



# WASTEWATER TREATMENT PLANT IMPROVEMENTS WTC PROJECT #51582

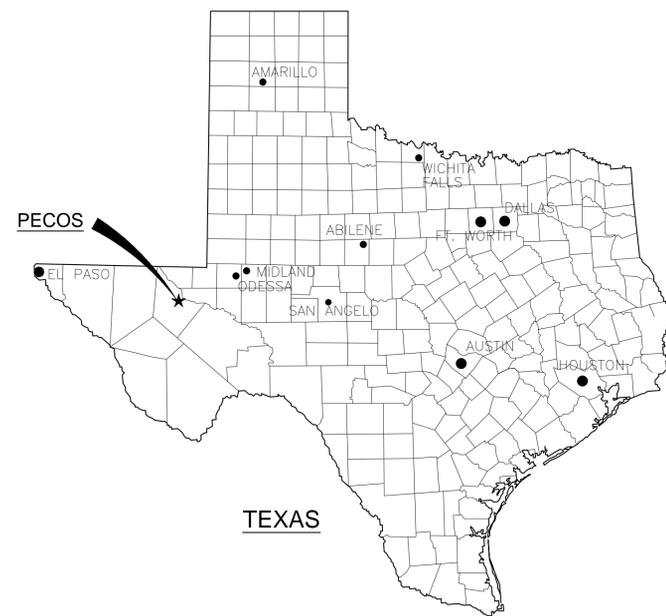
OCTOBER, 2017

### MAYOR

VENETTA SEALS

### CITY COUNCIL

GERALD TELLEZ  
ARTHUR ORONA  
OSCAR ORNELAS, JR.  
WALLY MOON  
VERONICA BACA



VICINITY MAP



SITE LOCATION MAP



THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JAMES C. TOMPKINS, P.E. 93839 ON October 20, 2017

### PREPARED BY:

**WEST TEXAS CONSULTANTS, INC.**

ENGINEERS PLANNERS SURVEYORS

405 S.W. 1st. Street

Andrews, TX 79714

(432) 523-2181

TEXAS REGISTERED ENGINEERING FIRM F-2746

TEXAS REGISTERED SURVEYOR FIRM #100792-00

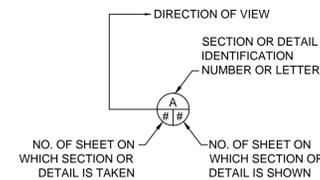


**GENERAL NOTES:**

- ALL EXISTING UTILITIES CURRENTLY IN SERVICE MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION OF THE NEW FACILITIES, EXCEPT AS NOTED IN THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES (INCLUDING SERVICE CONNECTIONS) FROM DAMAGE AS A RESULT OF CONSTRUCTION ACTIVITIES.
- ALTHOUGH ALL EFFORTS HAVE BEEN MADE TO INDICATE ALL MAJOR EXISTING UTILITIES ON PLANS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL SAID UTILITIES, AS WELL AS, SERVICE CONNECTIONS (WHETHER OR NOT INDICATED ON PLANS) PRIOR TO AND DURING CONSTRUCTION. SERVICE CONNECTIONS ARE SHOWN ON THE PLANS.
- PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES AND TOWN OF PECOS CITY TO VERIFY LOCATION OF EXISTING UTILITIES AND CONTRACTOR SHALL CALL THE RESPECTIVE "1-CALL" NUMBER FOR SUCH UTILITIES.
- UNLESS OTHERWISE INDICATED, ALL EXISTING ROADWAYS, SIDEWALKS, AND SURFACE GRADING AFFECTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL CONDITION AND ELEVATION BY CONTRACTOR.
- CONTRACTOR SHALL KEEP ALL DEBRIS AND SPOIL OUT OF DRAINS, CULVERTS, AND DROP INLETS AND ENSURE THAT THEY DO NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF PECOS, IN WRITING, OF ANY DUMP SITE(S) FOR OVERBURDEN AND ANY CONSTRUCTION DEBRIS FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL OBTAIN APPROVAL OF ITS TRUCK ROUTE TO THE DUMP SITE, AS WELL AS, FOR THE MATERIALS IT SHALL BE HAULING BEFORE REMOVAL OF OVERBURDEN FROM THE PROJECT SITE.
- CONTRACTOR SHALL PROVIDE A MINIMUM OF 3 FT. OF COVER FROM THE TOP OF PIPE TO FINISH GRADE FOR ALL NEW PIPE, UNLESS INDICATED OTHERWISE ON THE DRAWINGS AND SPECIFICATIONS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING VERTICAL AND HORIZONTAL OFFSETS USING ADDITIONAL FITTINGS AND BEDS FOR GRADE ADJUSTMENTS TO AVOID OTHER EXISTING UNDERGROUND UTILITIES AND OBSTRUCTIONS WHEN ENCOUNTERED. FOR NEW PIPE INSTALLATION, WHEN CROSSING UNDERNEATH EXISTING OBSTRUCTIONS AND/OR UTILITIES, THE NEW LINE SHALL HAVE A MINIMUM 12 INCHES OF CLEARANCE, UNLESS OTHERWISE INDICATED ON DRAWINGS AND SPECIFICATIONS.
- THRUST BLOCKING IS REQUIRED ON ALL FITTINGS AS SHOWN IN THE STANDARD DETAIL AND THE COST IS SUBSIDIARY TO THE PIPE COST.
- TRACE WIRE IS REQUIRED ON ALL RECLAIMED WATER LINES AND THE COST IS SUBSIDIARY TO THE PIPE COST.
- ALL ELECTRICAL TO BE COORDINATED BY OTHERS.
- THE DEMOLITION CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CLEARING AND GRUBBING OPERATIONS. UNSUITABLE EXCAVATION MATERIAL AND ALL WASTE RESULTING FROM CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR.
- UNLESS OTHERWISE SPECIFIED, ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED.
- THE CONTRACTOR SHALL FILE A "NOTICE OF INTENT" WITH TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ), PRIOR TO COMMENCING EARTHWORK, CLEARING AND DEMOLITION OPERATIONS.
- BASIS OF BEARING, COORDINATES AND DISTANCES ARE A LAMBERT CONICAL PROJECTION OF THE TEXAS COORDINATE SYSTEM, STATE PLANE GRID, NAD 83, TEXAS CENTRAL (4203).

- MINIMUM 95% COMPACTION REQUIRED UNDER ENTIRE FOUNDATION.
- ENGINEER IS TO BE NOTIFIED 48 HOURS IN ADVANCE OF PLACING CONCRETE.
- SUBMIT CONCRETE MIX DESIGN 14 DAYS PRIOR TO PLACING CONCRETE. CONCRETE SHALL BE A MIN. OF 4000 PSI COMPRESSIVE STRENGTH.
- THIRD PARTY 7 DAY AND 28 DAY CONCRETE COMPRESSIVE STRENGTH TESTING IS REQUIRED AND THE RESULTS ARE TO BE PROVIDED TO THE ENGINEER.
- APPLY A 10 MIL VAPOR BARRIER TO THE SOIL BENEATH THE CONCRETE PRIOR TO PLACING CONCRETE.
- CONCRETE IS NOT TO EXCEED 95°F BEFORE THE CONCRETE IS PLACED.
- NO WATER IS TO BE ADDED TO THE CONCRETE MIX ONSITE W/O PRIOR APPROVAL BY THE ENGINEER.
- EUCOBAR EVAPORATION RETARDANT TO BE APPLIED IMMEDIATELY AFTER CONCRETE IS PLACED.
- SEAL TIGHT 1100-CLEAR WATER BASED CONCRETE CURING COMPOUND TO BE APPLIED 24 HOURS AFTER CONCRETE IS PLACED NOT MORE THAN 48 HOURS AFTER CONCRETE IS PLACED.
- FORMS ARE NOT TO BE REMOVED UNTIL CONCRETE HAS REACHED 75% COMPRESSIVE STRENGTH.
- ALL REQUIRED BACKFILL DONE AFTER REMOVAL OF CONCRETE FORMS WILL BE PERFORMED IN 9" LIFTS AT 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY THE STANDARD COMPACTION TEST (ASTM D-698) AT A WATER CONTENT WITHIN WORKABLE MOISTURE CONTENT THAT IS AT OR ABOVE ITS OPTIMUM VALUE, AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D-698) AT THE TIME OF PLACEMENT AND COMPACTION.
- NO FORM RELEASE COMPOUNDS OR ANY OIL OR GREASE OF ANY KIND CAN BE USED ON CONCRETE OR FORMS.
- ALL CALICHE ROADS AND SURFACES SHALL BE RETURNED TO EXISTING CONDITION AND HAVE AN ADDITIONAL 4" OF NEW MATERIAL PLACED AND COMPACTED TO 95% DENSITY.
- CONTRACTOR TO PROVIDE FULLY OPERATIONAL COMPLIANT WINDSOCK (SOLAR POWERED), MINIMUM OF TWO (2) WITH BASE, 2 LIGHT FIXTURE WITH OBSTRUCTION LIGHTING ON TOP, AND A FABRIC WINDSOCK WITH FRAMEWORK AND SWIVEL. CONTRACTOR TO COORDINATE ELECTRICAL SERVICE IF APPLICABLE.
- CONTRACTOR TO PROVIDE LEGIBLE AS-BUILT PLANS AT COMPLETION OF PROJECT TO CLIENT AND ENGINEER OF RECORD.

**SECTION AND DETAIL CROSS REFERENCING:**



DETAIL SCALE: NONE

ELEVATION VIEW

**LEGEND**

- GRAVEL
- CONCRETE
- NATURAL GROUND/EARTH
- NORMAL FLOW DIRECTION
- WATER LEVEL
- FENCE LINE
- OVERHEAD ELECTRICAL
- UNDERGROUND ELECTRICAL
- PROPERTY LINE
- PIPE UTILITY LINES (COLOR VARIES)
- 10" WASTE WATER
- 15" WASTE WATER
- 16" WASTE WATER
- SPOT ELEVATIONS
- EXISTING CONTOURS
- DESIGN CONTOURS

**PROJECT CONTACT:**

**OWNER:**

TOWN OF PECOS CITY  
110 E. 6TH STREET  
PECOS, TEXAS 79772  
(432) 445-2421  
MR. JESUS SILVA



**ENGINEER:**

WTC, INC.  
405 SW. 1ST  
ANDREWS, TEXAS 79714  
(432) 523-2181  
MR. CHAD TOMPKINS, P.E.



**UTILITIES:**

TEXAS NEW MEXICO POWER  
1126 STAFFORD BLVD.  
PECOS, TEXAS 79772  
(432) 447-2182  
TITUS AKINYODE

TEXAS GAS SERVICE  
601 SOUTH OAK STREET  
PECOS, TEXAS 79772  
(800) 700-2443

TEXAS ONE CALL SYSTEM (UTILITY LOCATE)  
1-800-DIGTESS (344-8377)  
WWW.TEXAS811.ORG

**SHEET INDEX**

SHEET NO.	SHEET TITLE
CVR. SH.	COVER SHEET
1	GENERAL NOTES/ PROJECT CONTACTS/ SHEET INDEX
2	EXISTING SITE LAYOUT/ SURVEY CONTROL TABLE
3	EXISTING HYDRAULIC GRADE LINE
4	HYDRAULIC GRADE LINE
5	SITE UTILITY
6	POND GRADING PLAN
7	POND CROSS-SECTIONS
8	LEAK DETECTION DRAIN PLAN AND DETAILS
9	WET WELL PLAN
10	CHLORINE CONTACT BASIN PLAN
11	CHLORINE CONTACT BASIN CROSS-SECTIONS
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13	BIO-SHELL SITE PLAN AND DETAILS
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17	DE-CHLORINATION EQUIPMENT BUILDING PLAN
18	EXISTING TREATMENT POND SLUDGE DEPTH PLAN
19	DETAILS



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**WWTP IMPROVEMENTS**

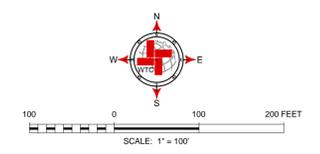
**GENERAL NOTES/  
PROJECT CONTACTS/ SHEET INDEX**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	N/A	1



**NOTES:**

1. EXISTING WASTE WATER TREATMENT PLANT (WWTP) TO REMAIN IN OPERATION UNTIL ADDITIONAL PONDS ARE TESTED AND APPROVED READY FOR SERVICE. CONTRACTOR TO COORDINATE WITH WWTP MANAGEMENT AND OR ENGINEER OF RECORD.
2. PRIOR TO INSTALLATION OF LINER MATERIAL, CONTRACTOR TO REMOVE WATER FROM PONDS 1,2,3 TO BE LINED.
3. PONDS NOTED AS 1,2,3 ON PLANS TO BE LINED WITH CUSTOMER SUPPLIED LINER MATERIAL. LINER MANUFACTURERS INSTALLATION METHODS AND PROCEDURES TO BE FOLLOWED.
4. EXISTING PUMP SKID AND ELECTRICAL PANEL TO BE RELOCATED TO NEW WET WELL LOCATION.



BASIS OF BEARING, COORDINATES AND DISTANCES ARE A LAMBERT CONICAL PROJECTION OF THE TEXAS COORDINATE SYSTEM, STATE PLANE GRID, NAD 83, TEXAS CENTRAL (4202), WITH A CONVERGENCE ANGLE OF -01°38'11.1\"/>

PROJECT SURVEY CONTROL POINT COORDINATES TABLE					
DESCRIPTION	NORTHING	EASTING	LATITUDE	LONGITUDE	ELEVATION
CP 100	10496974.31'	1318742.57'	31° 25' 41.72"	103° 28' 08.02"	2579.37'
CP 101	10496756.99'	1317755.76'	31° 25' 39.29"	103° 28' 19.34"	2579.48'
CP 7 - 60d NAIL	10496562.39'	1317592.40'	31° 25' 37.32"	103° 28' 21.16"	2571.87'
CP 10 - 60d NAIL	10496978.15'	1319889.57'	31° 25' 42.07"	103° 27' 54.79"	2566.32'
CP 11 - 60d NAIL	10497225.35'	1318444.44'	31° 25' 44.12"	103° 28' 11.55"	2569.74'
CP 14 - 60d NAIL	10497748.95'	1319976.21'	31° 25' 49.72"	103° 27' 54.04"	2571.59'



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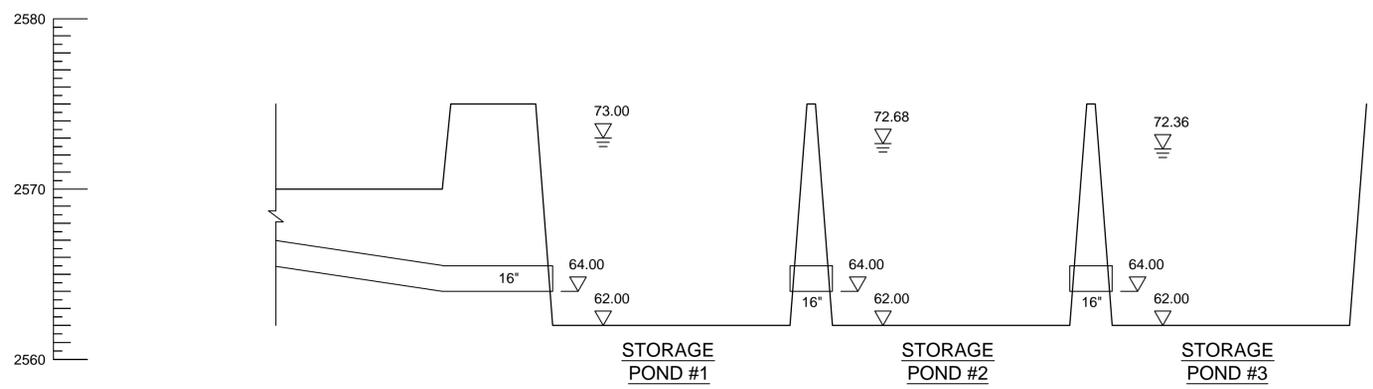
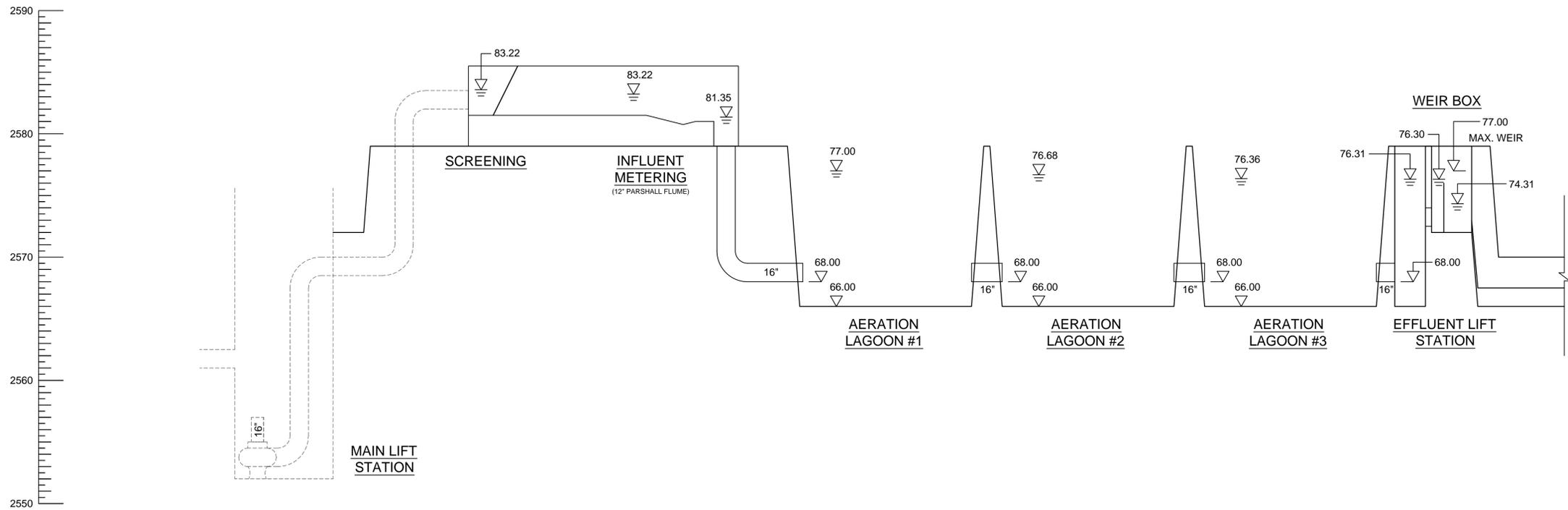
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WWTP IMPROVEMENTS					
EXISTING SITE LAYOUT/ SURVEY CONTROL TABLE					
DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	N/A	2

