JEA Water & Wastewater Standards Manual

VOLUME 5A: Water Treatment Plant Details

January 1, 2026 – Edition

Volume 5A – Water Treatment Plant Details

2025 SUMMARY OF MAJOR CHANGES

Exhibit 3-1

- Remove concrete pipe supports and add stainless steel pipe supports.
- Relocate flow meter to more accurately represent location.
- Remove acidization ports.

Exhibit 6-1A

- Change free chlorine test station to show correct analyzer.

Exhibit 6-3

- Remove schematic diagram of sodium hypo skid.
- Added note directing to Exhibit 6-5 for hypo skid details.

Exhibit 6-5

- Remove pressure relief valve from metering pump discharge piping.
- Remove dampener from metering pump discharge piping.

Volume 5A - Water Treatment Plant Standards

Table of Contents:

WATER TREATMENT PLANT DETAILS

NOTES

1. REFER TO TABLE 1 FOR REQUIRED HYDRAULIC PROFILE COMPONENTS.

2. REFER TO TABLE 2 FOR GROUND STORAGE TANK VALVE POSITION FOR PARALLEL AND IN-SERIES TANK OPERATION.

3. THIS PROCESS FLOW DIAGRAM IS INTENDED TO REPRESENT A GENERIC WTP. ACTUAL PROCESS FLOW DIAGRAMS SHALL BE SITE SPECIFIC AND CUSTOMIZED FOR THE PARTICULAR WTP REQUIREMENTS.

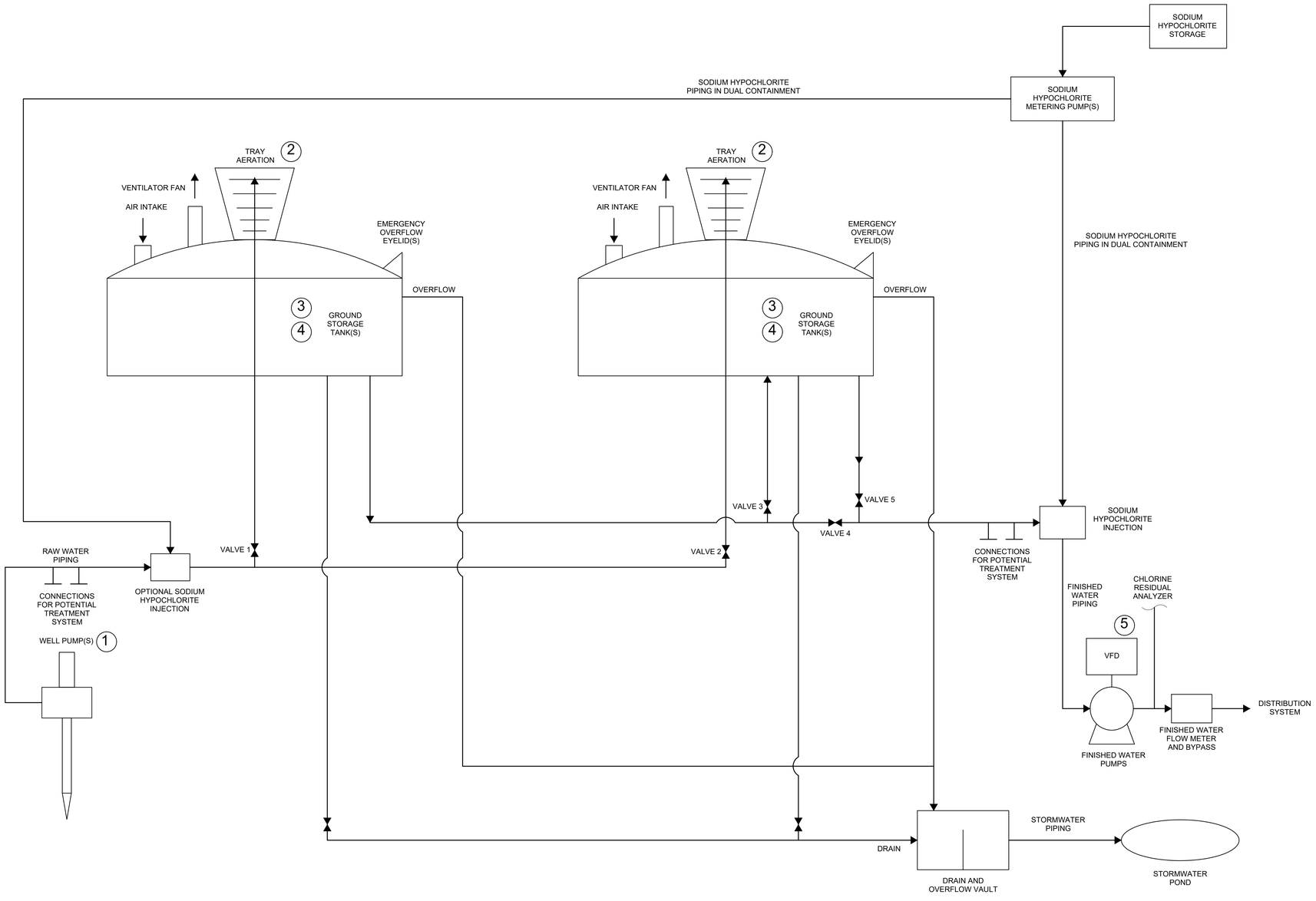

TABLE 1. REQUIRED HYDRUALIC PROFILE COMPONENTS

PFD NO.	WTP COMPONENT	HYDRAULIC PROFILE DESCRIPTION
1	WELL PUMPS	HYDRAULIC GRADE LINE FOR WELL PUMP DISCHRAGE TO CONVEY WELL FLOWS TO GST STANDPIPE(S)
2	GST TRAY AERATOR STANDPIPE	ELEVATION OF THE GST STANDPIPE(S) DISCHARGE IN THE TRAY AERATOR(S)
3	GST HIGH WATER LEVEL	MAXIMUM OPERATING WATER LEVEL INSIDE OF EACH GST
4	GST LOW WATER LEVEL	MINIMUM OPERATING WATER LEVEL INSIDE OF EACH GST
5	HIGH SERVICE PUMP DISCHARGE	RANGE OF HYDRAULIC GRADE LINE FOR THE HIGH SERVICE PUMP STATION DISCHARGE

NOTES:
1. THE REQUIRED HYDRAULIC PROFILE COMPONENTS LISTED ARE A MINIMUM. ACTUAL HYDRAULIC PROFILE FOR EACH WTP SHOULD BE SITE SPECIFIC AND DETERMINED BY THE DESIGN ENGINEER AND CONFIRMED WITH JEA.

TABLE 2. GROUND STORAGE TANK PARALLEL AND IN-SERIES VALVE POSITION

VALVE NO.	PARALLEL	IN-SERIES
VALVE 1	OPEN	OPEN
VALVE 2	OPEN	CLOSED
VALVE 3	CLOSED	OPEN
VALVE 4	OPEN	CLOSED
VALVE 5	OPEN	OPEN

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WTP STANDARDS
WTP PROCESS FLOW DIAGRAM AND HYDRAULIC PROFILE COMPONENTS

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

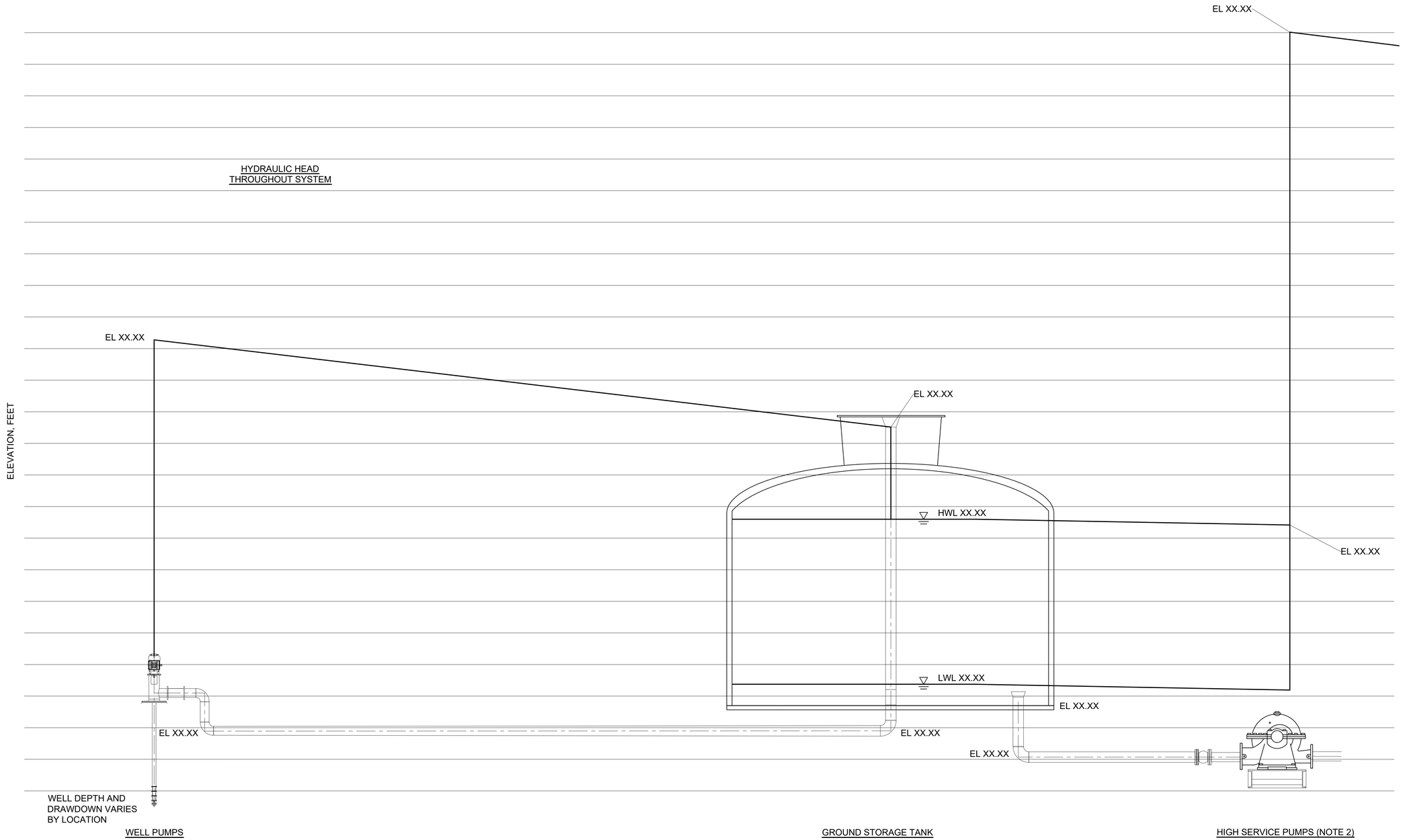
NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT I-1

NOTES:

1. THIS HYDRAULIC PROFILE IS INTENDED TO BE GENERIC. HYDRAULIC PROFILES SHALL BE CUSTOMIZED FOR EACH PROJECT AND BE BASED ON SITE DESIGN AND REQUIREMENTS.

2. THE ELEVATION OF THE HIGH SERVICE PUMPS SHALL ALLOW THE ENTIRE USABLE VOLUME OF THE GROUND STORAGE TANK(S) TO BE PUMPED WITHOUT THE USE OF A VACUUM PRIMING SYSTEM. SUBMERGENCE AND NET POSITIVE SUCTION HEAD SHALL BE DESIGNED TO MEET CURRENT HYDRAULIC INSTITUTE STANDARDS.

HYDRAULIC HEAD
THROUGHOUT SYSTEM



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WTP STANDARDS
TYPICAL WTP HYDRAULIC PROFILE

PROJ. NO. 10557X00
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT I-2

NOTES:

1. PROVIDE ADEQUATE SPACING BETWEEN THE AUTOMATED ENTRANCE GATE AND THE ROADWAY SUCH THAT A CHEMICAL DELIVERY VEHICLE CAN BE COMPLETELY OUT OF THE ROADWAY.

2. ALL RAW AND FINISHED WATER PIPING INSIDE OF THE WTP SITE SHALL BE DUCTILE IRON.

3. ALL BELOW GRADE PIPING INSIDE OF THE WTP SITE SHALL BE FULLY RESTRAINED.

4. THIS LAYOUT IS INTENDED TO PROVIDE A GENERIC LAYOUT TO ILLUSTRATE THE STANDARD COMPONENTS AND LAYOUT OF A WTP. ACTUAL SITE LAYOUTS SHALL BE SITE SPECIFIC AND CUSTOMIZED FOR THE PARTICULAR WTP REQUIREMENTS.

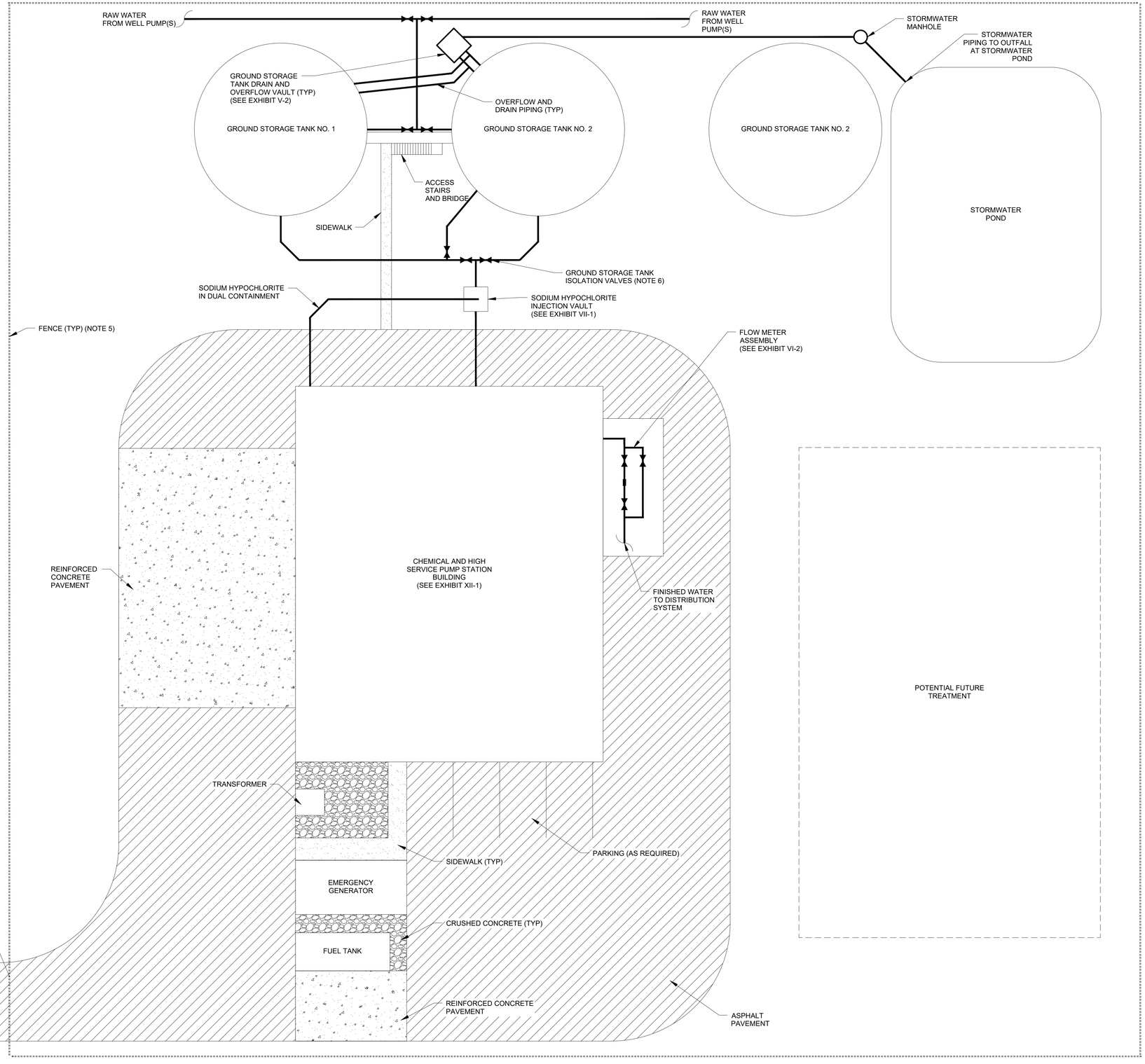
5. LANDSCAPING NOT SHOWN ON THIS FIGURE, REFER TO SECTION 16 FOR LANDSCAPING REQUIREMENTS.

6. PROVIDE ADEQUATE SPACE FOR FUTURE GROUND STORAGE TANKS, AS NECESSARY.

7. SEE EXHIBIT II-1 FOR PROCESS FLOW DIAGRAM AND VALVE POSITION FOR PARALLEL AND IN-SERIES OPERATION OF GROUND STORAGE TANKS.

PAVING LEGEND

- REINFORCED CONCRETE PAVEMENT
- ASHPHALT PAVEMENT
- SIDEWALK
- CRUSHED CONCRETE



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WTP STANDARDS
TYPICAL WTP SITE LAYOUT AND MAJOR YARD PIPING

NO. SHEETS

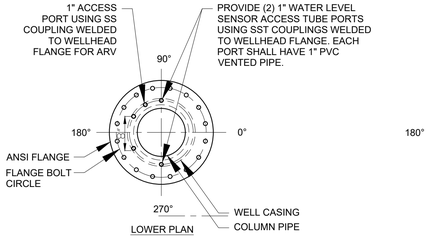
PROJ. NO.

