

TMUA PROJECT No. WPC 23-4,
FY '23 SOUTHSLOPE CAPITAL EQUIPMENT REPLACEMENTS

ATTENDANCE AT PRE-BID CONFERENCE IS MANDATORY

Prepared by:
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City of Tulsa Water and Sewer Department
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E-mail: pdenis@cityoftulsa.org



Account Number: 7503382-544003
7503383-531105

Pete Denis
Peter R. Denis, P.E. OK#25200

8-Feb-2023
Date

ERIC LEE DIRECTOR
WATER AND SEWER DEPARTMENT

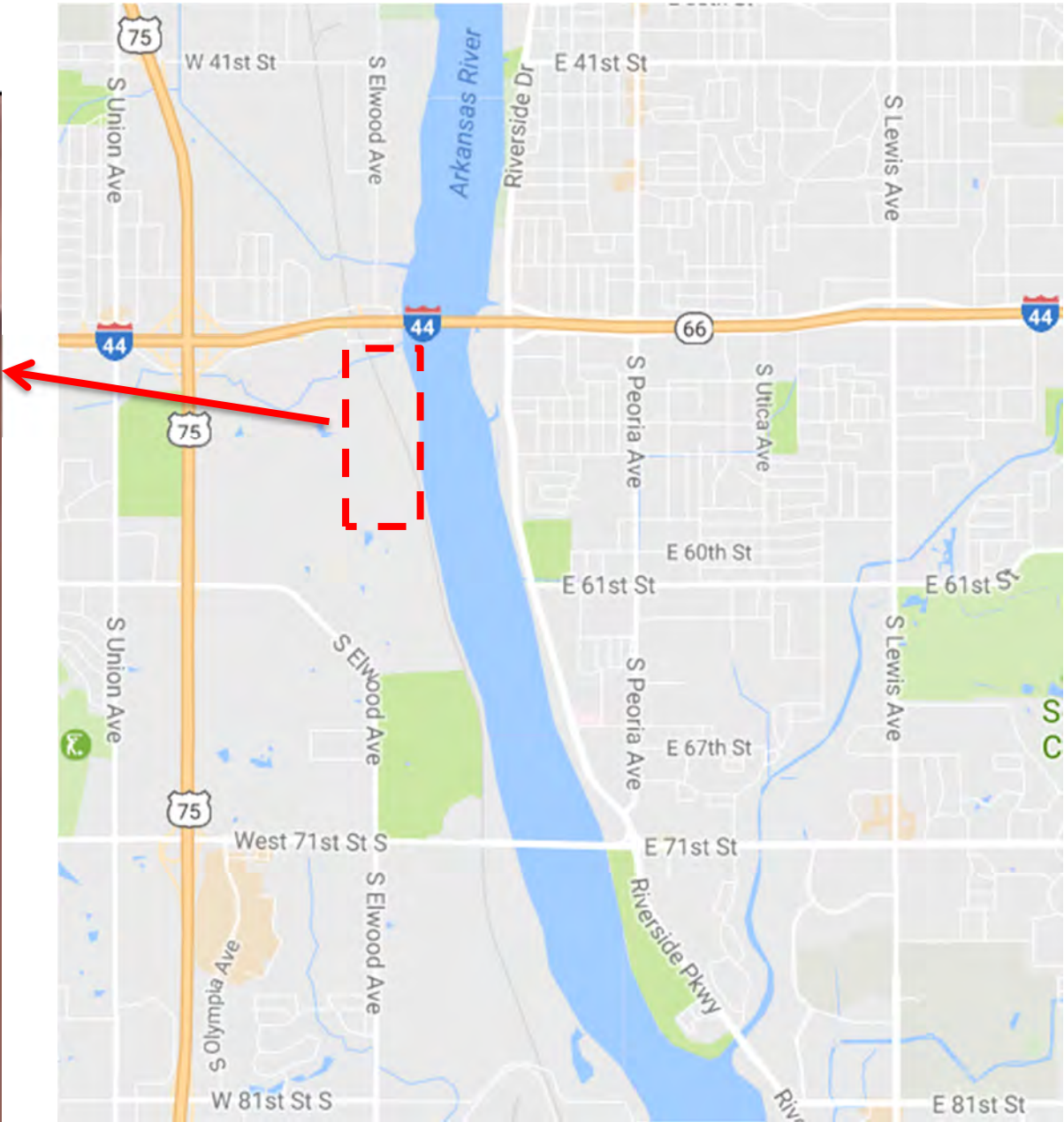
[Signature]
Eric Lee Director, Water & Sewer Dept.

2-9-2023
Date

Note: The Drawings attached hereto as part of these Specifications are for information purposes only. The Authority makes no representation or guarantee with respect to the accuracy of any information contained in the Drawings. It is the Contractors responsibility to verify information on the drawings to ensure the equipment installed or controlled by work performed under this Contract performs as specified herein.

Water and Sewer Department
175 E. 2nd Street
Tulsa, Oklahoma 74103
(918) 596-9845

DRAWINGS

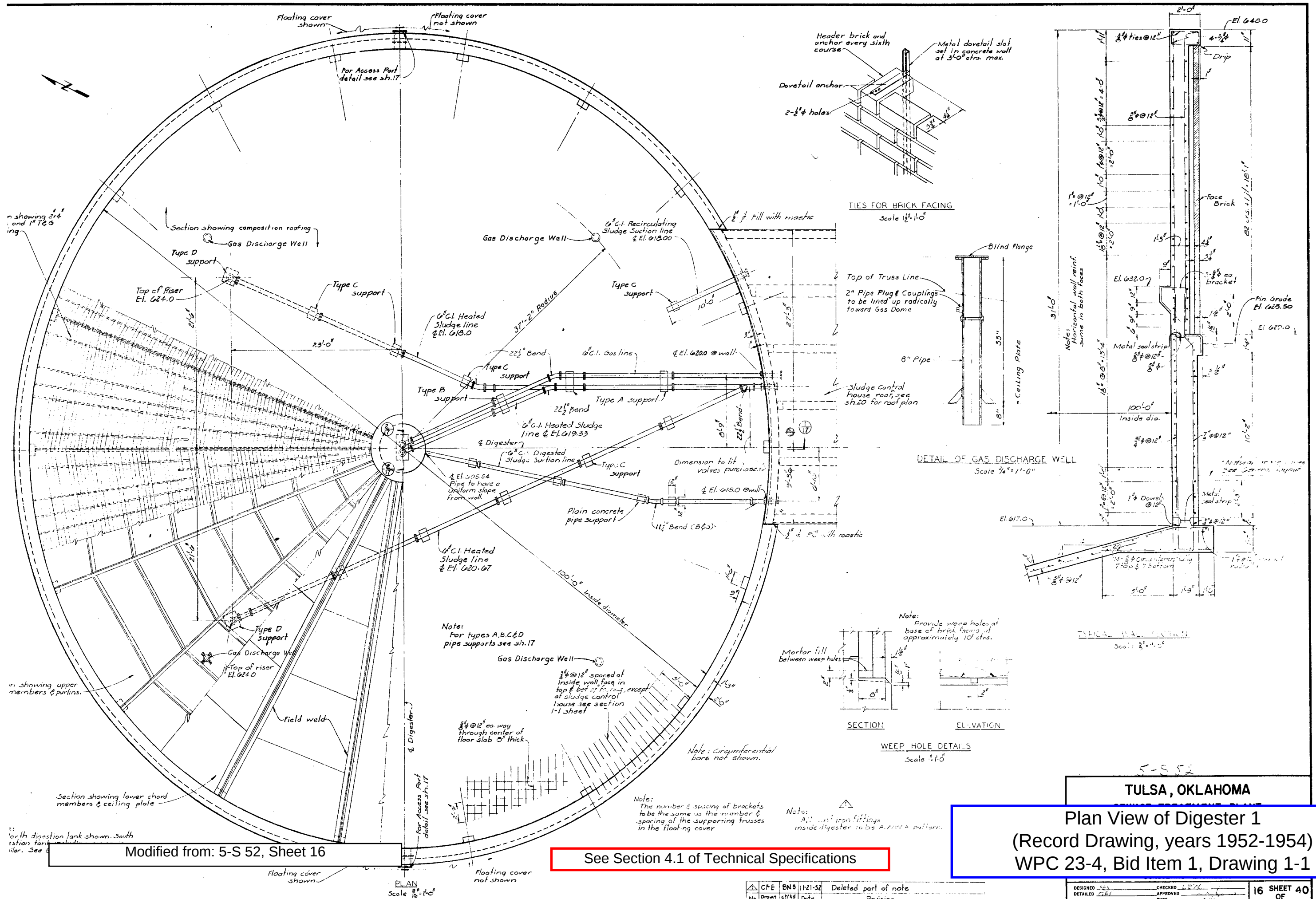


North

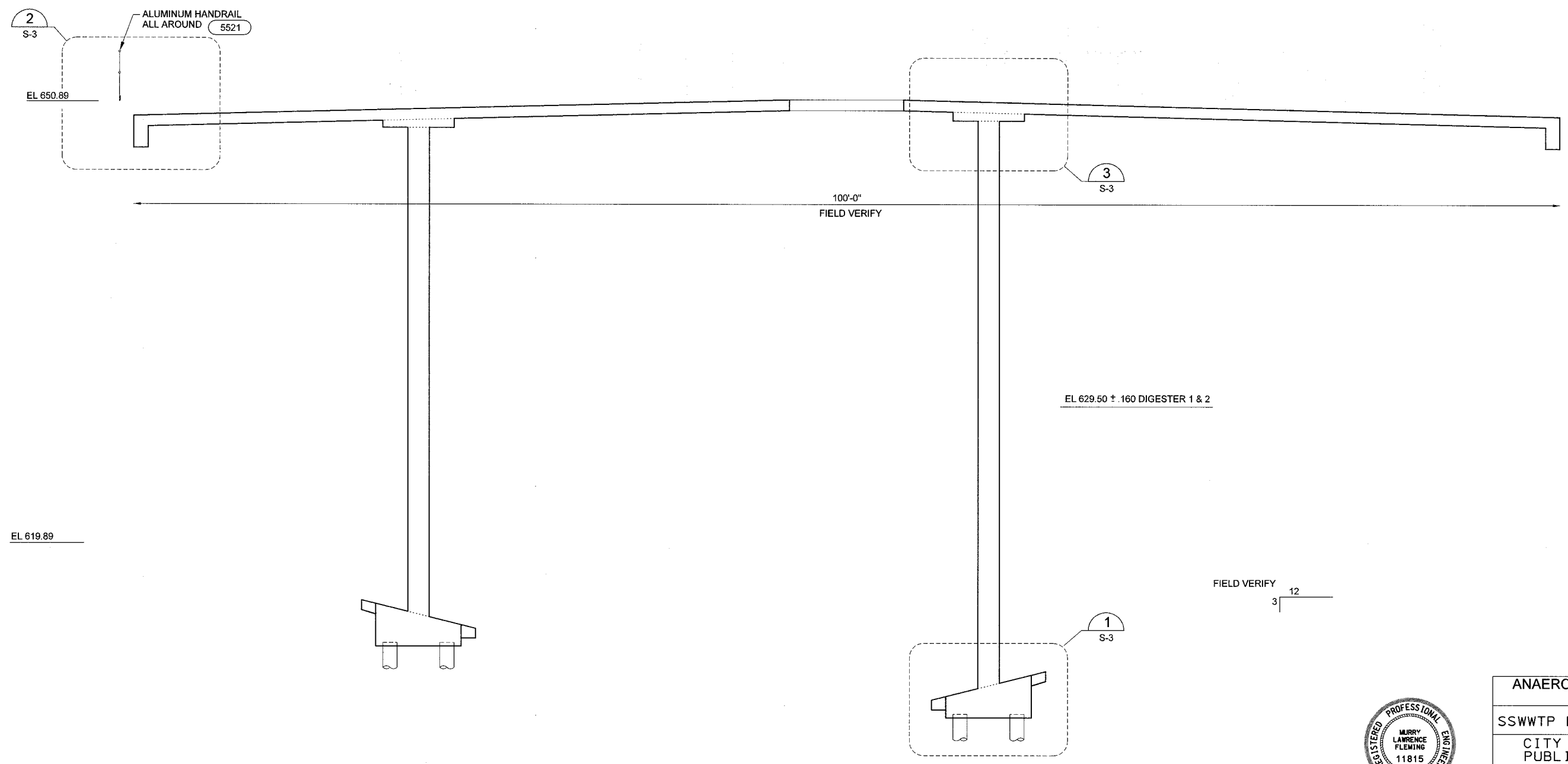
Project Locations
WPC 23-4

Drawing	Title
1-1	Plan View of Digester 1
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1-3	Plan View of Digester 1
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Drawing	Title
9-1	Diffused Air System within Aeration Basin 1
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9-4	Diffused Air System within Aeration Basin 1
9-5	Diffused Air System within Aeration Basin 1
9-6	Diffused Air System within Aeration Basin 1
9-7	Diffused Air System within Aeration Basin 1
9-8	Diffused Air System within Aeration Basin 1
9-9	Diffused Air System within Aeration Basin 1
9-10	Diffused Air System within Aeration Basin 1
9-11	Diffused Air System within Aeration Basin 1
9-12	Diffused Air System within Aeration Basin 1
9-13	Diffused Air System within Aeration Basin 1
9-14	Diffused Air System within Aeration Basin 1
9-15	Diffused Air System within Aeration Basin 1
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9-21	Diffused Air System within Aeration Basin 1
9-22	Membrane Disc Diffuser Assembly
10-1	Digester Gas Valves in Valve Pits
10-1	Digester Gas Valves at Boilers
13-1	Guard Shack at Southside WWTP
13-2	Guard Shack at Southside WWTP



4979s02d.dgn 1-45 17-63
4979s02d.dgn 1-2 4-5 7-63
4979s02d.dgn 1-3 5-63



SECTION **A**
1/4"=1'-0" S-1



ANAEROBIC DIGESTERS NO. 1 AND 2
SECTION
SSWWTP DIGESTER MODIFICATIONS
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION
PLANS AND ESTIMATES PREPARED BY:
CITY OF TULSA

REVISION	BY	DATE	PLAN SCALE:	DRAWN	DESIGNED	SURVEY	APPROVED:
			1/4" = 1'-0"				

RECORD DRAWINGS
Revisions Drawn By CGM Date 07/09/02
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR
Modified from: ES 2000-04, Sheet 10