Z:\Projects\Engineering & Surveying\Texas\Town of Pecos, TX\City of Pecos\51582-Pecos WWTP Discharge Permit and Plant Improvements Drawings\51582-2-EXIST SITE.dwg



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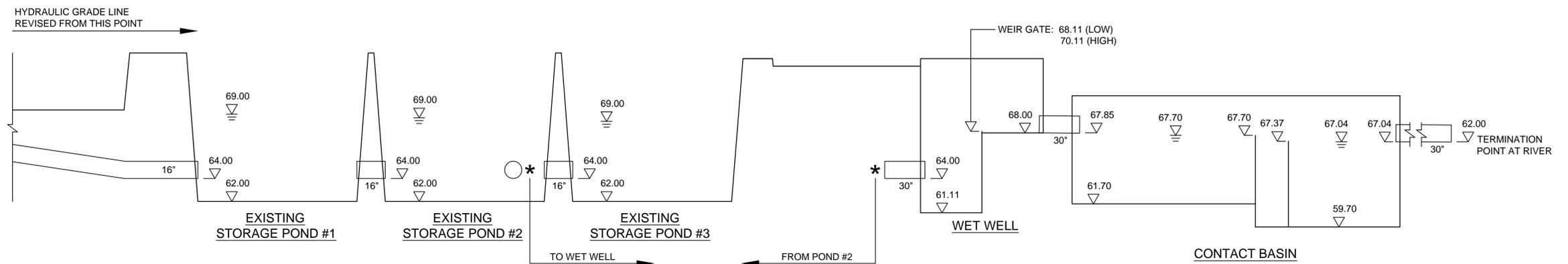
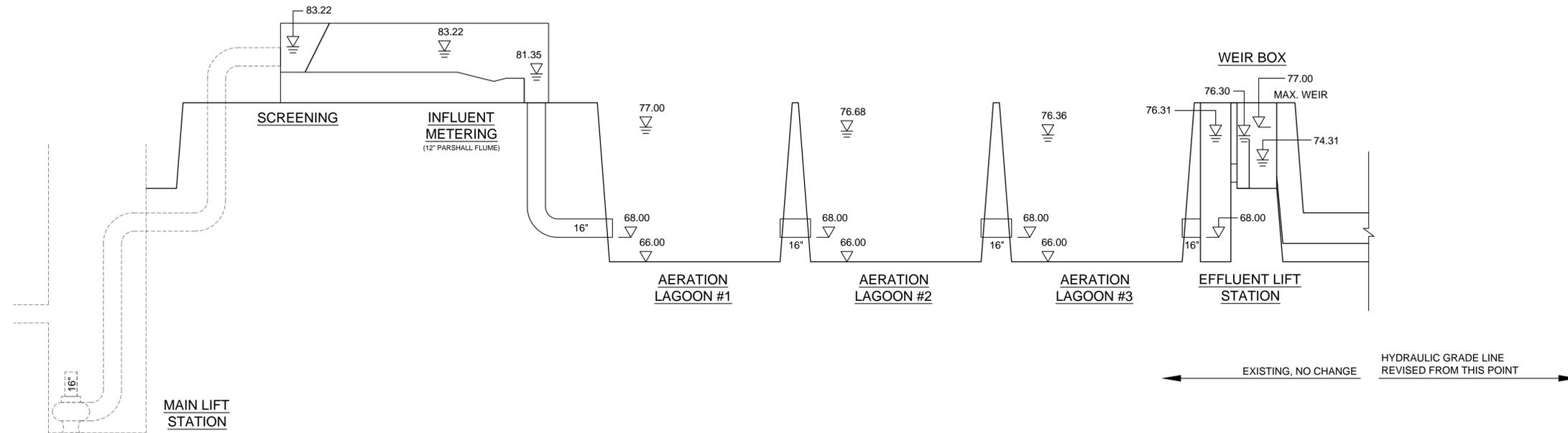


**WWTP IMPROVEMENTS**

**HYDRAULIC GRADE LINE**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	N/A	<b>3</b>

Z:\Projects\Engineering & Surveying\Texas\Town of Pecos, TX\City of Pecos\51582-Pecos WTP Discharge Permit and Plant Improvements Drawings\51582-3-EXIST-HYD-GRADE.dwg



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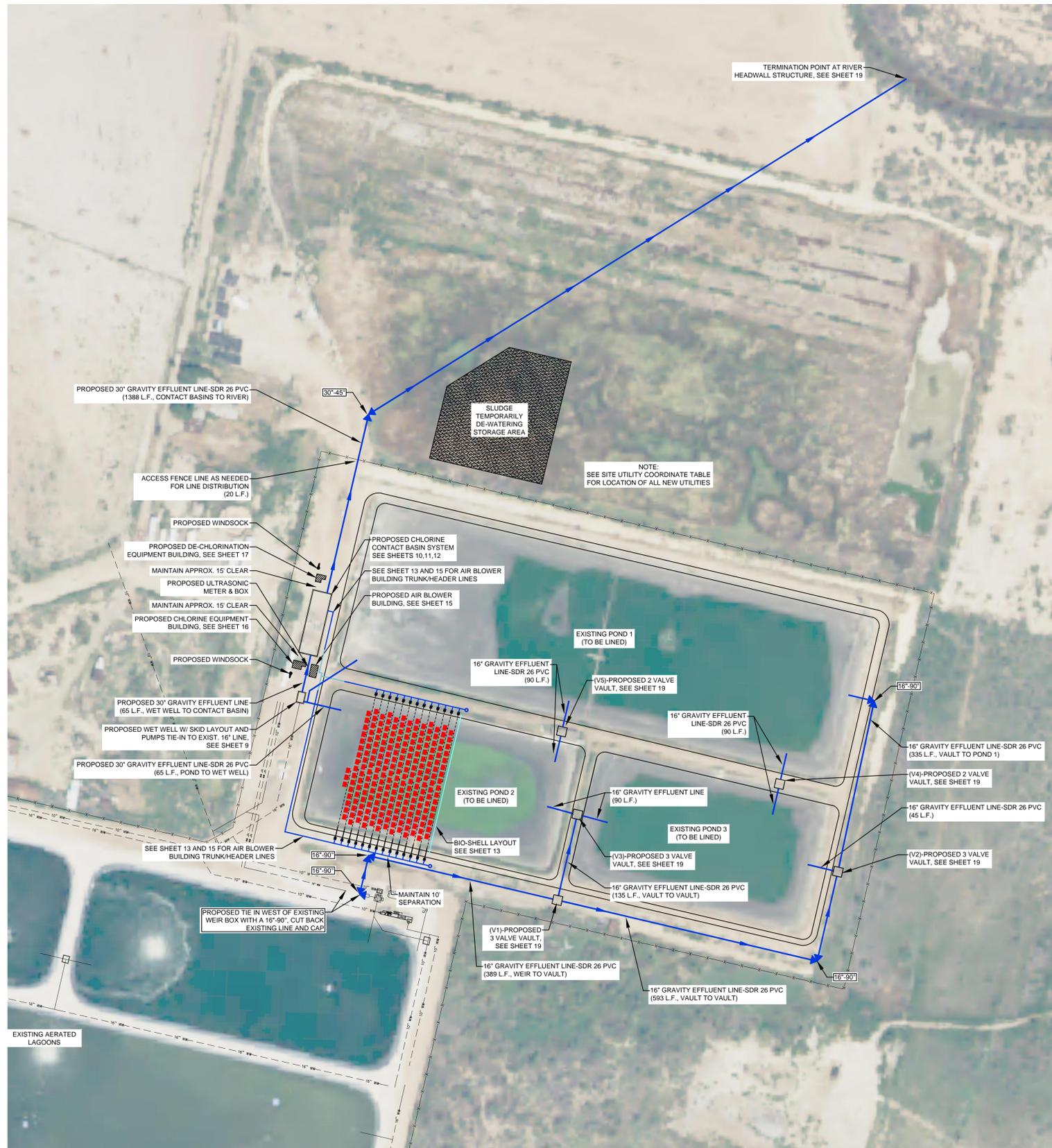


## WWTP IMPROVEMENTS

### HYDRAULIC GRADE LINE

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J.C.T.	J.T.A.	10/20/17	51582	N/A	4

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**SITE UTILITY COORDINATES TABLES**

WET WELL COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497319.75'	1318792.84'	NW CORNER
10497317.19'	1318804.56'	NE CORNER
10497299.61'	1318800.72'	SE CORNER
10497302.17'	1318789.00'	SW CORNER

(V5) VAULT COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497261.63'	1319234.38'	NW CORNER
10497258.15'	1319250.00'	NE CORNER
10497242.53'	1319246.52'	SE CORNER
10497246.01'	1319230.91'	SW CORNER

CHLORINE EQUIPMENT BUILDING COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497372.98'	1318784.57'	NW CORNER
10497367.96'	1318805.99'	SE CORNER
10497361.47'	1318804.47'	E-SE CORNER
10497362.97'	1318798.06'	INT. CORNER
10497356.81'	1318796.62'	SE CORNER
10497360.32'	1318781.61'	SW CORNER

PIPE FITTING COORDINATES		
NORTHING	EASTING	DESCRIPTION
10496976.95'	1318896.76'	S.O.L. 16"-90 FITTING
10497041.59'	1318911.65'	16"-90 FITTING
10496863.33'	1319674.50'	16"-90 FITTING
10497303.39'	1319771.79'	16"-90 FITTING
10497301.49'	1318807.28'	30"-TEE FITTING
10497320.95'	1318811.53'	30"-45 FITTING
10497788.86'	1318911.91'	30"-45 FITTING
10498356.51'	1319826.58'	RIVER TERMINATION POINT

DE-CHLOR. EQUIPMENT BUILDING COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497518.82'	1318824.04'	NW CORNER
10497515.17'	1318839.62'	NE CORNER
10497508.68'	1318838.10'	E-SE CORNER
10497510.18'	1318831.69'	INT. CORNER
10497504.02'	1318830.25'	SE CORNER
10497506.16'	1318821.08'	SW CORNER

WINDSOCK COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497350.58'	1318779.33'	WINDSOCK 1
10497528.56'	1318826.32'	WINDSOCK 2

CONTACT BASIN COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497491.56'	1318817.66'	NW CORNER
10497484.26'	1318848.82'	NE CORNER
10497379.11'	1318824.20'	SE CORNER
10497386.40'	1318793.04'	SW CORNER

ULTRASONIC METER & BOX COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497361.67'	1318808.82'	CENTER LOCATION

AIR BLOWER BUILDING COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497365.87'	1318814.93'	NW CORNER
10497363.14'	1318826.61'	NE CORNER
10497342.69'	1318821.83'	SE CORNER
10497345.42'	1318810.14'	SE CORNER

(V1) VAULT COORDINATES		
NORTHING	EASTING	DESCRIPTION
10496976.05'	1319226.84'	NW CORNER
10496972.57'	1319242.46'	NE CORNER
10496956.96'	1319238.98'	SE CORNER
10496960.43'	1319223.36'	SW CORNER

(V2) VAULT COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497024.13'	1319703.80'	NW CORNER
10497020.65'	1319719.42'	NE CORNER
10497005.04'	1319715.94'	SE CORNER
10497008.51'	1319700.32'	SW CORNER

(V3) VAULT COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497120.98'	1319260.70'	NW CORNER
10497117.50'	1319276.31'	NE CORNER
10497101.88'	1319272.84'	SE CORNER
10497105.36'	1319257.22'	SW CORNER

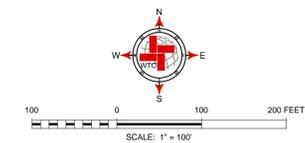
(V4) VAULT COORDINATES		
NORTHING	EASTING	DESCRIPTION
10497172.69'	1319604.72'	NW CORNER
10497169.21'	1319620.33'	NE CORNER
10497153.59'	1319616.86'	SE CORNER
10497157.07'	1319601.24'	SW CORNER



WET WELL AREA INSET  
SCALE: N.T.S.

**NOTES:**

- EXISTING PUMP SKID AND ELECTRICAL PANEL TO BE RELOCATED TO NEW WET WELL LOCATION.
- OWNER TO PROVIDE LINER AND GEOTEXTILE MATERIAL. CONTRACTOR TO INSPECT PRIOR TO BIDDING.



