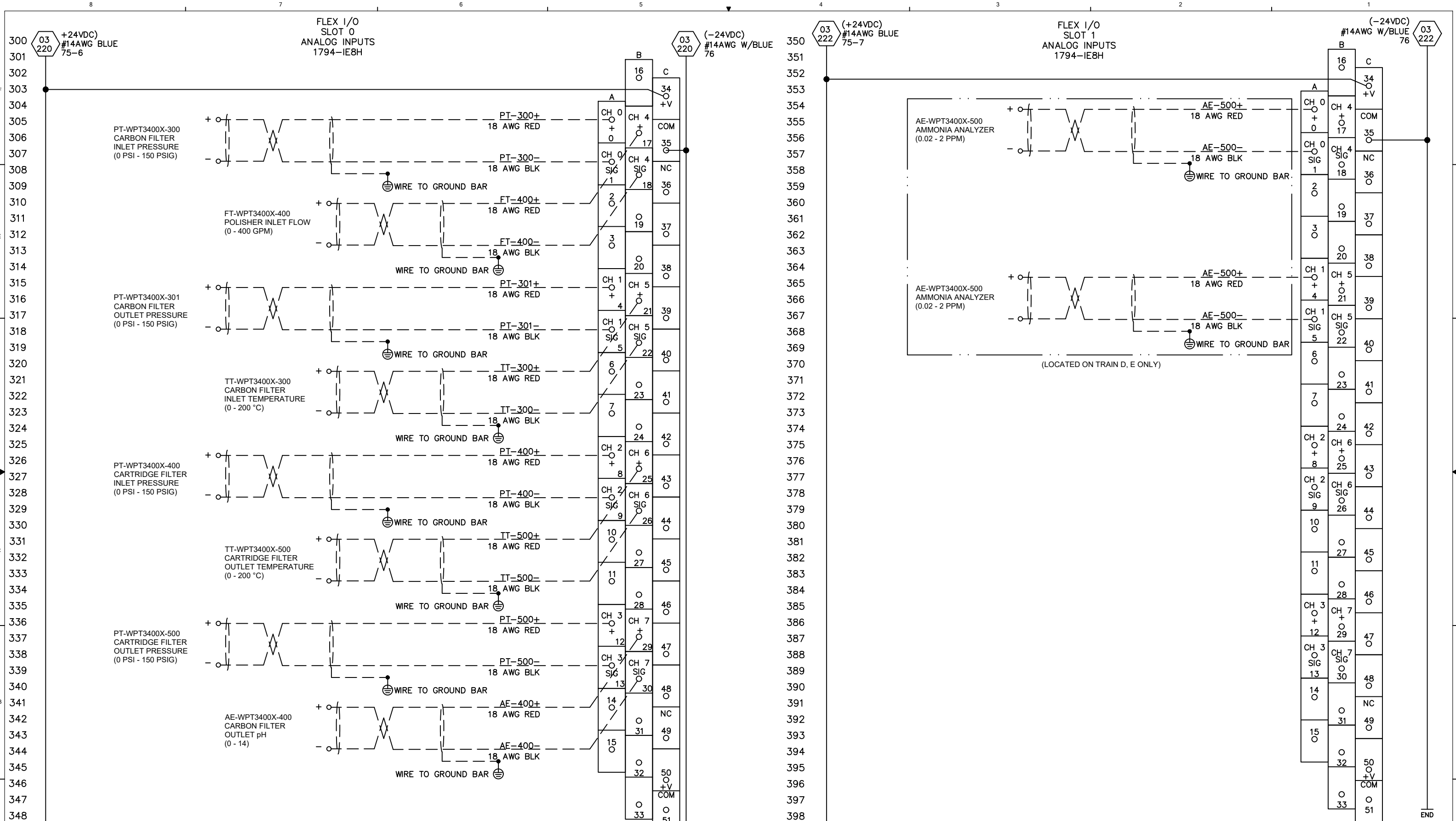
COMMUNICATION FOR M12 CONNECTOR



SIGNATURES		DATE	
DRAWN	JNH	2/18/2019	
CHECKED	DRT	2/18/2019	
ENG APPR.	JML	2/18/2019	
COMMENTS:			
<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.</small>			
SIZE	B	DWG. NO.	627-13183-000
SCALE	NONE	JOB NO.	W1598
		SHEET	3 OF 6