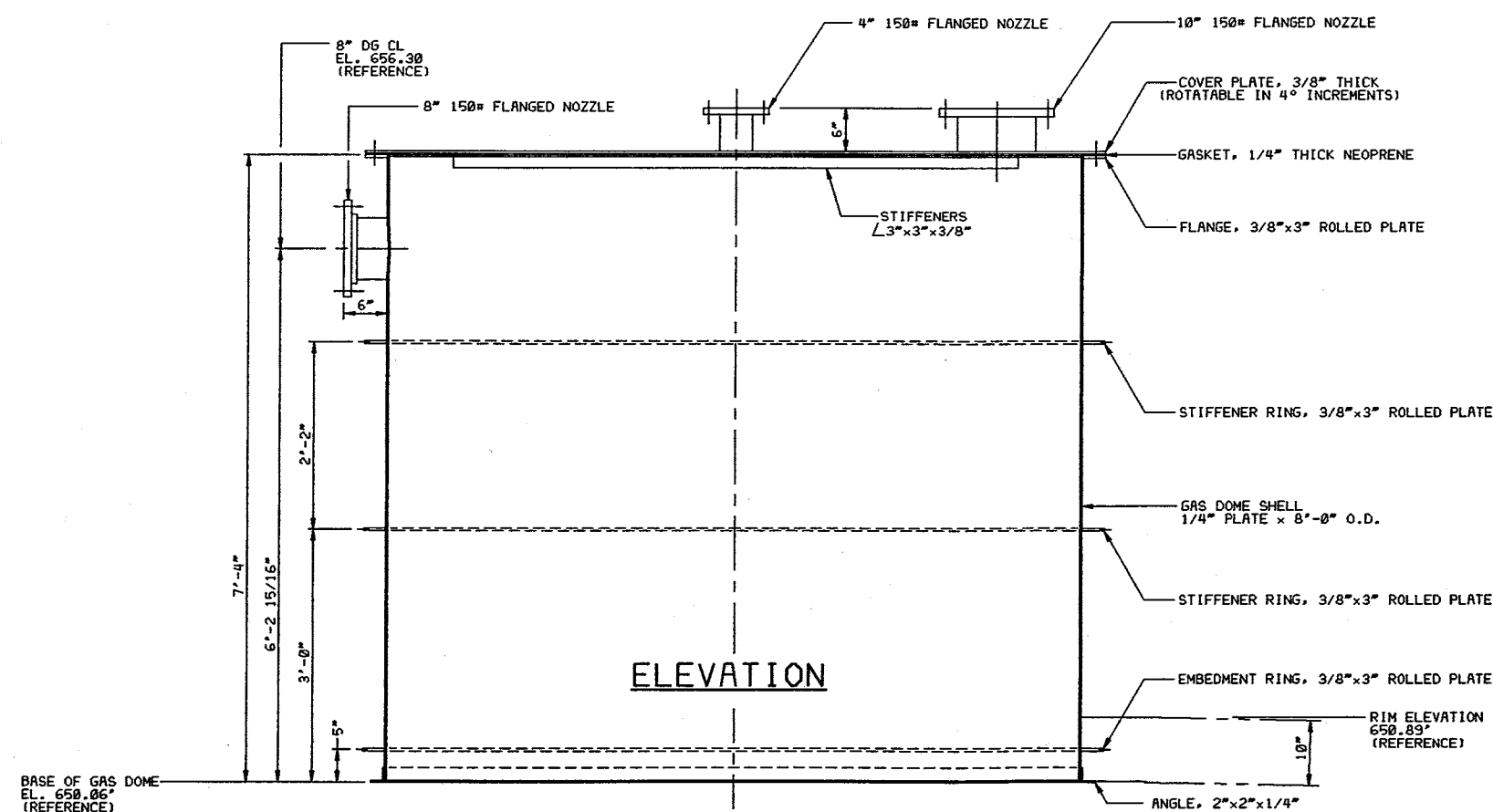
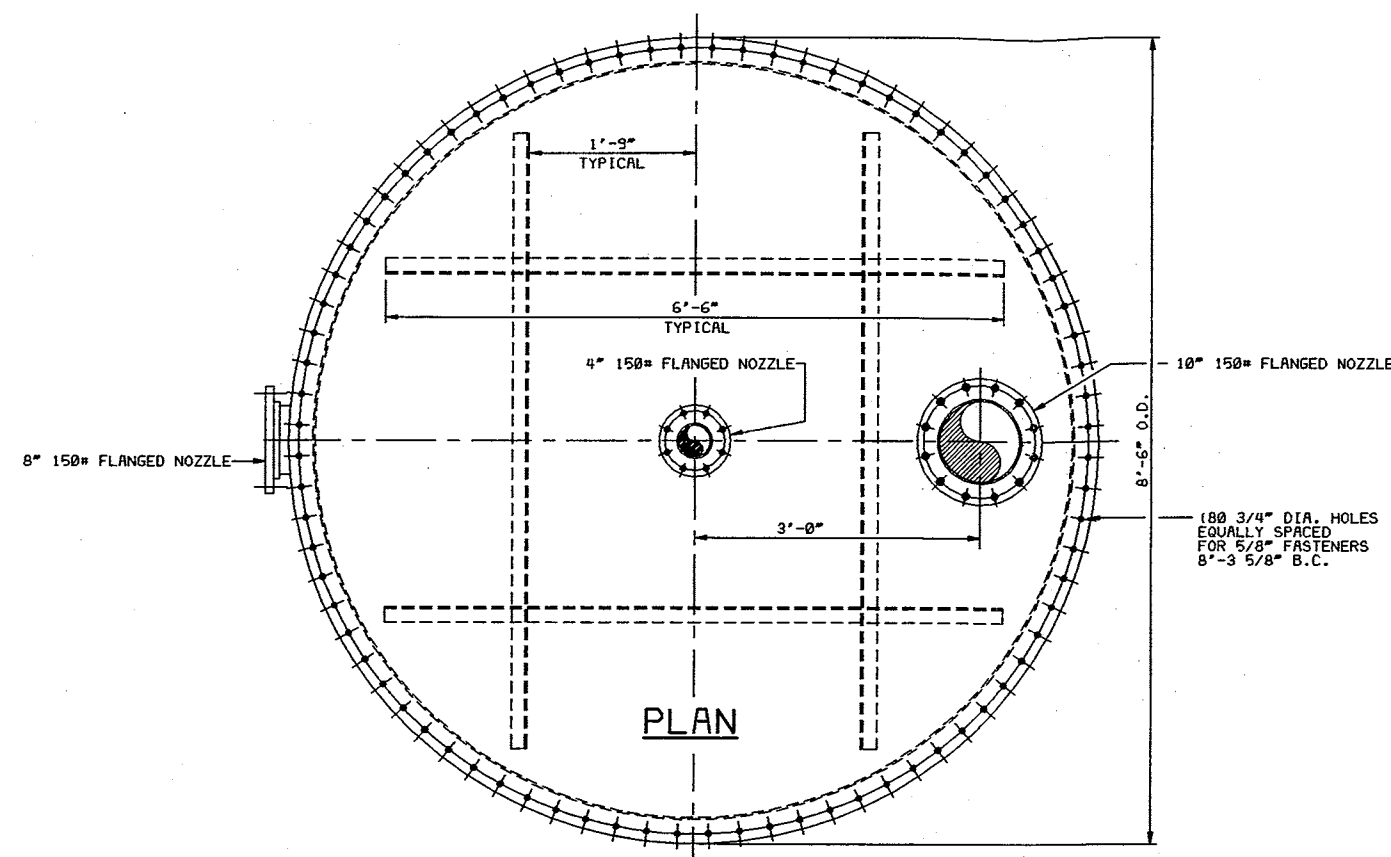
See Section 4.1 of Technical Specifications

Elevation View of Digester 1
(Record Drawing, years 2000-2002)
WPC 23-4, Bid Item 1, Drawing 1-4

TMA NO. ES2000-04 SOUTHSIDE WASTEWATER TREATMENT PLANT DIGESTERS NO. 1 AND 2 MODIFICATIONS

NOTES

1. MATERIAL: A36 STEEL
2. FINISH: ABRASIVE BLAST TO SSPC-SP5
COAT WITH "TNESEC" SERIES 69
HI-BUILD EPOXOLINE II PRIMER
3.0 - 5.0 MILS D.F.T., COLOR: RED
ALL COATINGS TO BE APPLIED IN STRICT ACCORDANCE
WITH MANUFACTURER'S RECOMMENDATIONS.
3. SHIPPING WEIGHT: APPROXIMATELY 3600#



QUANTITY: 2

Infilco Degremont Inc.

- ☐ Information Only - Return not required.
- ☐ Preliminary - Not to be used for construction.
- ☐ For Approval - Requests for changes can add to price and delay shipment.
- ☒ Certified

For Southside WHIP
Tulsa, Oklahoma

REV.	BY	CHK.	APP.	DATE	DESCRIPTION
B	A	W	M	05/04/01	GENERAL REVISION
A	A	W	M	05/04/01	REVISED DIMENSIONS
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO INFILCO DEGREMONT INCORPORATED. IT IS SUBMITTED IN CONFIDENCE AND IS TO BE USED SOLELY FOR THE PURPOSE FOR WHICH IT IS FURNISHED AND RETURNED UPON REQUEST. THIS DRAWING AND SUCH INFORMATION IS NOT TO BE REPRODUCED, TRANSMITTED, DISCLOSED, OR USED OTHERWISE IN WHOLE OR IN PART WITHOUT THE WRITTEN AUTHORIZATION OF INFILCO DEGREMONT INCORPORATED.					
DR.	MC ELLEN	02/01			
CHK.	S.E.A.	02/01			
APP.	S.E.A.	02/01			
APP.					
CADD NO.	12285001				

Infilco Degremont Inc.
Post Office Box 71390 Richmond Virginia 23255-1390

8'-0" DIAMETER GAS DOME

LAYOUT

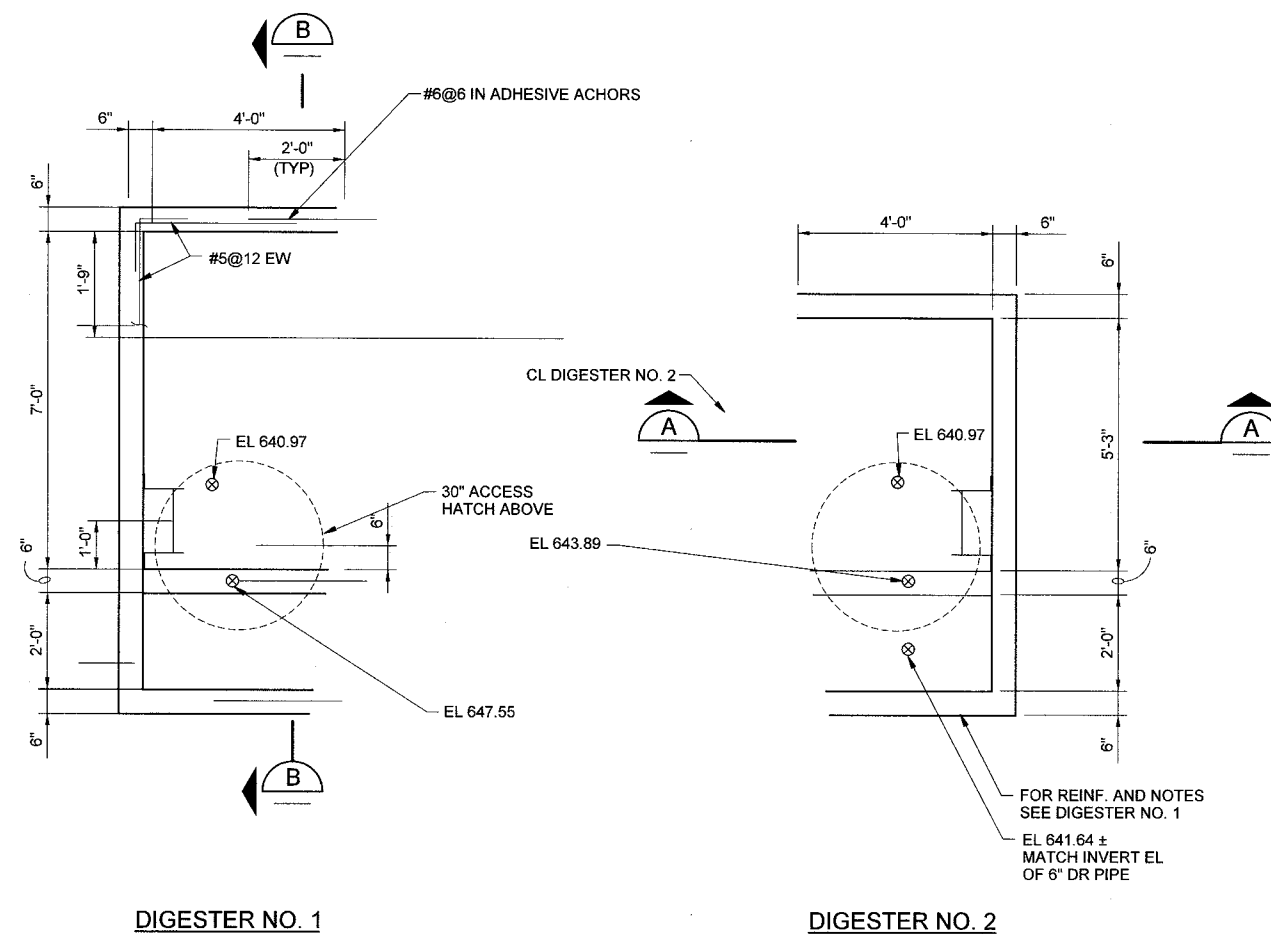
CANNON® MIXING SYSTEM

Modified from: ES 2000-04, O&M Manual

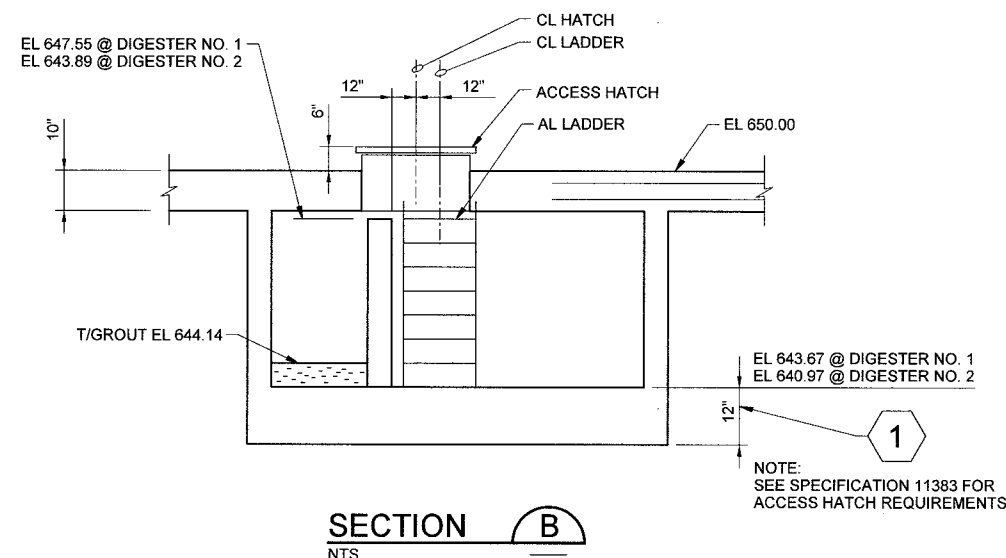
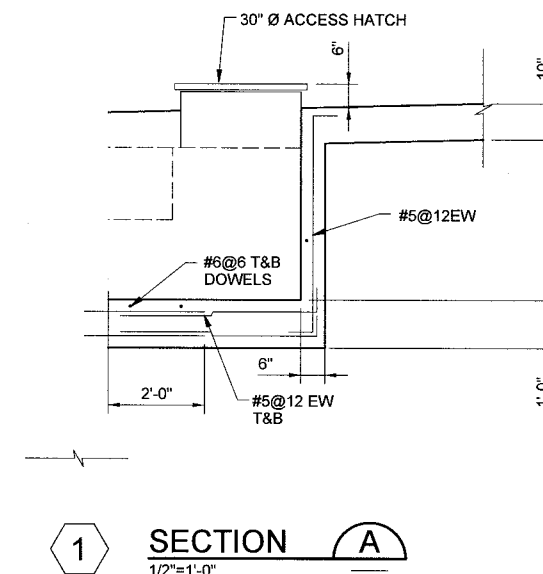
See Section 4.1 of Technical Specifications

Gas Dome of Digester 1
(Record Drawing, year 2001)
WPC 23-4, Bid Item 1, Drawing 1-5

5-001



DETAIL 4
1/2"=1'-0"



RECORD DRAWINGS

Revisions Drawn By CGM Date 07/11/02
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DIGESTER NO. 1 AND NO. 2 SECTIONS AND DETAILS			
SSWWTP DIGESTER MODIFICATIONS			
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION			
PLANS AND ESTIMATES PREPARED BY: CITY OF TULSA			
REVISION	BY	DATE	APPROVED:
ADDENDUM 1	CM	07/02	

PLAN SCALE:	DRAWN	DESIGNED	SURVEY
1/2" = 1'-0"			

Sludge Decant Box and Piping of Digester 1
(Record Drawing, years 2000-2002)
WPC 23-4, Bid Item 1, Drawing 1-6