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**WWTP IMPROVEMENTS**

**SITE UTILITY PLAN**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	5

Z:\Projects\Engineering & Surveying\Texas\Town of Pecos, TX\City of Pecos\WTP Discharge Permit and Plant Improvements Drawings\51582-5-PROP SITE UTILITY -OVERALL.dwg

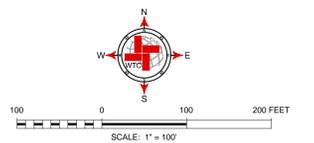


**NOTES:**

1. CONTRACTOR SHALL PROTECT IN PLACE EXISTING EMERGENCY OVERFLOW STRUCTURE.
2. CONTRACTOR TO DEMOLITION EXISTING LIGHT STRUCTURES.
3. CONTRACTOR SHALL DRAIN EXISTING PONDS AND ALLOW PONDS TO DRY IN ACCORDANCE WITH THE SEQUENCE OF CONSTRUCTION. GROUNDWATER LEVEL IN AND AROUND PONDS IS ARTIFICIALLY HIGHER THAN BOTTOM OF PONDS DUE TO APPARENT LEAKAGE OF EXISTING POND BERMS. CONTRACTOR IS REQUIRED TO LOWER GROUNDWATER LEVEL TO MINIMUM 2 FEET BELOW BOTTOM POND ELEVATION PRIOR TO CONSTRUCTION OF NEW STORAGE PONDS AND LINER. GROUNDWATER FROM DEWATERING OPERATIONS SHALL BE DISCHARGED TO NEW TREATMENT PONDS. IT IS ANTICIPATED THAT THERE IS APPROXIMATELY 27,000 CUBIC YARDS (CY) OF SLUDGE IN THE EXISTING PONDS. SEE SHEET 18. CONTRACTOR SHALL REMOVE SLUDGE AND TEMPORARILY STORE TO DE-WATER ON WWTP PROPERTY AS SHOWN ON SHEET 5. COORDINATE DISPOSAL OF SLUDGE.
4. SEE LINER PENETRATION DETAIL, SHEET 8.
5. AT TIME OF GEOTECH INVESTIGATION, ANTICIPATED GROUND WATER ELEVATION FROM BORINGS TAKEN MAY 2009. (2564.00')
6. HISTORICAL PAST GROUND WATER ELEVATION ENCOUNTERED DURING CONSTRUCTION OF PONDS IN 1980, PRIOR TO APPARENT LEAKAGE OF EXISTING BERMS. (2558.00')

**LEGEND**

- EXISTING CONTOURS
- DESIGN CONTOURS



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 TEXAS REGISTERED SURVEYOR FIRM #100792-00

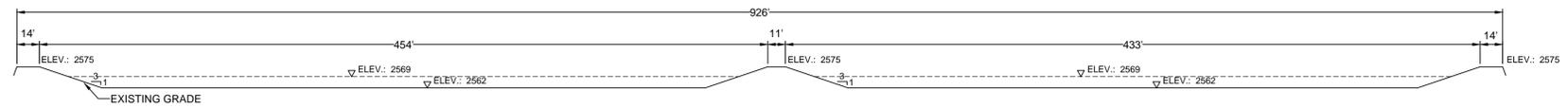
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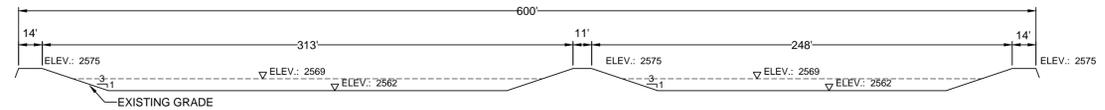
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WWTP IMPROVEMENTS					
POND GRADING PLAN					
DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	<b>6</b>

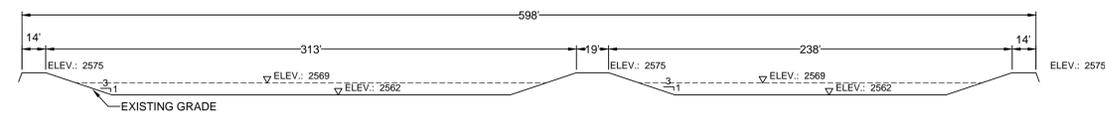
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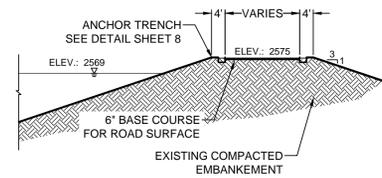
**A**  
6/17 CROSS SECTION VIEW  
SCALE: 1" = 50'



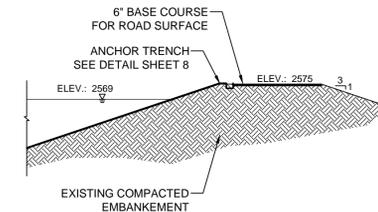
**B**  
6/17 CROSS SECTION VIEW  
SCALE: 1" = 50'



**C**  
6/17 CROSS SECTION VIEW  
SCALE: 1" = 50'



**E**  
6/17 CROSS SECTION VIEW  
SCALE: 1" = 50'



**D**  
6/17 CROSS SECTION VIEW  
SCALE: 1" = 50'



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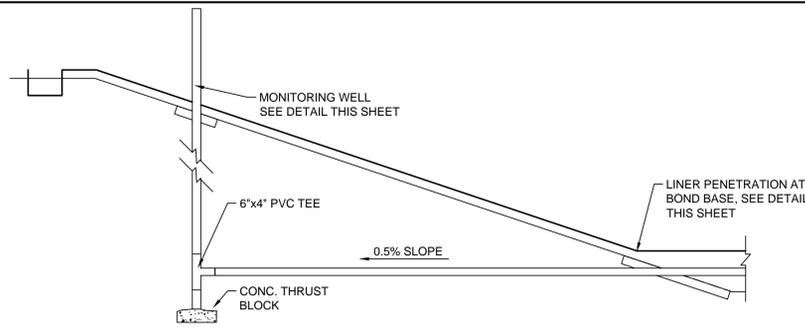
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**WWTP IMPROVEMENTS**

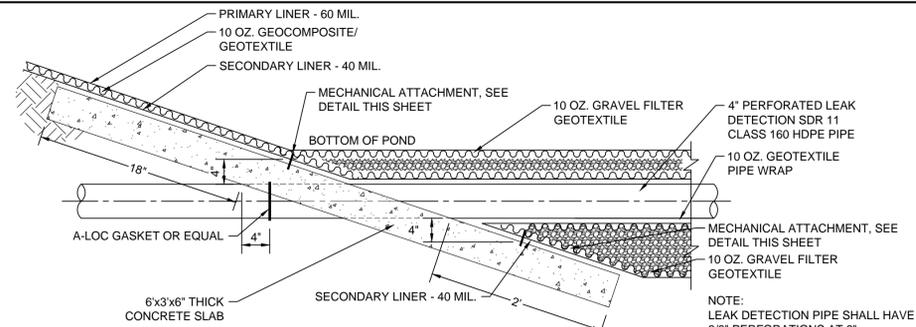
**POND CROSS-SECTIONS**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	<b>7</b>



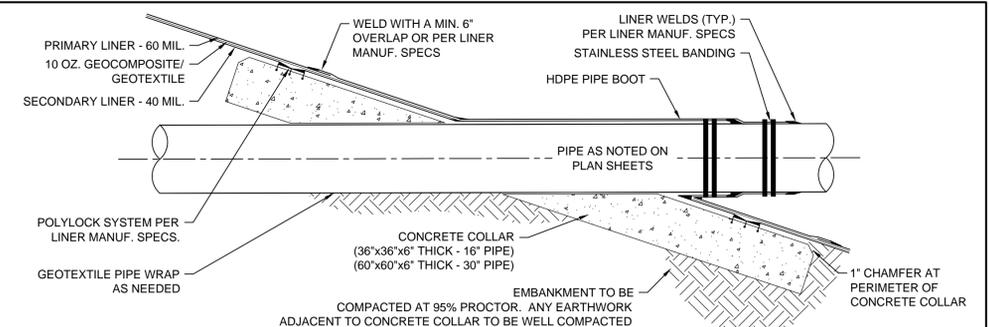
**MONITORING WELL PROFILE DETAIL**

SCALE: N.T.S.



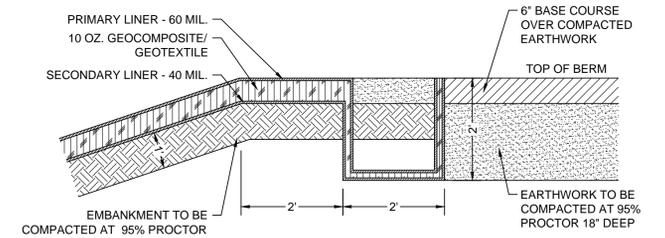
**LINER PENETRATION DETAIL AT POND BASE**

SCALE: N.T.S.



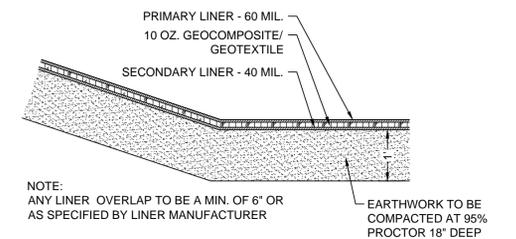
**LINER PENETRATION DETAIL AT EMBANKMENT**

SCALE: N.T.S.



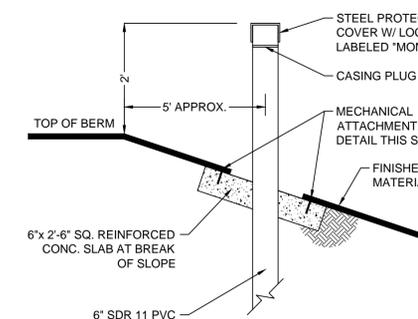
**ANCHOR TRENCH DETAIL**

SCALE: N.T.S.



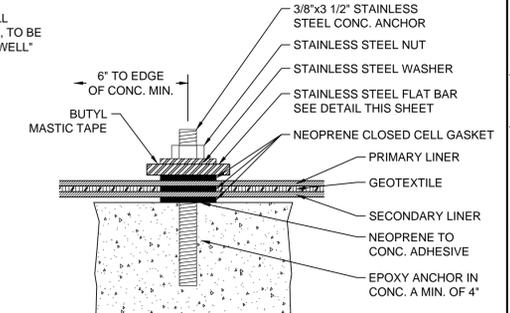
**BOTTOM OF LAGOON DETAIL**

SCALE: N.T.S.



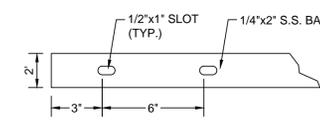
**MONITORING WELL DETAIL**

SCALE: N.T.S.



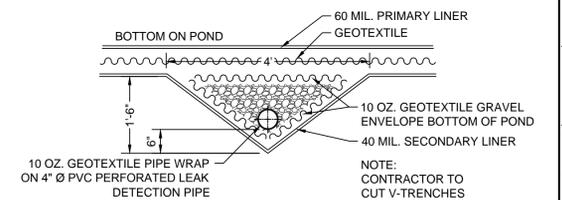
**MECHANICAL ATTACHMENT AT CONCRETE DETAIL**

SCALE: N.T.S.



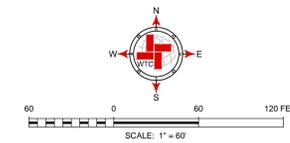
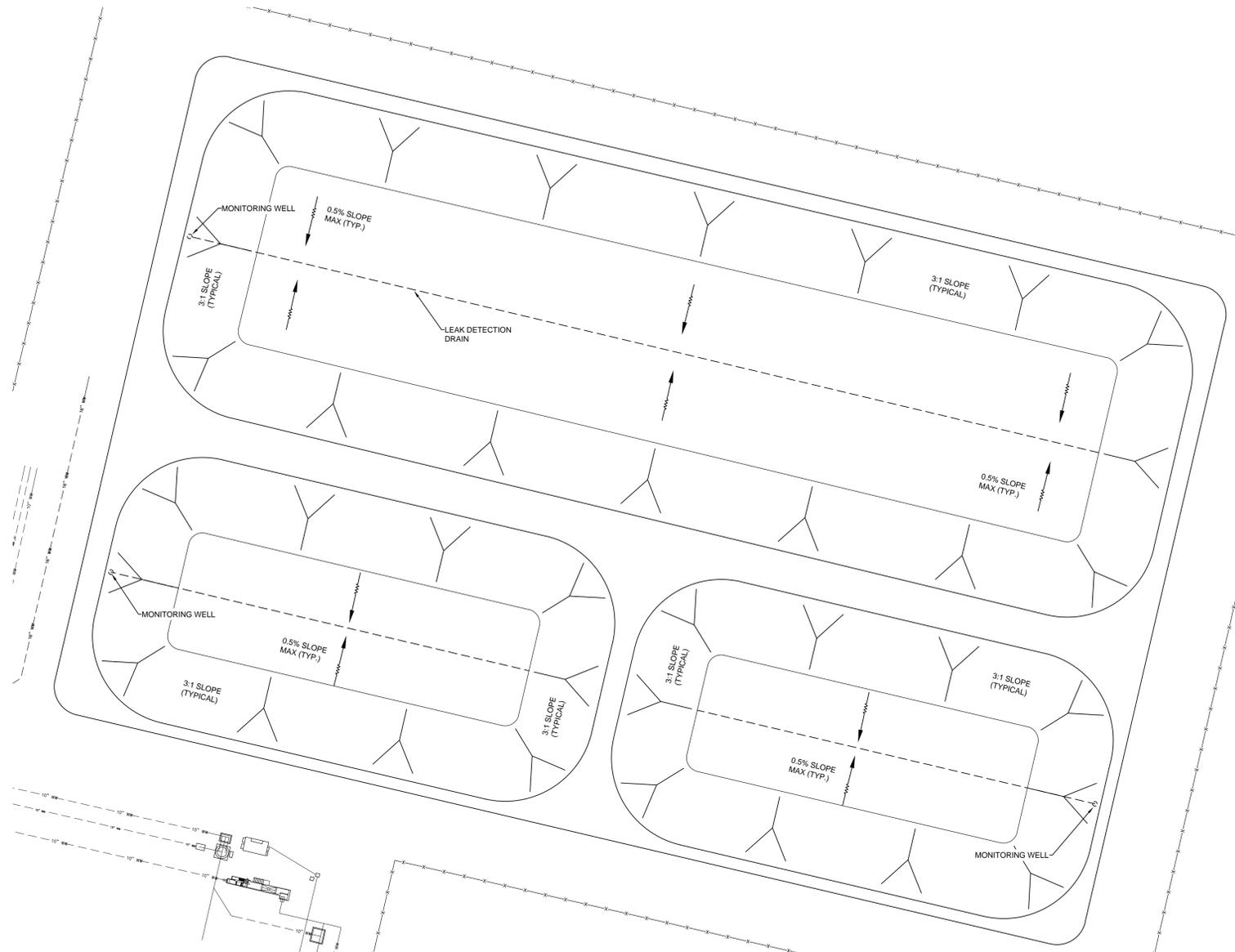
**S.S. FLAT BAR DETAIL**

SCALE: N.T.S.



**LEAK DETECTION DRAIN DETAIL**

SCALE: N.T.S.