DATE: OCTOBER 2020

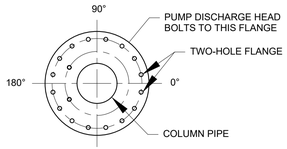
SHEET NO.

SCALE: NTS

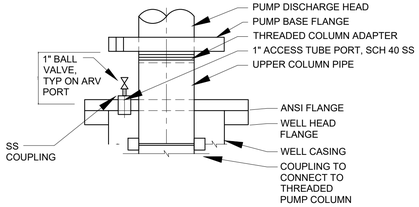
DRAWING NO.
EXHIBIT II-1



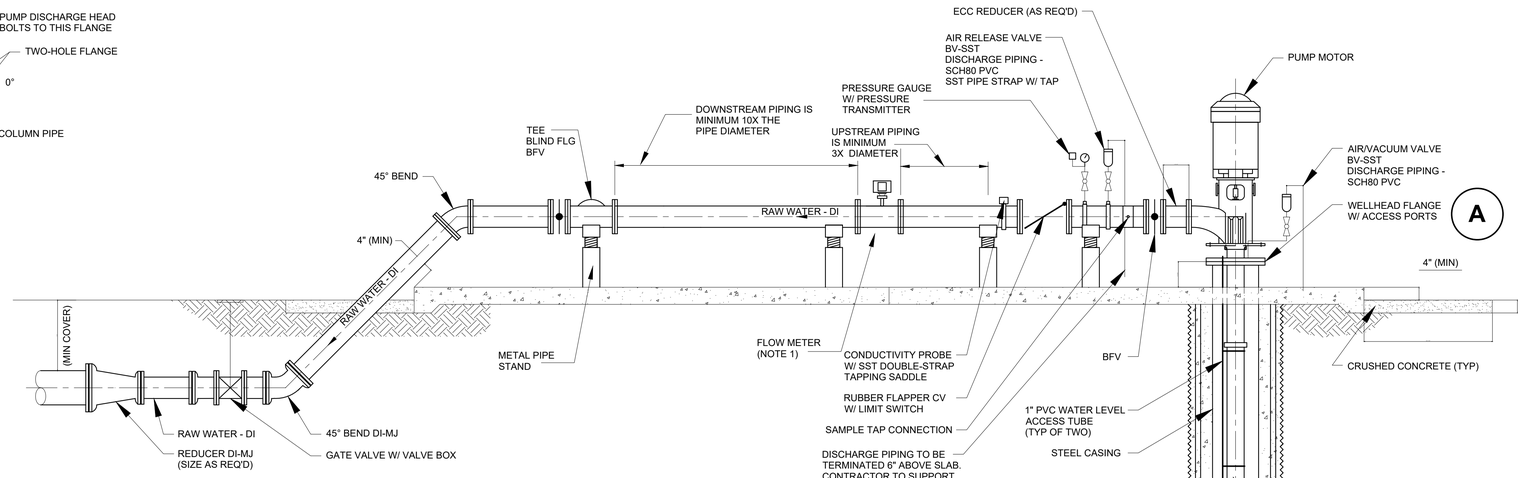
LOWER PLAN



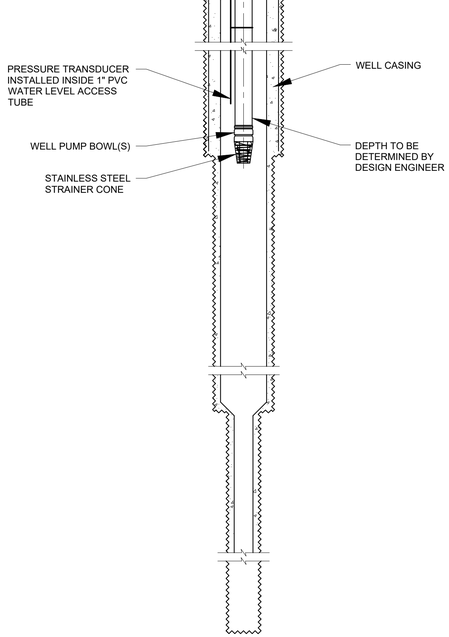
UPPER PLAN

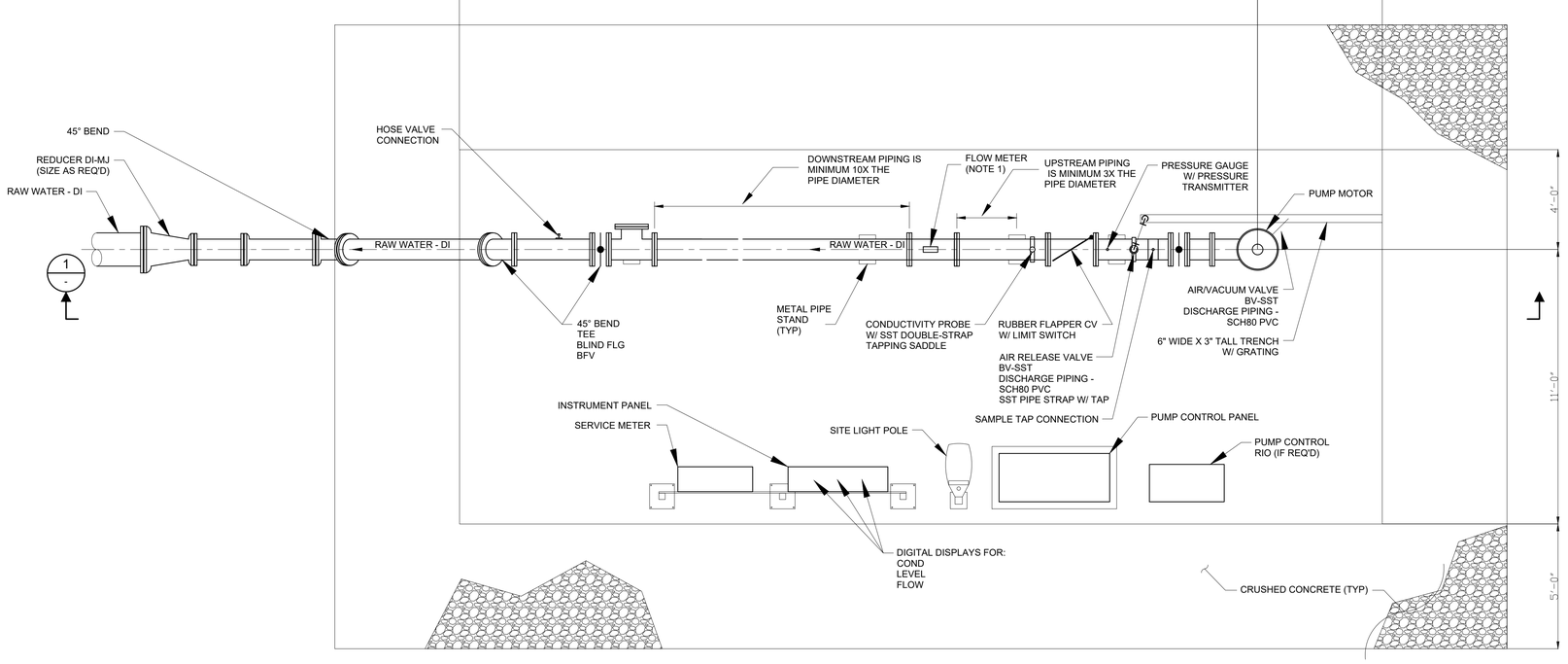


A DETAIL
SCALE: 3/4" = 1'-0"



1 - SECTION
SCALE: 3/8" = 1'-0"





PLAN
SCALE: 3/8" = 1'-0"

NOTES:

1. COORDINATE TYPE OF FLOW METER WITH JEA.
2. ALL ABOVE GRADE PIPING SHALL BE FLANGED DUCTILE IRON.
3. ALL BELOW GRADE PIPING WITHIN THE WELL SITE SHALL BE RESTRAINED MECHANICAL JOINT AND DUCTILE IRON.
4. ALL DISPLAYS SHOULD BE FACING NORTH.
3. ALL BELOW GRADE PIPING WITHIN THE WELL SITE SHALL BE RESTRAINED MECHANICAL JOINT AND DUCTILE IRON.

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DATE:

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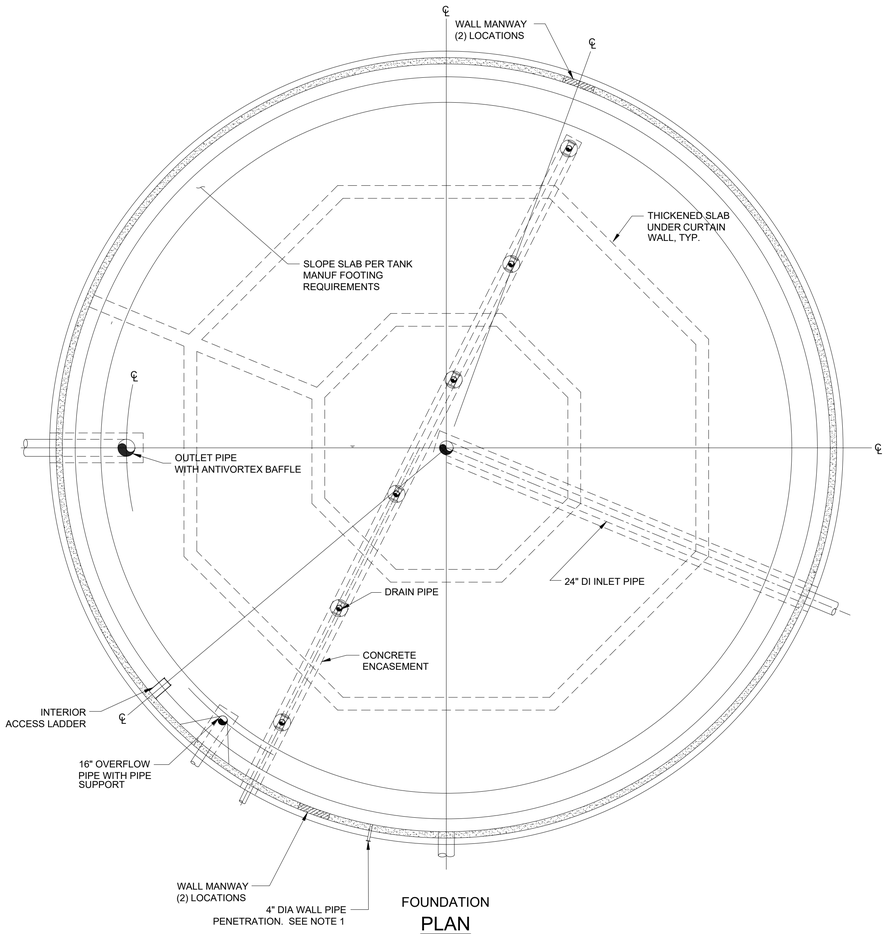
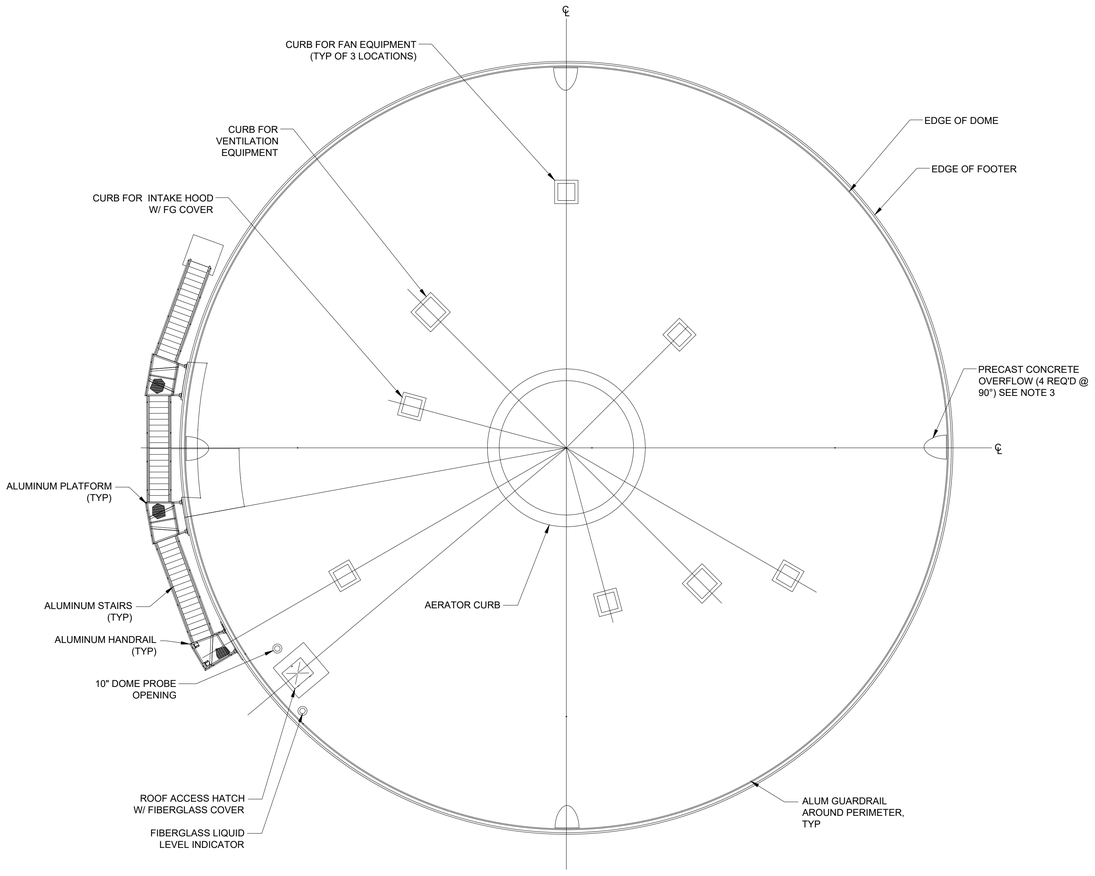
WTP STANDARDS
TYPICAL SUPPLY WELL PLAN, SECTION, AND DETAILS

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT III-1



FOUNDATION
PLAN



TOP OF STRUCTURE
PLAN

NOTES:
1. WALL PIPE CENTERLINE FOR FLANGED PRESSURE TRANSDUCER SHALL BE COORDINATED W/ TANK MANUFACTURER.
2. PROVIDE A MINIMUM OF 5 INTERIOR AND 4 EXTERIOR TANK SETTLEMENT MONITORING POINTS. MONITORING POINT SHALL INCLUDE ELEVATION AND NORTHINGS AND EASTINGS
3. OVERFLOWS SHALL BE OFFSET FROM EDGE OF TANK WALL TO PROVIDE ACCESSIBILITY FOR MAINTENANCE AND REPLACEMENTS OF OVERSLOW MESH.

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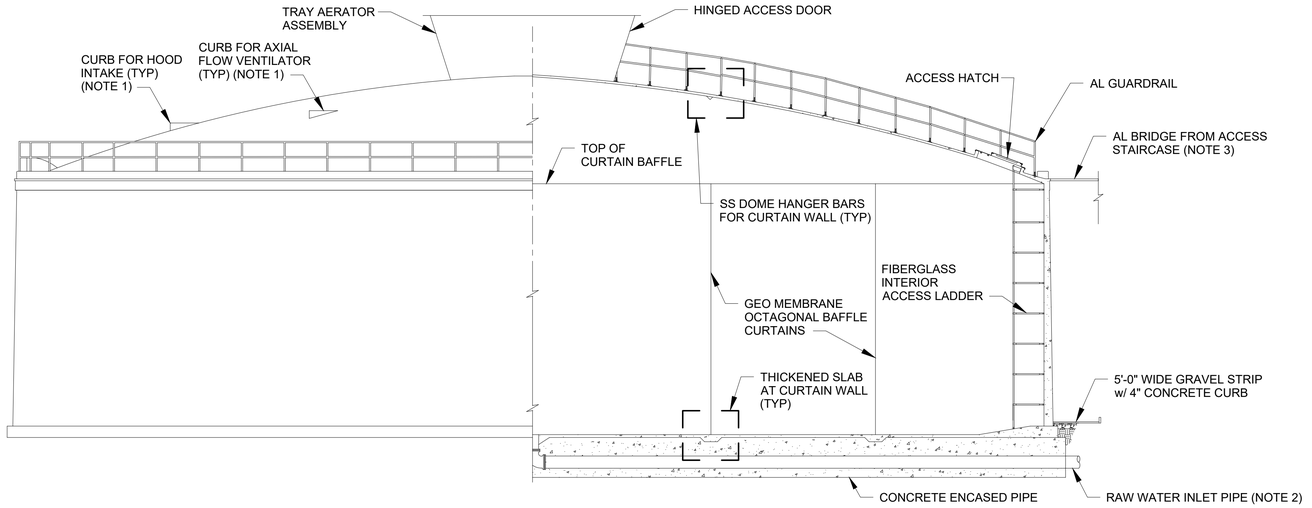
WTP STANDARDS
GROUND STORAGE TANK
GENERAL LAYOUT