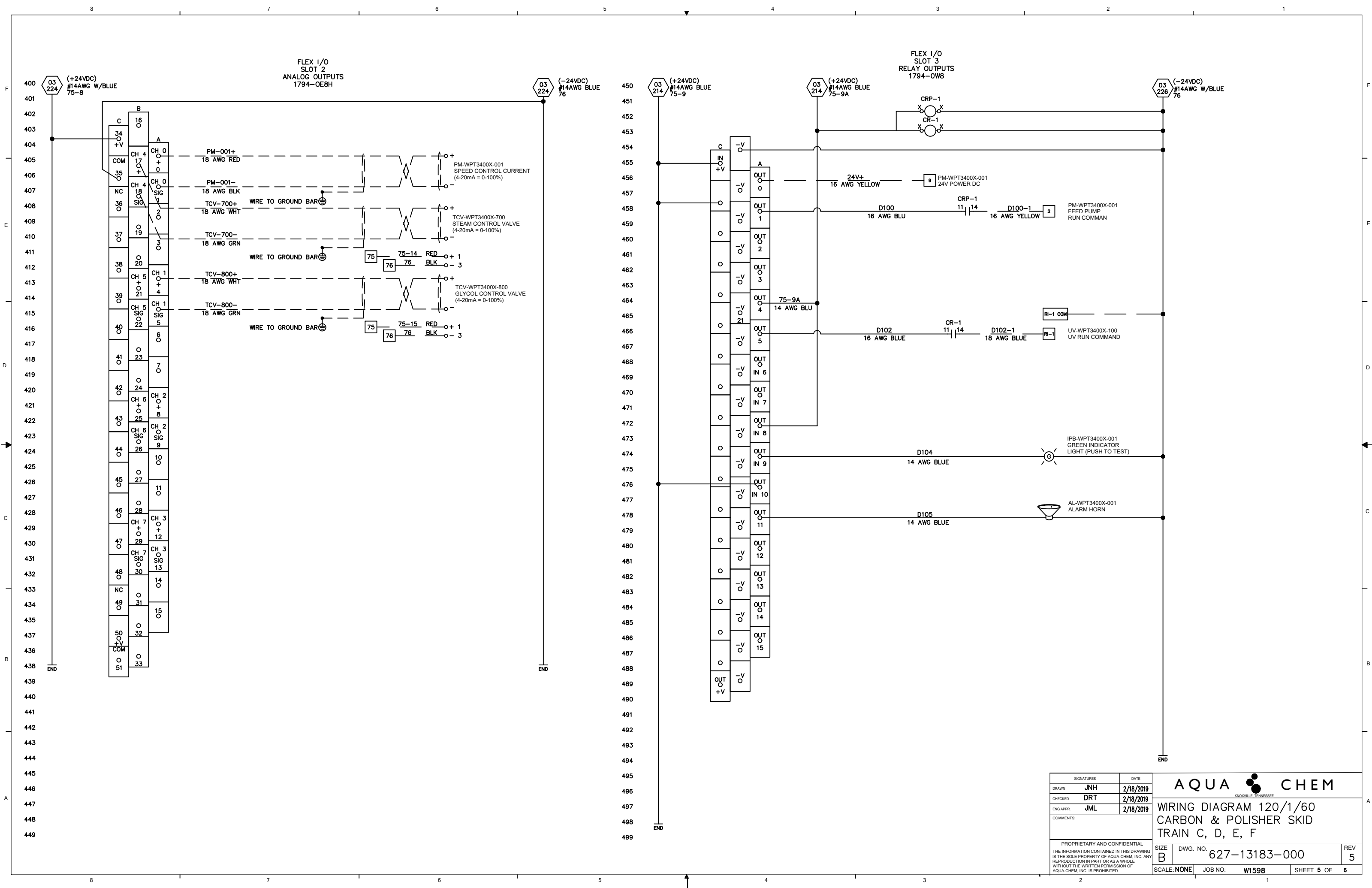
WIRING DIAGRAM 120/1/60
CARBON & POLISHER SKID
TRAIN C, D, E, F

REV 5
SCALE: NONE JOB NO: W1598 SHEET 3 OF 6



SIGNATURES		DATE
DRAWN	JNH	2/18/2019
CHECKED	DRT	2/18/2019
ENG APPR.	JML	2/18/2019
COMMENTS:		
<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.</small>		
SIZE	DWG. NO.	REV
B	627-13183-000	5
SCALE: NONE	JOB NO: W1598	SHEET 4 OF 6