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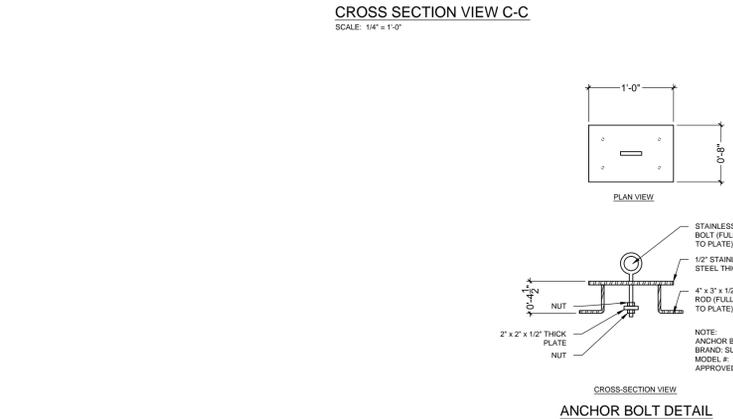
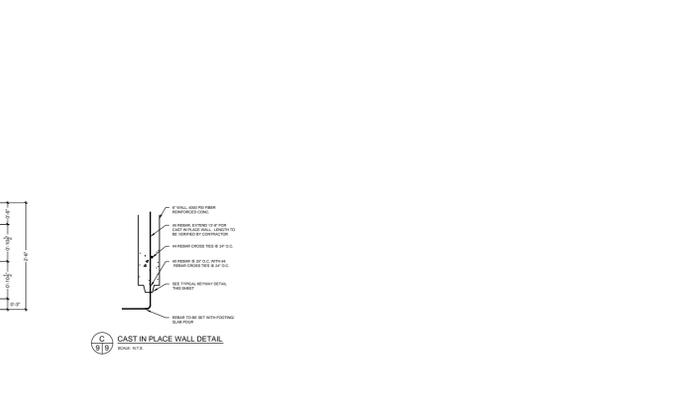
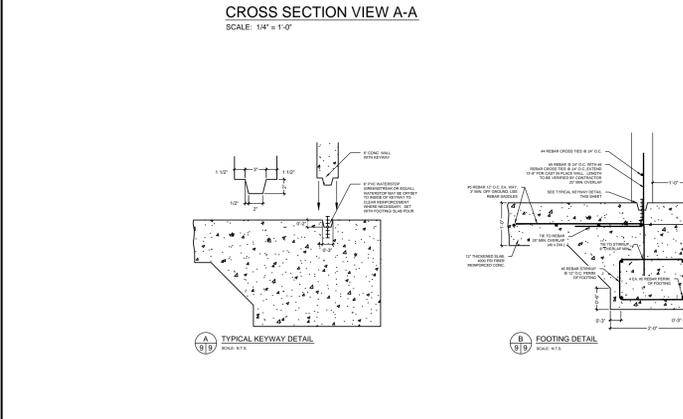
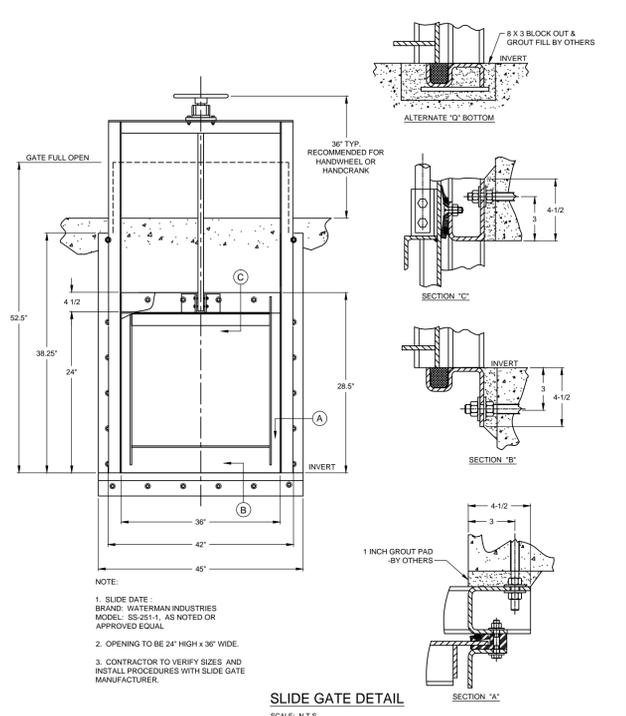
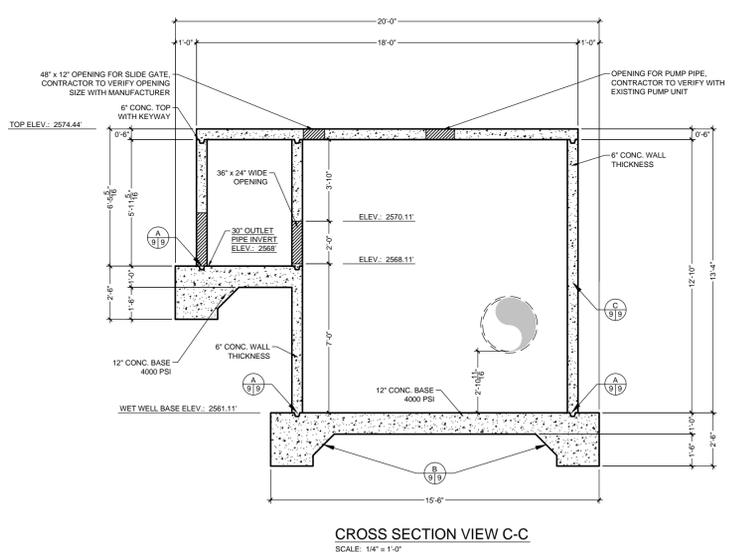
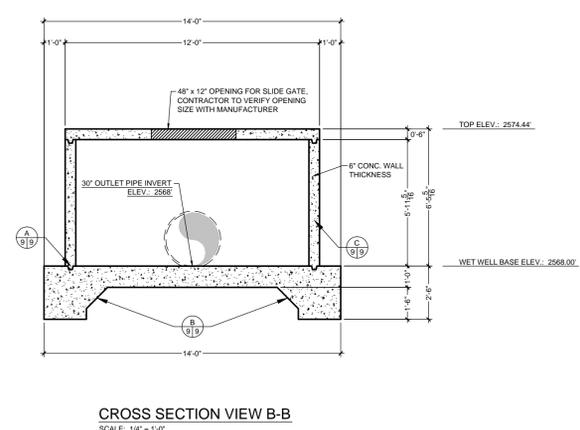
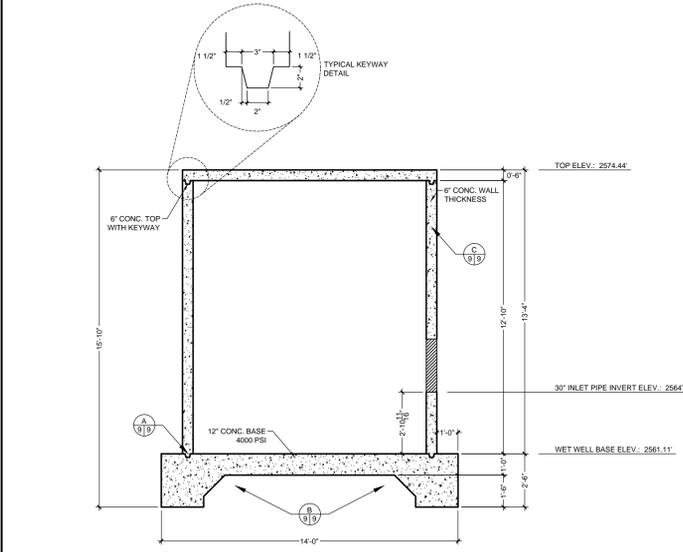
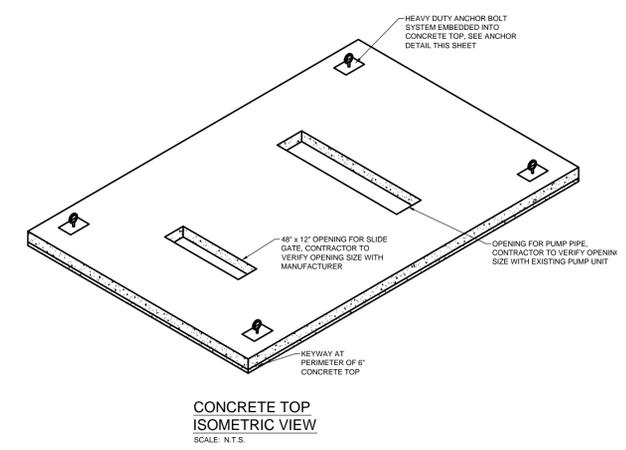
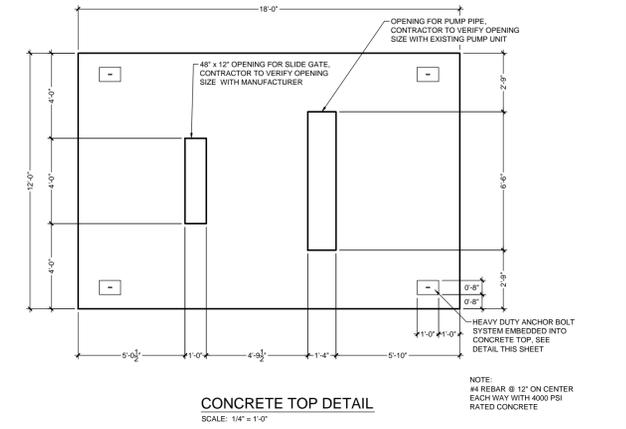
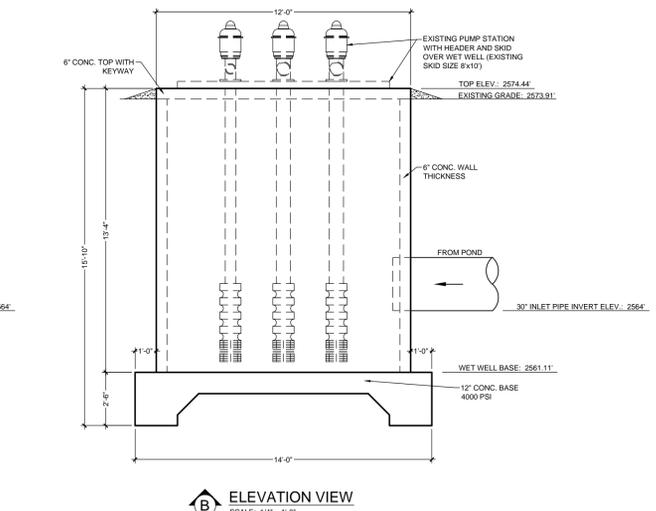
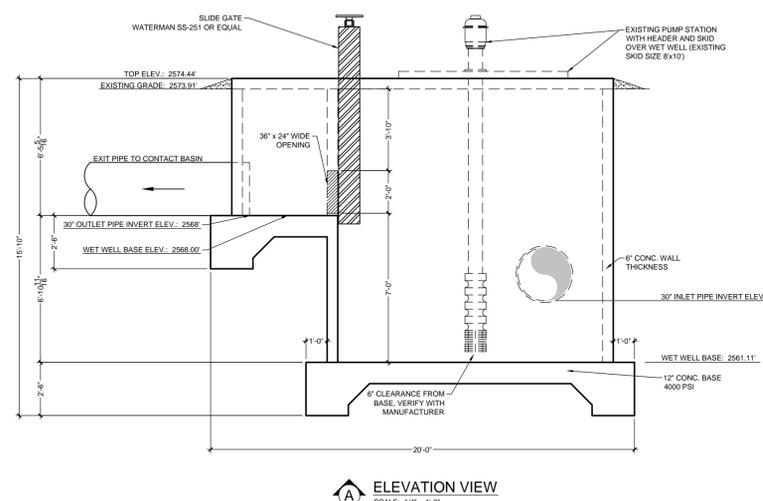
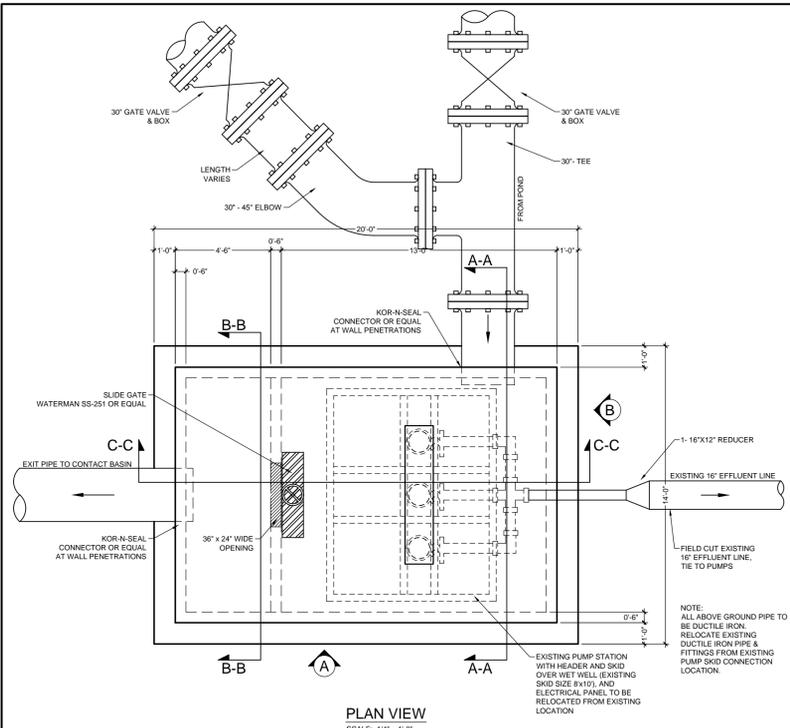
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**WWTP IMPROVEMENTS**

**LEAK DETECTION DRAIN PLAN AND DETAILS**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	8

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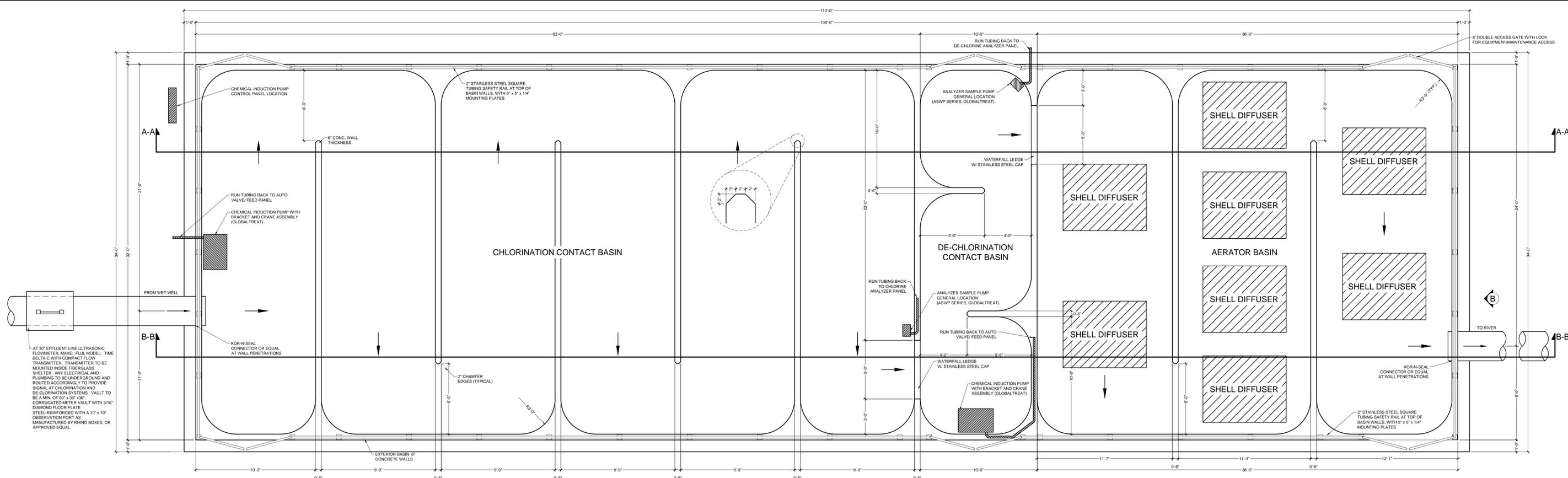
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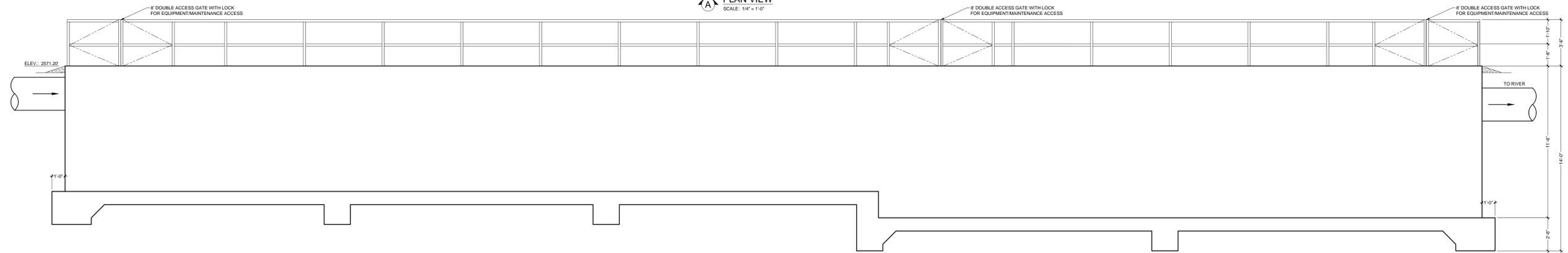
**WET WELL PLAN**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	9

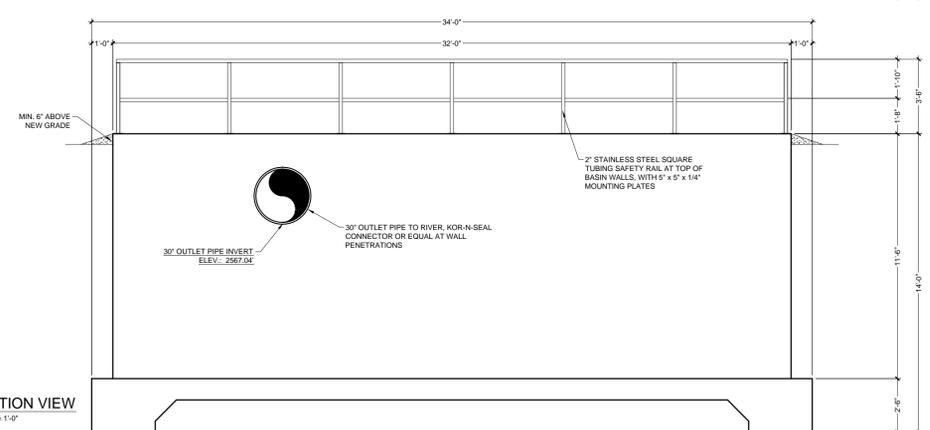
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**PLAN VIEW**  
SCALE: 1/4" = 1'-0"



**ELEVATION VIEW A**  
SCALE: 1/4" = 1'-0"



**ELEVATION VIEW B**  
SCALE: 1/4" = 1'-0"



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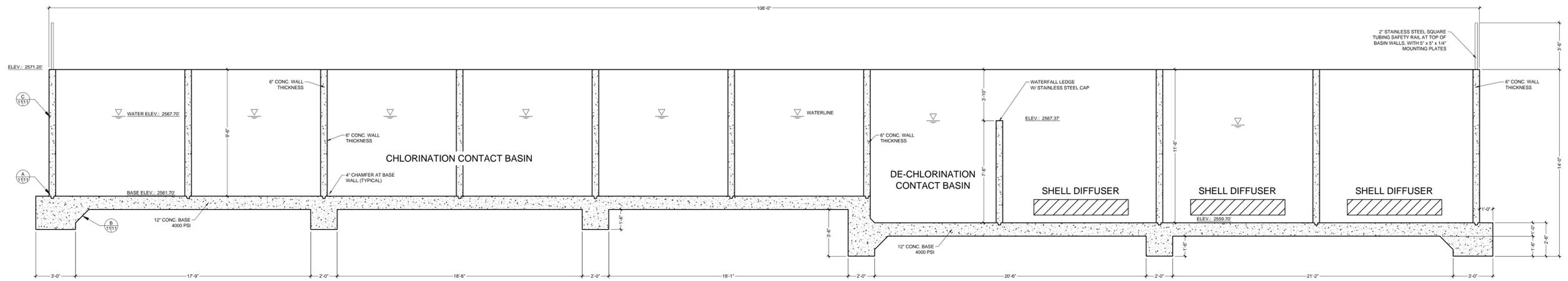