Modified from: ES 2000-04, Sheet 12

See Section 4.1 of Technical Specifications

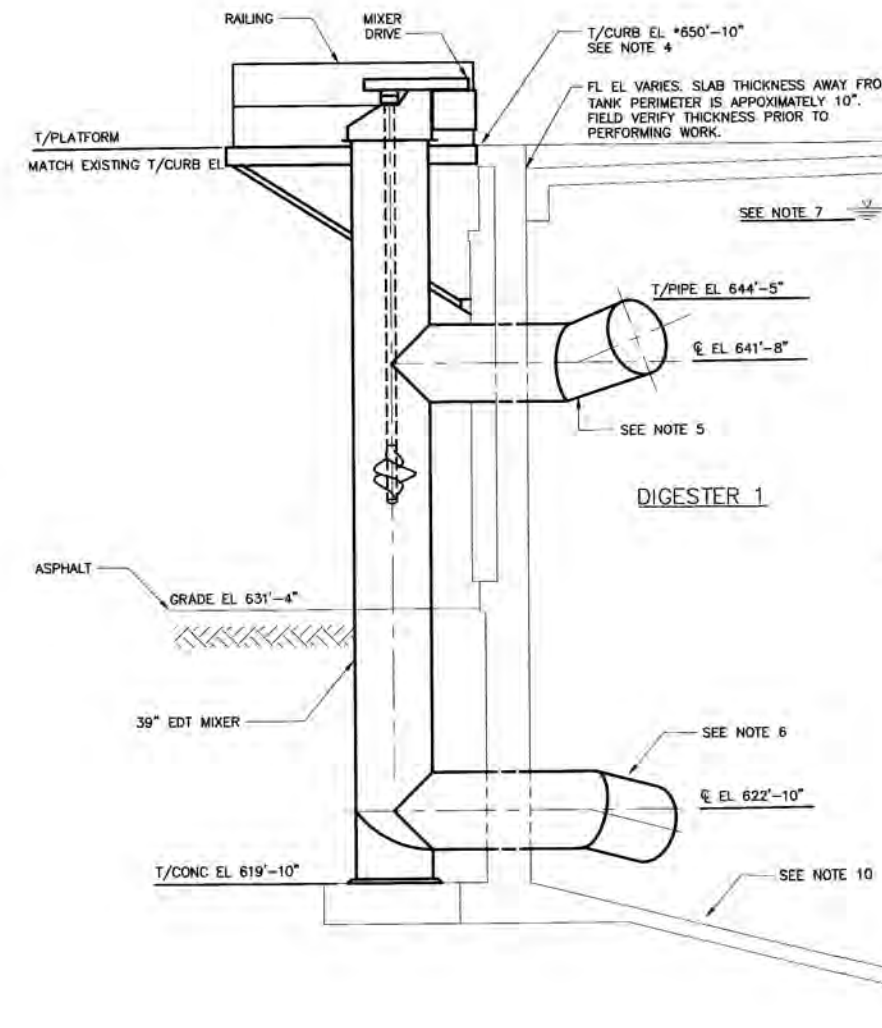
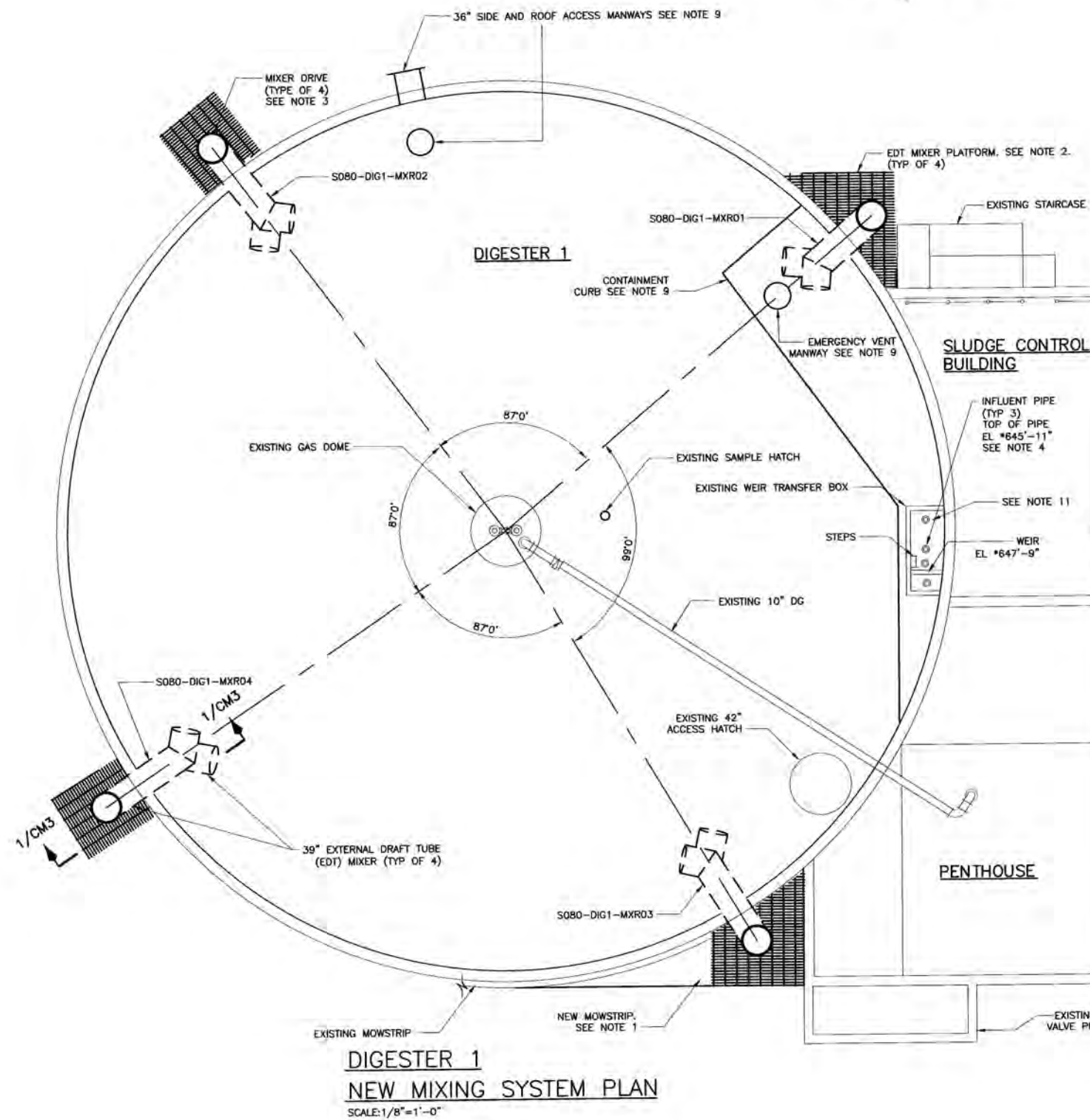


SLUDGE TRANSFER PIPING SECTIONS				
SSSWTP DIGESTER MODIFICATIONS				
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION				
PLANS AND ESTIMATES PREPARED BY:				
CITY OF TULSA				
E	PLAN SCALE:	DRAWN		APPROVED:
	8'	DESIGNED		
		SURVEY		

See Section 4.1 of Technical Specifications

Sludge Decant Box and Piping of Digester 1
(Record Drawing, years 2000-2002)
WPC 23-4, Bid Item 1, Drawing 1-8

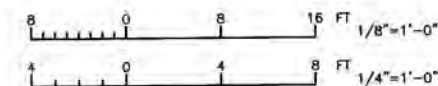
PLOT DATE: 4/5/2019 6:08 PM PLOTTED BY: YAHR, RONALD



NOTES:

1. REMOVE EXISTING SPIRAL STAIRCASE AND APPURTENANCES. DEMOLISH ASSOCIATED CONCRETE FOUNDATION. EXTEND MOW STRIP TO FACE OF THE SLUDGE CONTROL BUILDING. SLOPE MOW STRIP AWAY FROM STRUCTURE.
2. REFERENCE SPECIFICATION SECTION 46 73.31 FOR PLATFORM REQUIREMENTS.
3. RELOCATE FIRE HYDRANT, WATERLINES, VALVE BOXES, ELECTRICAL CONDUITS AND OTHER UTILITIES AND PROCESS PIPING LOCATED ON OR ADJACENT TO THE DIGESTER AS REQUIRED. REPLACE MOW STRIPS AND ASPHALT REMOVED. COORDINATE ROUTING WITH ENGINEER.
4. FIELD VERIFY ELEVATIONS INCLUDING TOP OF CURB AND INFLUENT PIPES. CONFIGURE EDT MIXER ACCORDINGLY.
5. PROVIDE EXTERNAL DRAFT TUBE, LENGTH AND ANGLE AT BEND AS RECOMMENDED BY THE EQUIPMENT MANUFACTURE.
6. PROVIDE BEND ARRANGED TO MATCH EXISTING FLOOR SLOPE IMMEDIATELY BELOW DRAFT TUBE AND THE SPECIFIED HORIZONTAL ANGLE.
7. NORMAL OPERATING LEVEL AND A MAXIMUM OPERATING LEVEL ARE 8" AND 3" BELOW THE TOP OF INFLUENT PIPE RESPECTIVELY.
8. REMOVE AND RELOCATE DRAINS AS REQUIRED FOR INSTALLATION OF DRAFT TUBE MIXERS AS SHOWN. FOR EXPOSED DRAIN PIPING, CORE DRILL THE DIGESTER WALL, PROVIDE PIPE MATCHING EXISTING SIZE AND MATERIALS OF CONSTRUCTION, AND SEAL THE ANNUAL SPACE WITH A MODULAR LINK SEAL ON EACH SIDE OF THE NEW WALL OPENING. SEAL EXISTING DRAIN OPENINGS USING NON-SHRINK GROUT. PROVIDE BURIED DRAIN PIPING OF DUCTILE IRON AND ROUTE FROM DIGESTER WALL TO THE DRAIN MANHOLE LOCATED APPROXIMATELY 15 FEET EAST OF DIGESTER 1 AND ADJACENT TO THE 6 INCH WATER LINE SHOWN ON DRAWING AG2. COORDINATE ROUTING AND DEPTH WITH THE ENGINEER.
9. SIDE AND ROOF ACCESS MANWAY, EMERGENCY VENT MANWAY, AND CONTAINMENT CURB INSTALLED AT SIMILAR LOCATIONS ON DIGESTER 2.
10. (24) PRVs REPLACED IN KIND AT DIGESTERS 1 AND 2. CONTRACTOR PERFORMED EPOXY INJECTION REPAIRS FOR CRACKS OBSERVED ALONG DIGESTER 2 FLOOR AND LOWER WALLS. TOTAL LF EQUALLED 60 LF.

SECTION 1/CM3 - DIGESTER 1 NEW MIXING SYSTEM SECTION SCALE: 1/4"=1'-0"



RECORD DRAWING

THIS RECORD DRAWING IS NOT WARRANTED TO REPRESENT CONDITIONS UPON COMPLETION OF THE PROJECT. IT IS BASED ON THE INFORMATION PROVIDED BY THE ENGINEER PERTAINING TO THE PROJECT.

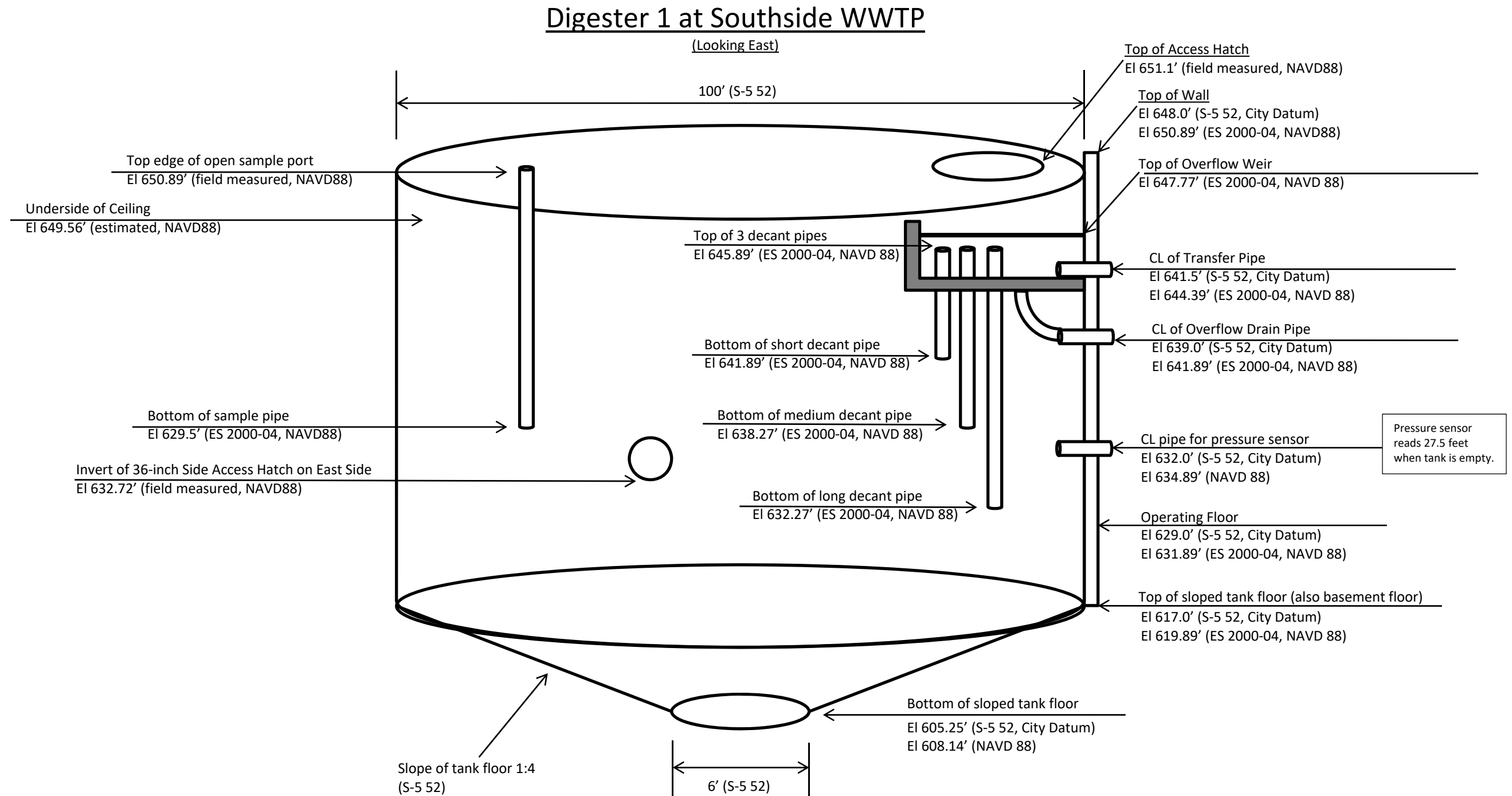
Mixing System of Digester 1
(Record Drawing, years 2014-2019)
WPC 23-4, Bid Item 1, Drawing 1-9

Modified from: ES 2010-04, Contract 2, Sheet 28

See Section 4.1 of Technical Specifications

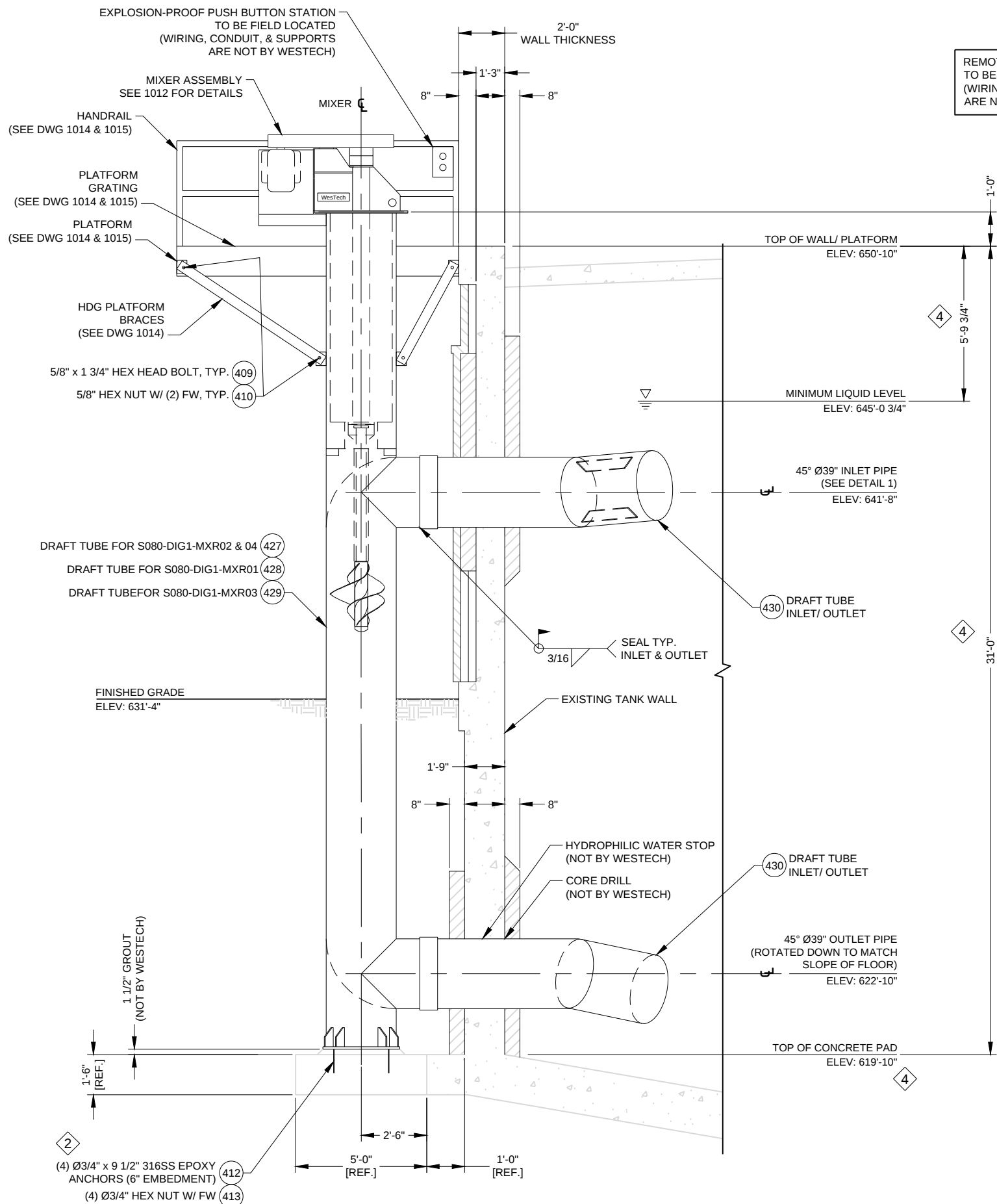
DIGESTER MIXING SYSTEM DIGESTER 1 NEW MIXING SYSTEM PLAN AND SECTION
SOUTHSIDE WWTP DIGESTER GAS IMPROVEMENTS
PROJECT NO. ES2010-04 CONTRACT 2
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION
PLANS PREPARED BY: GREELEY AND HANSEN 100 SOUTH WACKER DRIVE, SUITE 1400 CHICAGO, ILLINOIS 60606-4003