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

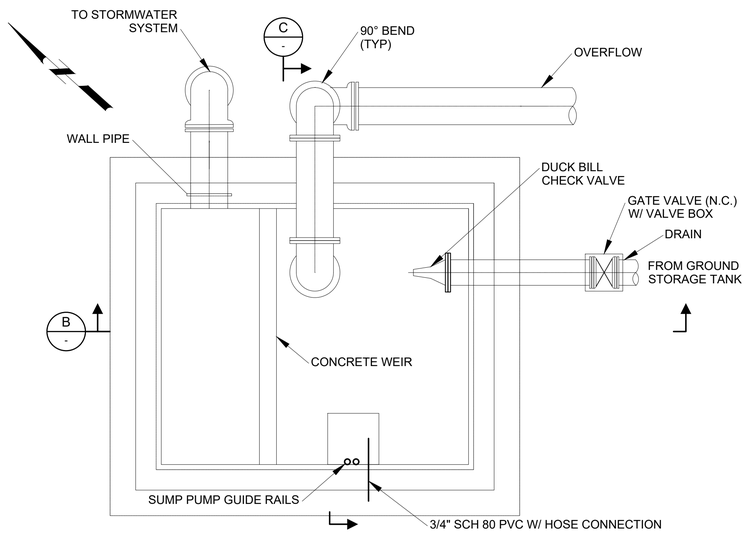
NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT IV-1



SECTION 1 -

NOTES:

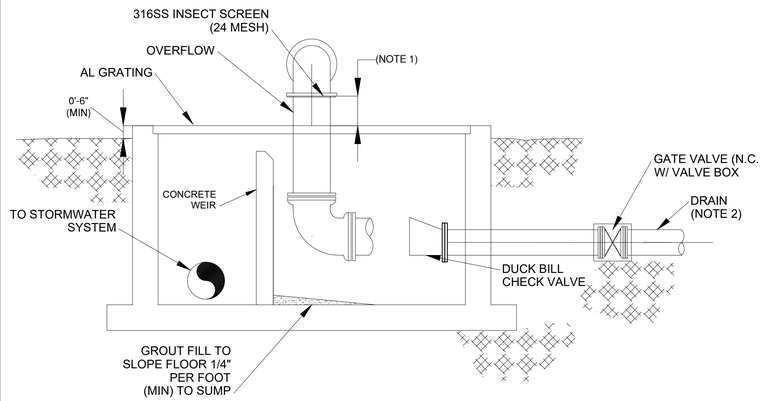
1. QUANTITY AND LOCATION OF PRECAST OVERFLOWS, CURBS FOR AXIAL VENTILATORS AND CURBS FOR INTAKE HOODS MAY VARY WITH TANK SIZE. COORDINATE WITH TANK MANUFACTURER.
2. LOCATION AND SIZE OF PIPING WILL VARY BASED ON SITE, TANK SIZE AND WTP FLOWS.
3. ACCESS STAIRCASE TO BE LOCATED AS CLOSE TO THE GROUND STORAGE TANK AS ALLOWED BY THE TANK MANUFACTURER AND COORDINATED WITH THE LOCATION OF THE SECOND OR FUTURE GROUND STORAGE TANK. MAXIMIUM DISTANCE BETWEEN TANKS SHALL BE 25 FEET. COORDINATE CONNECTION OF THE BRIDGE WITH THE GROUND STORAGE TANK MANUFACTURER.
4. PIPING SHALL BE CONFIGURED TO ALLOW PARALLEL AND IN-SERIES OPERATION OF GROUND STORAGE TANKS.
5. LOCATE MANWAYS ADJACENT TO DRAIN LINES FOR EASE OF ACCESS DURING TANK CLEANING.



NOTES:

1. EXACT DIMENSIONS AND PIPE SIZING TO BE DETERMINED BY THE DESIGN ENGINEER.

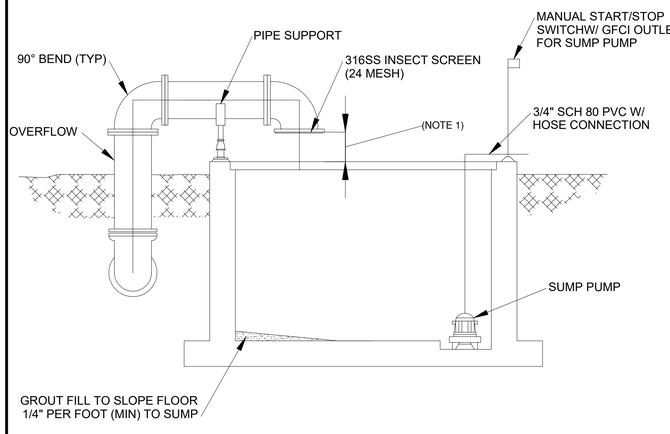
A - PLAN
SCALE: NO SCALE
FILE:



NOTES:

1. AIR GAP SHALL BE A MINIMUM DISTANCE OF 2 DIAMETER LENGTHS AND MEET ALL FDEP AND F.A.C. REQUIREMENTS.
2. DRAIN OUTLET SHALL BE CAPABLE OF FULLY DRAINING THE GROUND STORAGE TANK. ADJUST ELEVATION AS APPROPRIATE BASED ON SITE CONDITIONS.

B - SECTION
SCALE: NO SCALE
FILE:



NOTES:

1. AIR GAP SHALL BE A MINIMUM DISTANCE OF 2 DIAMETER LENGTHS AND MEET ALL FDEP AND F.A.C. REQUIREMENTS.

C - SECTION
SCALE: NO SCALE
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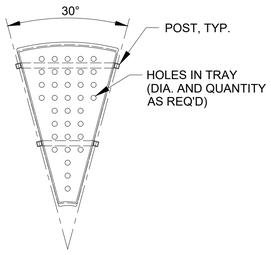
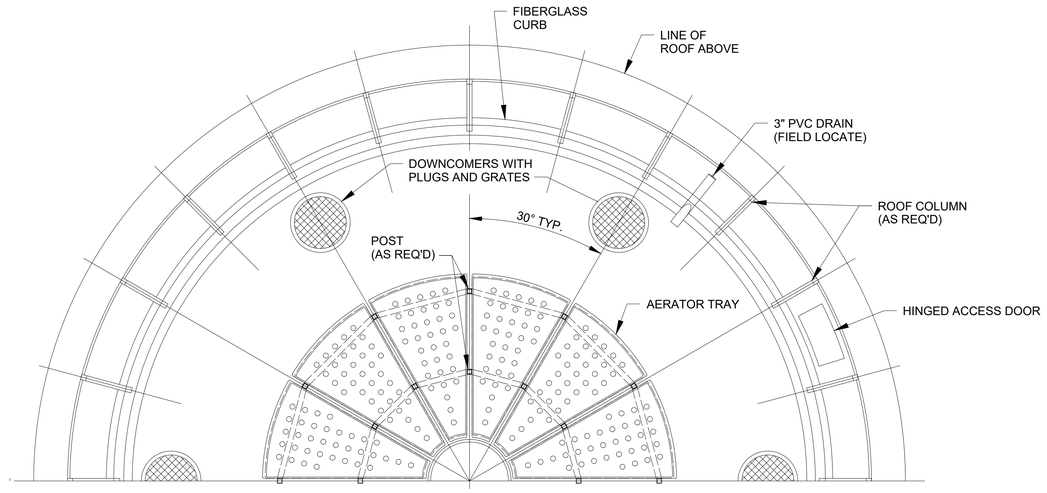
WTP STANDARDS
GROUND STORAGE TANK GENERAL SECTION AND OVERFLOW AND DRAIN TANK DETAILS

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

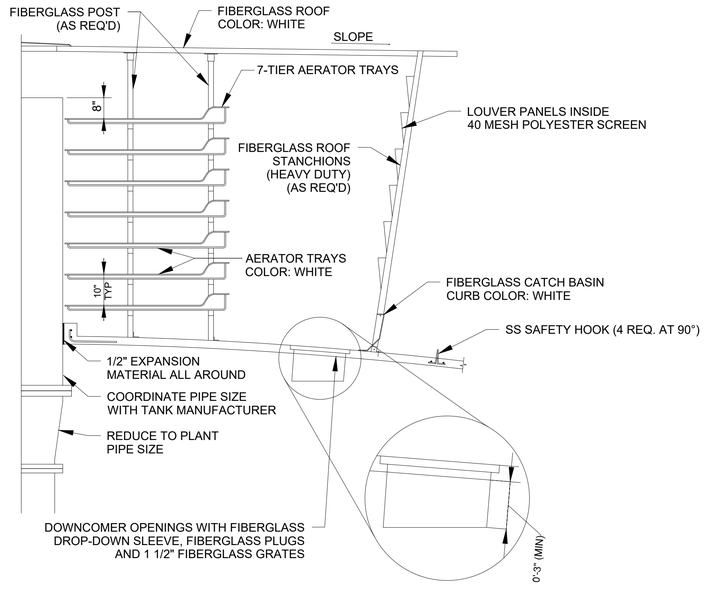
NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT IV-2



AERATOR TRAY



AERATOR HALF-PLAN



AERATOR HALF-SECTION THROUGH CENTER LINE

NOTES:

1. ALL FIBERGLASS SHALL BE CONSTRUCTED WITH STAINLESS STEEL HARDWARE.

2. EXACT ARRANGEMENT AND DIMENSIONS OF THE AERATOR ASSEMBLY TO BE SITE AND PROJECT SPECIFIC.

PERFORATED TRAY AERATOR WITH LOUVERED PANELS

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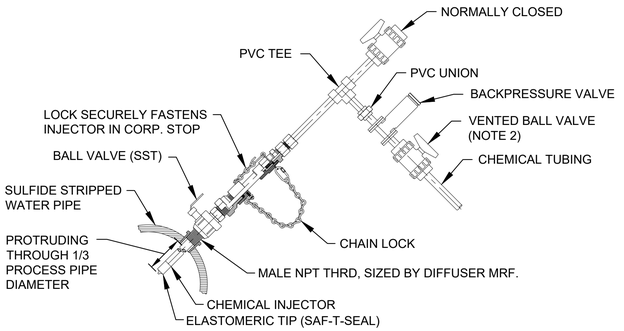
WTP STANDARDS
GROUND STORAGE TANK GENERAL TRAY
AERATOR DETAILS

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

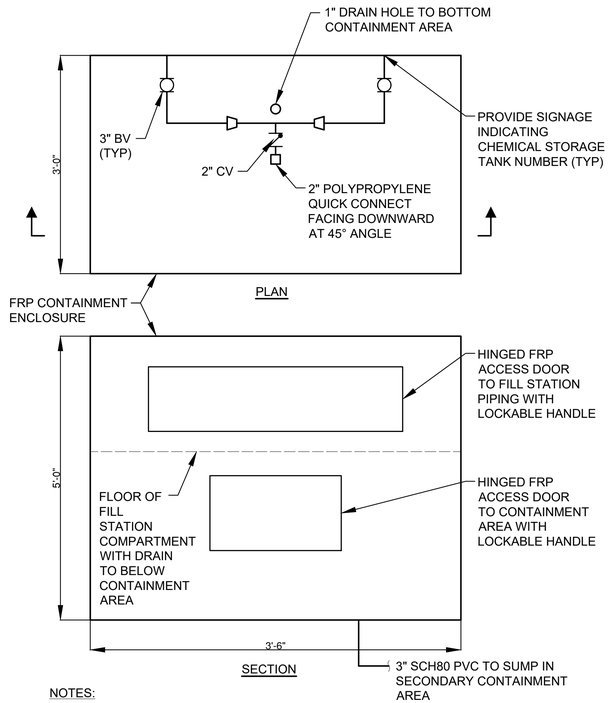
NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT IV-3



NOTES:

1. INJECTOR SHALL BE RETRACTABLE INJECTION QUILL WITH BALL VALVE. REFER TO JEA APPROVED MANUFACTURERS.
2. MATERIAL OF DIFFUSER, CONNECTIONS AND PIPING TO BE COMPATIBLE WITH CHEMICAL AND APPLICATION.
3. EACH CHEMICAL INJECTION SITE SHALL RECEIVE TWO INJECTORS TO PROVIDE REDUNDANCY. PIPING AND VALVES SHALL ALLOW ISOLATION OF EACH INJECTOR WHILE THE OTHER REMAINS IN SERVICE.
4. INJECTOR PENETRATION LOCATIONS SHALL BE STAGGERED AND SPACED SUFFICIENTLY TO ENSURE PIPE INTEGRITY IS NOT COMPROMISED AND SUFFICIENT ACCESSIBILITY IS PROVIDED.

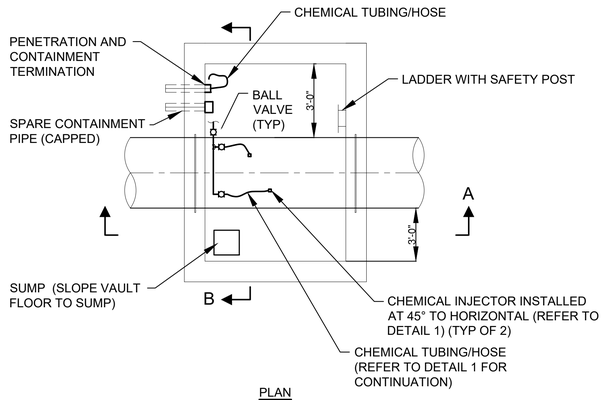
CHEMICAL INJECTOR 1
NTS



NOTES:

1. COORDINATE WITH JEA AND CHEMICAL DELIVERY SUPPLIER TO CONFIRM PIPE AND QUICK CONNECT SIZING.
2. SEE EXHIBIT VI-1A FOR EXAMPLE CHEMICAL FILL STATION.

CHEMICAL FILL STATION 2
NTS



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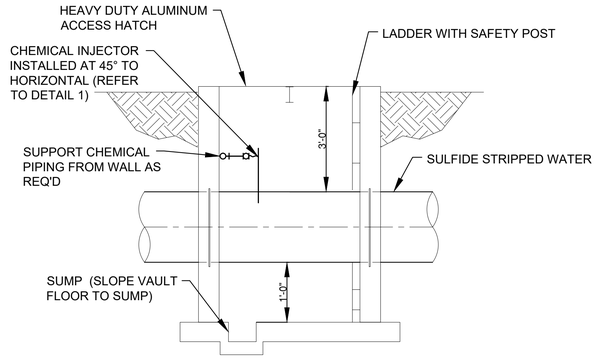
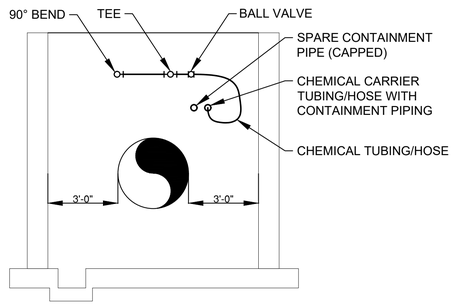


SECTION A

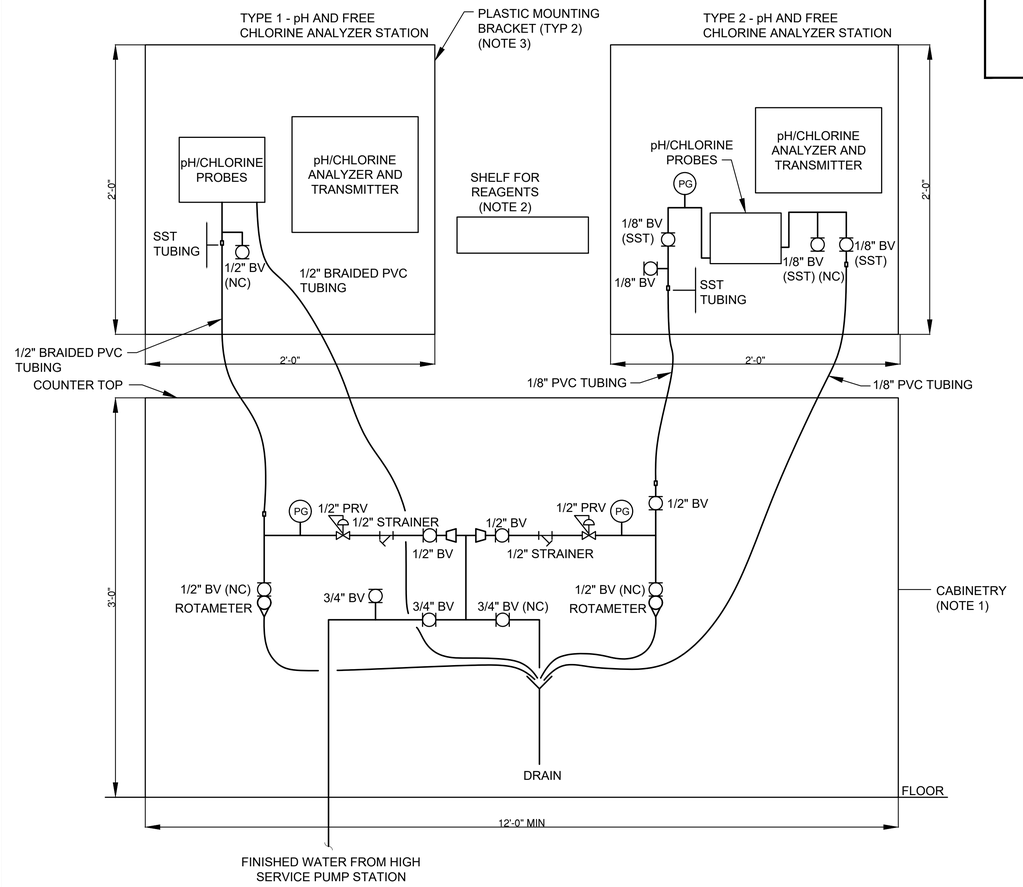


SECTION B

NOTES:

1. ALL BALL VALVES TO BE VENTED TYPE.
2. MATERIALS OF PIPING, TUBING, VALVES AND FITTINGS TO BE COMPATIBLE WITH CHEMICAL AND APPLICATION.
3. VAULT DIMENSIONS SHALL ALLOW FOR EASE OF REMOVAL OF THE CHEMICAL INJECTORS.