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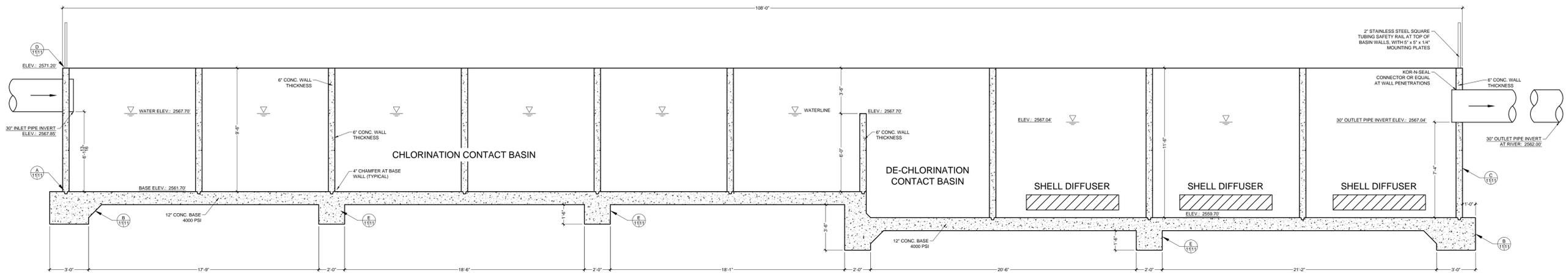
**CHLORINE CONTACT BASIN PLAN**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	10

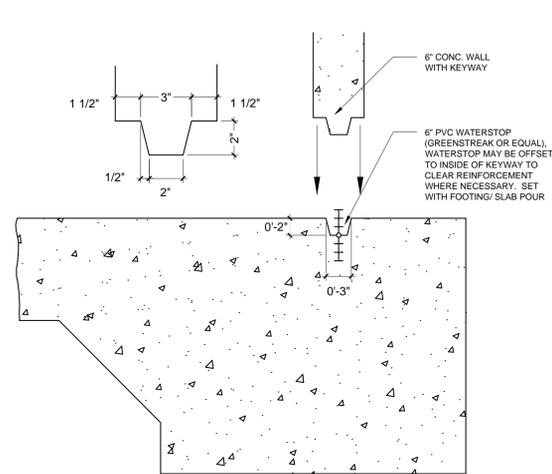
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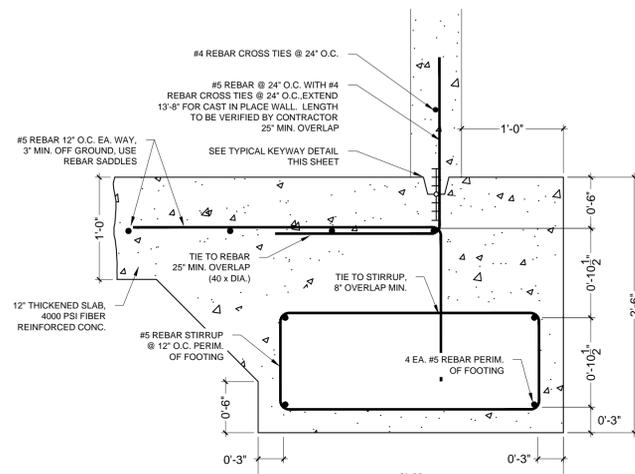
CROSS SECTION VIEW A-A  
SCALE: 1/4" = 1'-0"



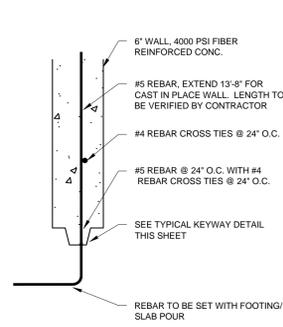
CROSS SECTION VIEW B-B  
SCALE: 1/4" = 1'-0"



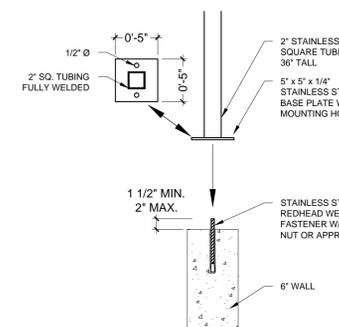
A TYPICAL KEYWAY DETAIL  
SCALE: N.T.S.



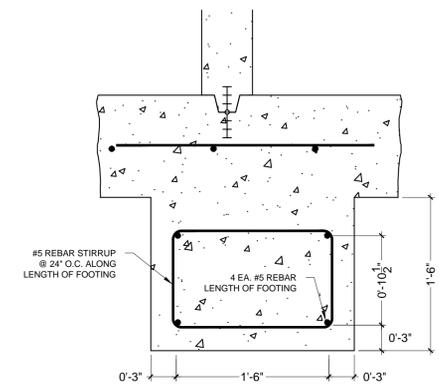
B FOOTING DETAIL  
SCALE: N.T.S.



C CAST IN PLACE WALL DETAIL  
SCALE: N.T.S.



D PERIMETER RAIL DETAIL  
SCALE: N.T.S.



E INTERIOR FOOTING DETAIL  
SCALE: N.T.S.



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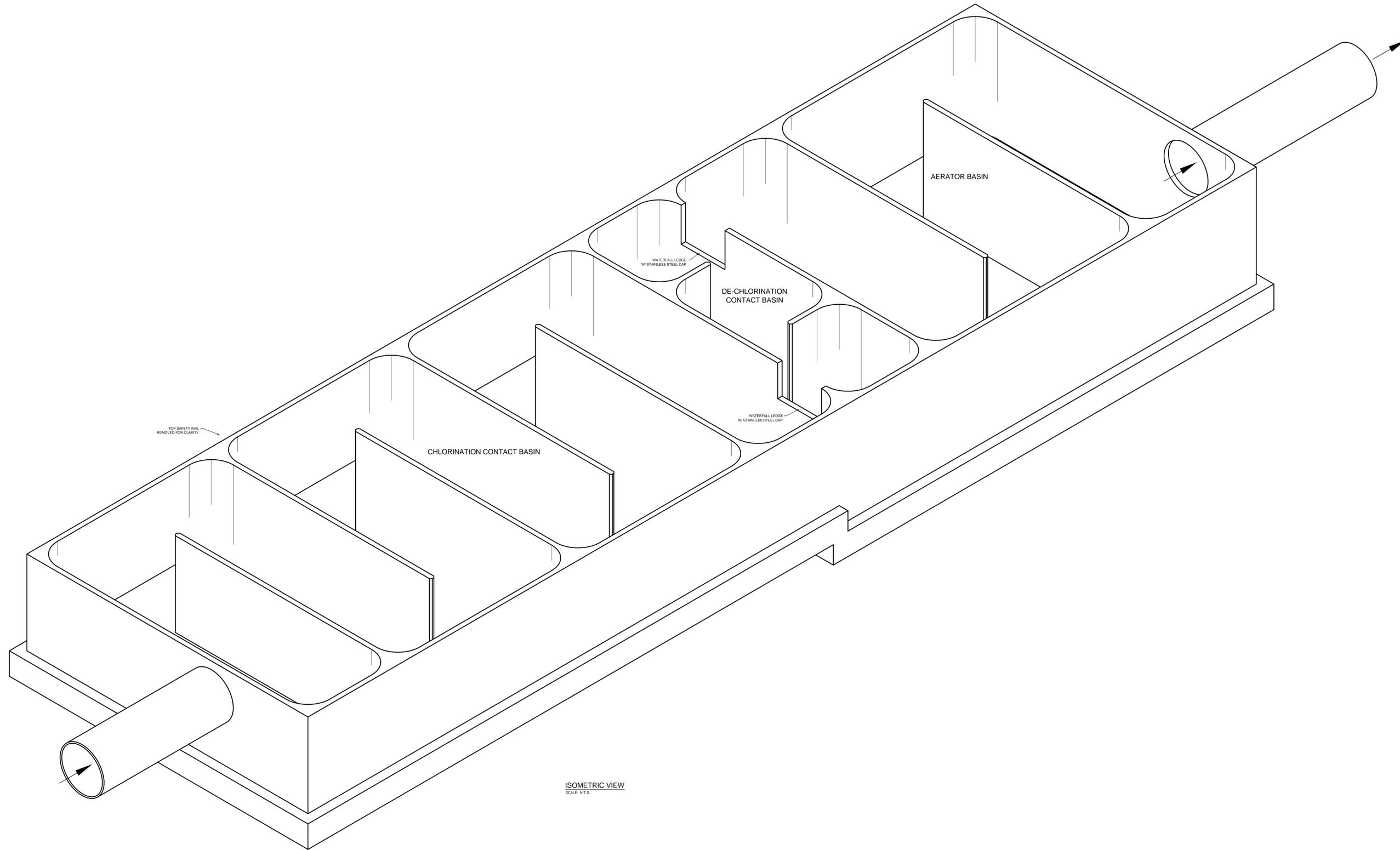


**WWTP IMPROVEMENTS**

**CHLORINE CONTACT BASIN  
CROSS-SECTIONS/ DETAILS**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	11

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ISOMETRIC VIEW  
SCALE: N.T.S.



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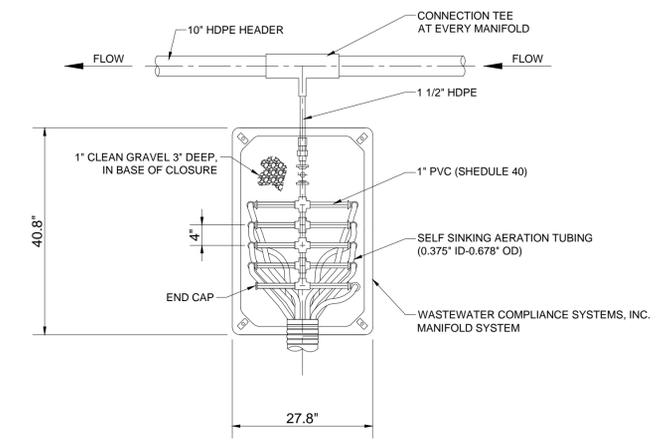
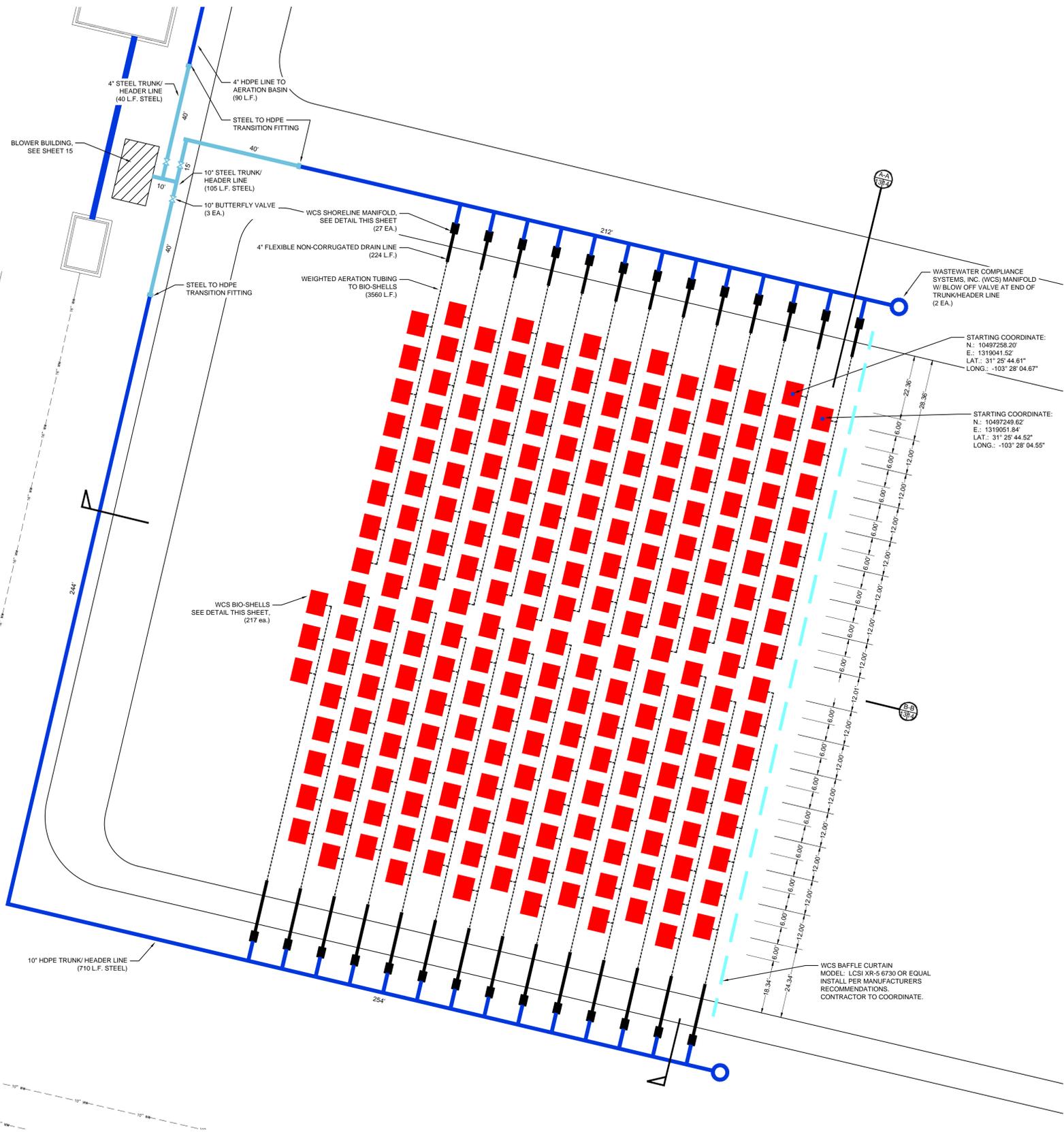


**WWTP IMPROVEMENTS**

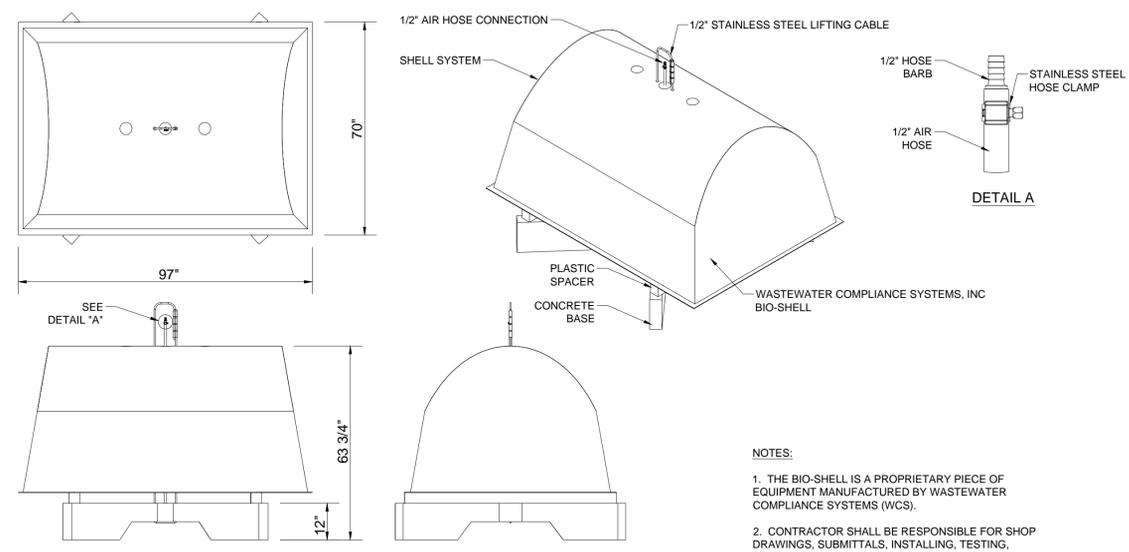
**CHLORINE CONTACT BASIN  
ISOMETRIC VIEW**

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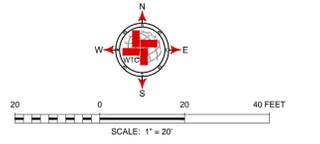


**MANIFOLD DETAIL**  
SCALE: N.T.S.



**BIO-SHELL DETAIL**  
SCALE: N.T.S.

- NOTES:**
1. THE BIO-SHELL IS A PROPRIETARY PIECE OF EQUIPMENT MANUFACTURED BY WASTEWATER COMPLIANCE SYSTEMS (WCS).
  2. CONTRACTOR SHALL BE RESPONSIBLE FOR SHOP DRAWINGS, SUBMITTALS, INSTALLING, TESTING, COMMISSIONING THE UNITS IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE DURING THE CONTRACTOR'S WARRANTY PERIOD TO ADDRESS ISSUES WITH THE SYSTEM.
  3. DIMENSIONS AND LAYOUTS ARE SHOWN FOR INFORMATION PURPOSES ONLY. SUBMITTALS SHALL PROVIDE ACTUAL DIMENSIONS.
- NOTES:**
1. FINAL EQUIPMENT LAYOUT TO BE COORDINATED BY WASTEWATER COMPLIANCE SYSTEMS, INC. REPRESENTATIVE AND CONTRACTOR.