REVISION	BY	DATE	PLAN SCALE	DRAWN	DATE	APPROVED
CONFORMED	TOG	9/14	AS SHOWN	TOG	3/2013	
RECORD DRAWINGS	RYK	3/19				



See Section 4.1 of Technical Specifications

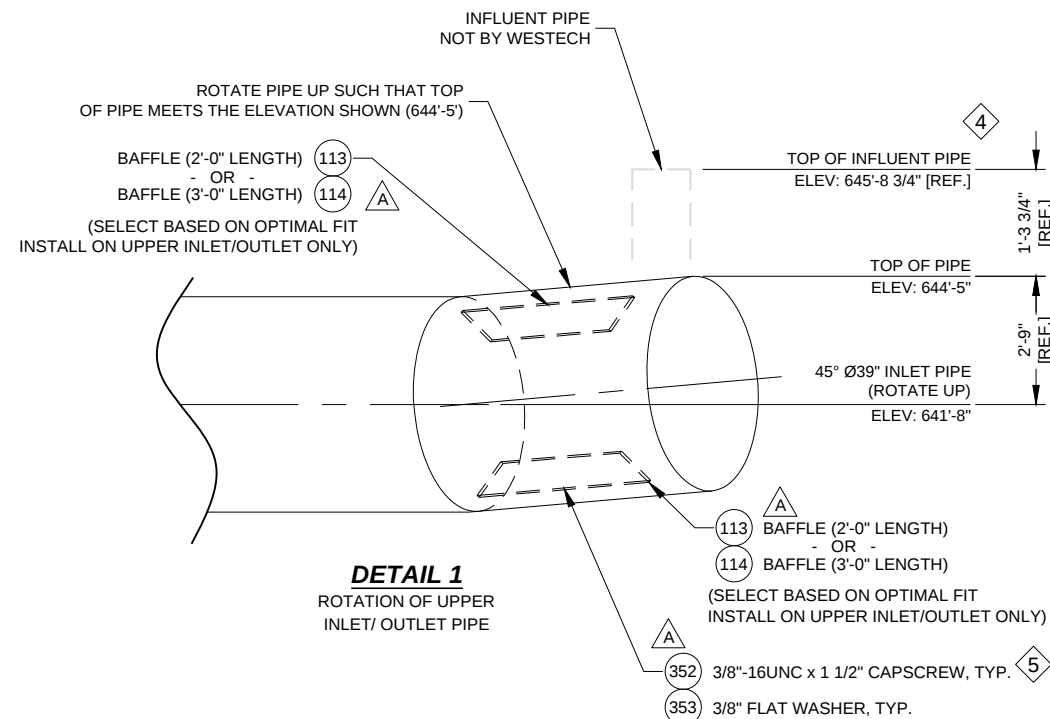
Dimensions and Elevations of Digester 1
(Not to Scale)
WPC 23-4, Bid Item 1, Drawing 1-10



REMOTE CONTROL PANEL TO BE FIELD LOCATED (WIRING, CONDUIT, & SUPPORTS ARE NOT BY WESTECH)

INSTALLATION OUTLINE:

1. LOCATE DRAFT TUBE ON CONCRETE PAD
- SUPPORT AND BRACE TEMPORARILY.
2. INSTALL PLATFORM ONTO THE DRAFT TUBE
- VERIFY CORRECT PLATFORM FIT TO TANK AND/OR ADJACENT BUILDING. VERIFY THAT THE INLET/ OUTLET OPENINGS ARE CORRECTLY ALIGNED WITH THE OPENINGS IN THE TANK WALL.
3. INSTALL DRAFT TUBE BASE ANCHOR BOLTS
- USE LEVELING NUTS TO ENSURE THE DRAFT TUBE IS LEVEL. GROUT BENEATH BASE FLANGE USING NON-SHRINK GROUT (NOT BY WESTECH)
4. INSTALL PLATFORM SUPPORTS
- USE 5/8" x 1 3/4" BOLTS WITH 5/8" HEX NUTS AND (2) FLAT WASHERS AT BOTH THE DRAFT TUBE CONNECTION POINT AND THE PLATFORM CONNECTION POINT. INSTALL BRACES AS DESCRIBED ON DRAWINGS: 22397A-1014 & 1015.
5. INSTALL PLATFORM ANCHOR BOLTS
6. INSTALL INLET/ OUTLET PIPES ONTO DRAFT TUBE
- ORIENT THE INLET AND OUTLET PIPES AND FIELD WELD AS SHOWN ON DRAWING 22397A-1011.



NOTES

1. PUMPING CAPACITY IS 15,750 GPM. NORMAL FLOW IS IN THE DOWNWARD DIRECTION.
2. INSTALL USING HILTI PRODUCTS (ITEM NO'S: 418, 419, 420, 421, 422, & 423)
3. USE ANTI-SIEZE LUBRICANT (ITEM #: 303) ON ALL STAINLESS STEEL FASTENERS.
4. TOP OF CONCRETE PAD ELEVATION OF 619'-10" BASED ON CONTRACT DRAWINGS. DIMENSIONS AND ELEVATIONS NOTED WITH (4) HAVE BEEN PROVIDED BY THE CONTRACTOR JANUARY 12, 2015.
5. APPLY LEAK LOCK THREAD SEALANT (ITEM #: 354) AT INSTALLATION

PROCESS FLOW AND WEIGHT DATA

PUMP CAPACITY:	15,750 GPM
IMPELLER ROTATIONAL SPEED:	183 RPM
MIXER WEIGHT:	APPROX. 4,800 LBS.
DRAFT TUBE WEIGHT:	APPROX. 4,500 LBS.
INLET/ OUTLET WEIGHT:	APPROX. 500 LBS.
PLATFORM WEIGHT (MXR02 & MXR04):	810 LBS. (EACH)
PLATFORM WEIGHT (MXR01):	790 LBS.
PLATFORM WEIGHT (MXR03):	900 LBS.

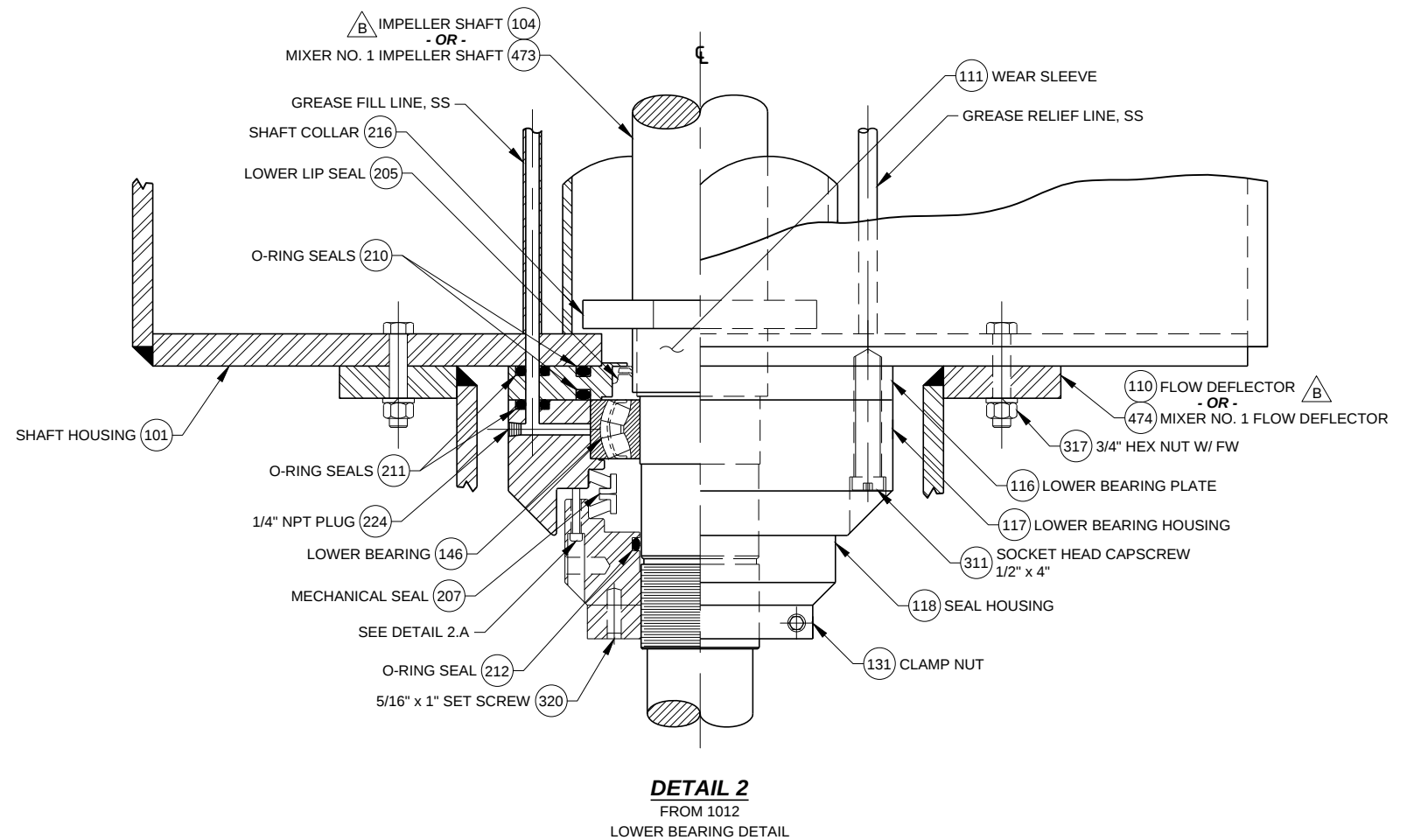
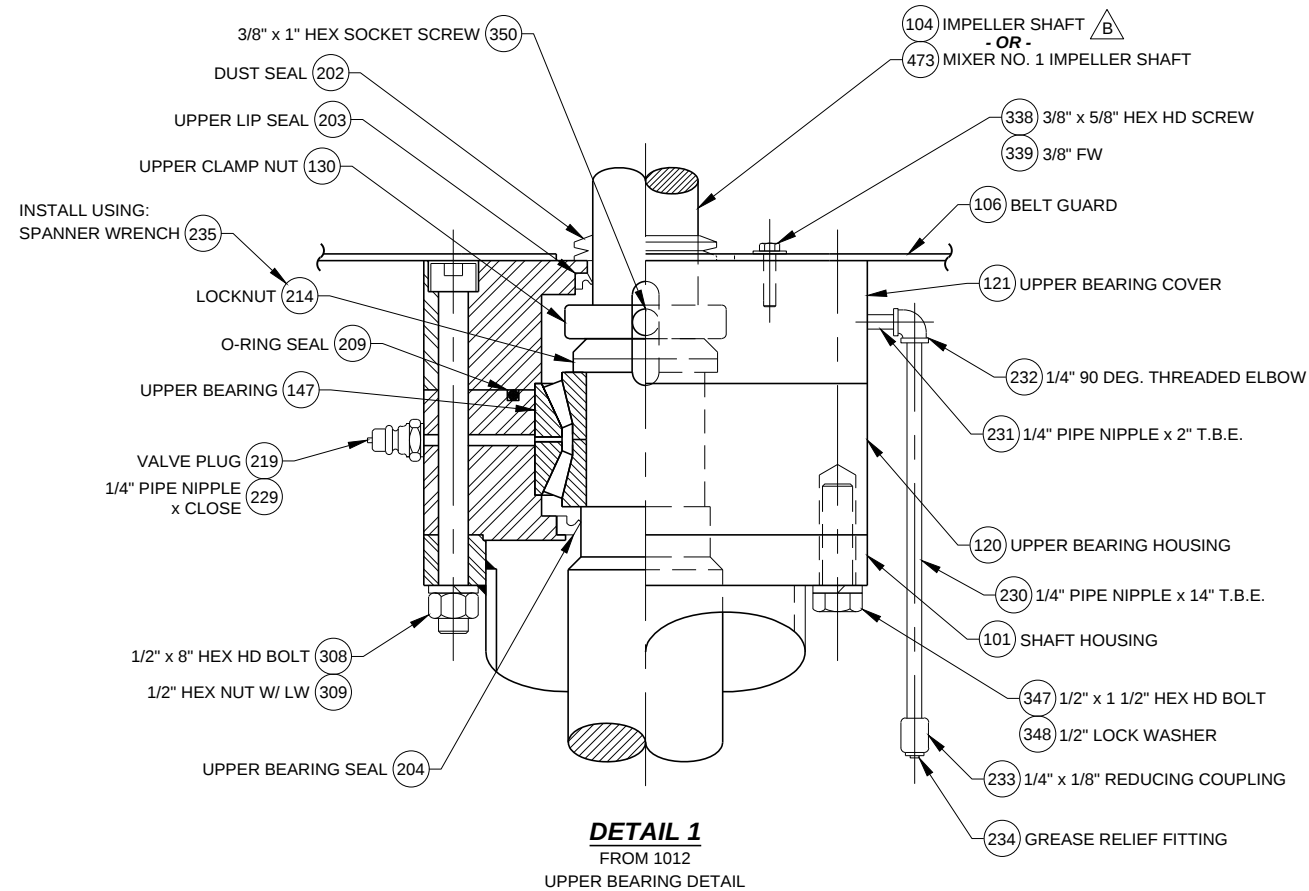
WestTech

Sludge Mixer System of Digester 1
(Existing)
WPC 23-4, Bid Item 4, Drawing 4-1

Modified from: WestTech O&M Manual

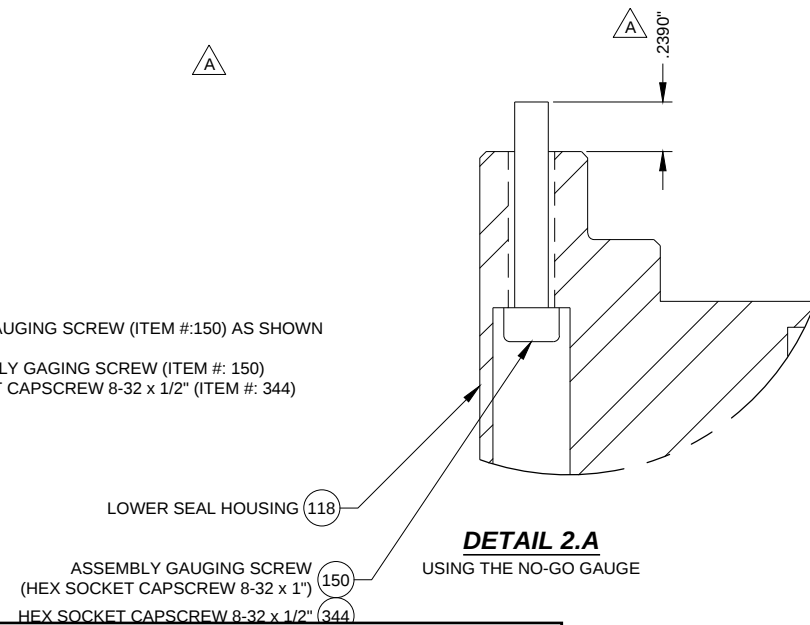
See Section 4.4 of Technical Specifications

REV	REVISION DESCRIPTION	ECN	DESIGNER	APPROVER	DATE	REFERENCE DOCUMENTS	REVISION
MO101							A



NOTE:
SET ASSEMBLY GAUGING SCREW (ITEM #:150) AS SHOWN

REPLACE ASSEMBLY GAGING SCREW (ITEM #: 150)
WITH HEX SOCKET CAPSCREW 8-32 x 1/2" (ITEM #: 344)
BEFORE TESTING



NOTES

1. ALL MATERIAL TO BE MILD STEEL UNLESS NOTED OTHERWISE.

SMXDT118 SMXDT113 22207A-1007		WestTech THIS DRAWING IS PROPERTY OF WESTTECH ENGINEERING, INC. AND IS TRANSMITTED IN CONFIDENCE. NEITHER RECEIPT NOR POSSESSION CONFERS OR TRANSFERS ANY RIGHTS TO REPRODUCE, USE, OR DISCLOSE, IN WHOLE OR IN PART, DATA CONTAINED HEREIN FOR ANY PURPOSE, WITHOUT THE WRITTEN PERMISSION OF WESTTECH ENGINEERING, INC.	
Sludge Mixer System of Digester 1 (Existing) WPC 23-4, Bid Item 4, Drawing 4-3		REV B	