CHEMICAL INJECTION VAULT DETAIL 3
NTS



NOTES:

1. CABINETRY SHALL INCLUDE A SLIDING DOOR TO PROVIDE FULL ACCESS TO SAMPLE PIPING. ADEQUATE LIGHTING SHALL BE PROVIDED WITHIN THE CABINETRY.
2. TYPICAL SHELF SHALL BE WALL MOUNTED AND 18" WIDE X 3" TALL X 4" DEPTH.
3. COORDINATE SIZE OF PLASTIC MOUNTING BRACKET WITH PROBE AND ANALYZER SIZES.
4. SEE EXHIBIT VII-1A FOR EXAMPLE pH AND FREE CHLORINE SAMPLE AND ANALYZER STATION.

pH AND FREE CHLORINE SAMPLE AND ANALYZER STATION 4
NTS

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WTP STANDARDS
SODIUM HYPOCHLORITE INJECTION AND SAMPLE STATION DETAILS

PROJ. NO. 10557K00
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT VI-1

CHEMICAL FILL STATION PIPING

CHEMICAL FILL STATION 1
NTS

pH AND FREE CHLORINE SAMPLE AND ANALYZER STATION 2
NTS

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WTP STANDARDS
SODIUM HYPOCHLORITE INJECTION AND SAMPLE STATION DETAILS

PROJ. NO. 10557X00
DATE: OCTOBER 2020
SCALE: NTS

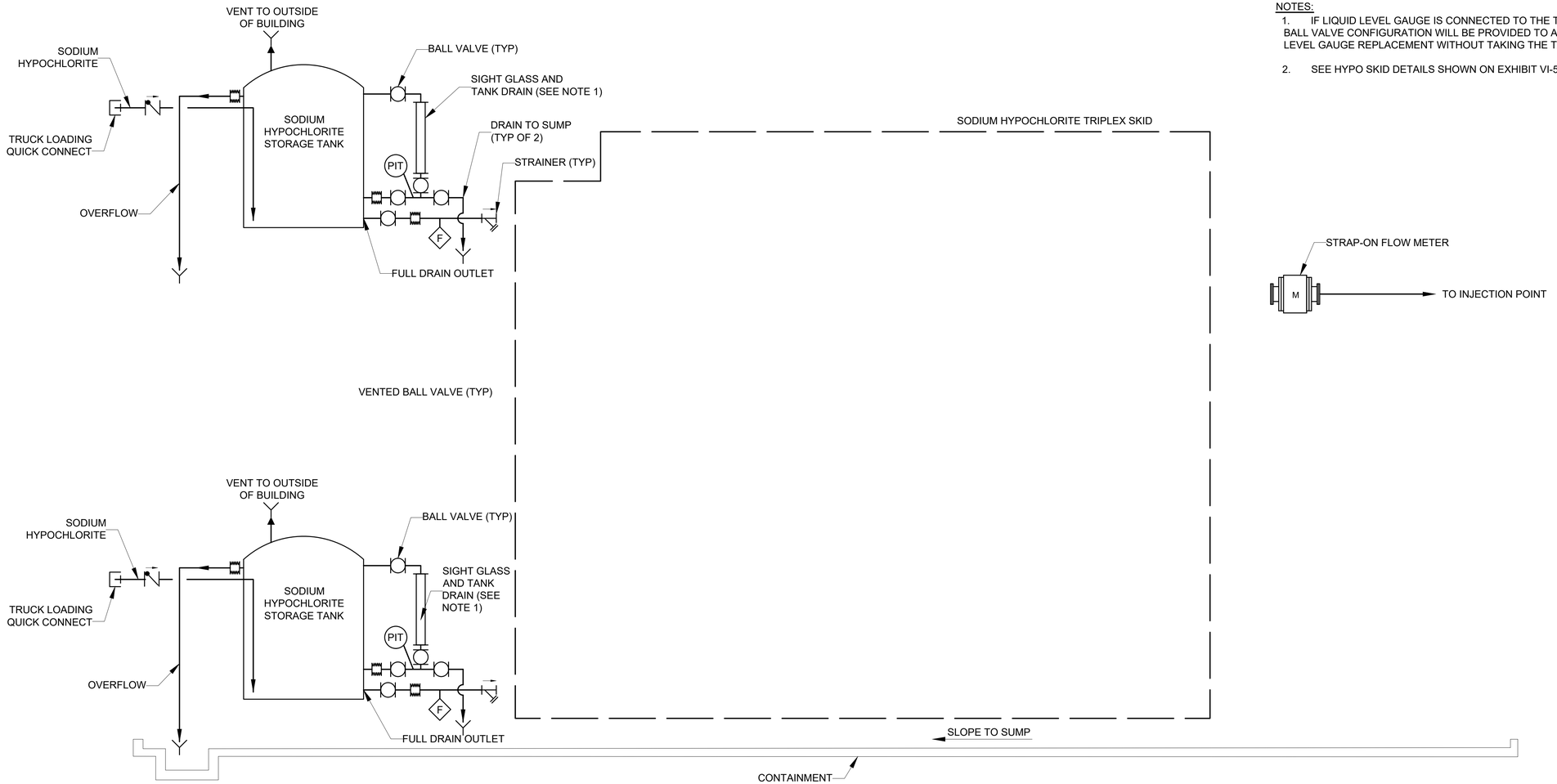
NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VI-1A

LEGEND

- BALL VALVE
- BACK PRESSURE VALVE
- CALIBRATION COLUMN
- DIAPHRAGM PUMP
- DRAIN
- EXPANSION JOINT
- FLUSHING CONNECTION (F)
- PRESSURE INDICATOR
- PRESSURE INDICATING TRANSMITTER (PIT)
- PRESSURE RELIEF VALVE
- PULSATION DAMPENER
- QUICK CONNECT
- SIGHT GLASS
- STRAINER
- STRAP-ON FLOW METER (M)
- SWING CHECK VALVE
- UNION
- VENT

NOTES:

1. IF LIQUID LEVEL GAUGE IS CONNECTED TO THE TANK OUTLET, BALL VALVE CONFIGURATION WILL BE PROVIDED TO ALLOW LIQUID LEVEL GAUGE REPLACEMENT WITHOUT TAKING THE TANK OFFLINE.
2. SEE HYPO SKID DETAILS SHOWN ON EXHIBIT VI-5



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FLORIDA REGISTRATION NO.

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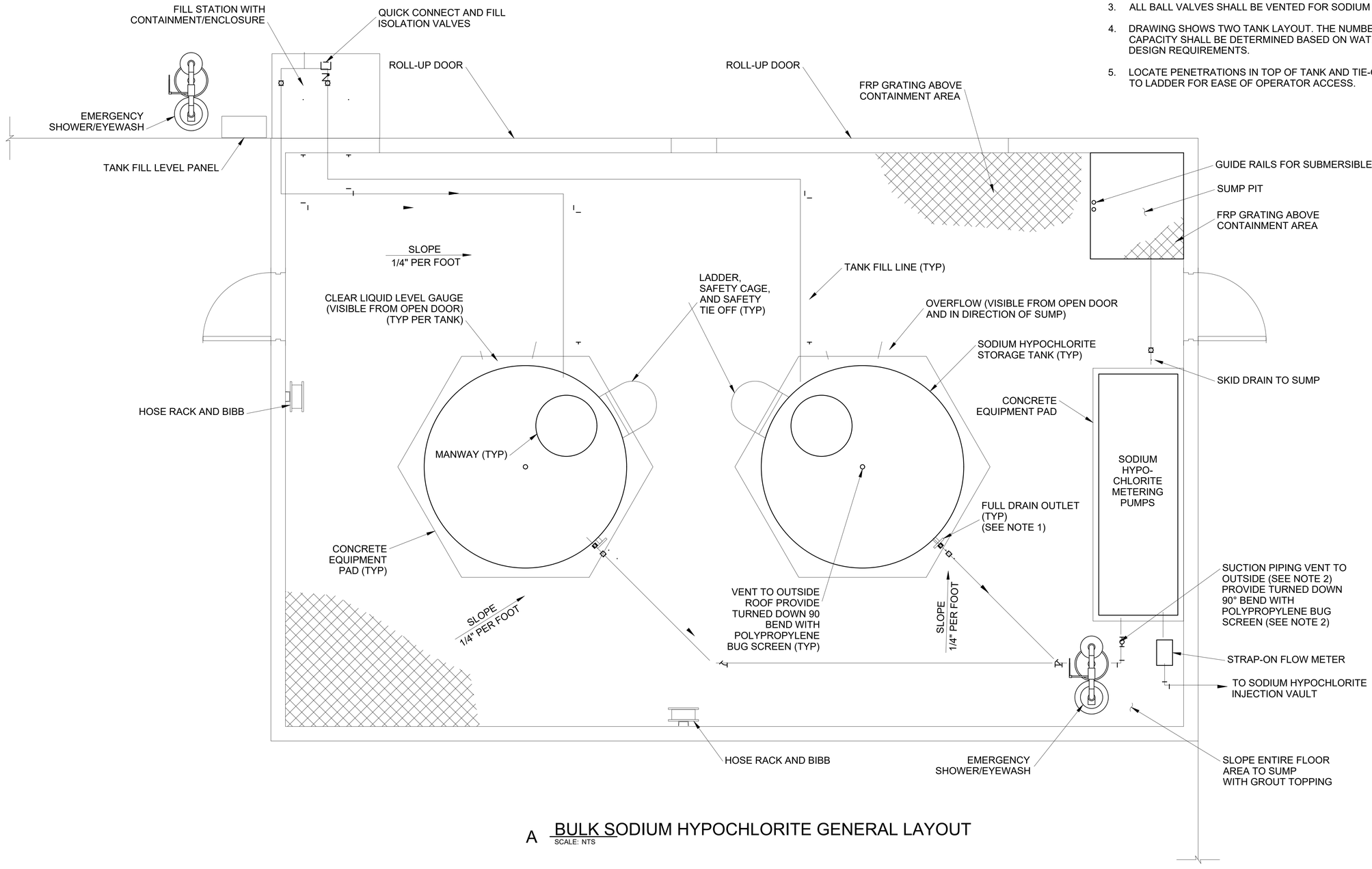
WTP STANDARDS
SODIUM HYPOCHLORITE SYSTEM SCHEMATIC

PROJ. NO. 10557K00
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT VI-3

NOTES:

1. TANK EQUIPMENT PAD WILL BE CONSTRUCTED TO ACCOMMODATE FULL DRAIN OUTLET.
2. SKID VENT ELEVATIONS, INCLUDING CALIBRATION COLUMN VENTS, WILL BE HIGHER THAN THE TOP OF THE TANK DOME TO ENSURE NO CHEMICAL OVERFLOWS OCCUR THROUGH THE VENTS.
3. ALL BALL VALVES SHALL BE VENTED FOR SODIUM HYPOCHLORITE SERVICE.
4. DRAWING SHOWS TWO TANK LAYOUT. THE NUMBER OF TANKS AND TANK CAPACITY SHALL BE DETERMINED BASED ON WATER TREATMENT PLANT DESIGN REQUIREMENTS.
5. LOCATE PENETRATIONS IN TOP OF TANK AND TIE-OFF IN CLOSE PROXIMITY TO LADDER FOR EASE OF OPERATOR ACCESS.



A BULK SODIUM HYPOCHLORITE GENERAL LAYOUT
SCALE: NTS

NO.	BY	DATE	REVISIONS
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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

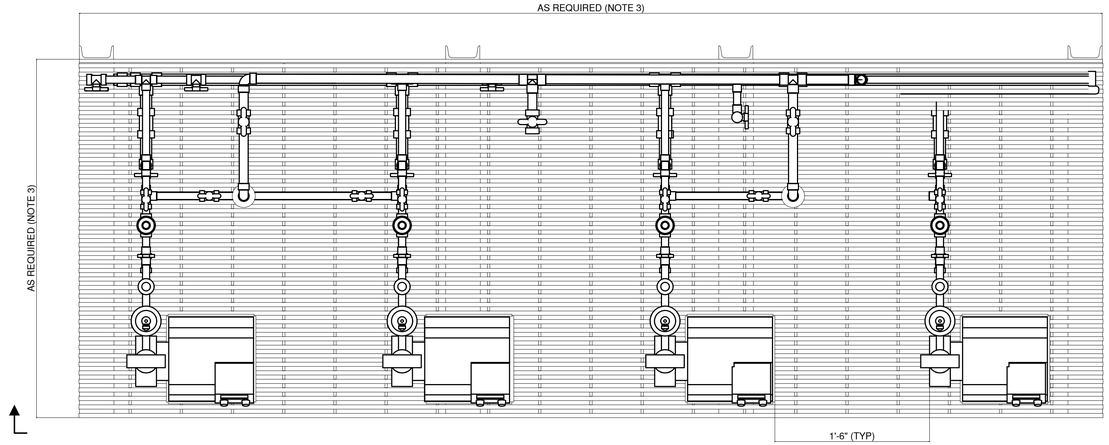
DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:

JEA Building Community.com

WTP STANDARDS
GENERAL LAYOUT OF SODIUM HYPOCHLORITE STORAGE AND METERING FACILITY

PROJ. NO. 10557K00
DATE: OCTOBER 2020
SCALE: NTS

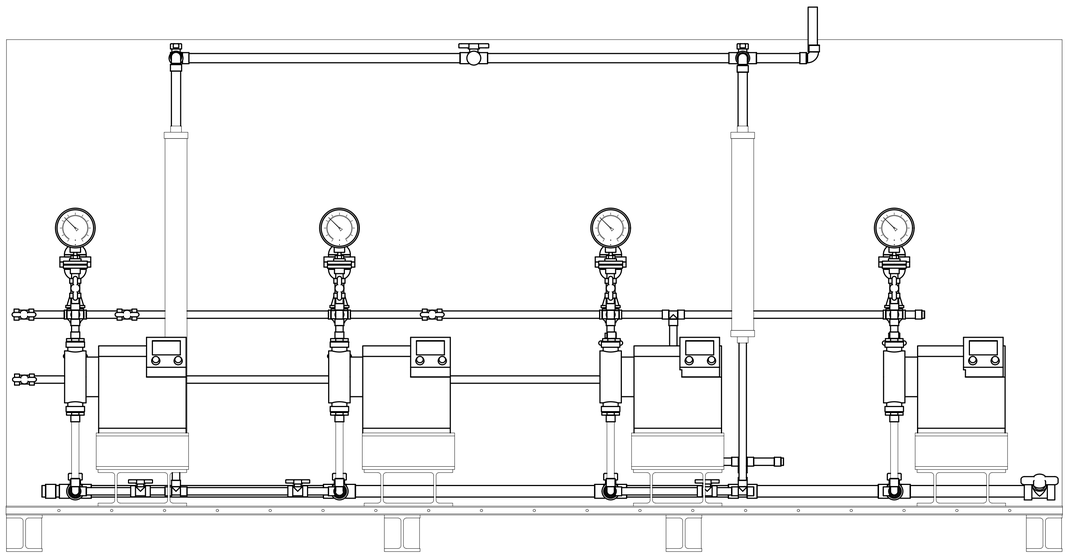
NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT V1-4



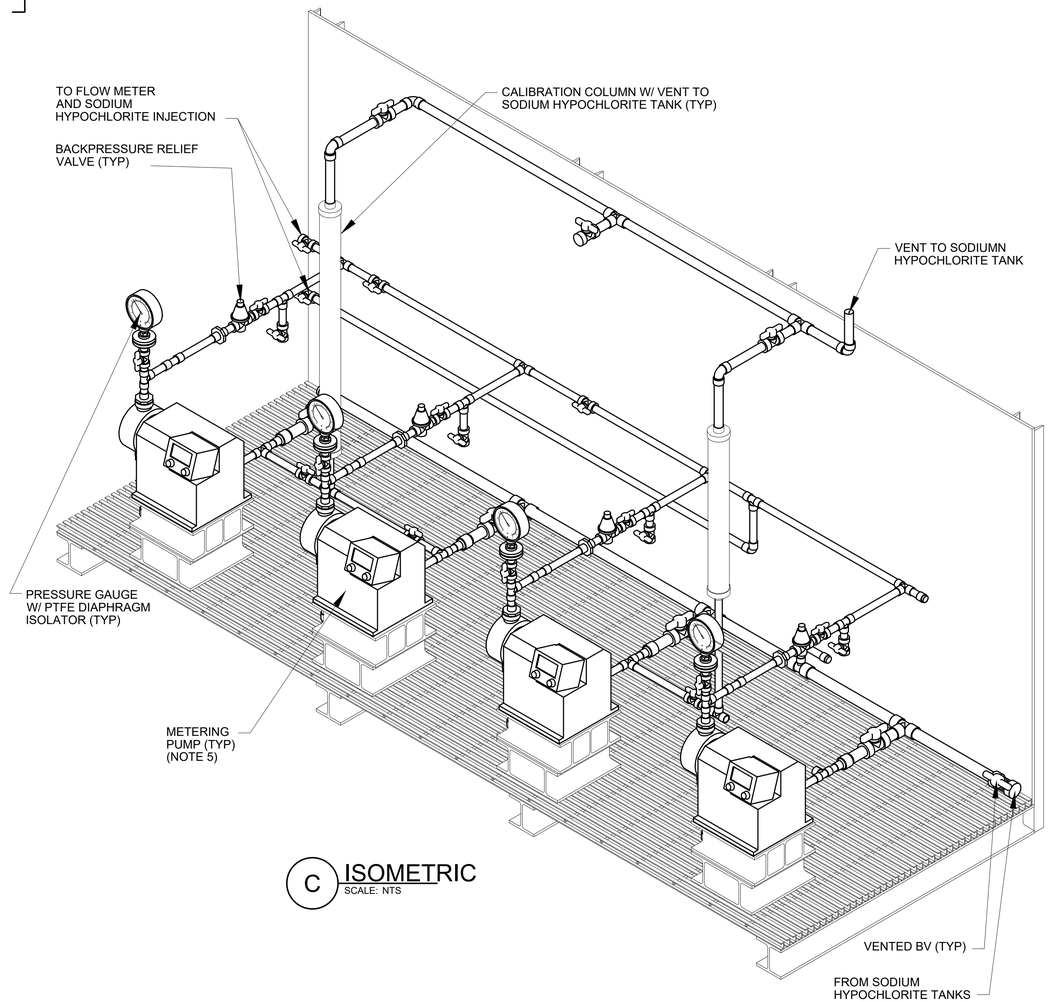
A PLAN
SCALE: NTS

NOTES:

1. PUMP SUCTION ELEVATION SHALL BE BELOW THE BOTTOM OF THE SODIUM HYPOCHLORITE TANK SUCH THAT THE ENTIRE VOLUME OF THE TANK CAN BE PUMPED.
2. PROVIDE APPROPRIATE PIPE SUPPORTS AND CLAMPS AS REQUIRED AND DESCRIBED IN SECTION VII.
3. SKID DIMENSIONS SHALL BE AS REQUIRED TO MAINTAIN SEPARATION BETWEEN PUMPS FOR EASE OF ACCESS TO EQUIPMENT, PIPING, VALVES, AND INSTRUMENTS.
4. THIS SODIUM HYPOCHLORITE PUMP SKID ASSEMBLY IS INTENDED TO BE GENERIC AND TO SHOW THE MINIMUM REQUIRED COMPONENTS AND GENERAL ARRANGEMENT. ACTUAL PUMP SKID ASSEMBLIES SHALL BE BASED ON SITE SPECIFIC REQUIREMENTS.
5. ACTUAL NUMBER OF METERING PUMPS SHALL BE BASED ON SITE SPECIFIC REQUIREMENTS.
6. FOR OUTDOOR INSTALLATIONS, THE SODIUM HYPOCHLORITE PUMP SKID SHALL INCLUDE A WEATHERPROOF ENCLOSURE. REFER TO SECTION VII FOR ADDITIONAL REQUIREMENTS.
7. CHEMICAL SKID SHOWN IS QUAD. NUMBER OF CHEMICAL PUMPS (DUPLEX, TRIPLEX, QUAD, ETC.) SHALL BE DETERMINED BASED ON WATER TREATMENT PLANT DESIGN REQUIREMENTS.
8. MOUNT PUMP CONTROL PANEL TO ADJACENT SKID WITHIN 5-FT.



B SECTION
SCALE: NTS



C ISOMETRIC
SCALE: NTS

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DESIGN ENGINEER
FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:

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WTP STANDARDS
TYPICAL SODIUM HYPOCHLORITE METERING PUMP SKID ASSEMBLY

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VI-5

SCADA

LAL ALARM LOW FUEL
LAX ALARM INTERSTITIAL LEAK
LI NUM FUEL LEVEL
LAH ALARM HIGH FUEL

Y1 STATUS GENERATOR RUNNING
Y2 ALARM GENERATOR FAULT
Y3 ALARM GENERATOR NOT IN AUTO
Y4 ALARM GENERATOR REMOTE STOP
Y5 ALARM GENERATOR OVERCRANK
Y6 ALARM GENERATOR MAX RUN TIME
Y7 ALARM GENERATOR UNDERSPEED
Y8 ALARM GENERATOR LOW OIL PRESSURE WARNING
Y9 ALARM GENERATOR CIRCUIT BREAKER CLOSED
Y10 ALARM GENERATOR LOW COOLANT TEMP
Y11 ALARM GENERATOR HIGH COOLANT TEMP
Y12 ALARM GENERATOR LOW COOLANT LEVEL
Y13 ALARM BATTERY FAULT
Y14 ALARM BATTERY CHARGER AC FAIL
Y15 ALARM SW POSITION
Y16 ALARM SW IN NORMAL
Y17 ALARM SW IN EMERGENCY
Y18 ALARM BYPASS TO NORMAL
Y19 ALARM BYPASS TO EMERGENCY
Y20 ALARM NORM SOURCE ACCEPTED
Y21 ALARM EMERGENCY SOURCE ACCEPTED
Y22 ALARM XFER TO EMERGENCY COMPLETE
Y23 ALARM XFER TEST SIG
KI NUM ETM ENG
EAL2 ALARM VOLT BATT
EAL1 ALARM POWER FAIL
JI1 NUM KW ENG
JI3 NUM KW AVAIL
SAL ALARM FREQ ENG
SAH ALARM FREQ ENG
JAH ALARM LOAD ENG
K NUM FREQ ENG
ZA STATUS COMM
STATUS GEN
STATUS ATS
SCADA COMMAND TO ATS ATS ON
GENERATOR SOURCE AVAILABLE
NORMAL SOURCE AVAILABLE
STATUS SWITCH ON GENERATOR
STATUS SWITCH ON NORMAL

CONTROL PANEL PLC I/O

LSX DI INTERSTITIAL LEAK PCP
L AI TANK LEVEL PCP
ATS SERIAL COMM PCP
JE AI KW ENG PCP
K AI FREQ ENG PCP
ESL DI BATTERY VOLTAGE WARNING PCP
AUX1 DI GENERATOR RUNNING PCP
AUX2 DI GENERATOR FAULT PCP
AUX3 DI GENERATOR NOT IN AUTO PCP
AUX4 DI GENERATOR REMOTE STOP PCP
AUX5 DI GENERATOR OVERCRANK PCP
AUX6 DI GENERATOR MAX RUN TIME PCP
AUX7 DI GENERATOR UNDERSPEED PCP
AUX8 DI GENERATOR LOW OIL PRESSURE WARNING PCP
AUX9 DI GENERATOR CIRCUIT BREAKER CLOSED PCP
AUX10 DI GENERATOR LOW COOLANT TEMP PCP
AUX11 DI GENERATOR HIGH COOLANT TEMP PCP
AUX12 DI GENERATOR LOW COOLANT LEVEL PCP
AUX13 DI BATTERY FAULT PCP
AUX14 DI BATTERY CHARGER AC FAIL PCP
AUX15 DI SW POSITION PCP
AUX16 DI SW IN NORMAL PCP
AUX17 DI SW IN EMERGENCY PCP
AUX18 DI BYPASS TO NORMAL PCP
AUX19 DI BYPASS TO EMERGENCY PCP
AUX20 DI NORM SOURCE ACCEPTED PCP
AUX21 DI EMERGENCY SOURCE ACCEPTED PCP
AUX22 DI XFER TO EMERGENCY COMPLETE PCP
AUX23 DO XFER TEST SIG PCP
MS DO RUN PCP
STP DO STOP ENG PCP
ATS SERIAL COMM PCP
PQM SERIAL COMM PCP

OPERATOR INTERFACE/ CONTROL DEVICES

POWER SOURCE

CB
24VDC POWER OPTIONAL ②
CB
CB TM 120VAC–1P

FIELD

VENDOR CONTROL PANEL
KT FREQ ENG
JT1 KW ENG
ESL1 BATT VOLT WARNING
AUX1 GEN RUNNING
AUX2 GEN FAULT
ATS ①
POWER ANALYZER
PQM
LSX
LIT
TNK
DIESEL FUEL STORAGE TANK
ECP
ENG
SOUND ATTENUATED GENERATOR ENCLOSURE

ECP– ENGINE CONTROL PANEL
ENG– GENERATOR AUX POWER
ATS– AUTOMATIC TRANSFER SWITCH
PQM– POWER QUALITY METER

KEY NOTES:

① ISOLATOR BYPASS IN AUTOMATIC TRANSFER SWITCH.

② TWO UNINTERRUPTIBLE POWER SUPPLIES (UPS'S) IN PARALLEL, 24VDC. FOR POWERING THE TS CONTROL PANEL, TOUCH DISPLAY AND COMMUNICATION DEVICES WHEN NORMAL AND EMERGENCY SOURCES ARE NOT PRESENT.

NO.	BY	DATE	REVISIONS
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DESIGN ENGINEER
FLORIDA REGISTRATION NO.

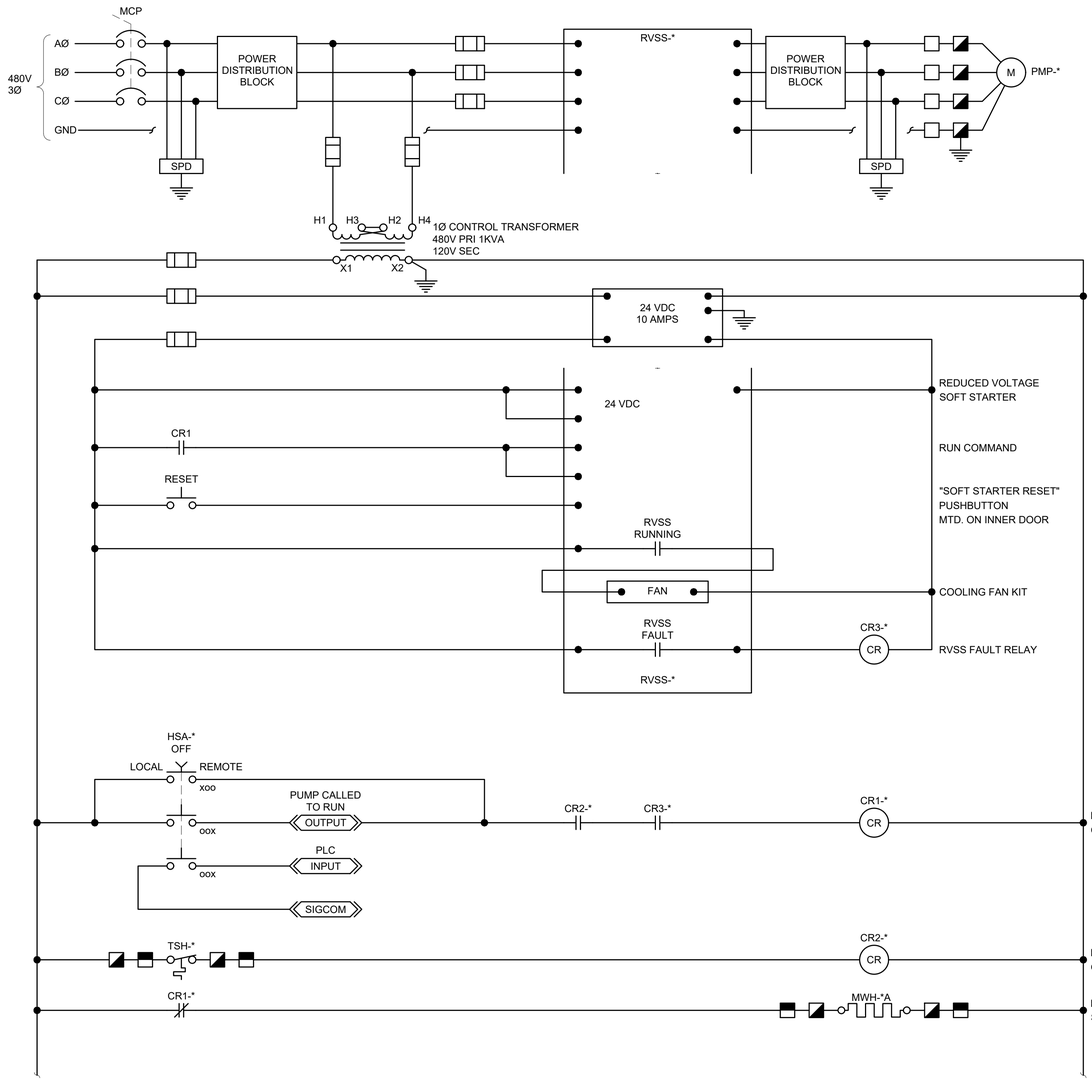
DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:

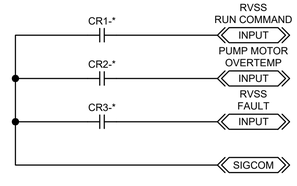
JEA Building Community.com

WTP STANDARDS AUTOMATIC TRANSFER SWITCH SCHEMATIC

PROJ. NO. 10557K00
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT VII-2





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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

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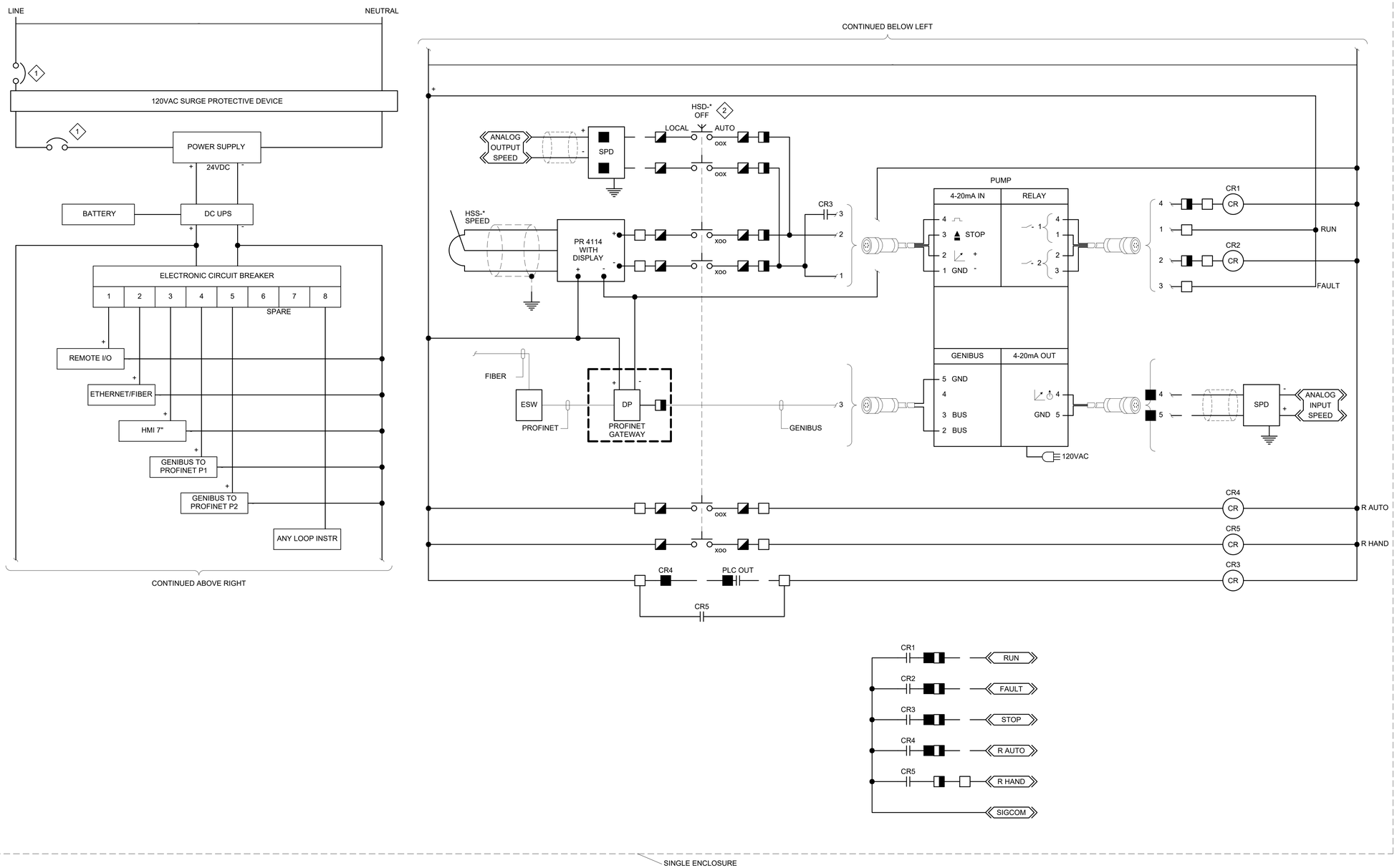
WTP STANDARDS
SOFT START TYPICAL SCHEMATIC

PROJ. NO. 10557K00
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VII-3



KEY NOTES:

1. SIZE BASED ON PROTECTION REQUIREMENT FOR THE LOAD(S) SERVED.
2. FOR LOW VOLTAGE, LOW AMPERAGE SIGNALS, UTILIZE LOW VOLTAGE RATED RELAY CONTACTS THROUGH SELECTOR SWITCH CONTACTS.