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405 S.W. 1st. Street  
Andrews, TX 79714  
(432) 523-2181  
TEXAS REGISTERED ENGINEERING FIRM F-2746  
TEXAS REGISTERED SURVEYOR FIRM #100792-00

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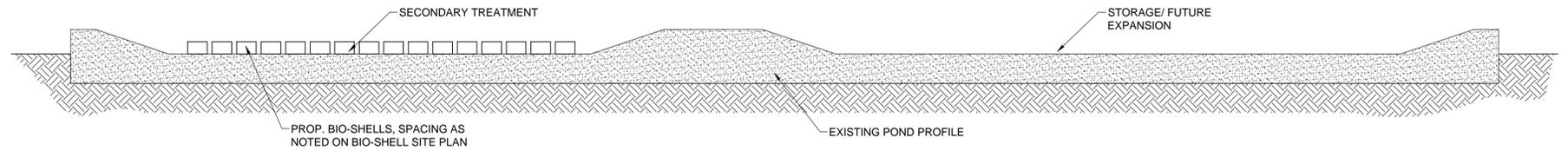
CONTRACTOR SHALL NOTIFY PROPERTY OWNERS AND RESIDENTS A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION ACTIVITIES ON OR IN THE VICINITY OF THEIR PROPERTY.

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www.texas811.org  
TOLL-FREE OSHA RULE 1926.651  
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TEXAS ONE CALL SYSTEM

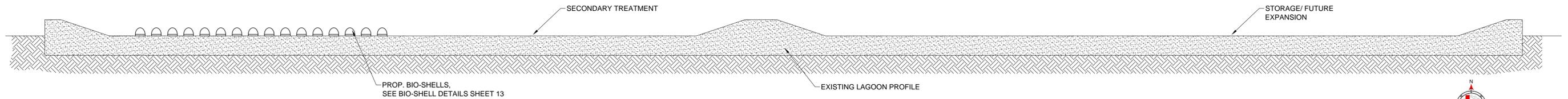
**WWTP IMPROVEMENTS**

**BIO-SHELLS SITE PLAN AND DETAILS**

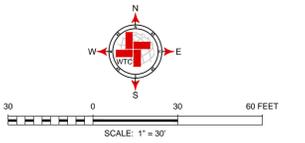
DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	13



**CROSS SECTION VIEW A-A**  
SCALE: 1" = 40'



**CROSS SECTION VIEW B-B**  
SCALE: 1" = 40'



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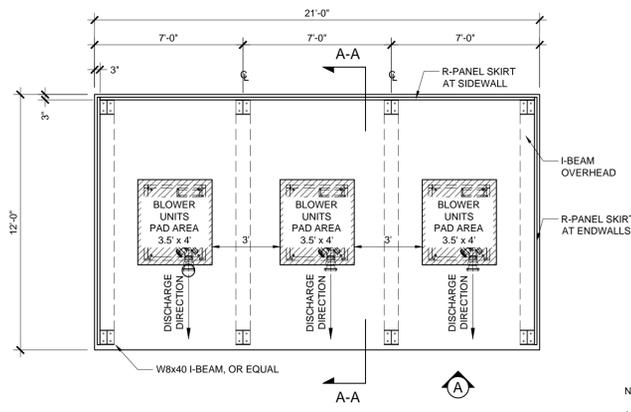


**WWTP IMPROVEMENTS**

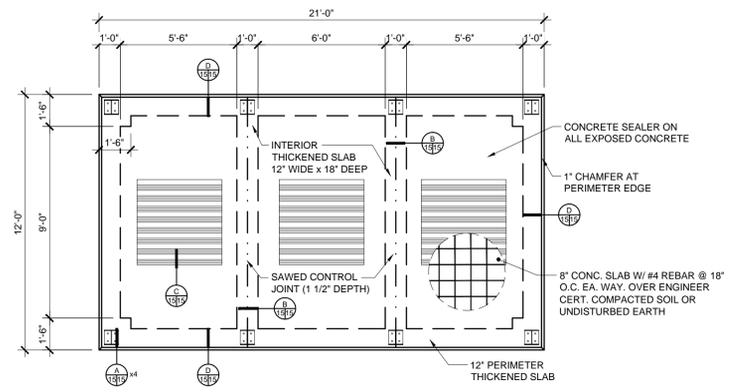
**BIO-SHELL CROSS-SECTIONS**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	14

Z:\Projects\Engineering & Surveying\Texas\Town of Pecos, TX\City of Pecos\51582-Pecos WTP Discharge Permit and Plant Improvements Drawings\51582-14-BIO-SHELL CROSS SEC.dwg

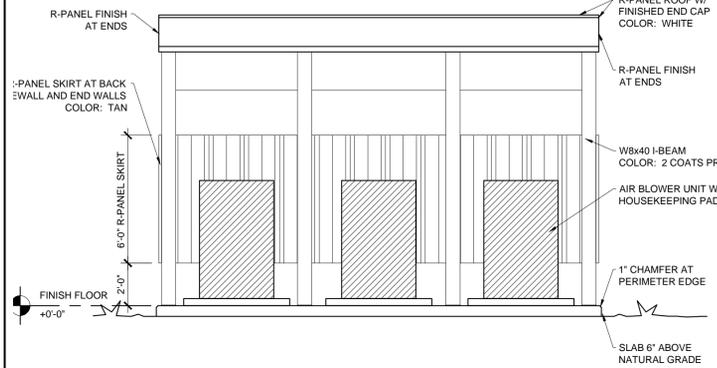


**FLOOR PLAN**  
SCALE: 1/4" = 1'-0"

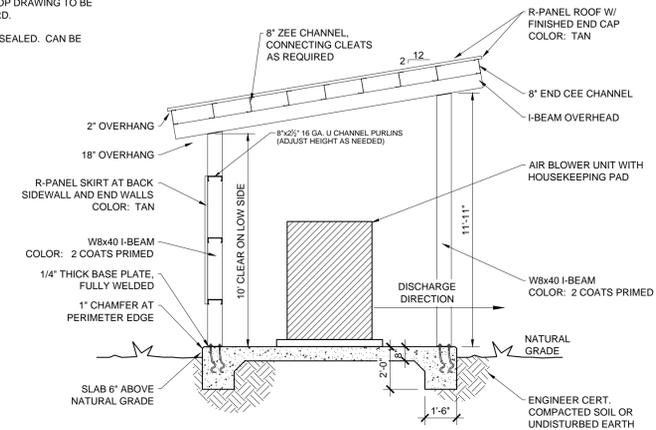


**FOUNDATION PLAN**  
SCALE: 1/4" = 1'-0"

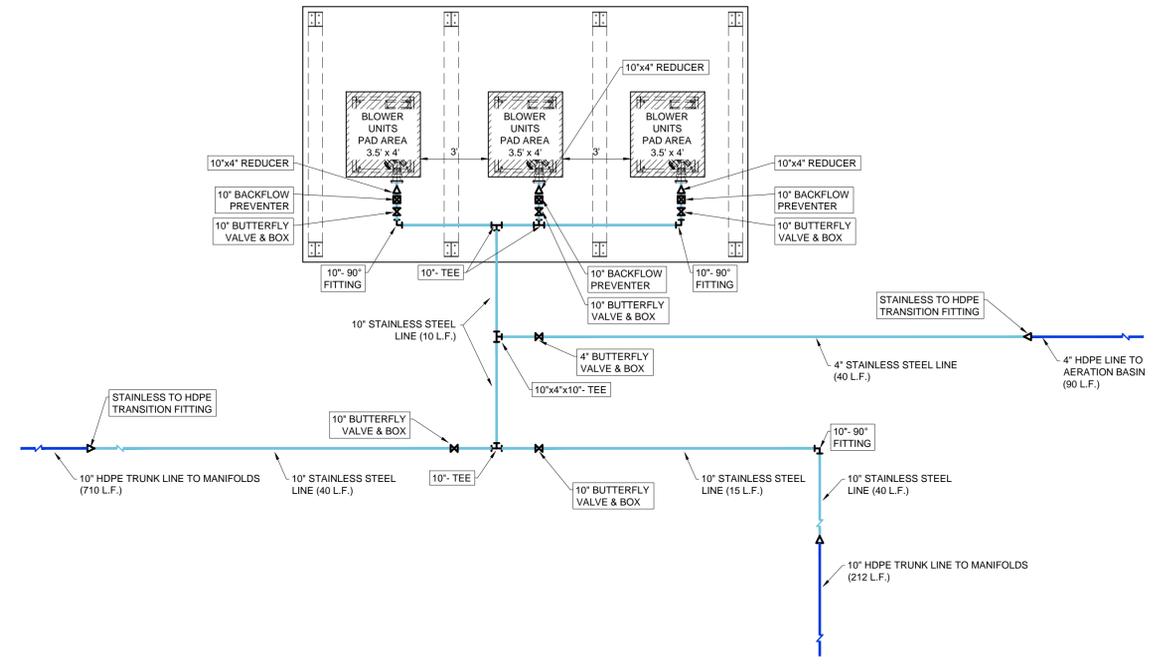
- NOTES:
- HOUSEKEEPING PAD TO BE SIZED TO ACCOMMODATE AIR BLOWER UNIT. COORDINATE WITH AIR BLOWER UNIT MANUFACTURER.
  - PROVIDE CONCRETE PIPE SUPPORT AS NEEDED. FINAL LOCATION DETERMINED AT SITE AT TIME OF INSTALL.
  - ROUGHEN JOINT/ SURFACE DIRECTLY BENEATH HOUSEKEEPING PAD.
  - PRIOR TO POUR, CONTRACTOR TO COORDINATE LOCATION OF ANY ANCHOR SYSTEM FOR THE AIR BLOWER UNIT AND HOUSEKEEPING PAD. SHOP DRAWING TO BE PROVIDED TO ENGINEER ON RECORD.
  - ALL EXPOSED CONCRETE TO BE SEALED. CAN BE CONTRACTOR SPECIFIC.



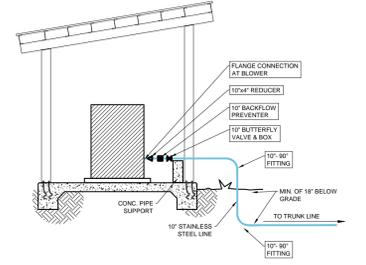
**ELEVATION VIEW - A**  
SCALE: 1/4" = 1'-0"



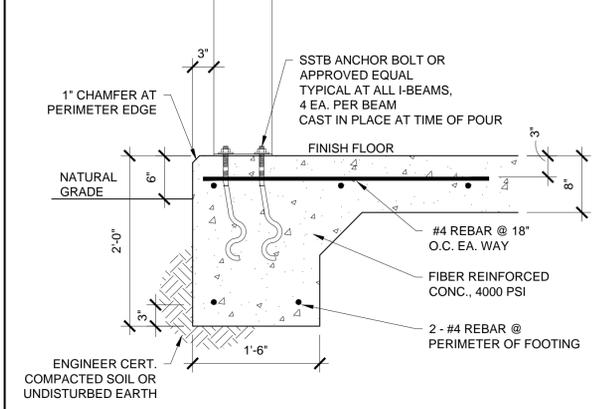
**CROSS SECTION VIEW A-A**  
SCALE: 1/4" = 1'-0"



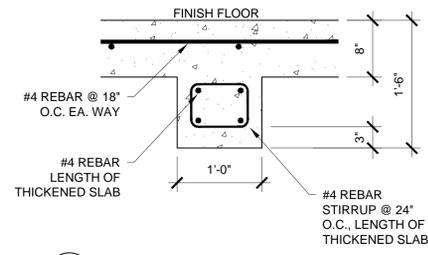
**BLOWER UNIT DISCHARGE PIPE LAYOUT**  
SCALE: 1/4" = 1'-0"



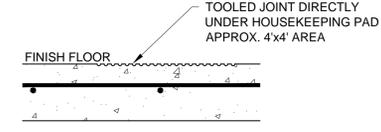
**CROSS SECTION VIEW - PIPE DISCHARGE**  
SCALE: 1/4" = 1'-0"



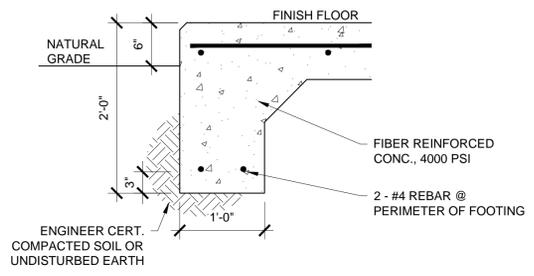
**A FOOTING DETAIL AT I-BEAMS**  
SCALE: N.T.S.