AQUA CHEM
 WIRING DIAGRAM 120/1/60
 CARBON & POLISHER SKID
 TRAIN C, D, E, F

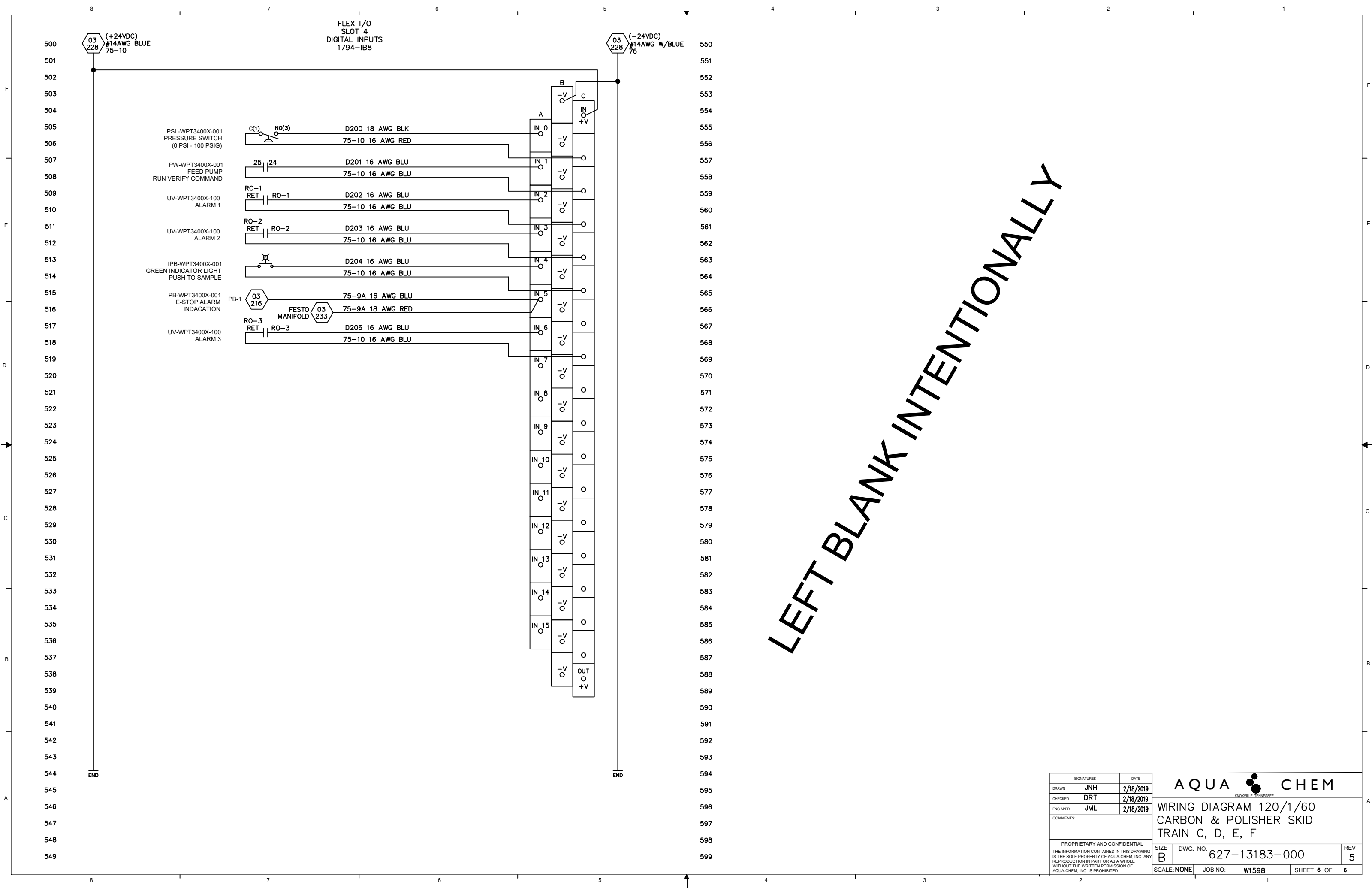


SIGNATURES	DATE
DRAWN JNH	2/18/2019
CHECKED DRT	2/18/2019
ENG APPR. JML	2/18/2019
COMMENTS:	
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.	

AQUA CHEM
KNOXVILLE, TENNESSEE

**WIRING DIAGRAM 120/1/60
CARBON & POLISHER SKID
TRAIN C, D, E, F**

SIZE B	DWG. NO. 627-13183-000	REV 5
SCALE: NONE	JOB NO. W1598	SHEET 5 OF 6




LEFT BLANK INTENTIONALLY

SIGNATURES		DATE		AQUA CHEM <small>KNOXVILLE, TENNESSEE</small>	
DRAWN	JNH	2/18/2019			
CHECKED	DRT	2/18/2019		WIRING DIAGRAM 120/1/60 CARBON & POLISHER SKID TRAIN C, D, E, F	
ENG APPR.	JML	2/18/2019			
COMMENTS:					
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF AQUA-CHEM, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AQUA-CHEM, INC. IS PROHIBITED.				SIZE	DWG. NO.
				B	627-13183-000
				SCALE: NONE	JOB NO: W1598
				SHEET 6 OF 6	REV 5


ELECTRICAL WIRING PROCEDURES

1. These regulations shall not be deviated from without a supervisor's approval.
2. Read ALL notes on the drawings before beginning the job. Familiarize yourself with the drawing legend symbols.
3. All bends made in conduit systems of EMT, IMC, or rigid conduit shall be made with a standard electrical conduit bender and be of legal dimensions per the National Electrical Code. Flexible conduit shall have a minimum bend radius of 8 times the diameter of the conduit. M.I. wiring shall be installed using M.I. wiring tools and the bends shall be made using benders sized correctly for the wire. ALS wiring shall be hand bent with a minimum radius of 8 times the diameter of the wire.
4. All wiring systems referenced in 3 above shall have a minimum of 1" straight section of conduit or wire cable extending past the termination point. Wiring systems shall be installed so that the smallest possible stress is put on the termination fitting.
5. All cabling shall be pushed entirely into the fitting, with not open wire showing.
6. All wiring shall be done in a manner that does not block access to valves or other equipment that may require service at any time.
7. Unused wires in multiconductor cable shall be cut off at the cable end and not rolled or folded up in the junction box.
8. Each conductor of a color coded multiconductor cable shall be numbered at each end.
9. Wires pulled in a conduit system shall be numbered at each end. The numbers shall conform to the wiring diagram and the wire color shall agree with #10 below.
10. Except for the control panel, black shall be used for the "hot" wire, red as a switch leg or secondary hot wire, and white as the neutral or return wire. The neutral wire will be labeled number "2" on most Vapor Compression electrical drawings. Green wire or green with a yellow tracer shall always be used as ground. These colors shall always apply unless otherwise noted on the wiring diagram or the colors are not available in a multiconductor cable.

ELECTRICAL WIRING PROCEDURES (Continued)

REVISIONS: 1) 6/24/75 Issued SP-8716-52 2) 9/1/78 Item 3 was 2 ½ times the diameter of the cable. 3) 10/20/81 Added notes 19,20,21 and 1-4 on sheet 3. W2415-10 RP 4) 08/04/99 Placed sheets 1-3 in Word: sheets 4&5 in AutoCad. SMB	DATE 6/15/75	 Code Ident. 09467
	DRAWN RR	
	CHECKED XXX	SHOP WIRING PROCEDURE FOR VAPOR COMPRESSION UNITS
	APPROVED RR	
	PAGE 1 OF 5	
DWG. NO. 389-A-8242		


11. Unused openings in conduit boxes, switches, control panels, etc. shall be plugged using electrical knockout closers or pipe plugs prior to the unit being tested. All shrink type connectors and terminators shall be shrunk down and all cables adequately supported before unit testing begins.
12. All wiring sizes shall conform to the requirements of the wiring diagram.
13. Panel wiring shall be done in a professional manner. If any unusual testing procedures are required before the unit test, it will be noted on the wiring diagram or panel drawing.
14. All wires inside a control or power panel shall be numbered per the wiring diagram.
15. No terminals shall have more than 2 wires landed under each screw, unless the terminal is specifically designed for that purpose.
16. The requirements for control panel wire colors are defined on the electrical drawings
17. Wires inside control panels that are greater than 150V to ground and have short or straight runs in them shall have relaxation loops.
18. Three phase and single phase wiring shall not be run in the same conduit.
19. All cables are to be supported by tying cables together to minimize movement.
20. All conduit and cable shall be supported within no more than 18" of their termination points and at no more that 3 ft. intervals on their runs.