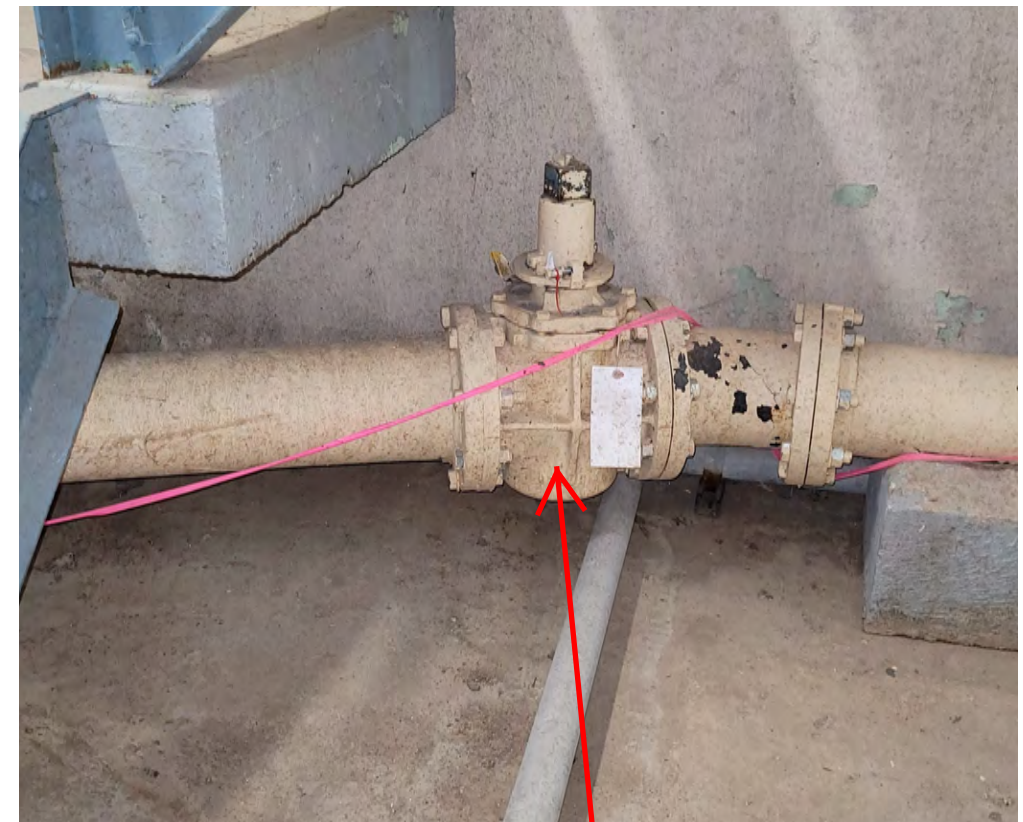
Modified from: WesTech O&M Manual

See Section 4.4 of Technical Specifications

REV	REVISION DESCRIPTION	ECN	DESIGNER	APPROVER	DATE	REFERENCE DOCUMENTS
				MO101 ST20		



Lower Northeast Sewer Pipe from
Digester 1 to Sewer (out east wall)



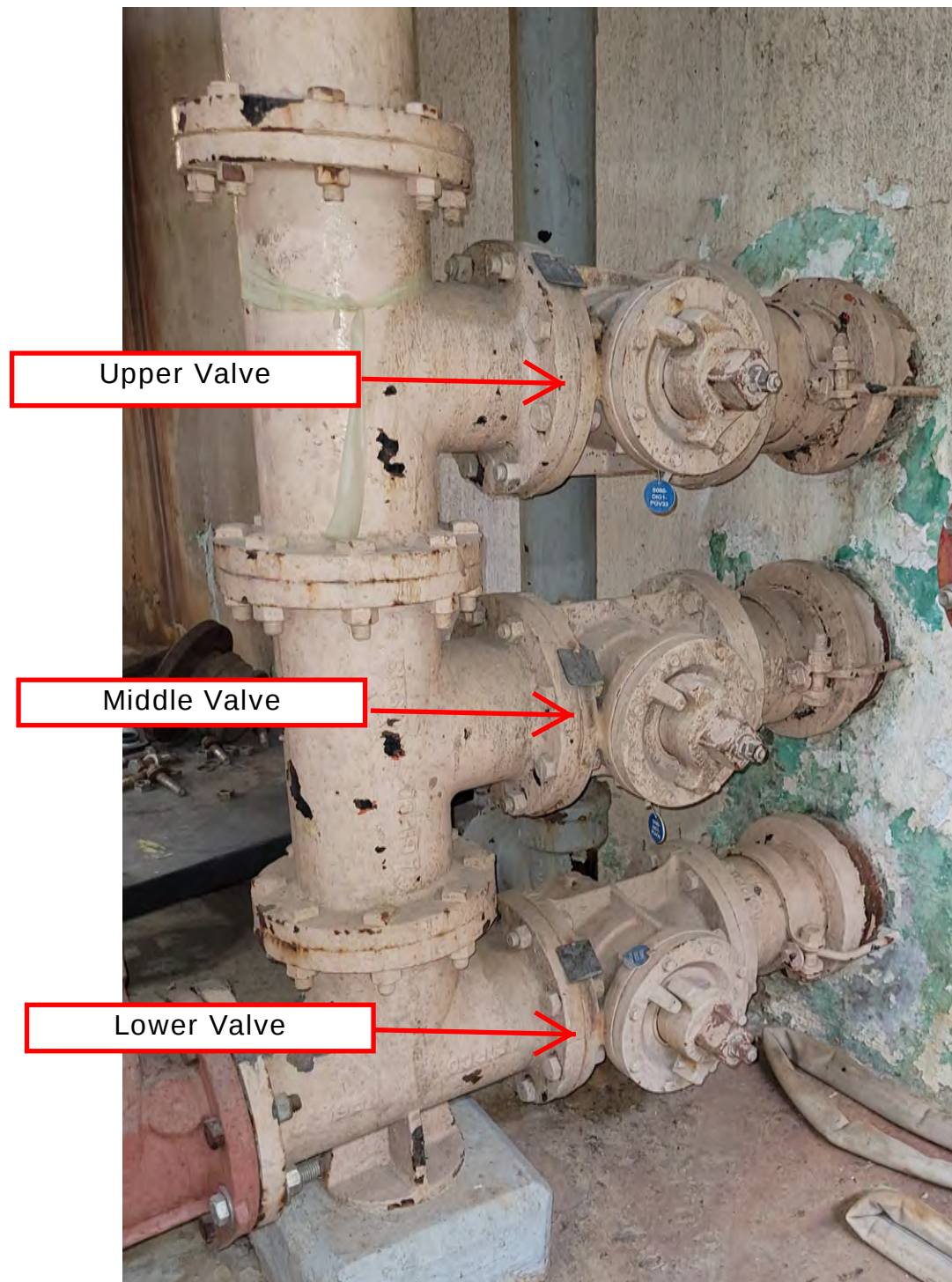
Recirculation Suction Pipe from
Digester 1



Transfer Suction Pipe from
Digester 1

See Section 4.6 of Technical Specifications

Sludge Valves in Digester 1&2 Building
(Existing)
WPC 23-4, Bid Item 6, Drawing 6-1



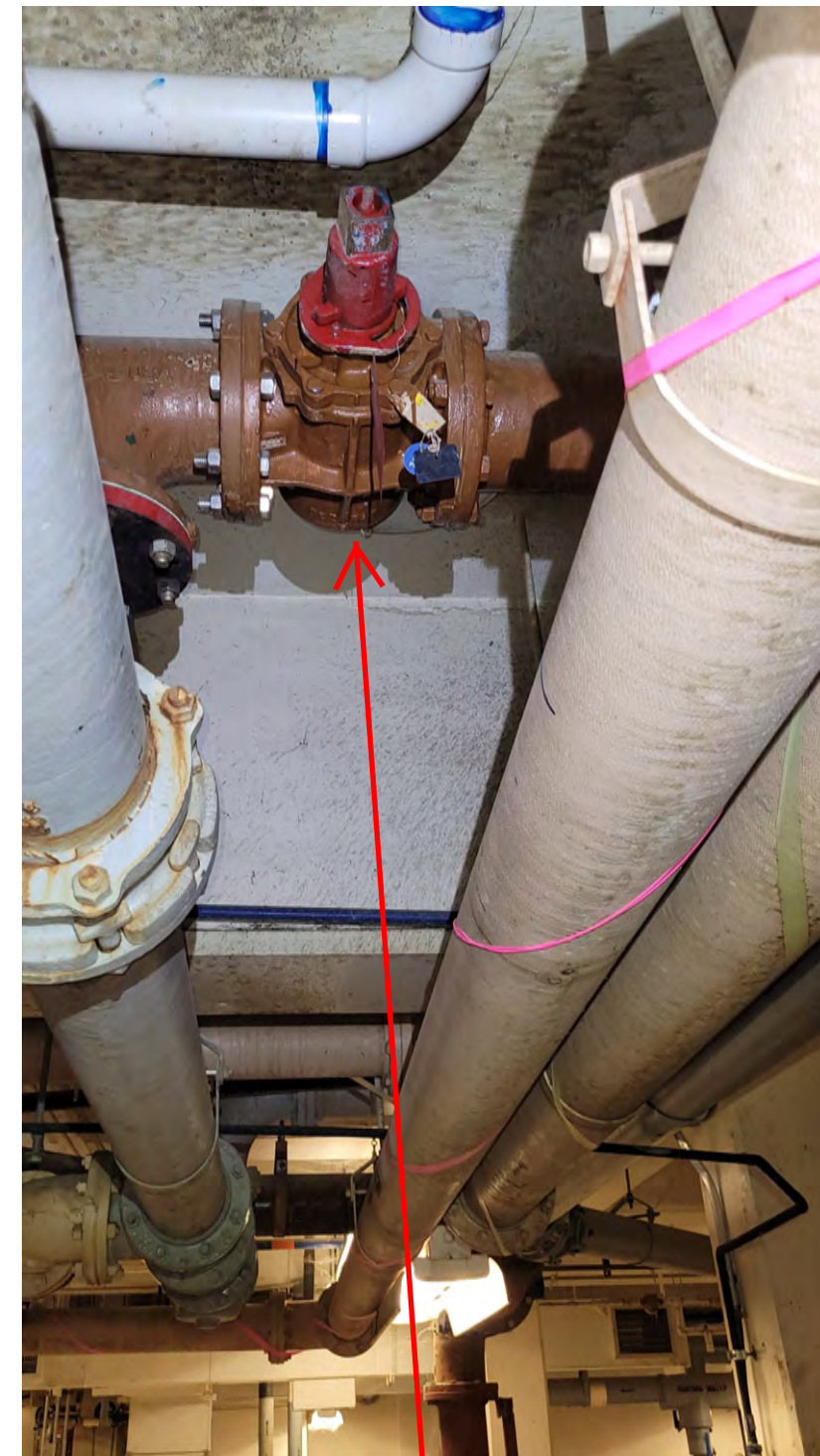
Upper Valve

Middle Valve

Lower Valve

Recirculation Discharge Pipes
to Digester 1

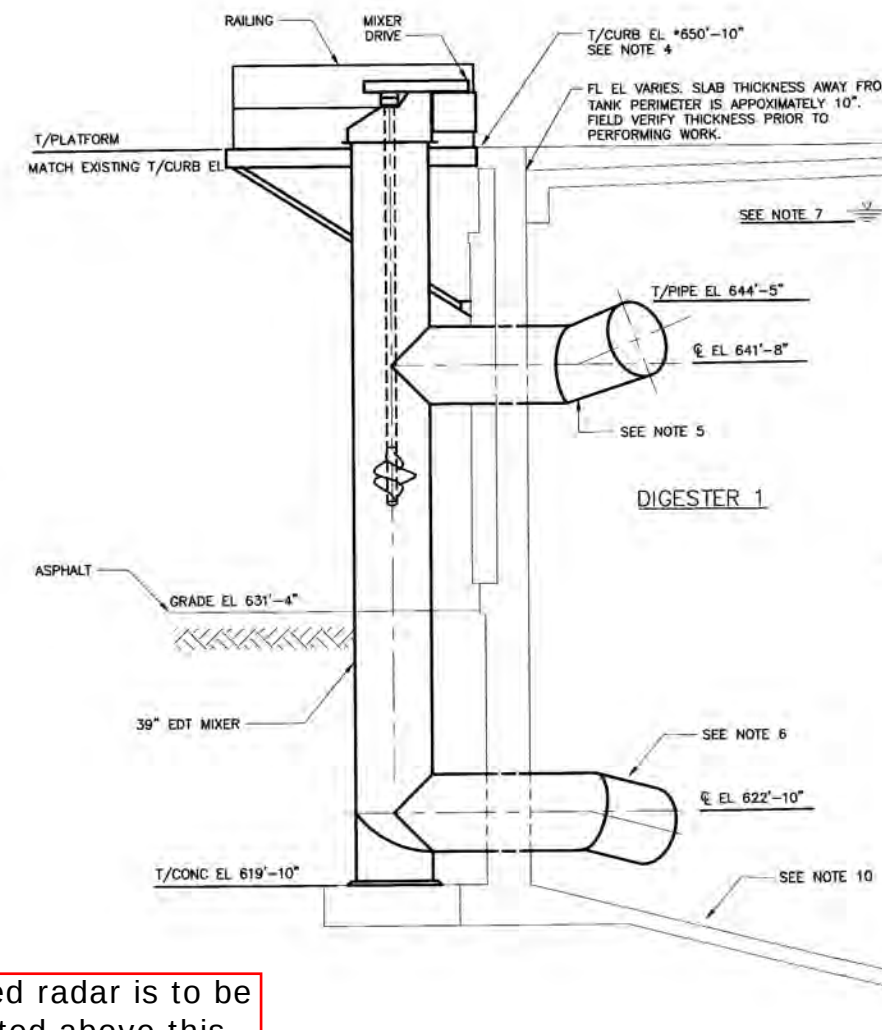
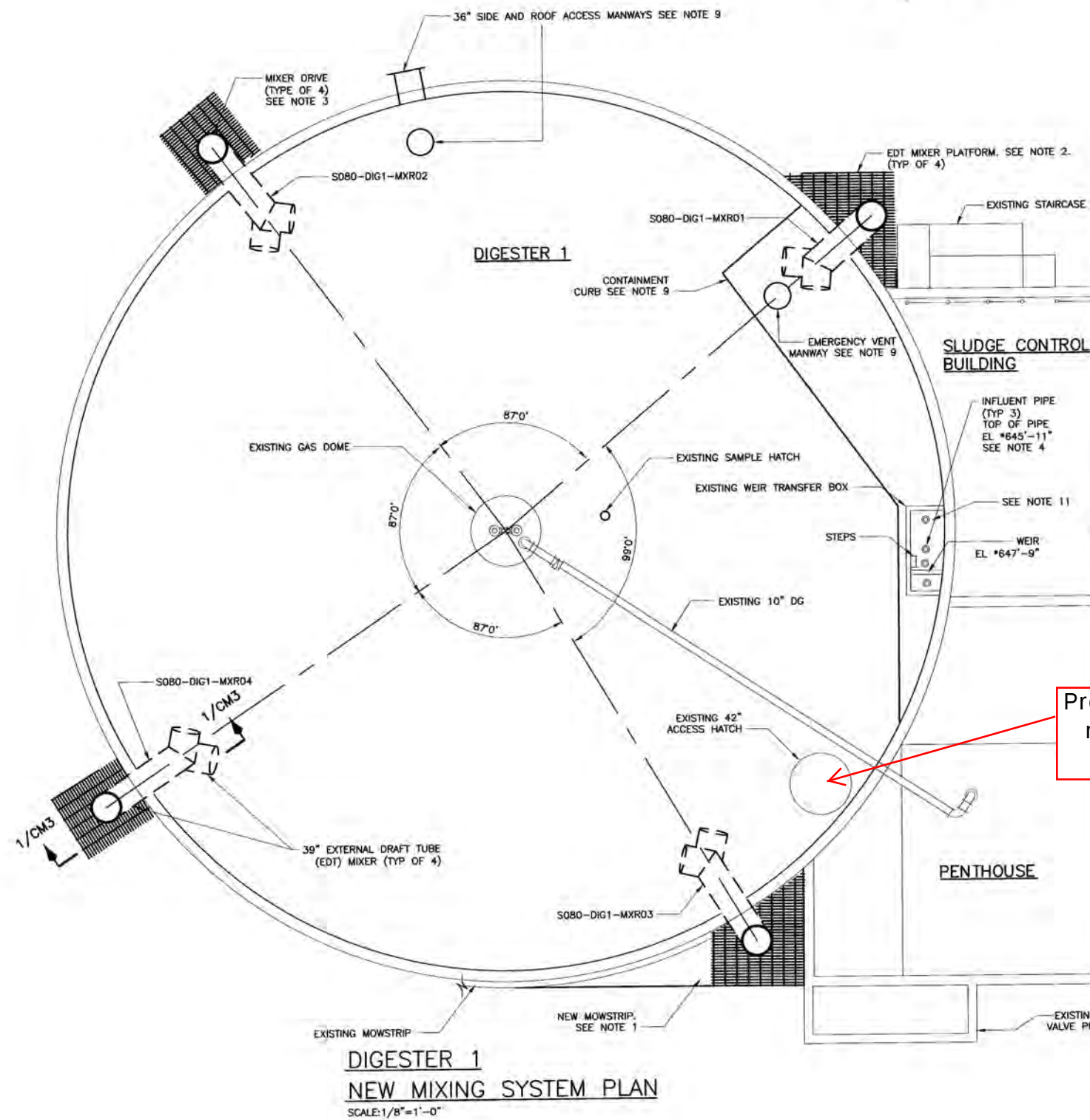
See Section 4.6 of Technical Specifications



Transfer Gravity Pipe from
Digester 1

Sludge Valves in Digester 1&2 Building
(Existing)
WPC 23-4, Bid Item 6, Drawing 6-2

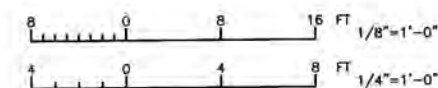
PLOT DATE: 4/5/2019 6:08 PM PLOTTED BY: YAH, RONALD



NOTES:

1. REMOVE EXISTING SPIRAL STAIRCASE AND APPURTENANCES. DEMOLISH ASSOCIATED CONCRETE FOUNDATION. EXTEND MOW STRIP TO FACE OF THE SLUDGE CONTROL BUILDING. SLOPE MOW STRIP AWAY FROM STRUCTURE.
2. REFERENCE SPECIFICATION SECTION 46 73.31 FOR PLATFORM REQUIREMENTS.
3. RELOCATE FIRE HYDRANT, WATERLINES, VALVE BOXES, ELECTRICAL CONDUITS AND OTHER UTILITIES AND PROCESS PIPING LOCATED ON OR ADJACENT TO THE DIGESTER AS REQUIRED. REPLACE MOW STRIPS AND ASPHALT REMOVED. COORDINATE ROUTING WITH ENGINEER.
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6. PROVIDE BEND ARRANGED TO MATCH EXISTING FLOOR SLOPE IMMEDIATELY BELOW DRAFT TUBE AND THE SPECIFIED HORIZONTAL ANGLE.
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9. SIDE AND ROOF ACCESS MANWAY, EMERGENCY VENT MANWAY, AND CONTAINMENT CURB INSTALLED AT SIMILAR LOCATIONS ON DIGESTER 2.
10. (24) PRVs REPLACED IN KIND AT DIGESTERS 1 AND 2. CONTRACTOR PERFORMED EPOXY INJECTION REPAIRS FOR CRACKS OBSERVED ALONG DIGESTER 2 FLOOR AND LOWER WALLS. TOTAL LF EQUALED 60 LF.