**B INTERIOR THICKENED SLAB**  
SCALE: N.T.S.



**C ROUGHEN JOINT**  
SCALE: N.T.S.



**D PERIMETER FOOTING DETAIL**  
SCALE: N.T.S.

NOTE:  
ALL EQUIPMENT IS AS NOTED OR APPROVED EQUAL



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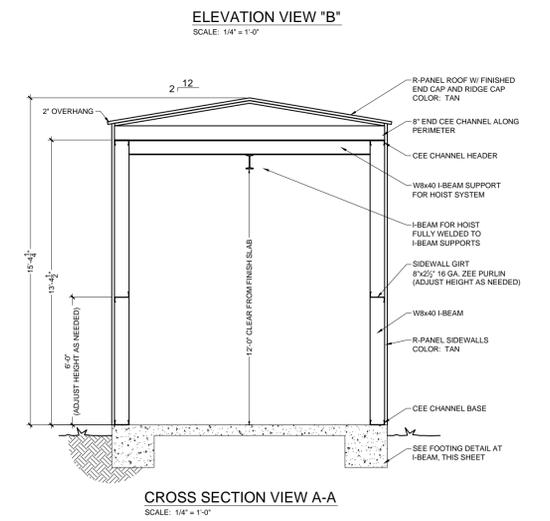
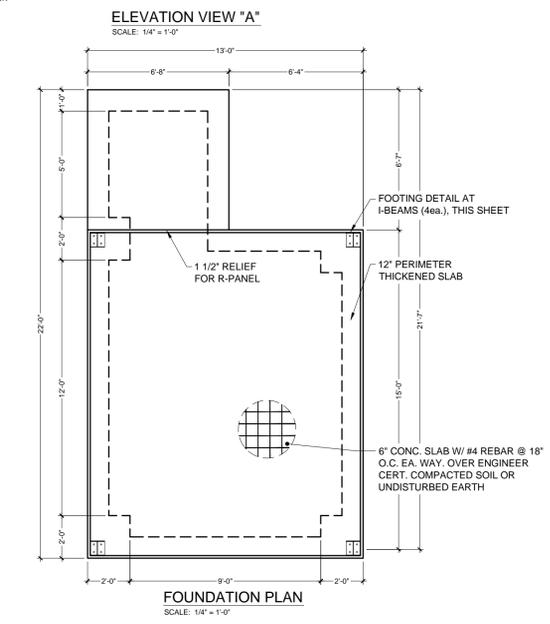
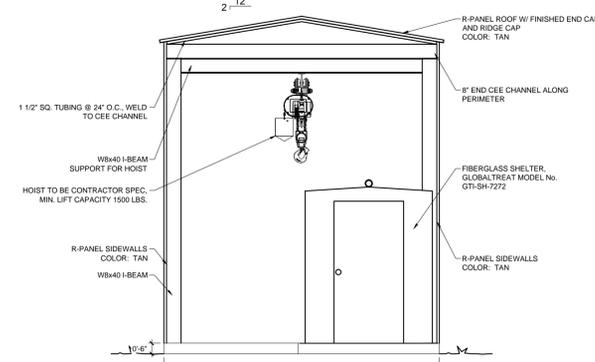
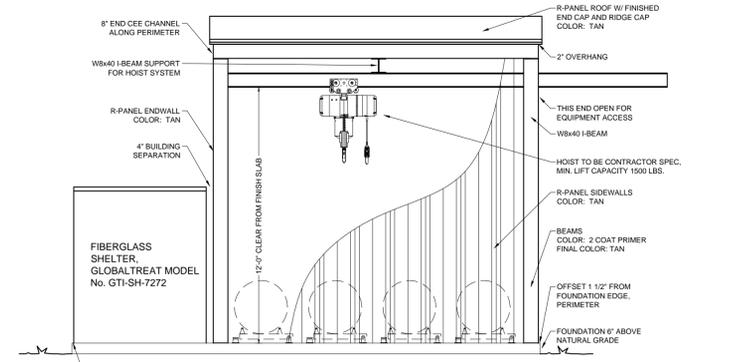
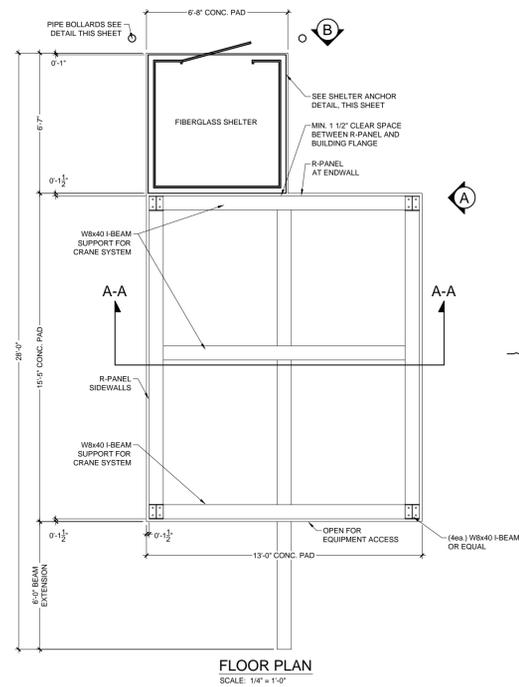
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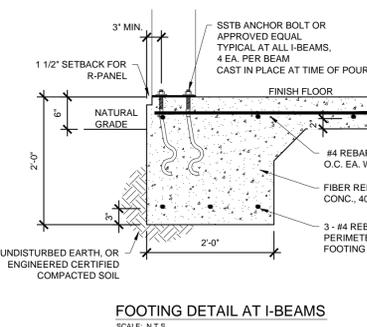
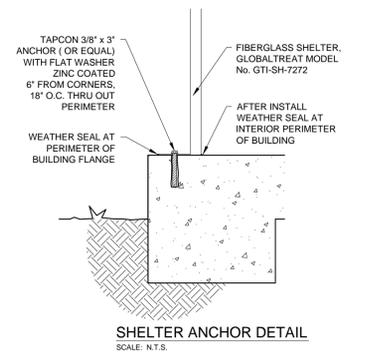
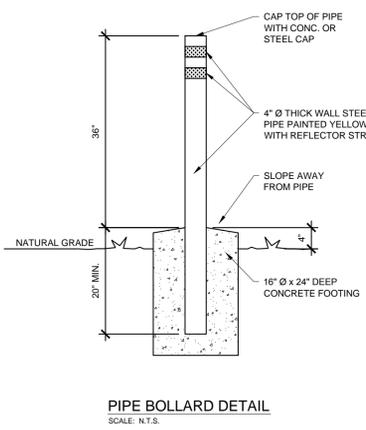
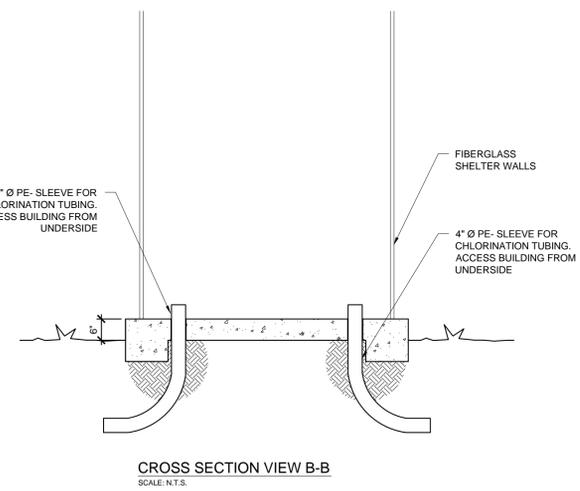
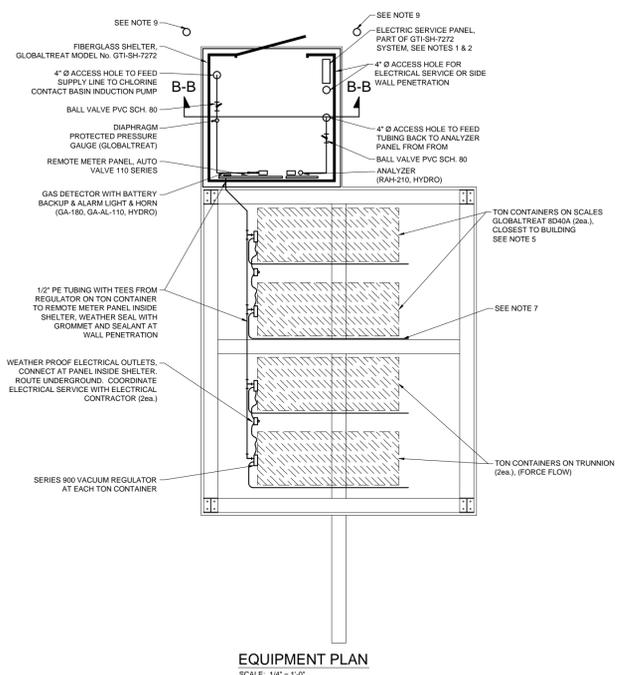
**WWTP IMPROVEMENTS**

**AIR BLOWER BUILDING PLAN AND DETAILS**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	15



- EQUIPMENT NOTE:**
- GENERAL CONTRACTOR TO COORDINATE WITH UTILITY COMPANIES. ANY TRENCHING TO BE INCLUDED AS PART OF EQUIPMENT.
  - ELECTRICAL SERVICE COMPANY TO VERIFY LOAD SERVICE.
  - ALL UTILITIES TO BE LABELED AND MARKED WITHIN A 10 FOOT (10') PERIMETER OF THE BUILDING.
  - A MINIMUM OF ONE (1) EMERGENCY KIT TO BE PROVIDED. GLOBALTREAT EMERGENCY KIT IS ALONG WITH A DUAL RESPIRATORY PROTECTION SYSTEM TO BE PROVIDED WITH WALL CASE. GLOBALTREAT GTI-SCBA-WCC, GTI-SCBA-CAB DUAL.
  - A "DUTY TAG" MUST BE PROVIDED TO DENOTE CYLINDER(S) CURRENTLY IN USE.
  - CONTRACTOR TO COORDINATE INSTALL OF CHLORINATION SYSTEM WITH MANUFACTURER. VERIFY FINAL EQUIPMENT AND CONNECTIONS TO BE USED. TEST TO BE VERIFIED BY MANUFACTURER REPRESENTATIVE.
  - REGULATOR VENT TO BE A MIN OF 10 FEET (10') AWAY IN OPPOSITE DIRECTION AND CLOSE TO FLOOR (NO OVERHEAD MOUNT) FROM REGULATOR LOCATION. TYPICAL ON ALL REGULATORS.
  - ANY WALL PENETRATIONS TO BE WEATHER SEALED FROM OUTSIDE ELEMENTS.
  - 4" Ø METAL PIPE BOLLARD PAINTED YELLOW WITH REFLECTOR STRIP. 36" ABOVE GROUND. 18" Ø x 24" DEEP CONCRETE FOOTING. EMBED A MIN. OF 20" INTO CEMENT.
  - ALL EQUIPMENT IS AS NOTED OR APPROVED EQUAL. CONTRACTOR TO COORDINATE WITH SUPPLIER TO VERIFY A FULLY FUNCTIONAL SYSTEM.



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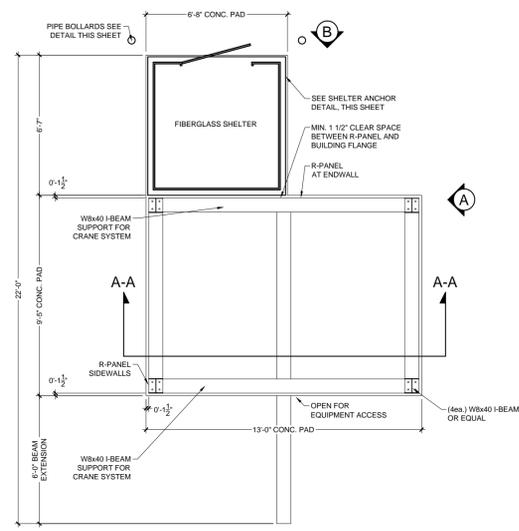
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**WWTP IMPROVEMENTS**

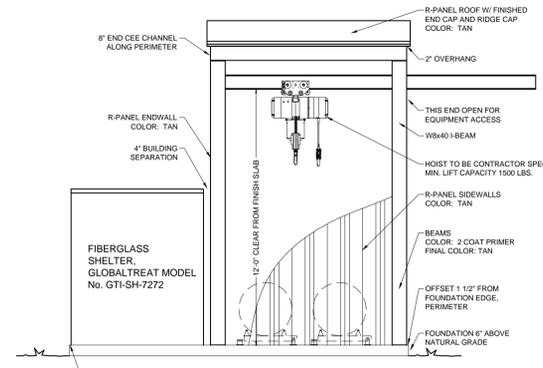
**CHLORINE EQUIPMENT BUILDING PLAN**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	16

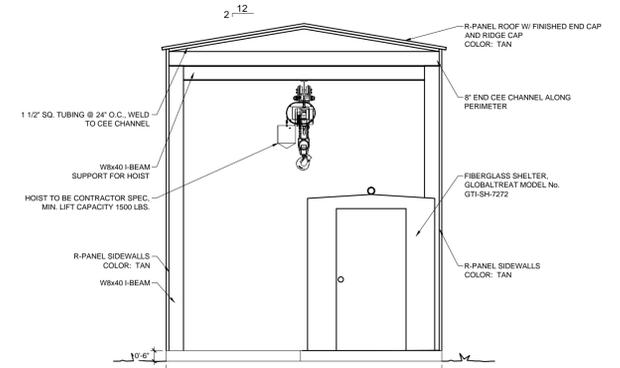
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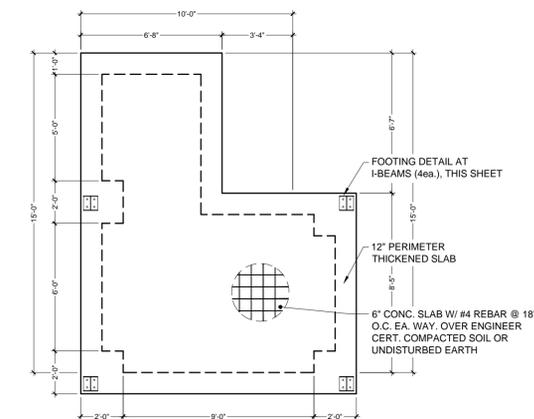
**FLOOR PLAN**  
SCALE: 1/4" = 1'-0"



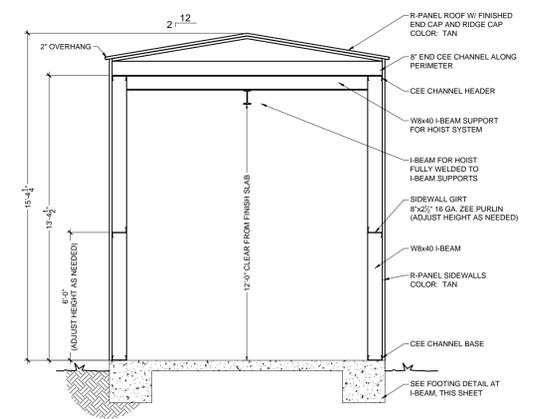
**ELEVATION VIEW "A"**  
SCALE: 1/4" = 1'-0"



**ELEVATION VIEW "B"**  
SCALE: 1/4" = 1'-0"



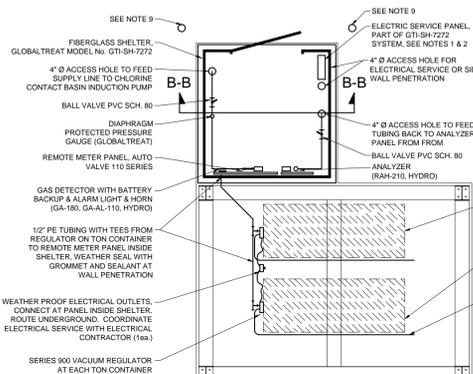
**FOUNDATION PLAN**  
SCALE: 1/4" = 1'-0"



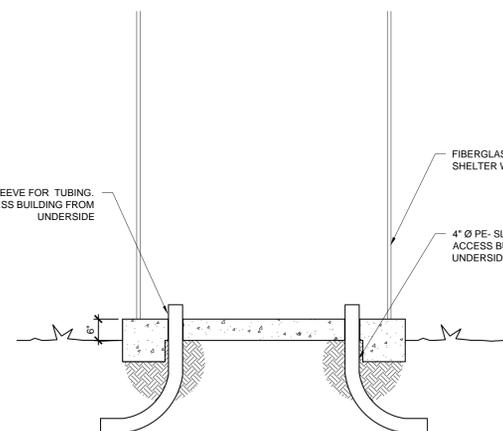
**CROSS SECTION VIEW A-A**  
SCALE: 1/4" = 1'-0"

**EQUIPMENT NOTE:**

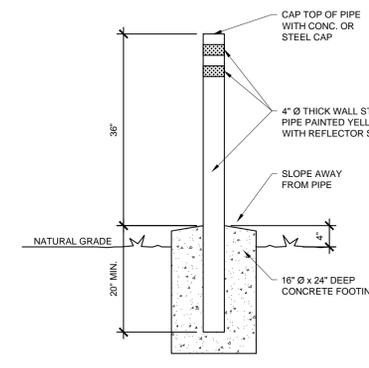
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2. ELECTRICAL SERVICE COMPANY TO VERIFY LOAD SERVICE.
3. ALL UTILITIES TO BE LABELED AND MARKED WITHIN A 10 FOOT (10') PERIMETER OF THE BUILDING.
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5. A "DUTY TAG" MUST BE PROVIDED TO DENOTE CYLINDER(S) CURRENTLY IN USE.
6. CONTRACTOR TO COORDINATE INSTALL OF CHLORINATION SYSTEM WITH MANUFACTURER. VERIFY FINAL EQUIPMENT AND CONNECTIONS TO BE USED. TEST TO BE VERIFIED BY MANUFACTURER REPRESENTATIVE.
7. REGULATOR VENT TO BE A MIN OF 10 FEET (10') AWAY IN OPPOSITE DIRECTION AND CLOSE TO FLOOR (NO OVERHEAD HOOD) FROM REGULATOR LOCATION. TYPICAL ON ALL REGULATORS.
8. ANY WALL PENETRATIONS TO BE WEATHER SEALED FROM OUTSIDE ELEMENTS.
9. 4" Ø METAL PIPE BOLLARD PAINTED YELLOW WITH REFLECTOR STRIP. 36" ABOVE GROUND. 16" Ø x 24" DEEP CONCRETE FOOTING. EMBED A MIN. OF 20" INTO CEMENT.
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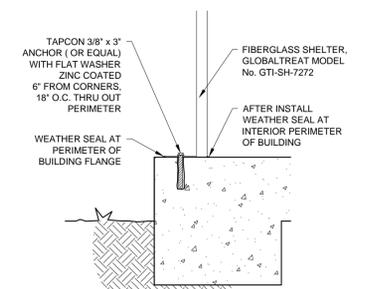
**EQUIPMENT PLAN**  
SCALE: 1/4" = 1'-0"



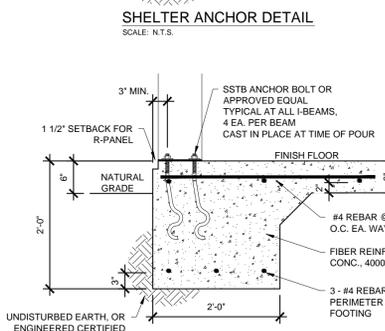
**CROSS SECTION VIEW B-B**  
SCALE: N.T.S.