TERMINAL BLOCK LEGEND

- PLC/PCM
- MOTOR CONTROL CENTER
- FIELD DEVICE
- FIELD PANEL

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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY:
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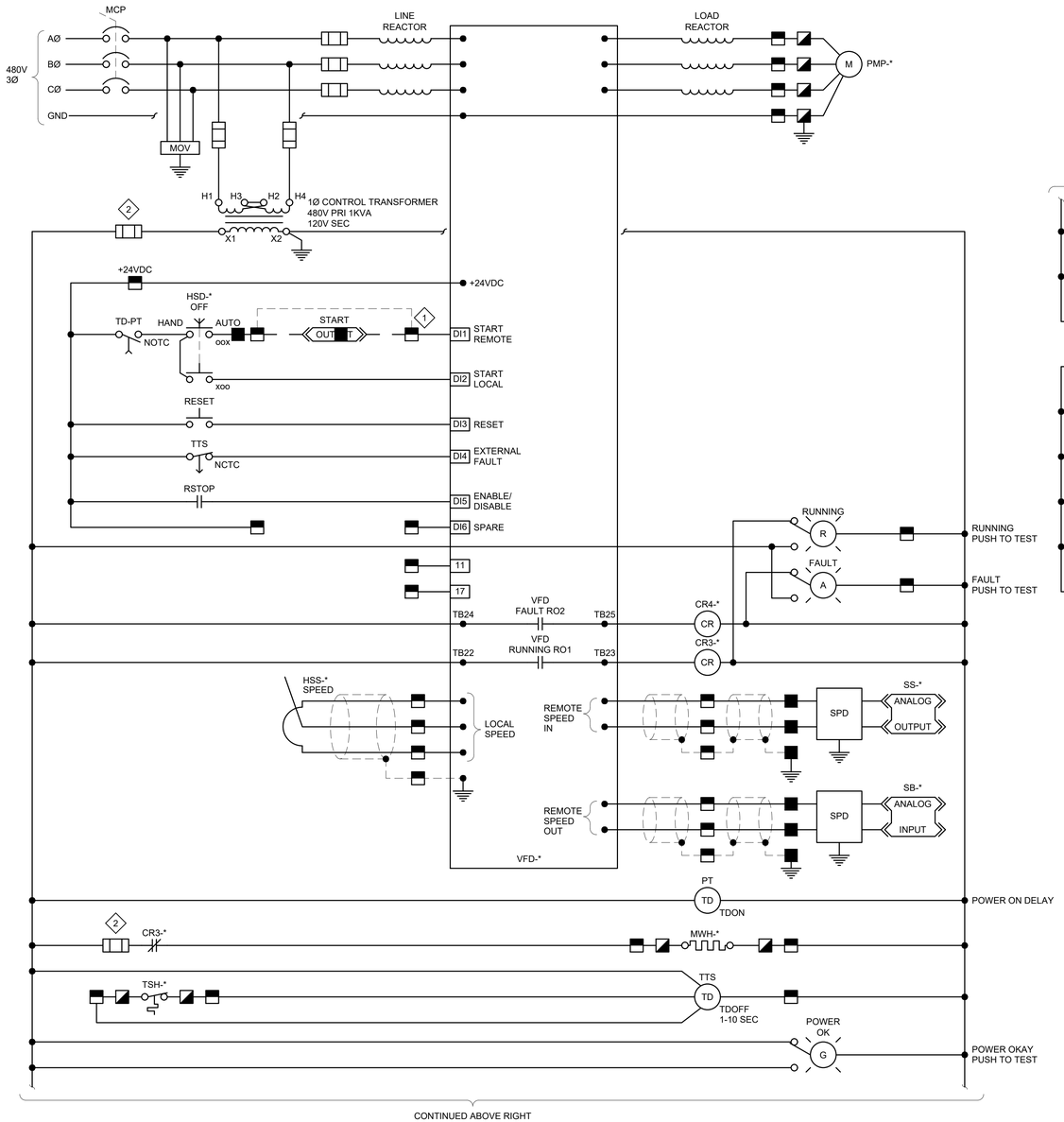
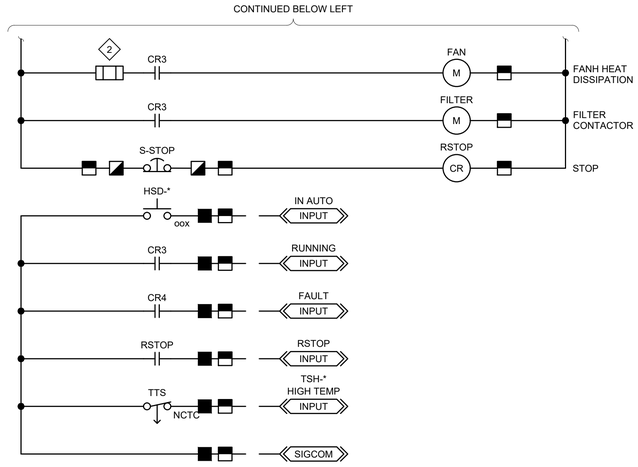
WTP STANDARDS
SODIUM HYPOCHLORITE SYSTEM
TYPICAL SCHEMATIC

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VIII-2





GENERAL NOTES:

1. SCHEMATIC TO BE REVIEWED FOR SPECIFIC PROJECT REQUIREMENTS AND APPORVED BY JEA PRIOR TO FABRICATION OF ANY KIND.
2. VFD CIRCUIT BOARD SHALL HAVE CONFORMAL COATING.

KEY NOTES:

1. JUMPER IS NEEDED IF COMMUNICATION CONTROL IS SELECTED BY USER.
2. SIZE BASED ON PROTECTION REQUIREMENT FOR LOAD(S) SERVED.

TERMINAL BLOCK LEGEND

- MOTOR CONTROL CENTER
- FIELD DEVICE
- FIELD PANEL
- LOCAL STARTER CONTROL PANEL / VFD

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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:

JEA Building Community.com

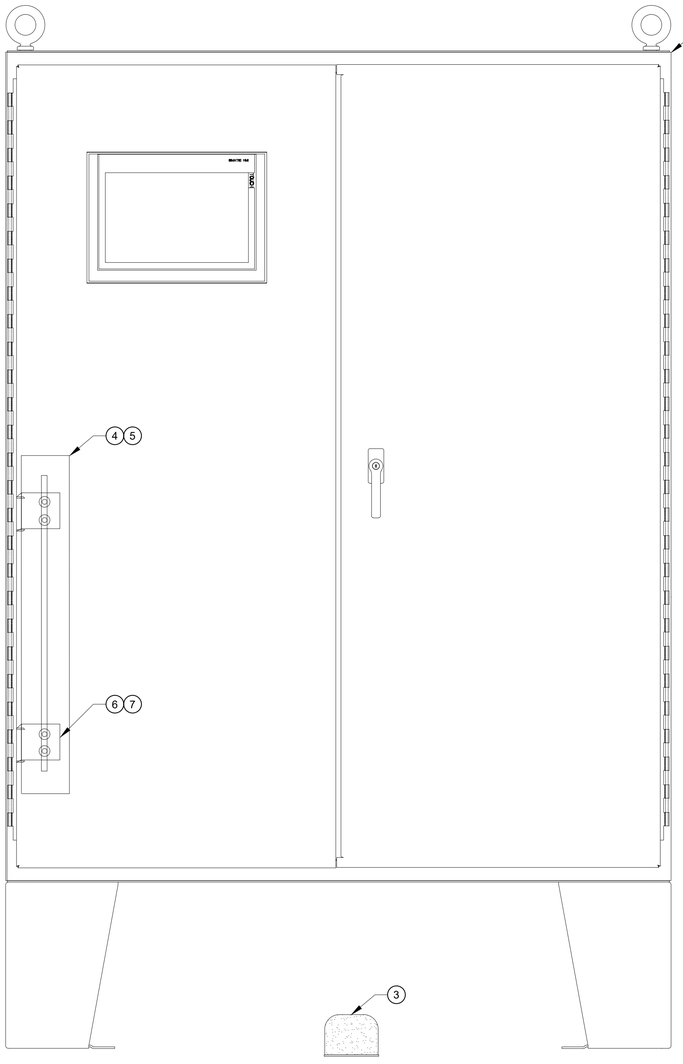
WTP STANDARDS
HSPS STARTER VFD TYPICAL SCHEMATIC

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

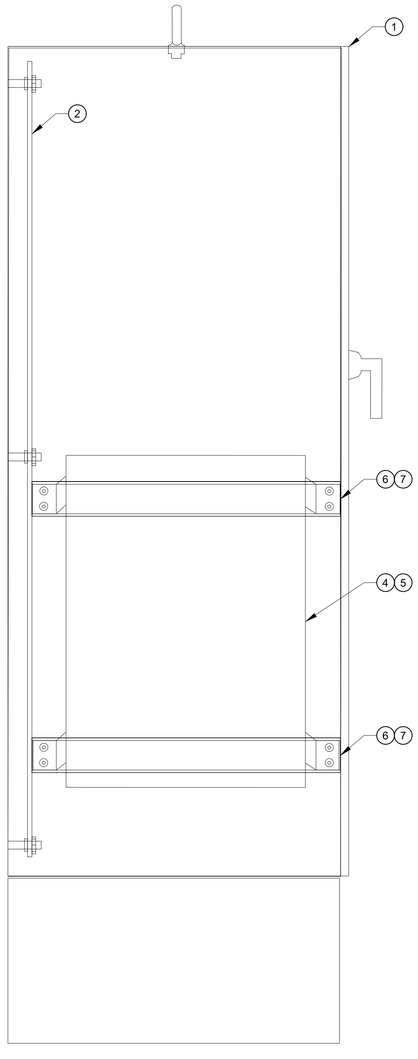
NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VIII-3

GENERAL NOTES:

1. (60"H x 48"W x 20"D) NEMA 12 RATED, FABRICATED FROM TYPE 304 STAINLESS STEEL. ENCLOSURE IS MOUNTED ON 12" TYPE 304 STAINLESS STEEL FLOOR STANDS. OUTER DOORS HAVE 3-POINT LATCHING ASSEMBLY WITH PADLOCKABLE HANDLE.



FRONT VIEW



SIDE VIEW

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	2-DOOR TYPE 12 W/ 3-POINT LATCH
2	BACK PLATE
3	INDUSTRIAL CORROSION INHIBITOR
4	TOWER STYLE UPS
5	RELAY CARD
6	STRUT SLOTTED CHANNEL 1 5/8" X 1 5/8" WHITE
7	SPRING NUTS FOR STRUT
8	HMI TP 1200 COMFORT PANEL, 12" TOUCH SCREEN

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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY: AVR
DATE:
CHECKED BY:
DATE:

JEA
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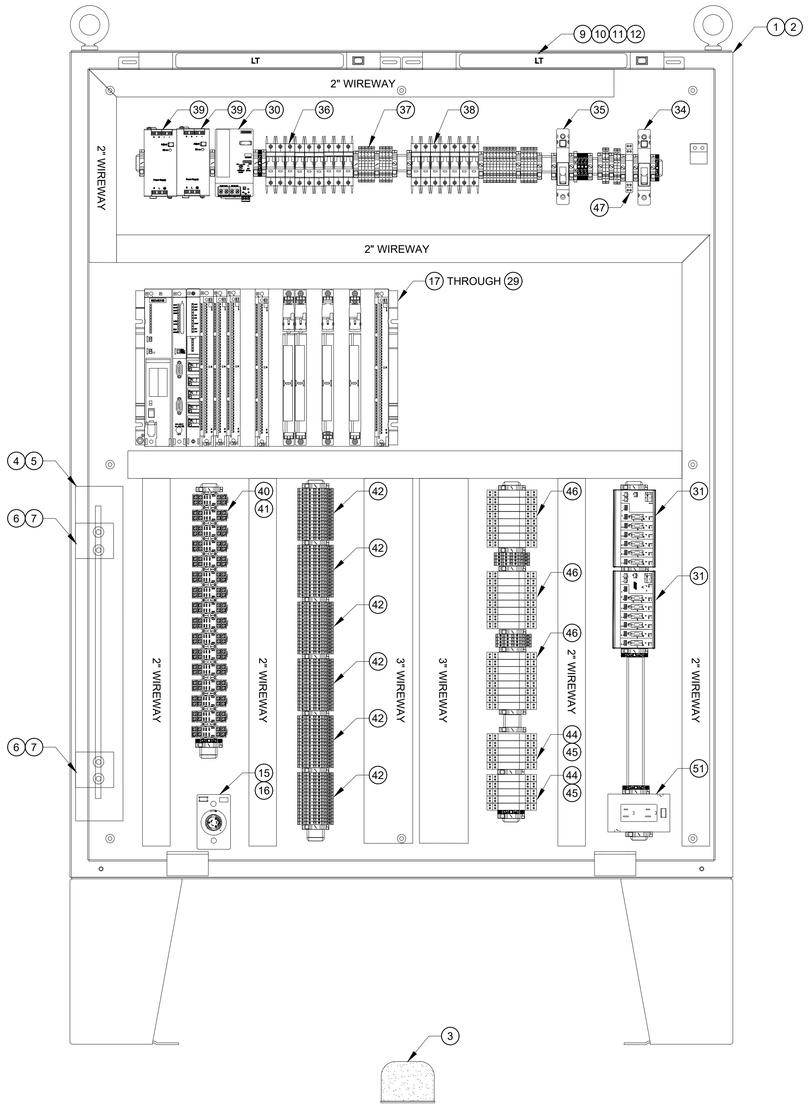
WTP STANDARDS
SCADA PANEL ELEVATION
TYPICAL

NO. SHEETS

SHEET NO.

DRAWING NO.
EXHIBIT VIII.4

PROJ. NO. 10557K00
DATE: JANUARY, 2020
SCALE: NTS



FRONT VIEW

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	2-DOOR W/ 3-POINT LATCH; 60"x48"x24"
2	BACK PLATE
3	INDUSTRIAL CORROSION INHIBITOR
4	TOWER STYLE UPS
5	RELAY CARD
6	STRUT SLOTTED CHANNEL 1 5/8"x1 5/8" WHITE
7	SPRING NUTS FOR STRUT
8	HMI TP 1200 COMFORT PANEL, 12" TOUCH SCREEN
9	15" FLUORESCENT FIXTURE
10	FLUORESCENT LAMP
11	FIXTURE POWER CABLE W/ LEADS
12	FIXTURE GANGING CABLE
13	NEMA L5-20 TWIST-LOCK MALE PLUG
14	POWER CORD
15	L5-20 TWIST-LOCK MALE PLUG
16	ELECTRICAL BOX 1-GANG ALUMINIUM
17	SIEMENS PLC
18	POWER SUPPLY
19	BACK-UP BATTERY
20	SIEMENS CPU
21	RAM MEMORY CARD
22	COMMUNICATION PROCESSOR
23	DIGITAL INPUT
24	DIGITAL INPUT
25	DIGITAL OUTPUT
26	ANALOG INPUT
27	ANALOG OUTPUT
28	FRONT CONNECTOR FOR SIGNAL MODULES
29	BLANK MODULE COVERS FOR RACK
30	REDUNDANT DC POWER SUPPLY MODULE
31	PROFIBUS HUB
32	PROFIBUS CONNECTOR W/ DIAGNOSTICS LED'S 45° ANGLE
33	PROFIBUS CONNECTOR W/ DIAGNOSTICS LED'S 90° ANGLE
34	BREAKER
35	BREAKER
36	BRANCH CIRCUIT BREAKER
37	BRANCH CIRCUIT BREAKER
38	BRANCH CIRCUIT BREAKER
39	DC POWER SUPPLY
40	RELAY
41	RELAY BASE
42	SURGE PROTECTOR FOR 120VAC SIGNALS
43	SURGE PROTECTOR FOR 24 VDC SIGNALS
44	SURGE PROTECTOR FOR RS-485/PROFIBUS CONNECTIONS
45	SURGE PROTECTOR BASE
46	SURGE PROTECTOR FOR 24V 4-20 MA SIGNALS
47	SURGE PROTECTOR FOR 120V SIGNALS
48	TERMINAL 1 CIRCUIT
49	GROUNDING TERMINAL GREEN YELLOW
50	TERMINAL END CLAMP
51	GFCI DUPLEX RECEPTACLE
52	GROUNDING LUG, DOUBLE

GENERAL NOTES:

1. (60"H x 48"W x 20"D) NEMA 12 RATED, FABRICATED FROM TYPE 304 STAINLESS STEEL. ENCLOSURE IS MOUNTED ON 12" TYPE 304 STAINLESS STEEL FLOOR STANDS. OUTER DOORS HAVE 3-POINT LATCHING ASSEMBLY WITH PADLOCKABLE HANDLE.
2. ENCLOSURE BACK PANEL FABRICATED FROM CARBON STEEL WITH INDUSTRIAL GRADE WHITE ENAMEL FINISH.