SECTION 1/CM3 - DIGESTER 1 NEW MIXING SYSTEM SECTION SCALE: 1/4"=1'-0"



RECORD DRAWING

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Radar Mounting Location on Digester 1
(Proposed)
WPC 23-4, Bid Item 7, Drawing 7-1

Modified from: ES 2010-04, Contract 2, Sheet 28

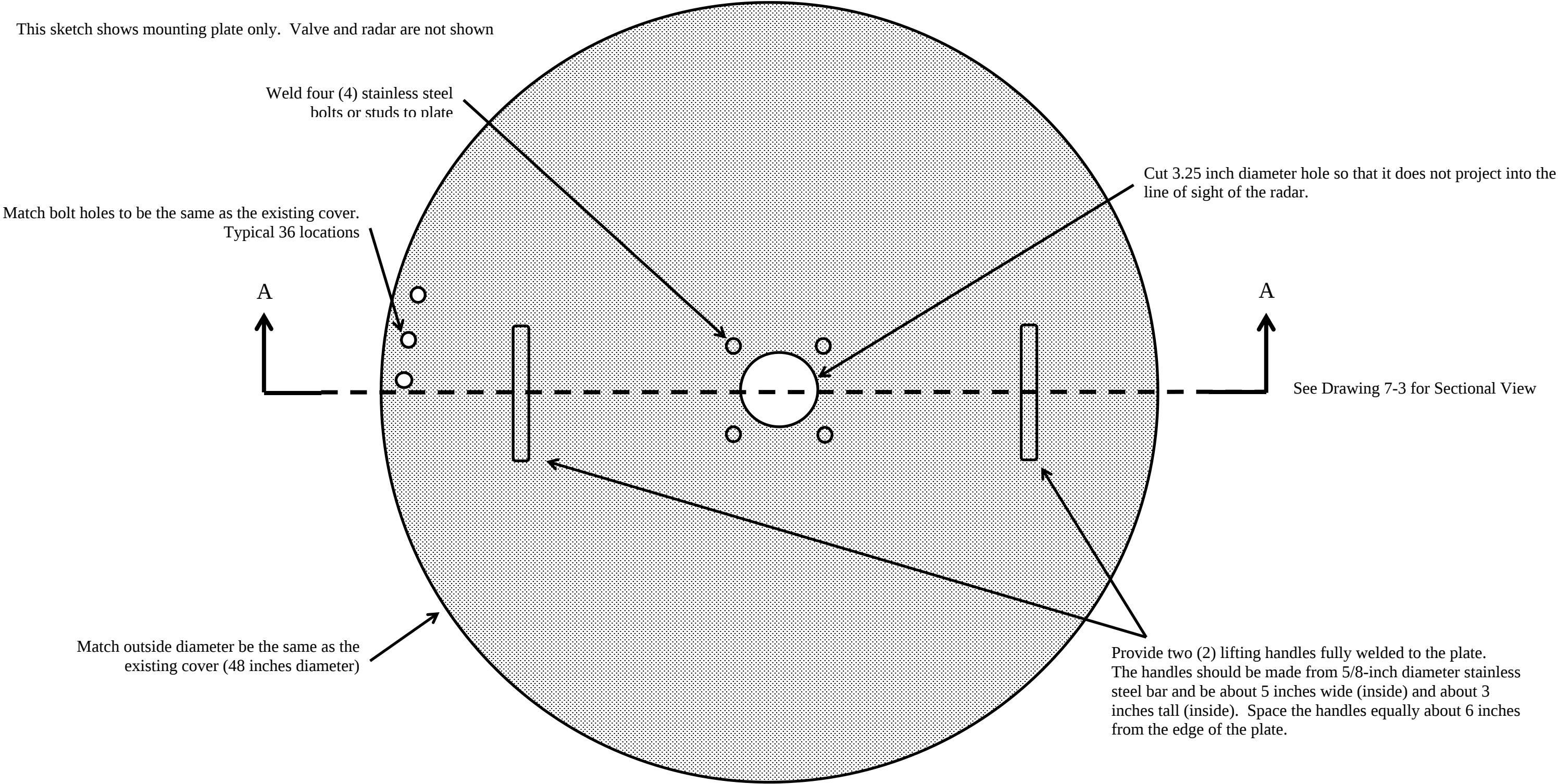
See Section 4.7 of Technical Specifications

DIGESTER MIXING SYSTEM DIGESTER 1 NEW MIXING SYSTEM PLAN AND SECTION
SOUTHSIDE WWTP DIGESTER GAS IMPROVEMENTS
PROJECT NO. ES2010-04 CONTRACT 2
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION
PLANS PREPARED BY: GREELEY AND HANSEN 100 SOUTH WACKER DRIVE, SUITE 1400 CHICAGO, ILLINOIS 60606-4003

REVISION	BY	DATE	PLAN SCALE	DRAWN	FG	3/2013	APPROVED
CONFORMED	TOG	9/14	AS SHOWN	DESIGNED	TG	3/2013	
RECORD DRAWINGS	RKY	3/19		SURVEY			

- Contractor to fabricate custom plate made from 304 stainless steel, ¼-inch thick.
- Plate is to serve as both a removeable cover for the access hatch and a mounting location for the radar.

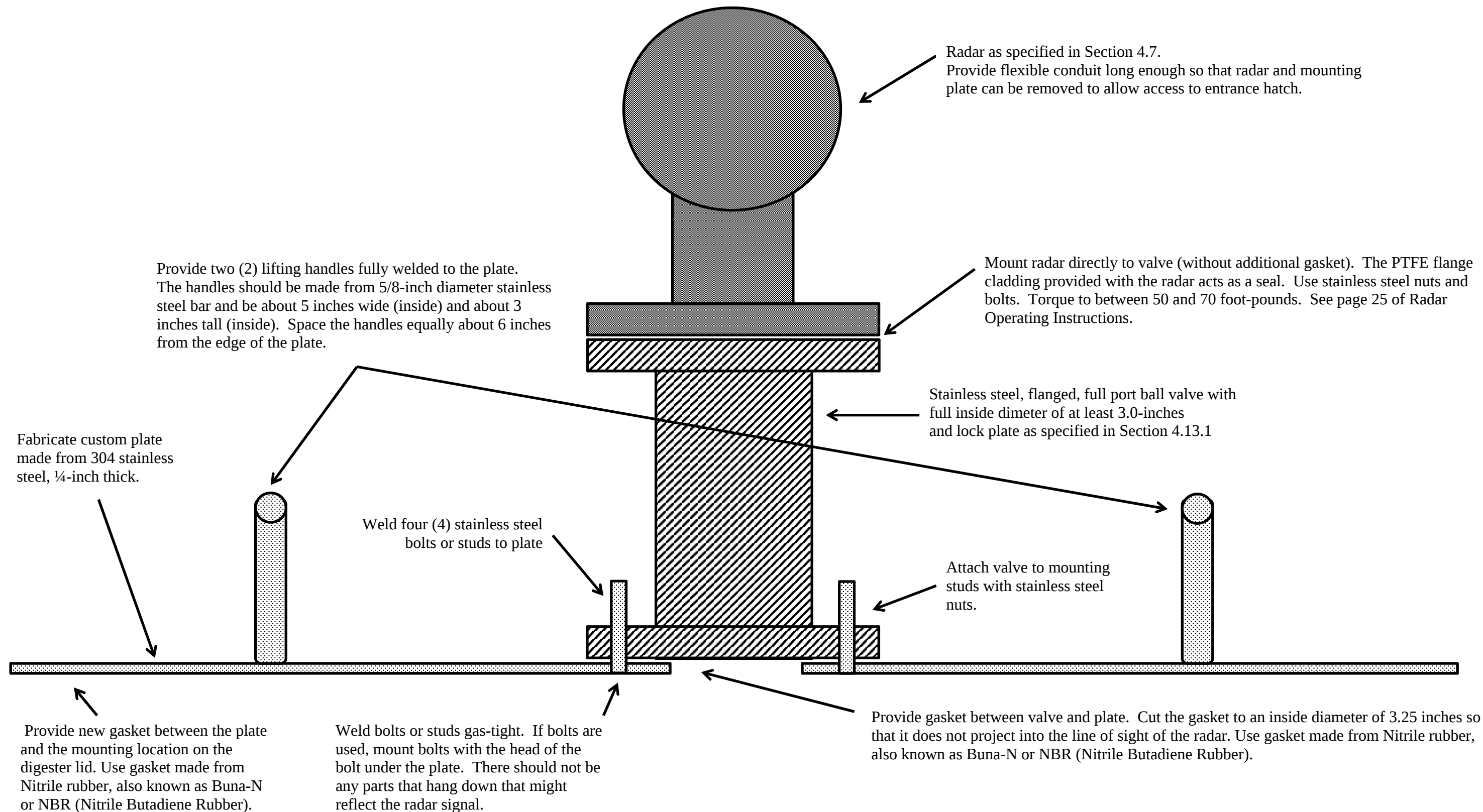
This sketch shows mounting plate only. Valve and radar are not shown



Not to Scale

See Section 4.7 of Technical Specifications

Mounting Plate for Radar, Plan View
(Proposed)
WPC 23-4, Bid Item 7, Drawing 7-2



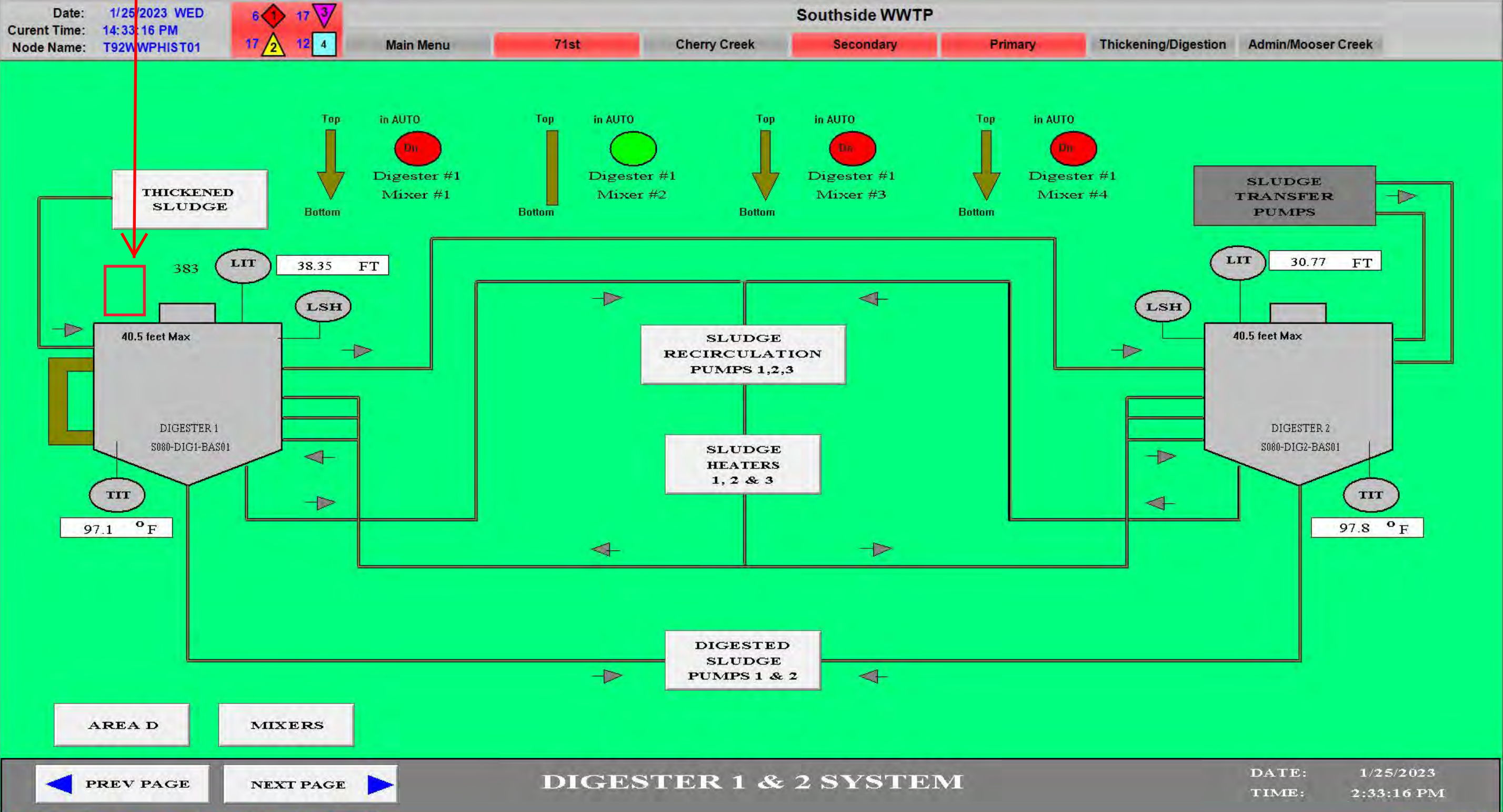
Sectional View A-A
from Drawing 7-2

Not to Scale

See Section 4.7 of Technical Specifications

Mounting Plate for Radar, Sectional View
(Proposed)
WPC 23-4, Bid Item 7, Drawing 7-3

Proposed location of radar



See Section 4.7 of Technical Specifications

SCADA View for Radar
(Proposed)
WPC 23-4, Bid Item 7, Drawing 7-4

At each Sludge Recirculation Pump (SRP1, SRP2, SRP3):

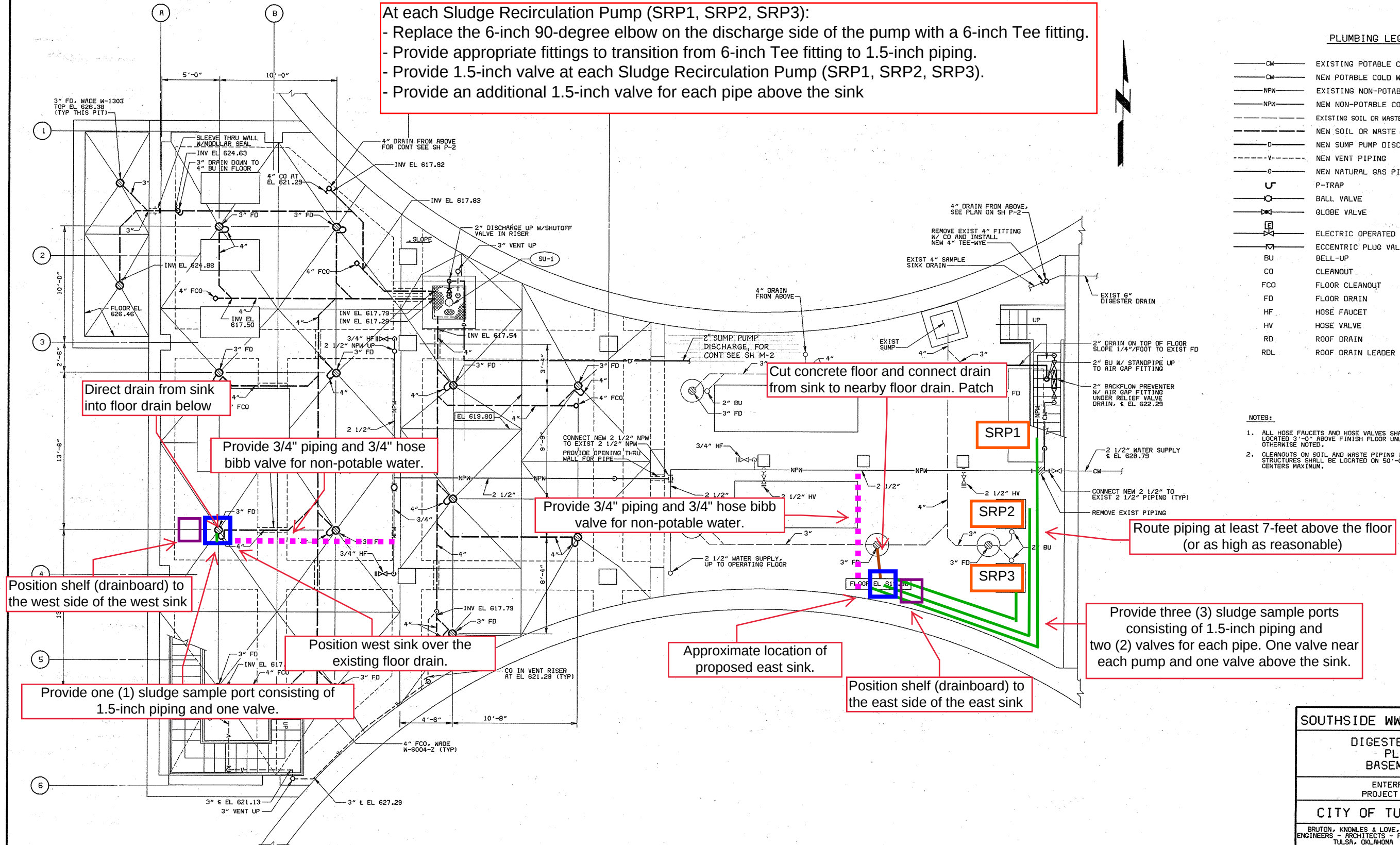
- Replace the 6-inch 90-degree elbow on the discharge side of the pump with a 6-inch Tee fitting.
- Provide appropriate fittings to transition from 6-inch Tee fitting to 1.5-inch piping.
- Provide 1.5-inch valve at each Sludge Recirculation Pump (SRP1, SRP2, SRP3).
- Provide an additional 1.5-inch valve for each pipe above the sink