REVISIONS: 1) 6/24/75 Issued SP-8716-52 2) 9/1/78 Item 3 was 2 ½ times the diameter of the cable. 3) 10/20/81 Added notes 19,20,21 and 1-4 on sheet 3. W2415-10 RP 4) 08/04/99 Placed sheets 1-3 in Word: sheets 4&5 in AutoCad. SMB	DATE 6/15/75	 Code Ident. 09467
	DRAWN RR	
	CHECKED XXX	SHOP WIRING PROCEDURE FOR VAPOR COMPRESSION UNITS
	APPROVED RR	
	PAGE 2 OF 5	
		DWG. NO. 389-A-8242

ELECTRICAL WIRING PROCEDURES (Continued)


EXPLOSION PROOF REQUIREMENTS


1. All threaded explosion proof joints shall have a minimum of 5 fully engaged threads.
2. All threads are to be lubricated using Dow Corning III silicone compound.
3. All flanged surfaces are to be coated using Dow Corning III silicone compound.
4. Do not fill any conduit seals until unit testing is complete. Leave all conduit seal plugs off and place them in a bag in the control panel until testing is finished. Then all seals shall be poured, checked, and plugged.


REVISIONS: 1) 6/24/75 Issued SP-8716-52 2) 9/1/78 Item 3 was 2 ½ times the diameter of the cable. 3) 10/20/81 Added notes 19,20,21 and 1-4 on sheet 3. W2415-10 RP 4) 08/04/99 Placed sheets 1-3 in Word: sheets 4&5 in AutoCad. SMB	DATE 6/15/75	 Code Ident. 09467
	DRAWN RR	
	CHECKED XXX	SHOP WIRING PROCEDURE FOR VAPOR COMPRESSION UNITS
	APPROVED RR	
	PAGE 3 OF 5	
DWG. NO. 389-A-8242		


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- 


SWITCH: A device used to open or close an electrical circuit; when no appendage is shown, it is manually operated.
- 


LIMIT SWITCH: A device which is mechanically actuated.
- 


PRESSURE CONTROL: A switch actuated by steam, water, air, oil or gas pressure. This symbol may also be used for a vacuum control.
- 


TEMPERATURE CONTROL: A switch actuated by steam, water, air, oil or gas; a sensing bulb is located in or near the controlling fluid.
- 


LEVEL CONTROL: A switch actuated by liquid level; a float is located in the liquid.
- 


TIME DELAY SWITCH: A switch actuated by mechanical or pneumatic timing device.
- 


FLOW SWITCH: A switch actuated by steam, water, air, oil or gas flow.
- 


CIRCUIT BREAKER: A manually-operated device designed to open automatically when current through it is excessive.
- 

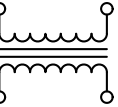
PUSH BUTTON: A manually-operated switch which returns to position shown when actuating force is released. Top symbol is "normally open", bottom symbol is "normally closed".
- 


CONTACT: A switch actuated through the energization of another electrical circuit. Top symbol is "normally open", bottom symbol is "normally closed".
- 

GENERAL SYMBOL: For relay coils, starter coils, motorized valves, scanners, alarms, meters, etc. This device must be identified as to function.
- 


PILOT LIGHT: A visual annunciator to indicate power to a specific circuit: The function must be defined. The letter in the center indicates lens or lamp color.
- 

SOLENOID: A device which produces linear mechanical motion when energized; usually used to represent solenoid actuated valves.
- 

FUSE: A device which breaks an electrical circuit when current flow is excessive by melting of the current carrying element. This device may be used to provide "branch circuit overcurrent protection".
- 

TRANSFORMER: A device which is used to increase or decrease, step up or step down, a voltage to the desired valve or to isolate circuits.
- 

GROUND: An electrical connection made to earth or ground in accordance with the National Electrical Code rules for grounding.

REVISIONS		SCALE N.T.S.	CODE IDENT. OEXU3	 WATER TECHNOLOGIES DIVISION aqua-chem, Inc. MILWAUKEE, WISCONSIN KNOXVILLE, TENNESSEE	SHOP WIRING PROCEDURE FOR VAPOR COMPRESSION UNITS	SH. 4 OF 5	DWG. NO. 389-A-8242	REV 4
	1	SEE SHEET 1	DATE 6/15/75					
	2	SEE SHEET 1	DRAWN RR					
	3	SEE SHEET 1	CHECKED					
	4	SEE SHEET 1	APPROVED RR					
			CAL. WT.					

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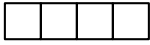
SEPARABLE CONNECTOR: Electrical wiring so constructed to be readily separated such as a plug and socket combination.



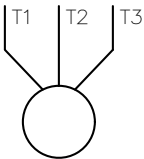
THERMAL OVERLOAD: A device which breaks an electrical circuit when current flow is excessive by heating a tripping device.



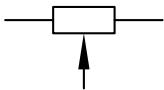
MAGNETIC OVERLOAD: A device which breaks an electrical circuit when current flow is excessive by mechanical action on a tripping device.



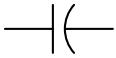
TERMINAL BLOCK: Wire connectors arranged in a row for the convenience of making electrical connections.



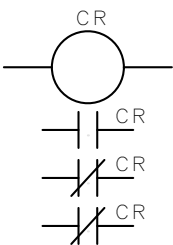
MOTOR: A device to convert electrical energy to rotary mechanical energy. Leads are designated T1, T2, etc., as necessary for various types of motors; a three phase motor is shown.



POTENTIOMETER: A device used to vary voltage and/or current for control purposes by varying the resistance in the circuit.