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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY: AVR
DATE:
CHECKED BY:
DATE:

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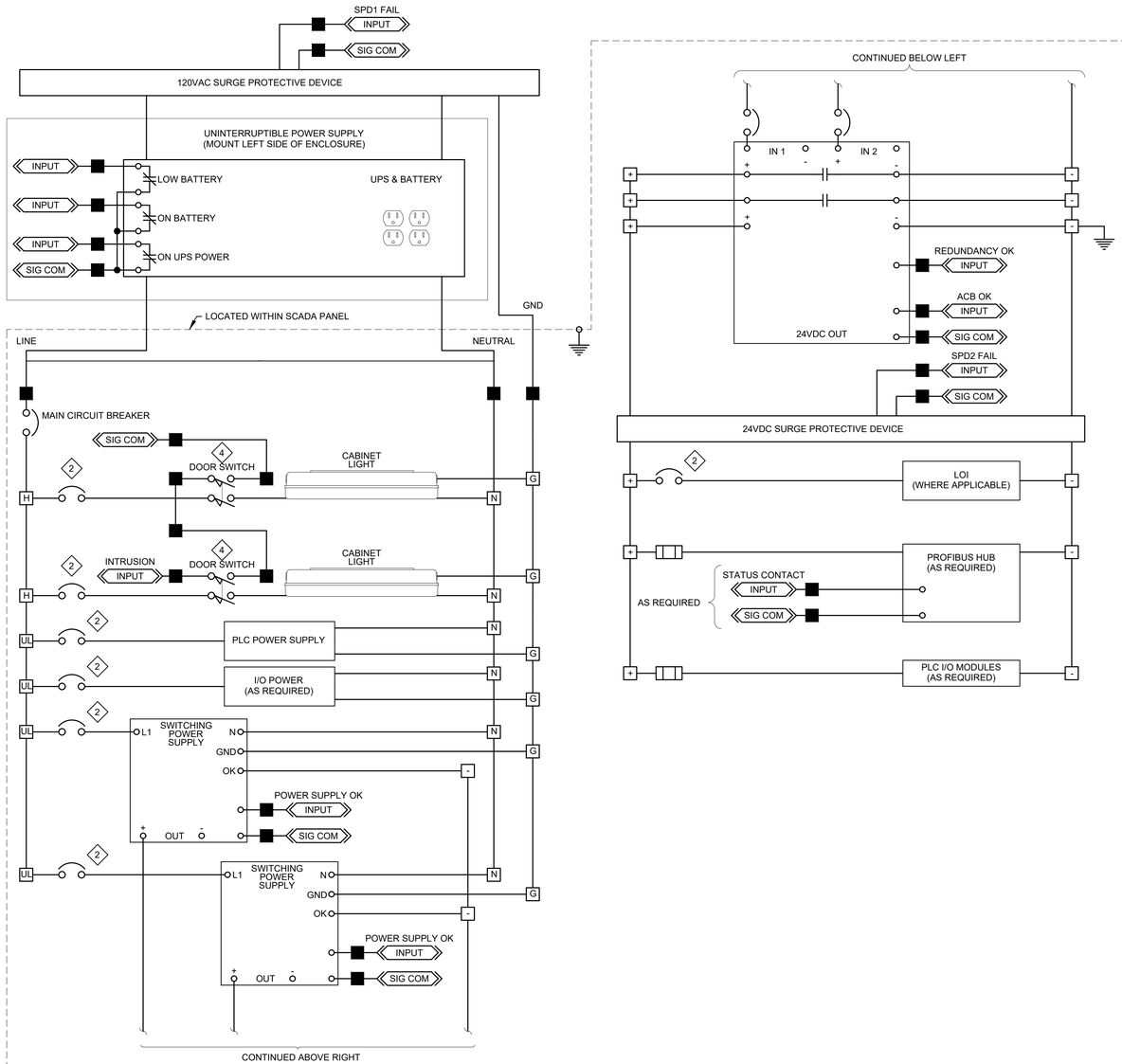
Building Community

WTP STANDARDS
SCADA PANEL INTERNAL ELEVATION
TYPICAL

PROJ. NO. 10557X00
DATE: JANUARY, 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VIII.5



GENERAL NOTES:

1. SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. PROVIDE ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.

KEY NOTES:

1. SIZE UPS AND BATTERY BASED ON UPS SPECIFICATION REQUIREMENTS.
2. SIZE BASED ON PROTECTION NEEDS.
3. VERIFY LOADS BASED ON TEMPERATURE CALCULATIONS. PROVIDE ADDITIONAL CIRCUIT IF REQUIRED.
4. INTEGRAL SWITCH WITH LIGHT.
5. SIZE BASED ON LOAD REQUIREMENT.
6. PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS. SIZE RECEPTACLE FOR LAPTOP.
7. PROVIDE HARDWIRED CONNECTIONS OR RECEPTACLE/PLUG AS REQUIRED BY MAINTENANCE BYPASS SWITCH.
8. SIZE BASED ON PROTECTION NEEDS. PROVIDE SEPARATE CIRCUIT BREAKERS FOR EACH INSTRUMENT POWERED FROM THE PCM CABINET.

TERMINAL BLOCK LEGEND

- SCADA PANEL
- H — 120VAC
- N — NEUTRAL
- G — GROUND
- UL — UPS 120VAC
- \+ — 24VDC (+)
- \- — 24VDC (-)

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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY: AVR
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DATE:

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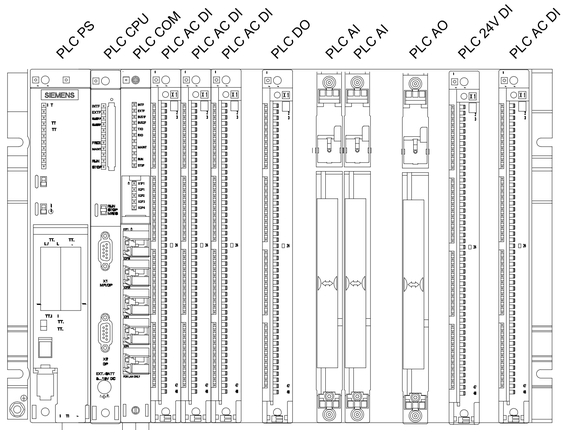
WTP STANDARDS
SCADA PANEL POWER
TYPICAL SCHEMATIC

PROJ. NO. 1057K09
DATE: JANUARY, 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VIII-6

PLC RACK (MASTER)



TO A.T.S.
BY OTHERS

TO MDS RADIO
BY OTHERS

HMI COLOR TOUCH SCREEN
COMFORT PANEL
SIEMENS

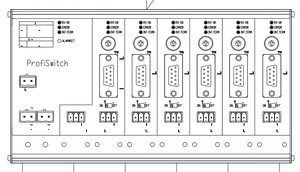
ETHERNET

PROFIBUS

PROFIBUS

PROFIBUS

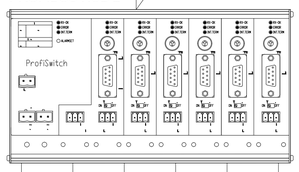
PROFIBUS HUB 1



TS-8 TS-8 TS-8 TS-8 TS-8 TS-8

TO PROFIBUS FIELD I/O

PROFIBUS HUB 2



TS-9 TS-9 TS-9 TS-9 TS-9 TS-9

TO PROFIBUS FIELD I/O

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DESIGN ENGINEER

FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY: AVR
DATE:
CHECKED BY:
DATE:

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Building Community

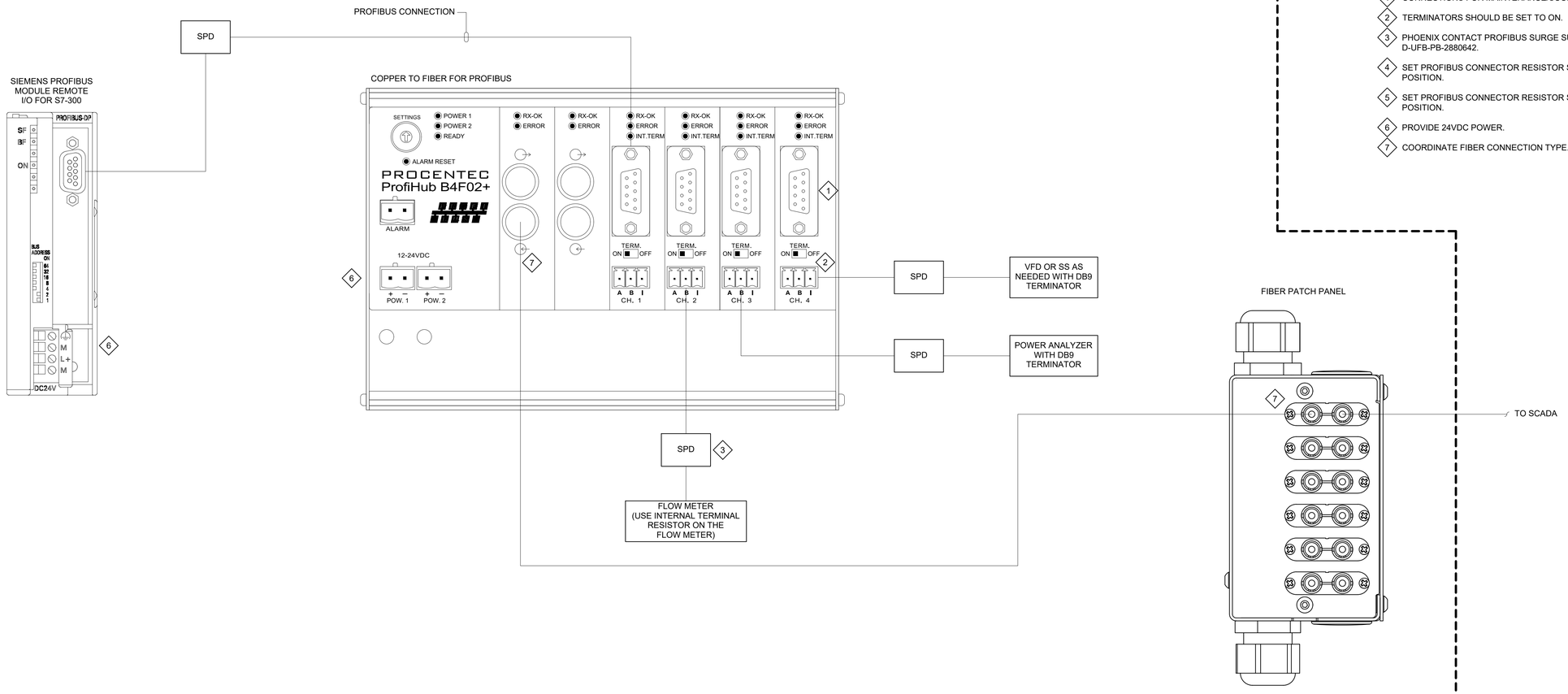
WTP STANDARDS
RTU TYPICAL

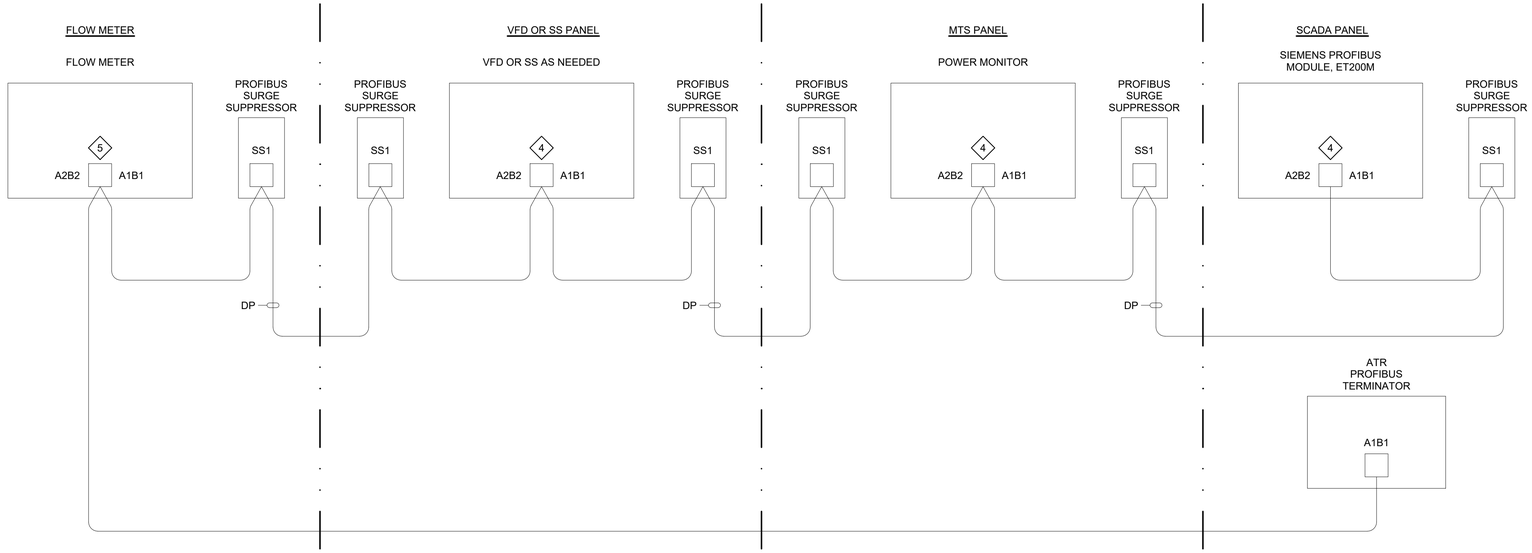
NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT VIII-7

PROJ. NO. 10557K00
DATE: JANUARY, 2020
SCALE: NTS

KEY NOTES:

1. CONNECTIONS FOR MAINTENANCE/SCOPING.
2. TERMINATORS SHOULD BE SET TO ON.
3. PHOENIX CONTACT PROFIBUS SURGE SUPRESSOR D-UFB-PB-2880642.
4. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "ON" POSITION.
5. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "OFF" POSITION.
6. PROVIDE 24VDC POWER.
7. COORDINATE FIBER CONNECTION TYPE.





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FLORIDA REGISTRATION NO.

DESIGNER:
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DATE:

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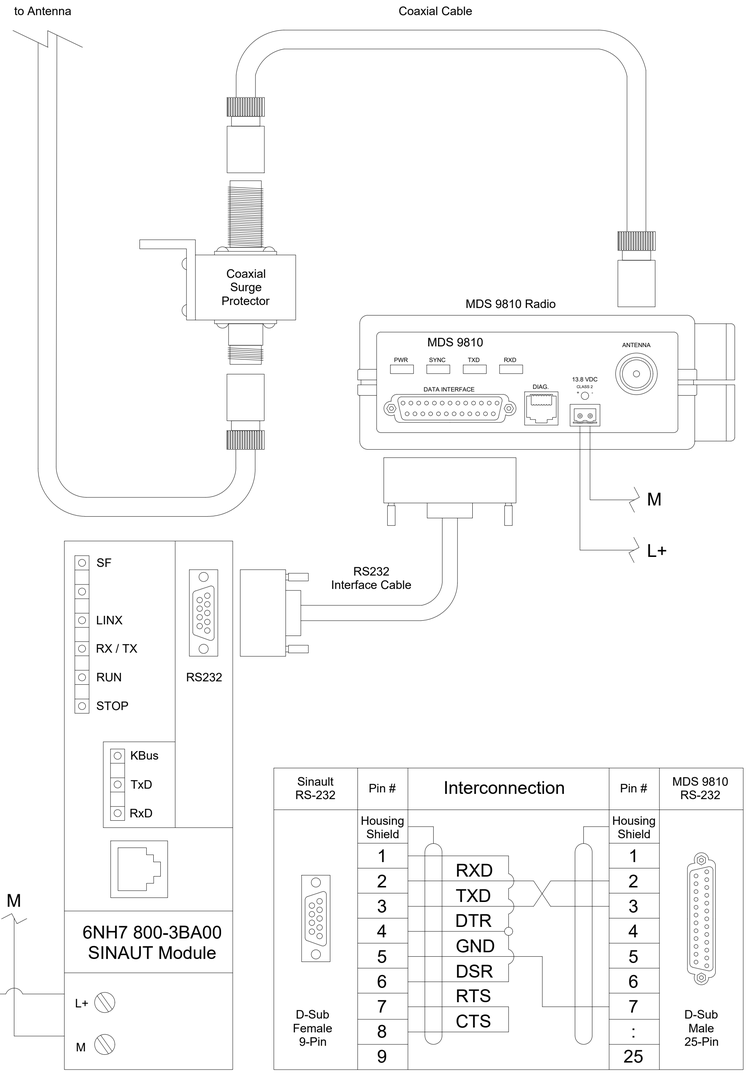
WTP STANDARDS
FIBER CONNECTED PROFIBUS WELL PANEL TYPICAL

PROJ. NO. 10557K00
DATE: JANUARY, 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT VIII-8

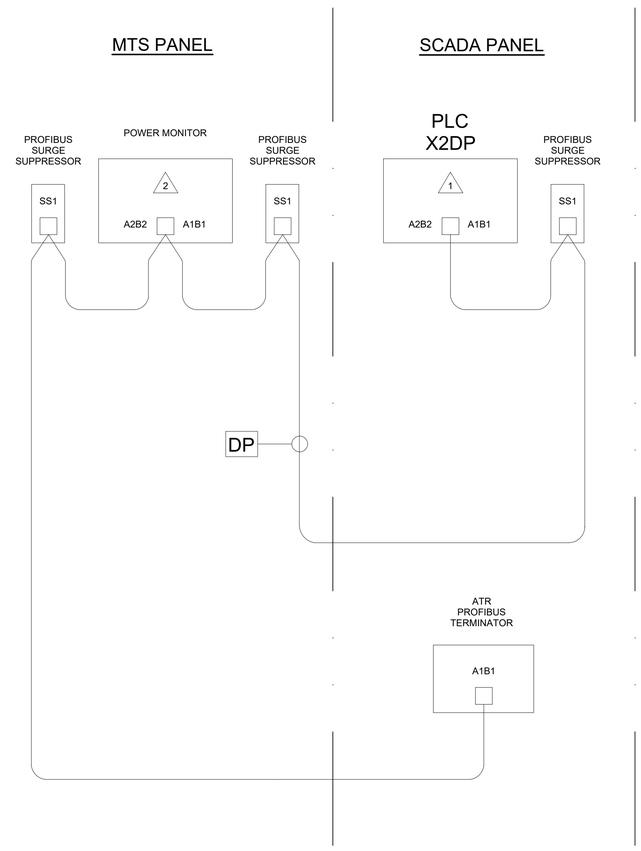
RACK: 0 SLOT: 6



6NH7 800-3BA00	
TIM3V-IE SINAUT Module	
RS-232 Pinout	
1	DCD Input
2	RXD Input
3	TXD Output
4	DTR Ouput
5	GND
6	
7	RTS Output
8	CTS Input
RJ-45 Pinout	
1	+TXD Output
2	-TXD Output
3	+ RXD Input
4	
5	
6	- RXD Input
7	
8	
Power Connector	
L+	+24VDC
M	DC Common

Sinault RS-232	Pin #	Interconnection	Pin #	MDS 9810 RS-232
D-Sub Female 9-Pin	Housing Shield		Housing Shield	D-Sub Male 25-Pin
	1		1	
	2	RXD	2	
	3	TXD	3	
	4	DTR	4	
	5	GND	5	
	6	DSR	6	
	7	RTS	7	
	8	CTS	:	
	9		25	

PROFIBUS CONNECTION DIAGRAM



NOTES:

1. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "ON" POSITION.
2. SET PROFIBUS CONNECTOR RESISTOR SWITCH TO THE "OFF" POSITION.