PLUMBING LEGEND

— CW —	EXISTING POTABLE COLD WATER PIPING
— NCW —	NEW POTABLE COLD WATER PIPING
— NPW —	EXISTING NON-POTABLE COLD WATER PIPING
— NNPW —	NEW NON-POTABLE COLD WATER PIPING
---	EXISTING SOIL OR WASTE PIPING BELOW FLOOR
---	NEW SOIL OR WASTE PIPING BELOW FLOOR
— D —	NEW SUMP PUMP DISCHARGE PIPING
— V —	NEW VENT PIPING
— S —	NEW NATURAL GAS PIPING
— P —	P-TRAP
— BV —	BALL VALVE
— GV —	GLOBE VALVE
— EV —	ELECTRIC OPERATED VALVE
— EPV —	ECCENTRIC PLUG VALVE
— BU —	BELL-UP
— CO —	CLEANOUT
— FCO —	FLOOR CLEANOUT
— FD —	FLOOR DRAIN
— HF —	HOSE FAUCET
— HV —	HOSE VALVE
— RD —	ROOF DRAIN
— RDL —	ROOF DRAIN LEADER

NOTES:

1. ALL HOSE FAUCETS AND HOSE VALVES SHALL BE LOCATED 3'-0" ABOVE FINISH FLOOR UNLESS OTHERWISE NOTED.
2. CLEANOUTS ON SOIL AND WASTE PIPING INSIDE STRUCTURES SHALL BE LOCATED ON 50'-0" CENTERS MAXIMUM.

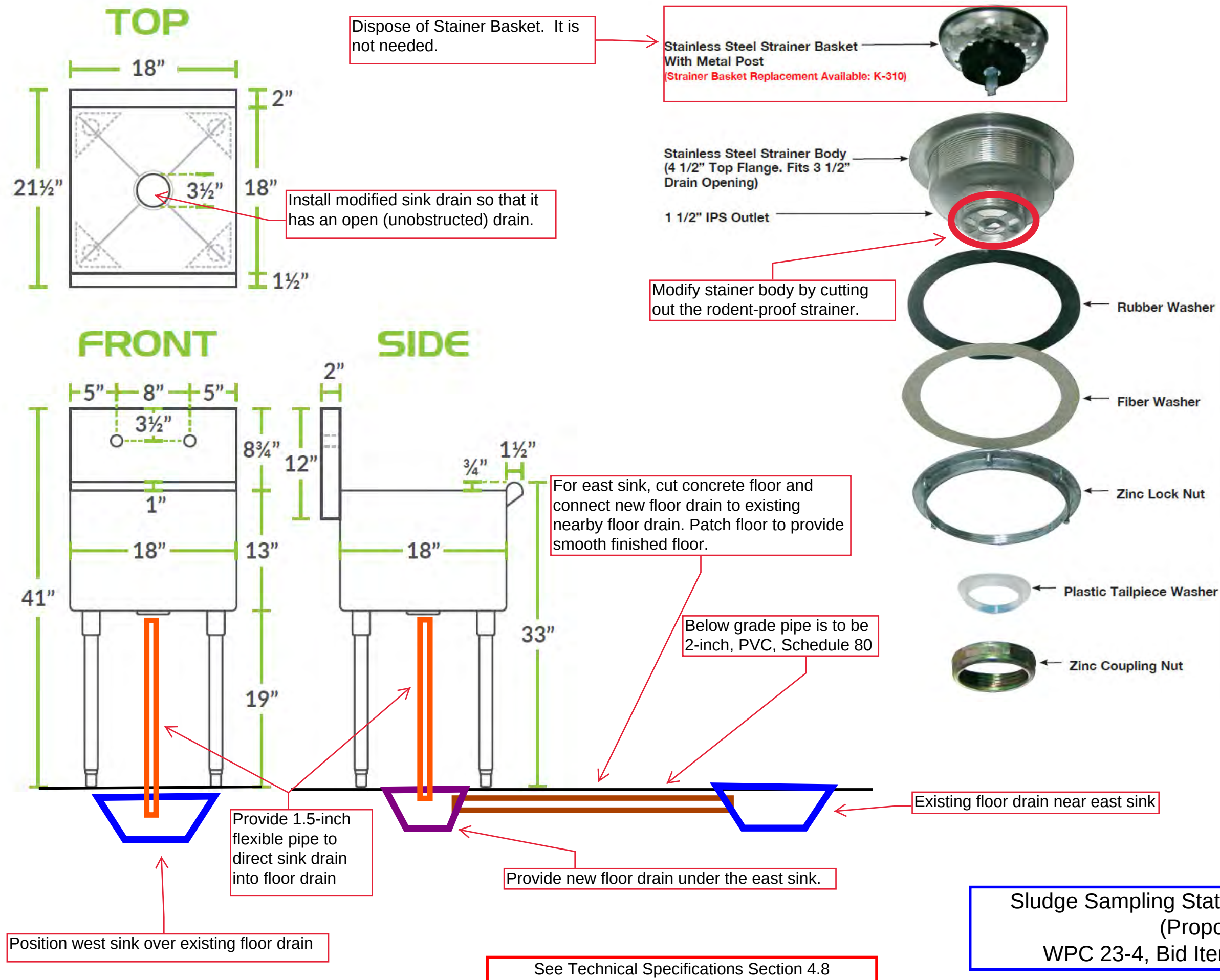


BASEMENT FLOOR PLAN - EL 619.80
1/4" = 1'-0"

Modified from: ES 87-12, Sheet 46

See Technical Specifications Section 4.8

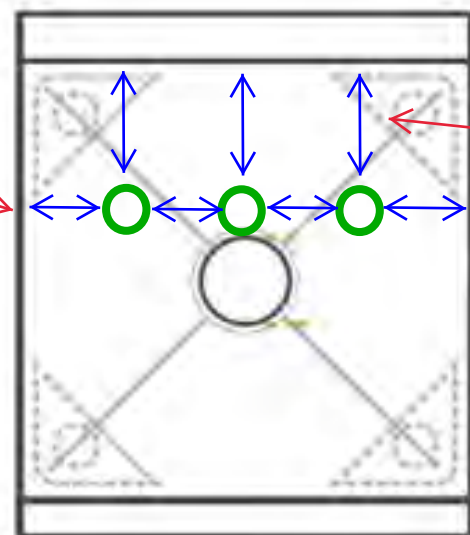
Sludge Sampling Stations at Digester 1&2
(Proposed)
WPC 23-4, Bid Item 8, Drawing 8-1



Drawing Not to Scale

Sludge Sampling Stations at Digester 1&2
(Proposed)
WPC 23-4, Bid Item 8, Drawing 8-2

Top View



Position the three sludge pipes in the sink so that the clearances between each pipe and the sides of the sink are about equal.

Position each 1.5-inch sludge pipe about 6 inches from the back of the sink

East sink is shown.

See Technical Specifications Section 4.8

Provide 3/4" piping and 3/4" hose bibb valve for non-potable water

Secure each 1.5-inch sludge pipe with valve to the wall.

Position each of the 1.5-inch valves about 4 to 5 feet above the floor

Angle piping as needed so that the three sludge pipes are spaced equally

Position the three sludge pipes in the sink so that the clearances between each pipe and the sides of the sink are about equal.

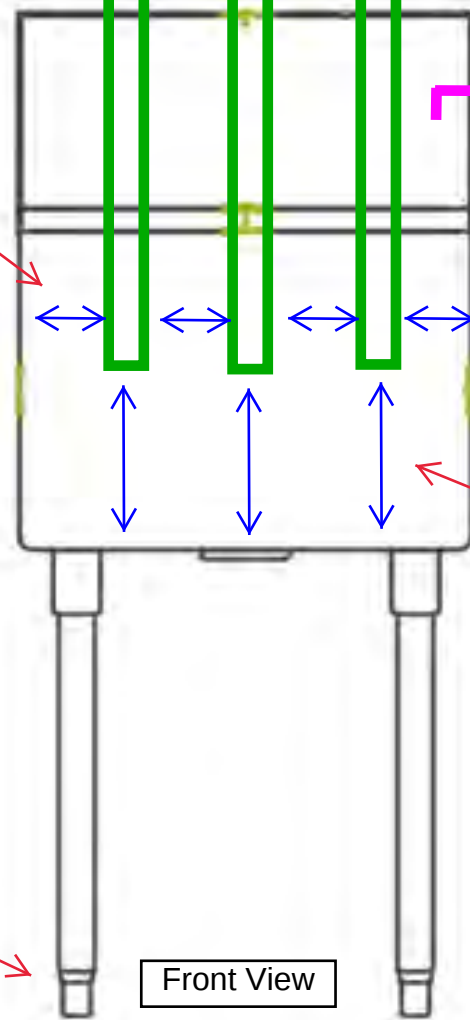
Provide NPT threads at the end of each 1.5-inch sludge pipe.

Replace standard feet with flanged feet and anchor the sink to the floor

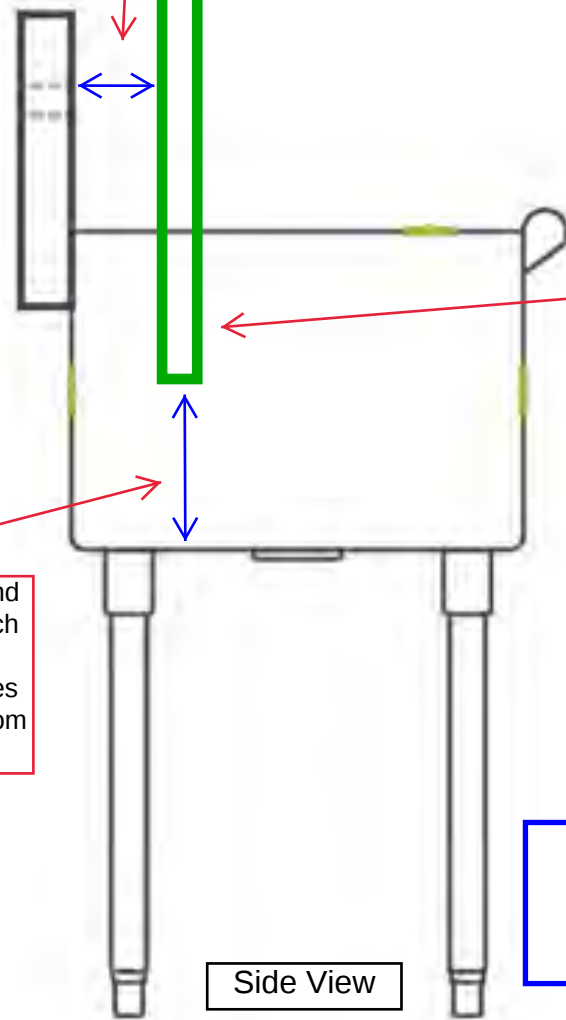
Position the end of each 1.5-inch sludge pipe about 10 inches above the bottom of the sink.

Drawing Not to Scale

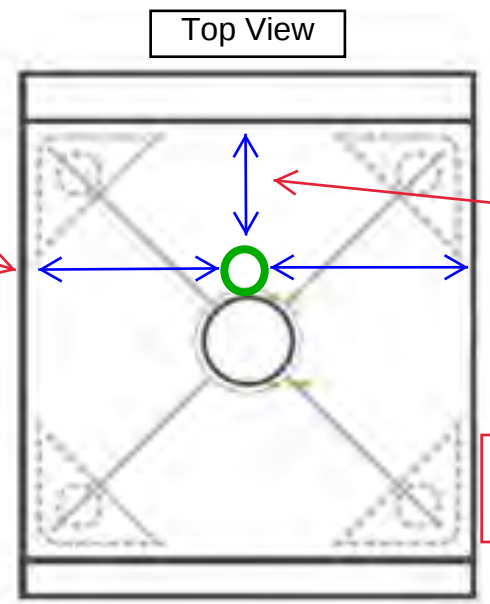
Front View



Side View



Sludge Sampling Station, East Sink
(Proposed)
WPC 23-4, Bid Item 8, Drawing 8-3



Position the one sludge pipe in the sink so that the clearances to the sides of the sink are about equal.

Position the 1.5-inch sludge pipe about 6 inches from the back of the sink

West sink is shown.

See Technical Specifications Section 4.8

Provide 3/4" piping and 3/4" hose bibb valve for non-potable water

Secure the 1.5-inch sludge pipe and valve so that it does not move or shake. If needed, provide struts to anchor to the floor.

Angle piping as needed so that the sludge pipe is positioned correctly in the sink.

Position the 1.5-inch valve about 4 to 5 feet above the floor

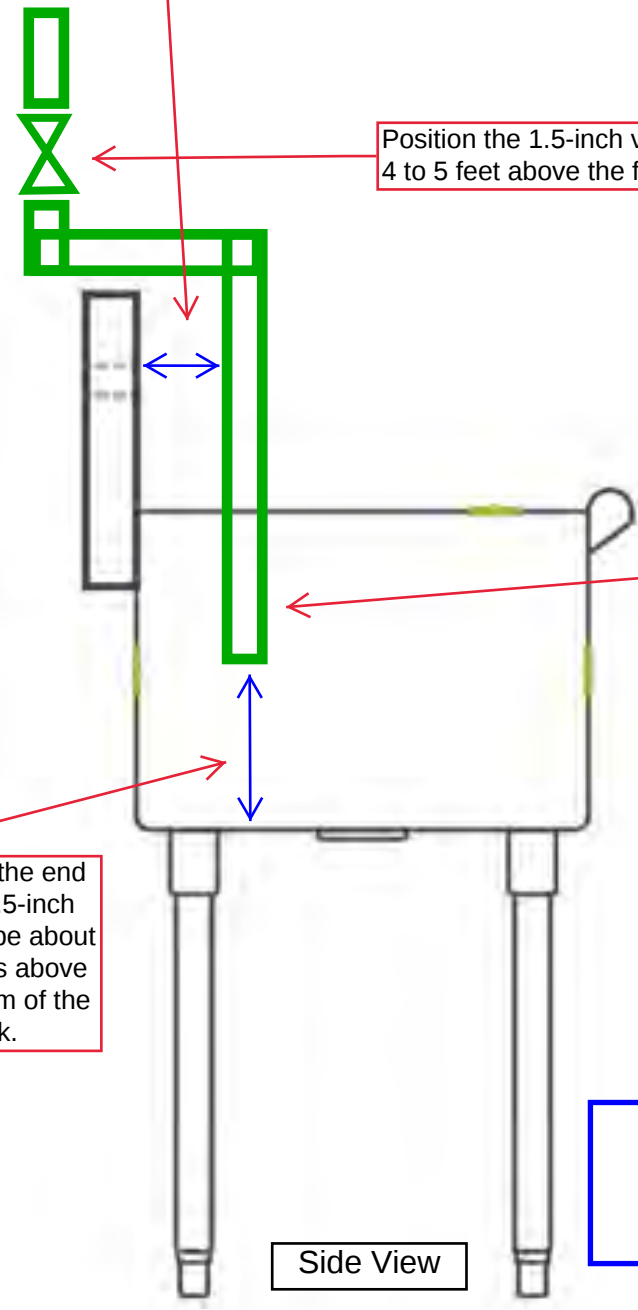
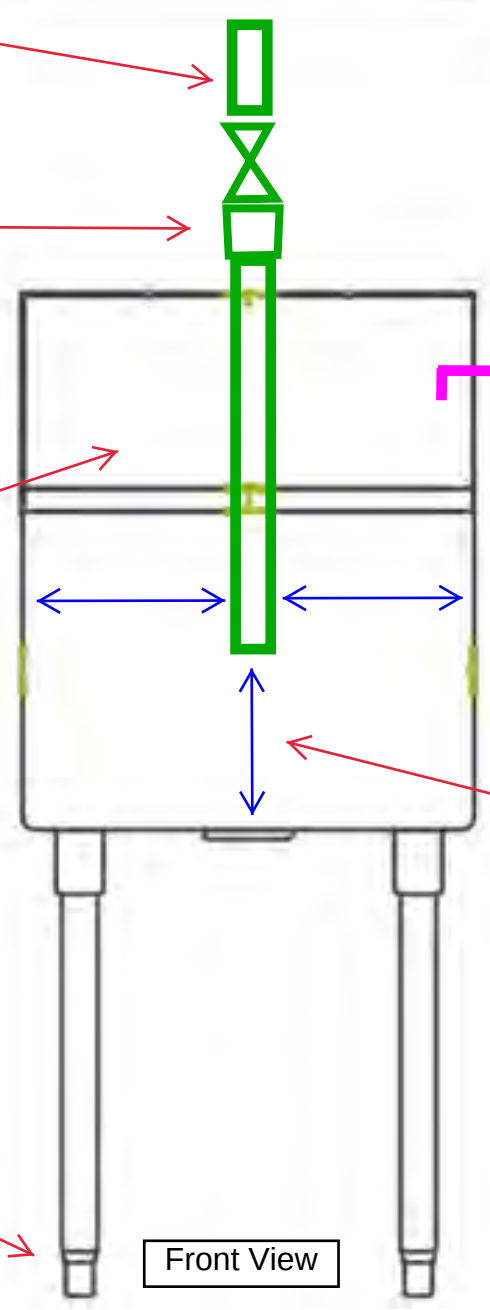
Position the one sludge pipe in the sink so that the clearances to the sides of the sink are about equal.