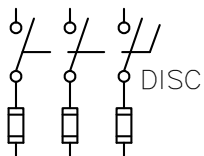


CAPACITOR: A device which is mechanically actuated.

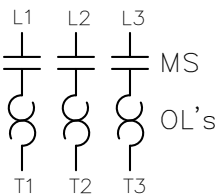


Control Relay with one "normally open" and two "normally closed" contacts.

COMBINED SYMBOLS




Three pole, fusible, disconnect switch.




Three pole magnetic motor starter (power circuit wiring is shown in top portion, control wiring is shown in bottom portion).




REVISIONS	1	SEE SHEET 1	SCALE N.T.S.	CODE IDENT. OEXU3	 WATER TECHNOLOGIES DIVISION aqua-chem, Inc. MILWAUKEE, WISCONSIN KNOXVILLE, TENNESSEE U.S.A.
	2	SEE SHEET 1	DATE 6/15/75	SHOP WIRING PROCEDURE FOR VAPOR COMPRESSION UNITS	
	3	SEE SHEET 1	DRAWN RR		
	4	SEE SHEET 1	CHECKED		
			APPROVED RR		
		CAL. WT.	SH. 5 OF 5	DWG. NO. 389-A-8242	REV 4


ITEM	QTY	PART NUMBER	CERT CODE*	TAG NO.	TYPE	OPERATOR	CONNECTION AND SIZE	SERVICE DESCRIPTION	MFG., MODEL NO. & REMARKS	CONTACT MATERIAL
1	13	941-11194-000	C	V-WPT3400X-100 V-WPT3400X-101 V-WPT3400X-300 V-WPT3400X-301 V-WPT3400X-302 V-WPT3400X-303 V-WPT3400X-304 V-WPT3400X-400 V-WPT3400X-401 V-WPT3400X-403 V-WPT3400X-404 V-WPT3400X-405 V-WPT3400X-500	BUTTERFLY	ACTUATOR	4" WAFER	CARBON FILTER / SOFTENER VALVES	BRAY 31-0400-11010-324 W/ 931193-11300532 ACTUATOR	316 SST DISC
2	2	941-11318-000	C	V-WPT3400X-018 V-WPT3400X-022	BALL	MANUAL	1" FPT	TANK VENT	APOLLO 76-105-01A	316 SST
3	2	941-11457-000	C	V-WPT3400X-019 V-WPT3400X-023	BALL	MANUAL	2" FPT	TANK DRAIN	APOLLO 76F-108-01A	316 SST
4	4	941-09422-000	C	V-WPT3400X-009 V-WPT3400X-010 V-WPT3400X-012 V-WPT3400X-014	BALL	MANUAL	1/2" FPT	UTILITIES BLEED	APOLLO 73A-103-01A	316 SST
5	3	941-11696-000	X	V-WPT3400X-017 V-WPT3400X-024 V-WPT3400X-035	NEEDLE	MANUAL	1/2" OD	SAMPLE	SWAGELOK SS-8P6T-BK-PM	316 SST
6	1	917-10221-000	X	V-WPT3400X-402	BALL	ACTUATOR	2" TRUE UNION	BRINE INLET	ASAHI TYPE 21, 1605-020 W/ CP79PSN ACTUATOR	PVC
7	2	940-09584-000	X	V-WPT3400X-001 V-WPT3400X-003	CHECK	SPRING	1.5" TRUE UNION	BRINE INLET	HAYWARD SLC10150SEU	PVC
8	2	940-09521-000	X	V-WPT3400X-002 V-WPT3400X-004	BALL	MANUAL	1.5" TRUE UNION	BRINE INLET WATER FOR BRINE BLEND	ASAHI 1601-015	PVC
9	1	941-11677-000	X	V-WPT3400X-005	BALL	MANUAL	1/2" TRUE UNION	MIXED BRINE SAMPLE	ASAHI 6700-005	PVC
10	1	918-07644-000	X	PCV-WPT3400X-001	PRESSURE CONTROL	MANUAL REGULATOR	1/4" FPT	INSTRUMENT AIR	FISHER FS-67CFR-239	ALUMINUM

REVISIONS 1) ISSUE FOR REVIEW 2) REVISED PER CUSTOMER COMMENTS. 2/11/2019 3) REVISED LINE ITEMS #2, #3, #5, #13, #17, #18, #19, #20, #21, #22, #23, #25, #27, #28. ADDED LINE ITEMS #29, #30, #31, #32. 3/1/2019 4) ADDED LINE ITEM #33, #34. 6/4/2019 5) CORRECTED VENDOR PART NUMBERS OF LINES #2, #3, #16, #19, #20, #21, #24 #33, #34. 7/3/2019 6) UPDATED MODEL NUMBER FOR ITEMS 3, 6, 19, 21, 22,32; UPDATED CONNECTION TYPE FOR ITEMS 14, 24; UPDATE VALVE TYPE FOR ITEM 15, 16 ; UPDATE CONTACT MATERIAL FOR ITESM 22, 29, 30, 31, 32, 33, 34; UPDATED CERT CODE FOR ITEM 25 : 7/8/19 7) CHANGE QTY OF LINE ITEM #13 FROM 4 TO 5. 7/11/19 8) UPDATED TAG AND SERVICE DESCRIPTION FOR ITEM 13, UPDATED MANUFACTURER FOR ITEM 21. UPDATED TAGS FOR ITEMS 33 AND 34 . UPDATED MODEL NUMBER FOR ITEM 6. 7/31/19	DATE 11/3/18	CODE IDENT NO. OEXU3 
	DRAWN JML	
	CHECKED DJC	
	APPROVED JML	
	PAGE 1 OF 4	
VALVE SCHEDULE CSL CARBON & POLISHER SKID		