NO.	BY	DATE	REVISIONS
4.			
3.			
2.			
1.			

DESIGN ENGINEER

FLORIDA REGISTRATION NO.

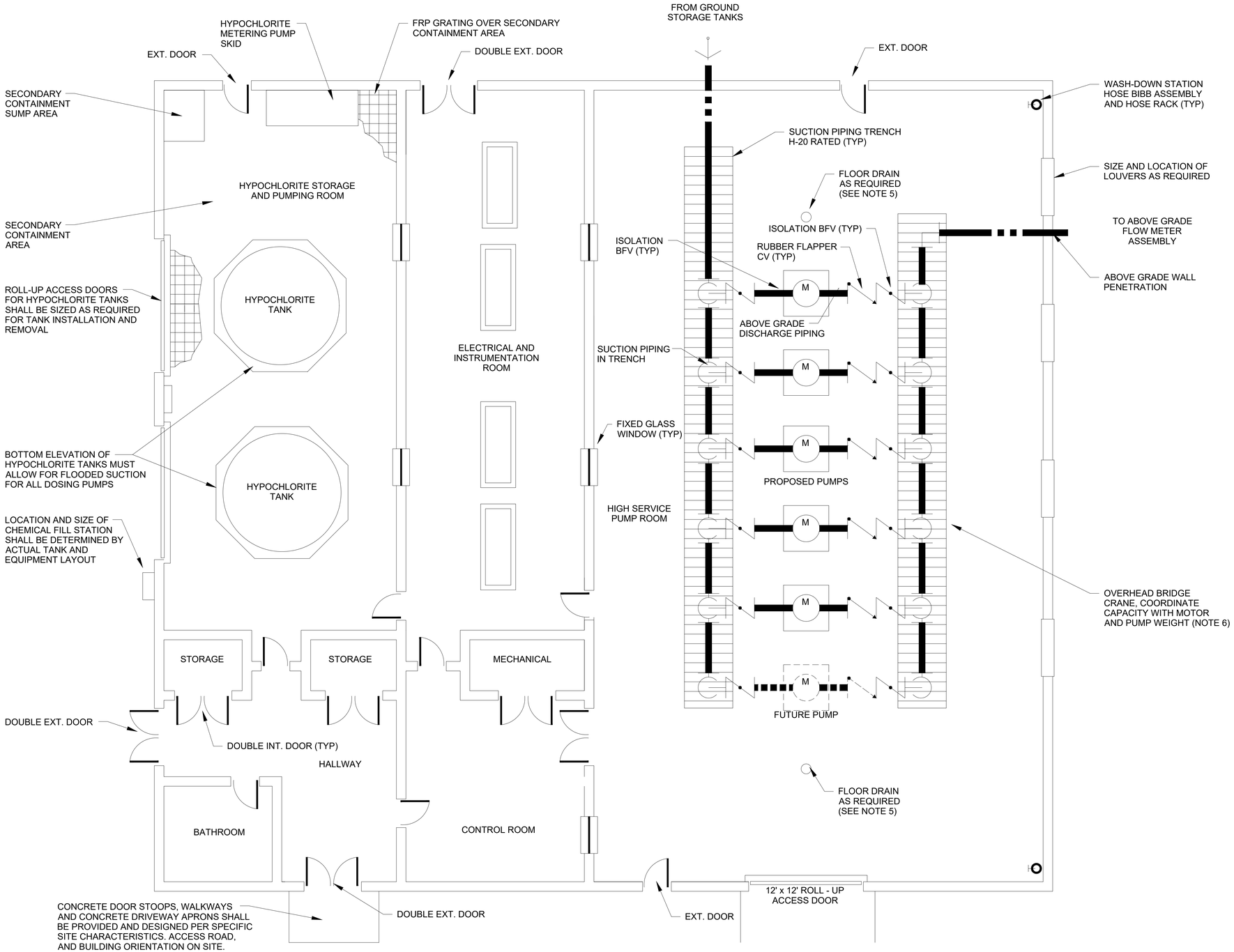
DESIGNED BY: AJR
DATE:
CHECKED BY:
DATE:

JEA Building Community

WTP STANDARDS
RADIO CONNECTED PROFIBUS WELL PANEL TYPICAL

PROJ. NO. 1055?K00
DATE: JANUARY, 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT VIII-9



FLOOR PLAN

SCALE: NTS

NOTES:

1. DESIGN OF FACILITY BUILDING SHALL INCLUDE A COMPLETE HVAC SYSTEM(S) AS REQUIRED INCLUDING LOUVERS AND EXHAUST FANS IN THE HIGH SERVICE PUMP AREA.
2. DESIGN OF FACILITY BUILDING SHALL INCLUDE A COMPLETE ELECTRICAL SYSTEM INCLUDING LIGHTING.
3. BUILDING LAYOUT IS INTENDED TO BE GENERIC AND WILL NEED TO BE SITE SPECIFIC FOR EACH PROJECT.
4. THE NUMBER OF HIGH SERVICE PUMPS, INCLUDING FUTURE PUMPS, SHALL BE DETERMINED ON A CASE BY CASE BASIS.
5. QUANTITY AND LOCATION OF DRAINS SHALL BE PROVIDED SUCH THAT DRAIN AND ARV DISCHARGE PIPING SHALL BE MINIMAL PIPE LENGTHS.
6. BRIDGE CRANE SYSTEM SHALL BE DESIGNED AND SPACE SHALL BE PROVIDED SUCH THAT VALVES AND PUMP COMPONENTS CAN BE REMOVED AND LOADED ONTO A TRUCK BED INSIDE OF THE HIGH SERVICE PUMP ROOM.

NO.	BY	DATE	REVISIONS
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4.			

DESIGN ENGINEER

FLORIDA REGISTRATION NO.

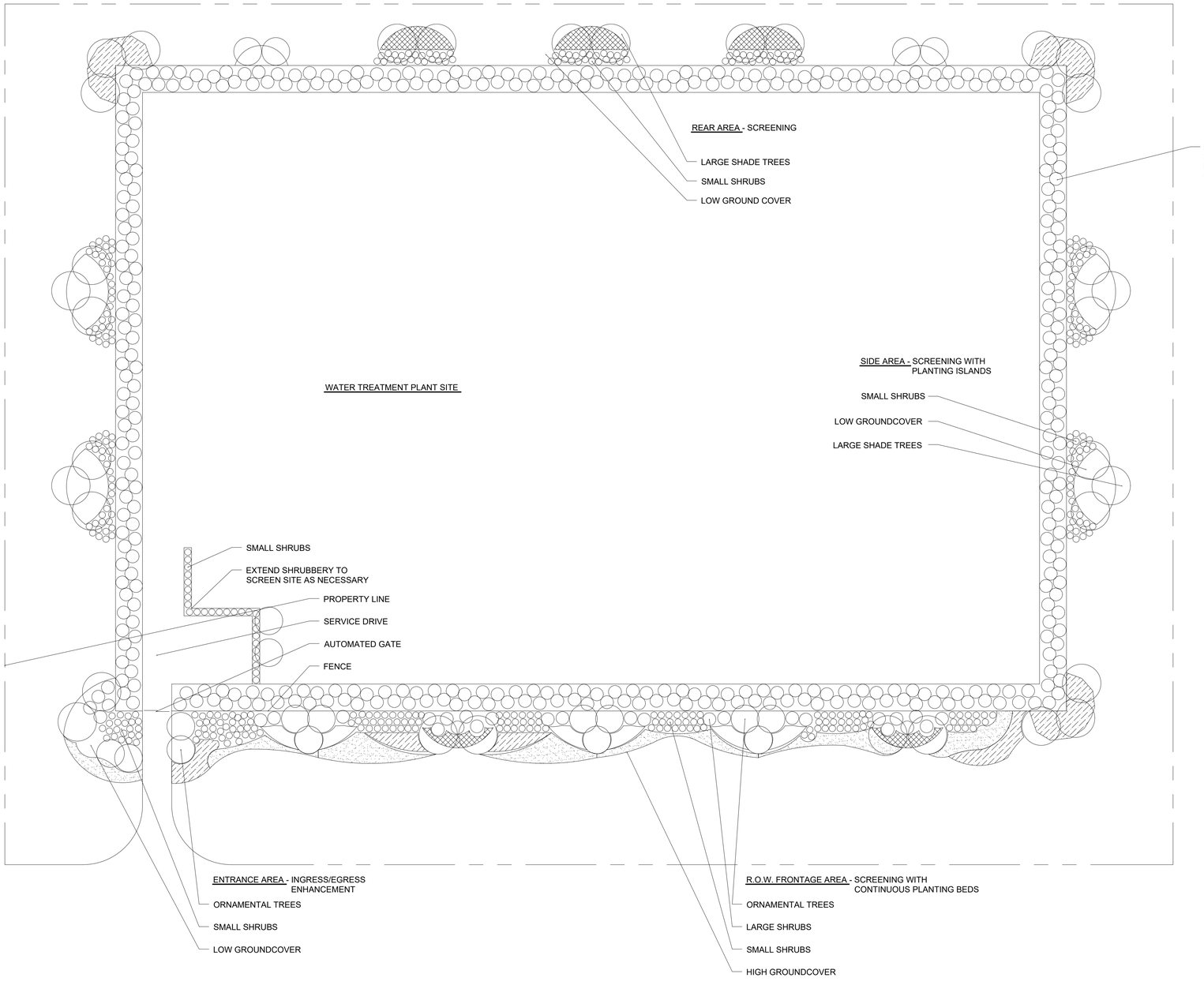
DESIGNER:
DRAWN BY: AVR
DATE:
CHECKED BY:
DATE:

JEA Building Community.com

WTP STANDARDS
CHEMICAL AND HIGH SERVICE PUMP STATION BUILDILNG TYPICAL LAYOUT

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT XI-1



PLANT KEY

LARGE SHADE TREES
LIVE OAK
ACER RUBRUM
DRAKE ELM
RED CEDAR

ORNAMENTAL TREES
CRAPE MYRTLE
LIGUSTRUM
YAUPON HOLLY
BRADFORD PEAR
EAST PALATKA HOLLY

LARGE SHRUBS
VIBURNUM
SAW PALMETTO
BUTTERFLY BUSH
OLEANDER
FLORIDA ANISE
AZALEA
BURFORD HOLLY
PITTOSPORUM

SMALL SHRUBS
DWARF INDIAN HAWTHORN
DWARF YAUPON HOLLY

HIGH GROUNDCOVER
EVERGREEN GIANT LIRIOPE
FOUNTAIN GRASS
DAYLILY
AMERICAN CRINUM
MUHLY GRASS
AZTEC GRASS
AFRICAN GRASS
CORD GRASS

LOW GROUNDCOVER
JUNIPER
ASIATIC JASMINE

NOTE:

1. THIS PLAN CONSTITUES A CONCEPTUAL REPRESENTATION OF A LANDSCAPE PLANNING SCHEME FOR A THEORETICAL UTILITY SITE. ACTUAL LAYOUT AND CONFIGURATION OF A PARTICULAR SUBSTATION OR TREATMENT PLANT WILL VARY GREATLY DEPENDING ON THE CONDITIONS EXISTING AT EACH FACILITY. IT IS IN NO WAY INTENDED THAT THIS GRAPHIC BE UTILIZED IN A BONEFIDE PLANTING PLAN FROM WHICH, A PERSON OR PERSONS MAY EXECUTE THE DESIGN IN THE FIELD. IT SHOULD BE UNDERSTOOD THAT LOCAL LANDSCAPE CODE WILL ULTIMATELY DETERMINE THE BASIC REQUIREMENTS FOR THE FINAL PLAN.

NO. | BY | DATE | REVISIONS
4. | 3. | 2. | 1.

DESIGN ENGINEER | FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:

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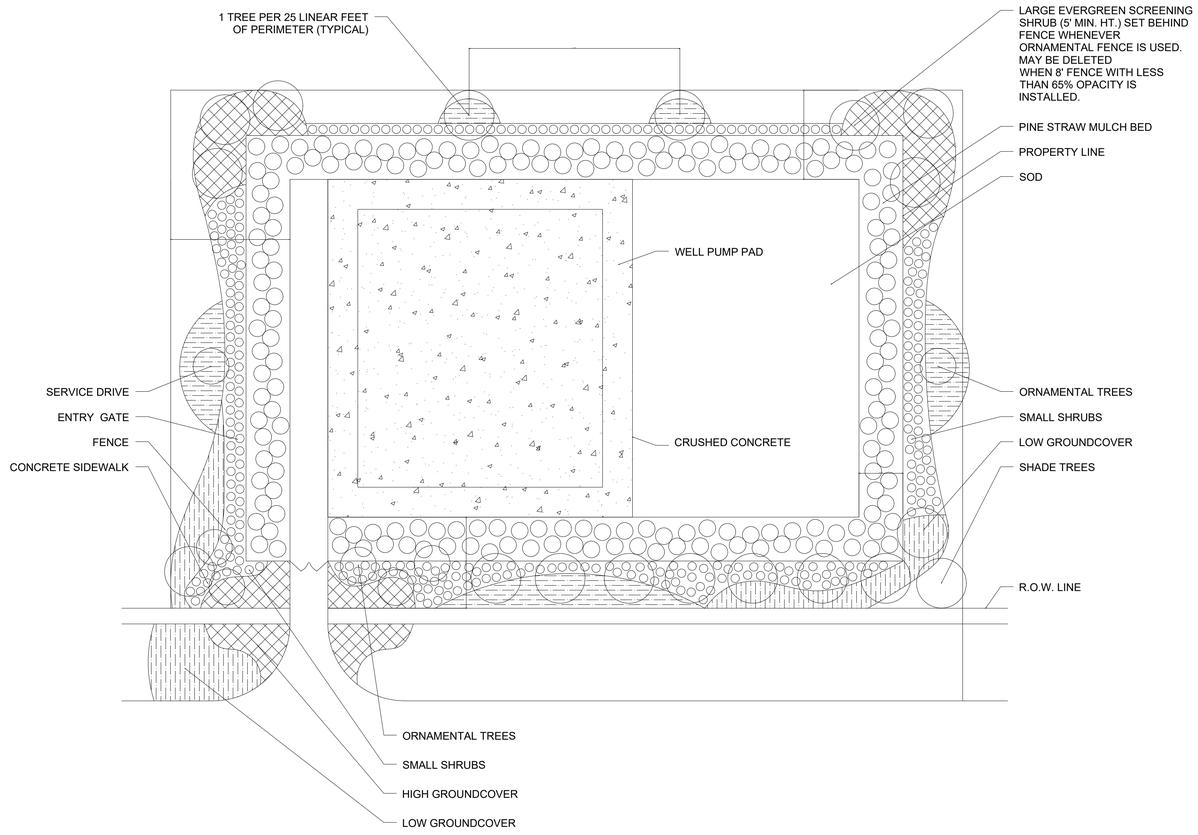
WTP STANDARDS
WTP SITE CONCEPTUAL LANDSCAPING PLAN

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO. EXHIBIT XV-2



PLANT KEY

LARGE SHADE TREES
LIVE OAK
ACER RUBRUM
DRAKE ELM

ORNAMENTAL TREES
CRAPE MYRTLE
WAS MYRTLE
LIGUSTRUM
YAUPON HOLLY
BRADFORD PEAR
EAST PALATKA HOLLY

LARGE SHRUBS
SAW PALMETTO
BUTTERFLY BUSH
OLEANDER
FLORIDA ANISE
AZALEA
BURFORD HOLLY
VIBURNUM
PITTOSPORUM

SMALL SHRUBS
DWARF INDIAN HAWTHORN
DWARF YAUPON HOLLY

HIGH GROUNDCOVER
EVERGREEN GIANT LIRIOPE
FOUNTAIN GRASS
DAYLILY
AMERICAN CRINUM
MUHLY GRASS
AZTEC GRASS
AFRICAN IRIS
VIRGINIA SWEETSPIRE

LOW GROUNDCOVER
JUNIPER
ASIATIC JASMINE
BIG BLUE LIRIOPE
FLORIDA GAMMA GRASS

NOTE:

1. THIS PLAN CONSTITUES A CONCEPTUAL REPRESENTATION OF A LANDSCAPE PLANNING SCHEME FOR A THEORETICAL UTILITY SITE. ACTUAL LAYOUT AND CONFIGURATION OF A PARTICULAR WELL SITE WILL VARY GREATLY DEPENDING ON THE CONDITIONS EXISTING AT EACH FACILITY. IT IS NOT INTENDED TO BE USED AS A PLANTING PLAN, BUT AS A GENERIC GUIDELINE. LOCAL LANDSCAPE CODE WILL ULTIMATELY DETERMINE THE BASIC REQUIREMENTS FOR THE FINAL PLAN.

NO. | BY | DATE | REVISIONS
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DESIGN ENGINEER
FLORIDA REGISTRATION NO.

DESIGNER:
DRAWN BY:
DATE:
CHECKED BY:
DATE:

JEA
Building Community.com

WTP STANDARDS
WELL SITE CONCEPTUAL LANDSCAPING PLAN

PROJ. NO.
DATE: OCTOBER 2020
SCALE: NTS

NO. SHEETS
SHEET NO.
DRAWING NO.
EXHIBIT XV-3