**PIPE BOLLARD DETAIL**  
SCALE: N.T.S.



**SHELTER ANCHOR DETAIL**  
SCALE: N.T.S.



**FOOTING DETAIL AT I-BEAMS**  
SCALE: N.T.S.



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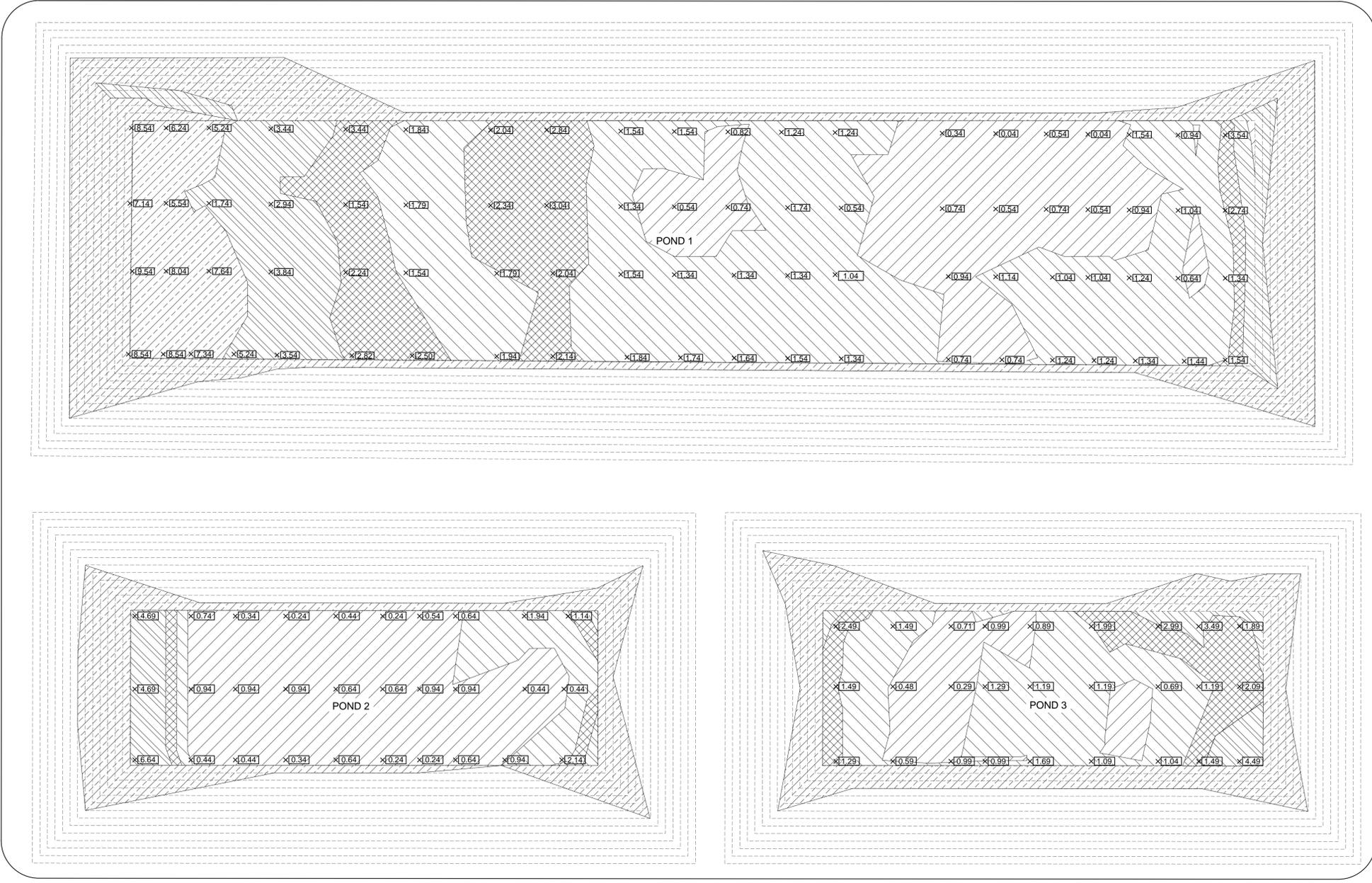
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**WWTP IMPROVEMENTS**

**DE-CHLORINATION EQUIPMENT BUILDING PLAN**

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	17



#	MIN. ELEV.	MAX. ELEV.	HATCH
1	0.000	1.000	[Hatch Pattern]
2	1.000	2.000	[Hatch Pattern]
3	2.000	3.000	[Hatch Pattern]
4	3.000	5.000	[Hatch Pattern]
5	5.000	10.000	[Hatch Pattern]

POND NAME	VOLUME (CY)	MIN. DEPTH (FT)	MAX. DEPTH (FT)	MEAN DEPTH (FT)
POND 1	19,310	0.04	9.54	2.38
POND 2	4,170	0.29	5.03	1.52
POND 3	2,850	0.24	6.07	1.08
TOTAL	26,330			

- NOTES:
1. DATA ON THIS SHEET PROVIDED BY CLIENT.
  2. SLUDGE LEVEL BASED ON SURVEY FROM APRIL 2013. CONTRACTOR SHALL VERIFY QUANTITIES.
  3. SLUDGE TO BE PLACED IN DESIGNATED AREA NORTHWEST OF POND 1 TO DE-WATER. CITY TO COORDINATE DISPOSAL.



WTC, INC.  
 TEXAS REGISTERED ENGINEERING FIRM F-2746  
 TEXAS REGISTERED SURVEYOR FIRM #100792-00  
 PRELIMINARY  
 FOR INTERIM REVIEW ONLY.  
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 JAMES C. TOMPKINS P.E., TEXAS REGISTRATION NO. 93839  
 DATE: October 16, 2017

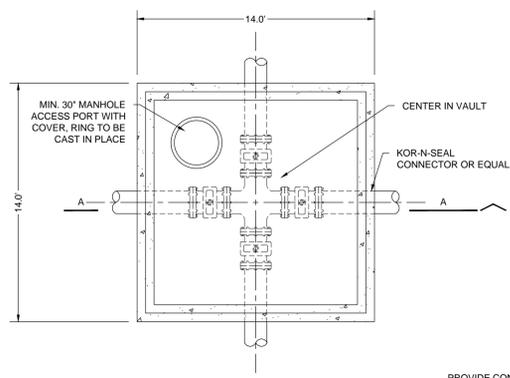
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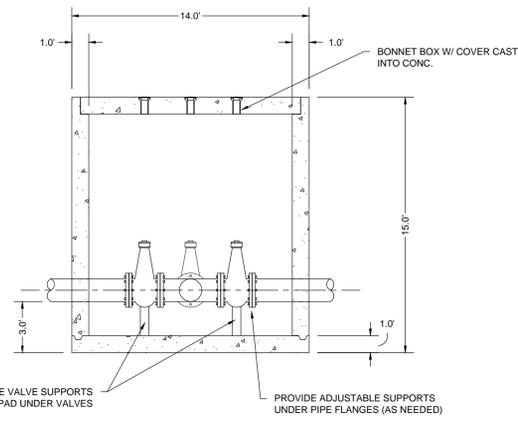
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WWTP IMPROVEMENTS					
EXISTING TREATMENT POND SLUDGE DEPTH					
DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/16/17	51582	AS NOTED	18

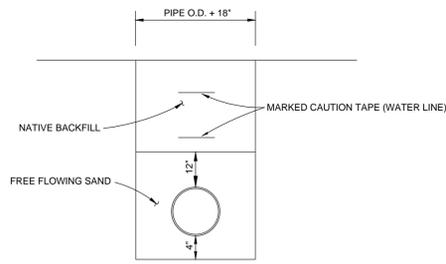
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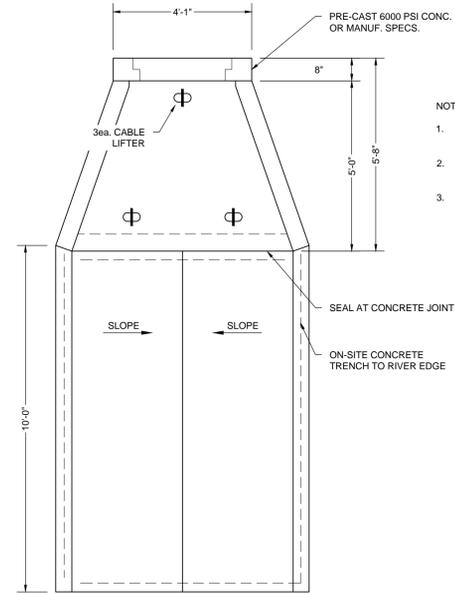
4-VALVE VAULT PLAN VIEW



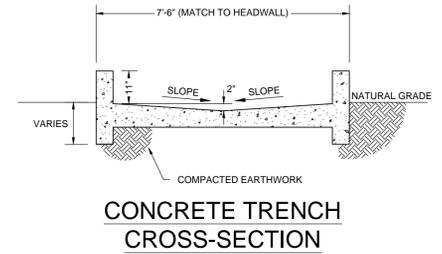
4-VALVE VAULT A-A SECTION VIEW



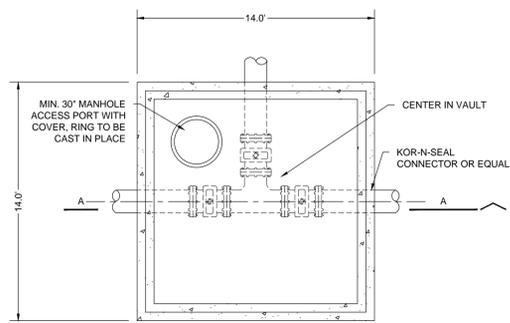
FLEXIBLE PIPE EMBEDMENT



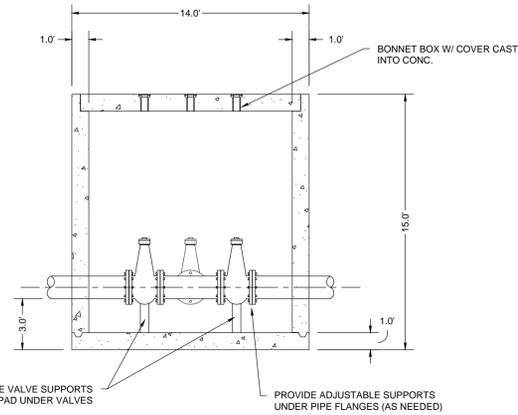
PLAN VIEW  
SCALE: N.T.S.



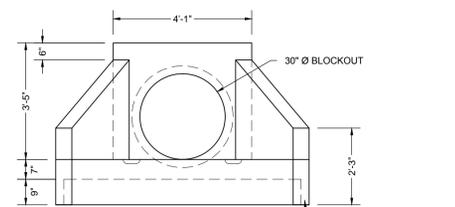
CONCRETE TRENCH  
CROSS-SECTION



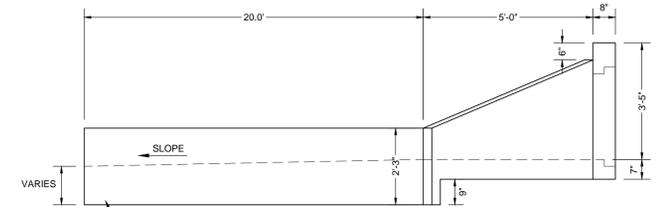
3-VALVE VAULT PLAN VIEW



3-VALVE VAULT A-A SECTION VIEW

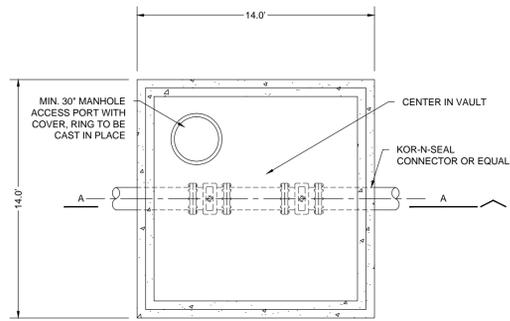


ELEVATION VIEW  
SCALE: N.T.S.

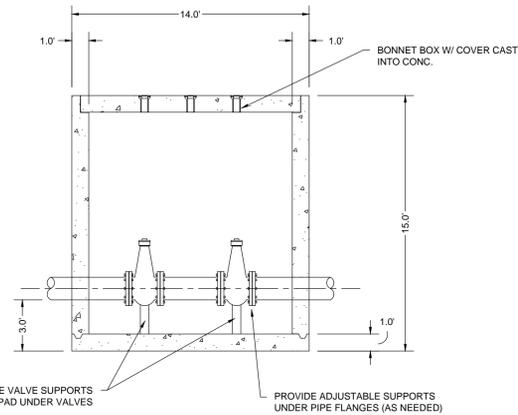


SIDE VIEW  
SCALE: N.T.S.

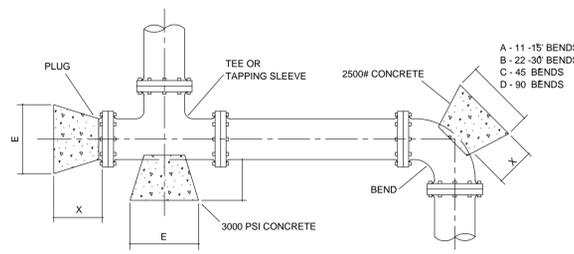
HEADWALL DETAIL (TYPE B)



2-VALVE VAULT PLAN VIEW



2-VALVE VAULT A-A SECTION VIEW



HORIZONTAL BLOCKING TABLE

PIPE SIZE	"X" DIA. FT.	A MIN. AREA FT. <sup>2</sup>	B MIN. AREA FT. <sup>2</sup>	C MIN. AREA FT. <sup>2</sup>	D MIN. AREA FT. <sup>2</sup>	E MIN. AREA FT. <sup>2</sup>	TEE & Plug MIN. AREA FT. <sup>2</sup>				
4"	1.0	0.7	0.5	0.9	0.8	1.3	1.7	1.8	3.1	1.5	2.2
6"	1.5	1.0	0.9	1.3	1.7	1.9	3.4	2.5	6.3	2.1	4.5
8"	1.5	1.2	1.5	1.7	3.0	2.4	5.8	3.3	10.7	2.8	7.7
10"	1.5	1.6	2.5	2.2	4.9	3.1	9.6	4.2	17.6	3.5	12.5
12"	2.0	1.9	3.5	2.6	7.0	3.7	13.6	5.0	25.0	4.2	17.7
14"	2.0	2.2	5.0	3.1	9.4	4.3	18.4	5.8	33.8	4.9	24.0

WATER LINE THRUST BLOCK DETAIL

NOTE:  
ALL EQUIPMENT IS AS NOTED OR APPROVED EQUAL. VERIFY ALL SIZES WITH ON SITE CONDITIONS



REVISION DESCRIPTION	REVISION	DATE	BY

**West Texas Consultants, Inc.**  
 ENGINEERS PLANNERS SURVEYORS  
 405 S.W. 1st. Street  
 Andrews, TX 79714  
 (432) 523-2181  
 TEXAS REGISTERED ENGINEERING FIRM F-2746  
 TEXAS REGISTERED SURVEYOR FIRM #100792-00

LOCATIONS OF UNDERGROUND AND OVERHEAD UTILITIES ARE APPROXIMATE AND MAY NOT INCLUDE ALL UNDERGROUND AND OR OVERHEAD UTILITIES PRESENT. CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITY CROSSINGS BEFORE BEGINNING ANY WORK.

CONTRACTOR SHALL NOTIFY PROPERTY OWNERS AND RESIDENTS A MINIMUM OF 48 HOURS IN ADVANCE OF CONSTRUCTION ACTIVITIES ON OR IN THE VICINITY OF THEIR PROPERTY.

Before You Dig Anywhere In Texas  
 STOP! DIAL 811  
 www.texas811.org  
 TOLL-FREE OSHA RULE 1926.651  
 REQUIRES PREVIOUS NOTIFICATION  
 TEXAS ONE CALL SYSTEM

**WWTP IMPROVEMENTS**

DETAILS

DESIGN	DRAWN	DATE	PROJECT NO.	SCALE	SHEET #
J.C.T.	J.T.A.	10/20/17	51582	AS NOTED	19

Z:\Projects\Engineering & Surveying\Texas Town of Pecos, TX\City of Pecos\51582-Pecos WWTP Discharge Permit and Plant Improvements Drawings\51582-B-VALVE DETAILS.dwg