ITEM	QTY	PART NUMBER	CERT CODE*	TAG NO.	TYPE	OPERATOR	CONNECTION AND SIZE	SERVICE DESCRIPTION	MFG., MODEL NO. & REMARKS	CONTACT MATERIAL
11	3	941-11321-000	X	V-WPT3400X-020 V-WPT3400X-021 V-WPT3400X-025	BALL	MANUAL	¼" FPT	INSTRUMENT AIR BLOCK INSTRUMENT AIR BLEED FILTER HOUSING VENT	APOLLO 76-101-01A	316 SST
12	2	940-09392-000	C	PSV-WPT3400X-307 PSV-WPT3400X-407	PRESSURE RELIEF	SPRING	1" NPT	VESSEL PRESSURE RELIEF	KUNKLE 917BDEE01BJE0100	316 SST
13	5	941-11357-000	C	V-WPT3400X-026 V-WPT3400X-031 V-WPT3400X-032 V-WPT3400X-034 V-WPT3400X-045	BUTTERFLY	MANUAL	4" WAFER	FILTER ISOLATION SOFTENER ISOLATION FILTER ISOLATION CARBON FILTER ISOLATION POLISHING SOFTENER DRAIN	BRAY 31-0400-11010-324	316 SST DISC
14	3	940-09218-000	P	V-WPT3400X-008 V-WPT3400X-007 V-WPT3400X-016	CHECK	SPRING	4" TRI CLAMP	POST COOLER CHECK RECIRCULATION CHECK BACKWASH INLET CHECK	CHECK ALL SCNSSFE.500SS	316 SST
15	1	917-10126-000	C	TCV-WPT3400X-700	SLIDING GATE	ACTUATOR & POSITIONER	3" WAFER	STEAM CONTROL VALVE	SCHUBERT & SALZER 8021/080VGE007M--91--ZC-S-2	CARBON STEEL
16	1	917-10127-000	C	TCV-WPT3400X-800	SLIDING GATE	ACTUATOR & POSITIONER	4" WAFER	STEAM CONTROL VALVE	SCHUBERT & SALZER 8021/100VGE007M----1ZC-S-2	CARBON STEEL
17	2	923-08398-000	X	S-WPT3400X-001 S-WPT3400X-002	Y-TYPE	MANUAL	4" FLANGE	STEAM INLET GLYCOL INLET	MUELLER 781	CARBON STEEL
18	2	941-11697-000	X	V-WPT3400X-038 V-WPT3400X-039	BALL	MANUAL	1 ½" FPT	STRAINER BLOW OUT	APOLLO 72-107-01	CARBON STEEL
19	3	941-11616-000	C	V-WPT3400X-006 V-WPT3400X-013 V-WPT3400X-015	GATE	MANUAL	4" FLANGE	STEAM BLOCK GLYCOL BLOCK GLYCOL BLOCK	WARREN 1155-12N	CARBON STEEL
20	1	941-10167-000	X	V-WPT3400X-011	BALL	MANUAL	2" FPT	CONDENSATE BLOCK	APOLLO 72-148-24	CARBON STEEL
21	1	917-10094-000	C	V-WPT3400X-700	BALL	ACTUATOR	4" FLANGE	STEAM BLOCK	FLOWTEK RF15-WCB W/ 93-1184-11300532 ACTUATOR	CARBON STEEL
22	1	934-08518-000	X	T-WPT3400X-001	THERMOSTATIC	FLOAT	1.5" FPT	CONDENSATE LINE	SPIRAX SARCO FTI-15	CAST IRON

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			DRAWN JML	
			CHECKED DJC	
			APPROVED JML	
			PAGE 2 OF 4	
			VALVE SCHEDULE CSL CARBON & POLISHER SKID	
			DWG. NO. 613-11654-000	REV. 8

ITEM	QTY	PART NUMBER	CERT CODE*	TAG NO.	TYPE	OPERATOR	CONNECTION AND SIZE	SERVICE DESCRIPTION	MFG., MODEL NO. & REMARKS	CONTACT MATERIAL
23	1	941-09747-000	C	V-WPT3400X-041	GATE	MANUAL	1/2" FPT	STEAM DRIP LEG	VELAN 1/2S2054B-02TY	CARBON STEEL
24	1	940-09740-000	X	V-WPT3400X-042	CHECK	SPRING	1.5" FLANGE	STEAM DRIP LEG	CHECK ALL F1JCSMT.125SS	CARBON STEEL
25	2	941-09422-000	C	V-WPT3400X-036 V-WPT3400X-037	BALL	MANUAL	1/2" FPT	STEAM INSTRUMENT BLOCK	APOLLO 73A-103-01A	CARBON STEEL
26	2	941-11685-000	C	V-WPT3400X-030 V-WPT3400X-033	BUTTERFLY	MANUAL CHAINWHEEL	4" WAFER	SOFTENER ISOLATION CARBON FILTER ISOLATION	BRAY 31-0400-BFA12-375 W/ CHAINWHEEL 040900-93850533	316 SST
27	1	941-11450-000	C	V-WPT3400X-027	BALL	MANUAL	3/4" FPT	FILTER HOUSING DRAIN	APOLLO 76F-104-01A	316 SST
28	2	941-11422-000	X	V-WPT3400X-040 V-WPT3400X-043	NEEDLE	MANUAL	1/4" OD	AMMONIA INSTRUMENT BLOCK pH BLOCK	SWAGELOK SS-1RS4	316 SST
29	1	941-11648-000	P	V-WPT3400X-029	ANGLE	MANUAL	3" TRI CLAMP X 5/16 HOSE BARB	SAMPLE	CASELLA CSMI CSM300TCAEVHB	316L SST
30	1	941-10929-000	P	V-WPT3400X-028	BUTTERFLY	MANUAL	4" TRI CLAMP	UV ISOLATION	TOPLINE 3820140EP	316L SST
31	2	940-09208-000	P	V-WPT3400X-600 V-WPT3400X-601	BUTTERFLY	ACTUATOR	3" TRI CLAMP	VC STILL FEED	TOPLINE 3820130EPSR	316L SST
32	1	934-08519-000	X	T-WPT3400X-002	THERMOSTATIC	FLOAT	1/2" FPT	STEAM DRIP LEG	SPIRAX SARCO FTI-15	CAST IRON
33	3	906-08135-000	P	FO-WPT3400X-001 FO-WPT3400X-003 FO-WPT3400X-005	ORIFICE	NONE	4" TRI CLAMP	RECIRCULATION LINE CARBON FILTER RINSE SOFTENER RINSE SOFTENER BACKWASH	NEWMAN A80MPE-400	316L SST
34	1	906-08136-000	P	FO-WPT3400X-002	ORIFICE	NONE	4" TRI CLAMP	CARBON FILTER BACKWASH	NEWMAN A80MPE-400	316L SST
35	1	941-09339-000	X	V-WPT3400X-044	BALL	MANUAL	1/4" MPT X HOSE	BRINE SAMPLE VALVE	ASAHI 1078002	PVC

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	DRAWN JML		VALVE SCHEDULE CSL CARBON & POLISHER SKID
	CHECKED DJC		
	APPROVED JML		
	PAGE 3 OF 4		

*** CERT. CODE EXPLANATION**

C – CERTIFICATE OF COMPLIANCE TO SPECIFICATION

Forward one (1) copy of certificates of compliance with material, certifying that material furnished meets the Purchase Order item description, specification and any additional ordering data requirements contained on the order


P – PHARMACEUTICAL CERTIFICATION

- Instruments – Certification of Compliance with Calibration Certifications and Surface Finish Certification on Process Contact Parts. See "C" Certification for requirements
- Valves – Mill Test Reports (MTRs) along with Surface Finish Certification and Certification of Compliance to FDA CFR 21 177 for all elastomers and sealing materials including diaphragms.
- Plate, Piping – MTRs along with Surface Finish Certification
- Gaskets – All requirements for "C" Certification and Certification of Compliance to FDA CFR 21, 177
- Pumps - MTRs and Certification of Surface Finish for product contact surfaces. Certification of Compliance to FDA


X – NO CERTIFICATION OR CALIBRATION REQUIRED

O – CERTIFICATION REQUIREMENTS CARRIED UP FROM LOWER LEVEL BILL OF MATERIAL (applies only to Aqua-Chem manufactured parts)

ITEMS IN PARENTHESIS ARE PURCHASED TO ANOTHER BILL OF MATERIAL

REVISIONS 1) ISSUE FOR REVIEW 2) REVISED PER CUSTOMER COMMENTS. 2/11/2019 3) REVISED LINE ITEMS #2, #3, #5, #13, #17, #18, #19, #20, #21, #22, #23, #25, #27, #28. ADDED LINE ITEMS #29, #30, #31, #32. 3/1/2019 4) ADDED LINE ITEM #33, #34. 6/4/2019 5) CORRECTED VENDOR PART NUMBERS OF LINES #2, #3, #16, #19, #20, #21, #24 #33, #34. 7/3/2019 6) UPDATED MODEL NUMBER FOR ITEMS 3, 6, 19, 21, 22,32; UPDATED CONNECTION TYPE FOR ITEMS 14, 24; UPDATE VALVE TYPE FOR ITEM 15, 16 ; UPDATE CONTACT MATERIAL FOR ITESM 22, 29, 30, 31, 32, 33, 34: UPDATED CERT CODE FOR ITEM 25 : 7/8/19 7) CHANGE QTY OF LINE ITEM #13 FROM 4 TO 5. 7/11/19 8) UPDATED TAG AND SERVICE DESCRIPTION FOR ITEM 13, UPDATED MANUFACTURER FOR ITEM 21. UPDATED TAGS FOR ITEMS 33 AND 34 . UPDATED MODEL NUMBER FOR ITEM 6. 7/31/19	DATE 11/3/18	CODE IDENT NO. OEXU3 	
	DRAWN JML		
	CHECKED DJC		VALVE SCHEDULE CSL CARBON & POLISHER SKID
	APPROVED JML		
	PAGE 4 OF 4		

ITEM	QTY	PART NUMBER	CERT CODE	TAG NO.	SERVICE DESCRIPTION	TYPE	MANUFACTURER	MODEL NUMBER	CONNECTION AND SIZE	RANGE
1	2	891-08828-000	X	FI-WPT3400X-401 FI-WPT3400X-400	WATER FOR BRINE MIX SATURATED BRINE	FLOW INDICATOR	UNIVERSAL FLOW MONITORS	INSITE IS-50 GPM-12-I-F	1 1/2" FPT	0-50 GPM
2	1	836-08975-000	C	PSL-WPT3400X-001	INSTRUMENT AIR SUPPLY	PRESSURE SWITCH	ASHCROFT	GPSN4GS25-XC4FS	1/4" NPT	100 PSIG
3	(1)	885-09855-000	C	AIT-WPT3400X-400	CARBON FILTER OUTLET	PH TRANSMITTER	METTLER TOLEDO THORNTON	M300 30 280 778	N/A	0 - 14
4	1	885-09366-000	C	AE-WPT3400X-400	CARBON FILTER OUTLET	PH SENSOR	METTLER TOLEDO THORNTON	52-002-559	SPECIAL THREAD	0 - 14
5	1	885-09853-000	X	N/A	CARBON FILTER OUTLET	PH SENSOR HOUSING	METTLER TOLEDO THORNTON	58-084-010	1/4" NPT	N/A
6	4	817-10679-000	C	PT-WPT3400X-300 PT-WPT3400X-301 PT-WPT3400X-400 PT-WPT3400X-500	CARBON FILTER INLET CARBON FILTER OUTLET CARTRIDGE FILTER INLET CARTRIDGE FILTER OUTLET	PRESSURE TRANSMITTER	ENDRESS & HAUSER	PMP51-CD12QD1PGFRKJA1F1Z1	1/2" NPT	0-150 PSIG
7	3	937-08494-000	X	TI-WPT3400X-100 TI-WPT3400X-800 TI-WPT3400X-801	CARBON FILTER INLET GLYCOL SUPPLY GLYCOL RETURN	TEMPERATURE INDICATOR	ASHCROFT	30EI60E040 0/250F XCS	1/2" NPT	0-250 F -20-120 C
8	3	937-08536-000	C	TW-WPT3400X-100 TW-WPT3400X-800 TW-WPT3400X-801	CARBON FILTER INLET GLYCOL SUPPLY GLYCOL RETURN	THERMOWELL	PYROMATION	H4D-04-08	3/4" MPT X 1/2" FPT	N/A

REVISIONS 1. INITIAL ISSUE. JML 11/14/2018 2. REVISED PER CUSTOMER COMMENTS. 2/11/2019 3. CORRECTED VENDOR PART NUMBERS OF LINES #2, #9, #11, #12. 7/3/2019 4. UPDATED MANUFACTURE FOR ITEMS 3, 4, 5,10, 14 ; UPDATED RANGE FOR ITEM 7; UPDATED MODEL NUMBER FOR ITEMS 8 AND 11. 7/9/19	5. UPDATED MODEL NUMBER FOR ITEM 10. 7/31/19				DATE	CODE IDENT NO. 0EXU3	 Global. Water. Solutions.
					11/14/2018		
					DRAWN		
					JML		
					CHECKED		
DJC	INSTRUMENT SCHEDULE CSL CARBON & POLISHER SKID						
APPROVED							
JML							
PAGE 1 OF 2	DWG. NO.	613-11655-000	SIZE	B	REV.	5	

ITEM	QTY	PART NUMBER	CERT CODE	TAG NO.	SERVICE DESCRIPTION	TYPE	MANUFACTURER	MODEL NUMBER	CONNECTION AND SIZE	RANGE
9	1	850-09318-000	C	PI-WPT3400X-500	PRETREATED WATER OUTLET	PRESSURE INDICATOR	ASHCROFT	35-1032-S-L-15-B-XC4	1.5" TRI CLAMP	0-100 PSIG
10	1	817-11003-000	C	FT-WPT3400X-400	POLISHER INLET	VORTEX FLOW METER	ENDRESS & HAUSER	E & H 7D2C1H- AACACADAAAAASMA1+AADCPF	4" FLANGE	13 - 700 GPM
11	2	817-11004-000	C	TT-WPT3400X-300 TW-WPT3400X-300 TT-WPT3400X-500 TW-WPT3400X-500	CARBON FILTER INLET CARTRIDGE FILTER OUTLET	RTD	ROSEMOUNT	644HANA7Q4XA TRANSMITTER WITH 214CRTSMB1S3E0037SLXAXW SENSOR & 114CE0020TAA2SC017AXW THERMOWELL	½" NPT	0-200 C
12	2	850-09162-000	C	PI-WPT3400X-701 PI-WPT3400X-702	STEAM INLET PRESSURE STEAM PRESSURE TO HTX	PRESSURE INDICATOR W/ SIPHON	ASHCROFT	451279RS02LXC4LLSG160#/BR W/ 25-1098S	¼" NPT	0-160 PSIG
13	(1)	885-09871-000 (ANALYZER ON SKIDS "D" AND "E" ONLY)	C	AIT-WPT3400X-500 AE-WPT3400X-500	AMMONIA ANALYZER	COLORIMETRIC	HACH	5500.AMC.2.KTO	¼" OD	0.02 - 2 PPM
14	1	885-09821-000	X	N/A	PH SENSOR CABLE	N/A	METTLER TOLEDO THORNTON	59-902-230	N/A	N/A

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Instruments – Certification of Compliance with Calibration Certifications and Surface Finish Certification on Process Contact Parts. See "C" Certification for requirements

Valves – Mill Test Reports (MTRs) along with Surface Finish Certification and Certification of Compliance to FDA CFR 21 177 for all elastomers and sealing materials including diaphragms.


Plate, Piping – MTRs along with Surface Finish Certification

Gaskets – All requirements for "C" Certification and Certification of Compliance to FDA CFR 21, 177

Pumps - MTRs and Certification of Surface Finish for product contact surfaces. Certification of Compliance to FDA

X – NO CERTIFICATION OR CALIBRATION REQUIRED

O – CERTIFICATION REQUIREMENTS CARRIED UP FROM LOWER LEVEL BILL OF MATERIAL (applies only to Aqua-Chem manufactured parts)

REVISIONS 1. INITIAL ISSUE. JML 11/14/2018 2. REVISED PER CUSTOMER COMMENTS. 2/11/2019 3. CORRECTED VENDOR PART NUMBERS OF LINES #2, #9, #11, #12. 7/3/2019 4. UPDATED MANUFACTURE FOR ITEMS 3, 4, 5,10, 14 ; UPDATED RANGE FOR ITEM 7; UPDATED MODEL NUMBER FOR ITEMS 8 AND 11. 7/9/19 5. UPDATED MODEL NUMBER FOR ITEM 10. 7/31/19					DATE	CODE IDENT NO. 0EXU3  Global. Water. Solutions.
					11/14/2018	
					DRAWN	
					JML	
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DJC	INSTRUMENT SCHEDULE CSL CARBON & POLISHER SKID					
APPROVED						
JML						
PAGE 2 OF 2	DWG. NO.	613-11655-000	SIZE	B	REV.	5