Provide NPT threads at the end of the 1.5-inch sludge pipe.

Position the end of the 1.5-inch sludge pipe about 10 inches above the bottom of the sink.

Replace standard feet with flanged feet and anchor the sink to the floor

Drawing Not to Scale



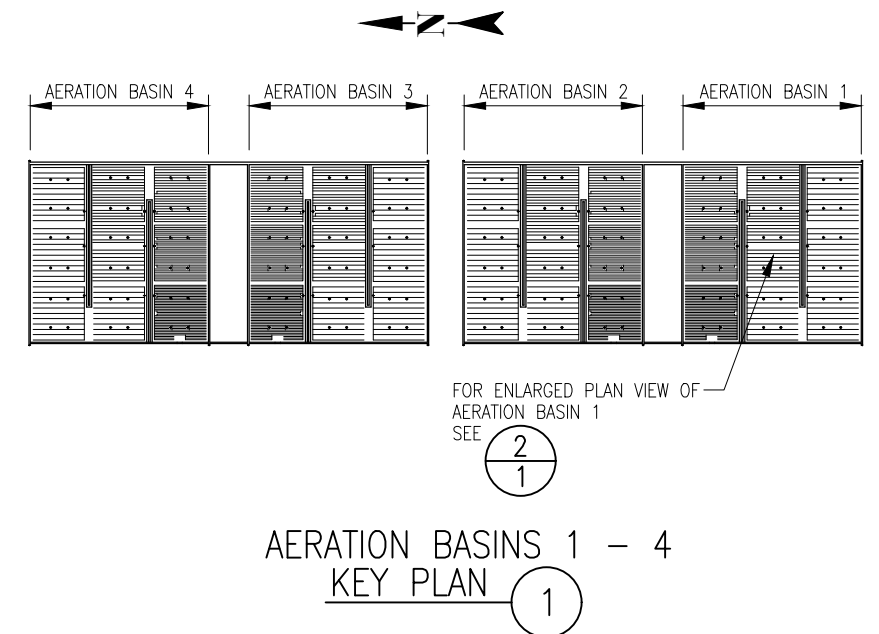
Sludge Sampling Station, West Sink
(Proposed)
WPC 23-4, Bid Item 8, Drawing 8-4



SEE SHEETS 2 - 19 FOR
PLAN VIEWS AND SECTIONS
OF GRID TYPES 1 - 9

AERATION BASIN 1
PLAN VIEW (2)

2 REQUIRED AS SHOWN (BASINS 1 & 3)
2 REQUIRED MIRROR IMAGE (BASINS 2 & 4)



DESIGNATES PLAN VIEW, SECTION
OR DETAIL NUMBER

(X/X)

DESIGNATES SHEET ON WHICH
PLAN VIEW, SECTION OR DETAIL
CAN BE FOUND

TULSA, OKLAHOMA
SOUTHSIDE WWTP

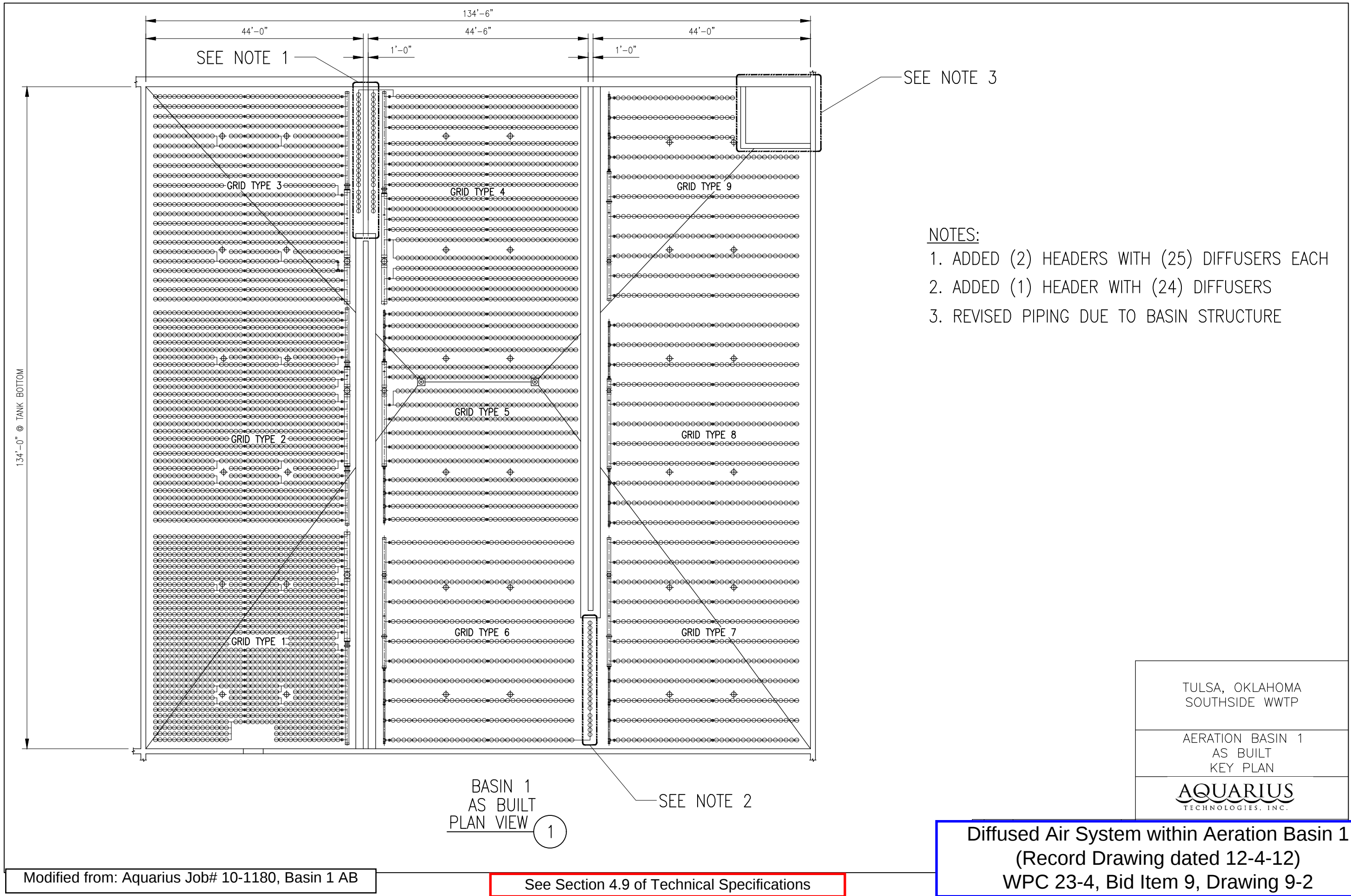
AERATION BASIN 1
PLAN VIEW
& KEY PLAN

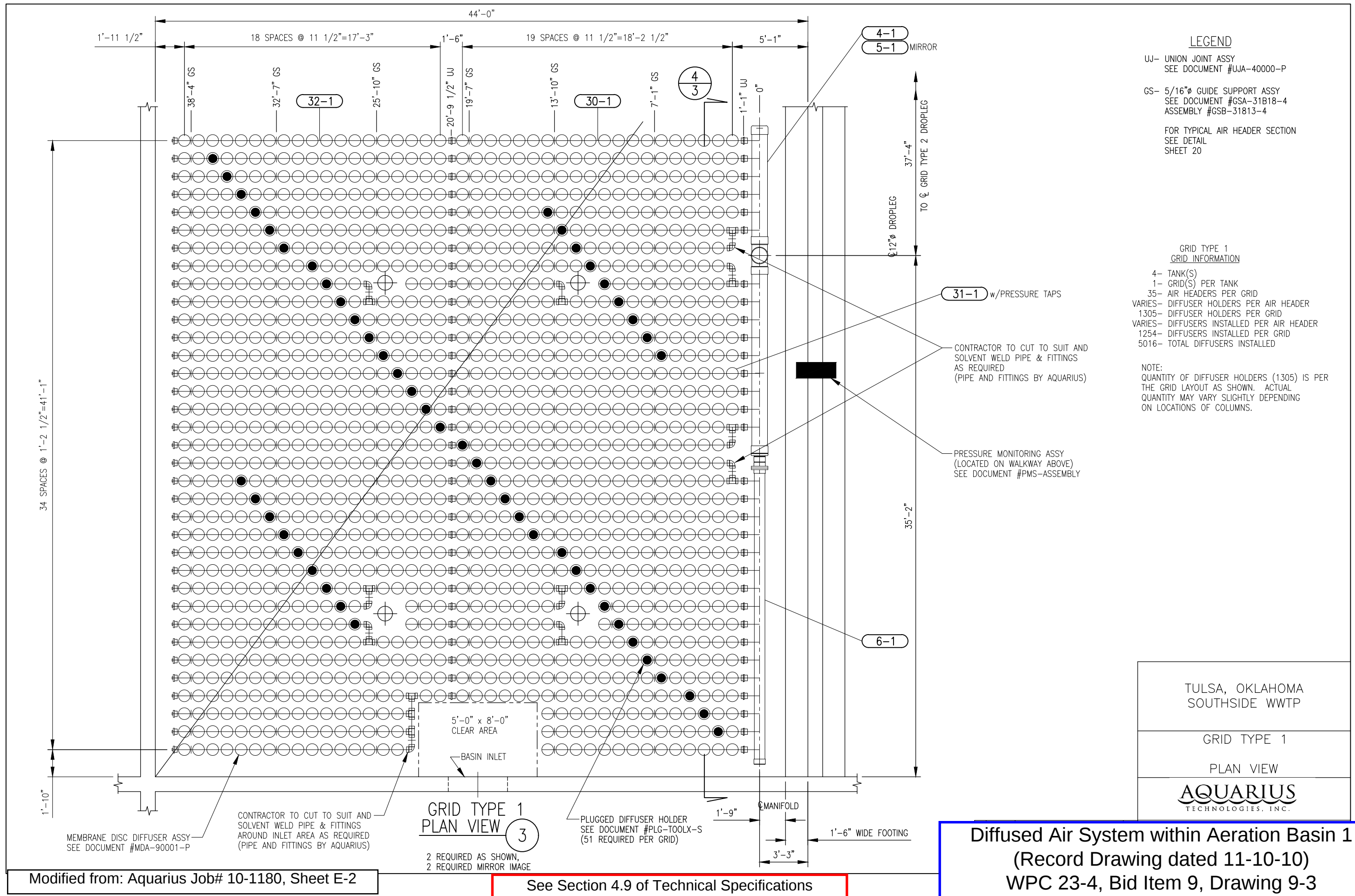
AQUARIUS
TECHNOLOGIES, INC.

Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-1

Modified from: Aquarius Job# 10-1180, Sheet E-1

See Section 4.9 of Technical Specifications





LEGEND

UJ- UNION JOINT ASSY
SEE DOCUMENT #UJA-40000-P

GS- 5/16"Ø GUIDE SUPPORT ASSY
SEE DOCUMENT #GSA-31818-4
ASSEMBLY #GSB-31813-4

FOR TYPICAL AIR HEADER SECTION
SEE DETAIL
SHEET 20

GRID TYPE 1
GRID INFORMATION

- 4- TANK(S)
- 1- GRID(S) PER TANK
- 35- AIR HEADERS PER GRID
- VARIES- DIFFUSER HOLDERS PER AIR HEADER
- 1305- DIFFUSER HOLDERS PER GRID
- VARIES- DIFFUSERS INSTALLED PER AIR HEADER
- 1254- DIFFUSERS INSTALLED PER GRID
- 5016- TOTAL DIFFUSERS INSTALLED

NOTE:
QUANTITY OF DIFFUSER HOLDERS (1305) IS PER
THE GRID LAYOUT AS SHOWN. ACTUAL
QUANTITY MAY VARY SLIGHTLY DEPENDING
ON LOCATIONS OF COLUMNS.

TULSA, OKLAHOMA
SOUTHSIDE WWTP

GRID TYPE 1

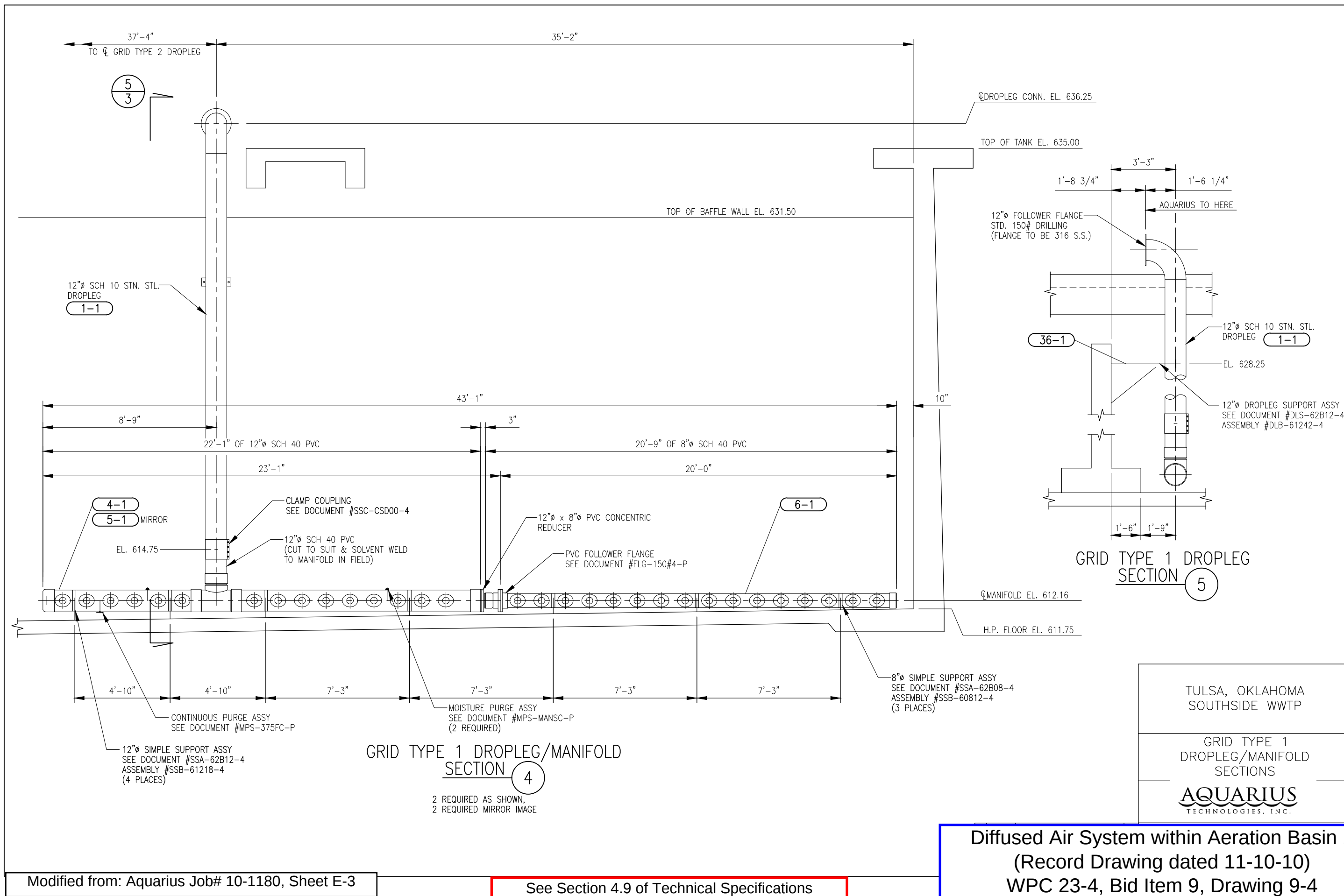
PLAN VIEW

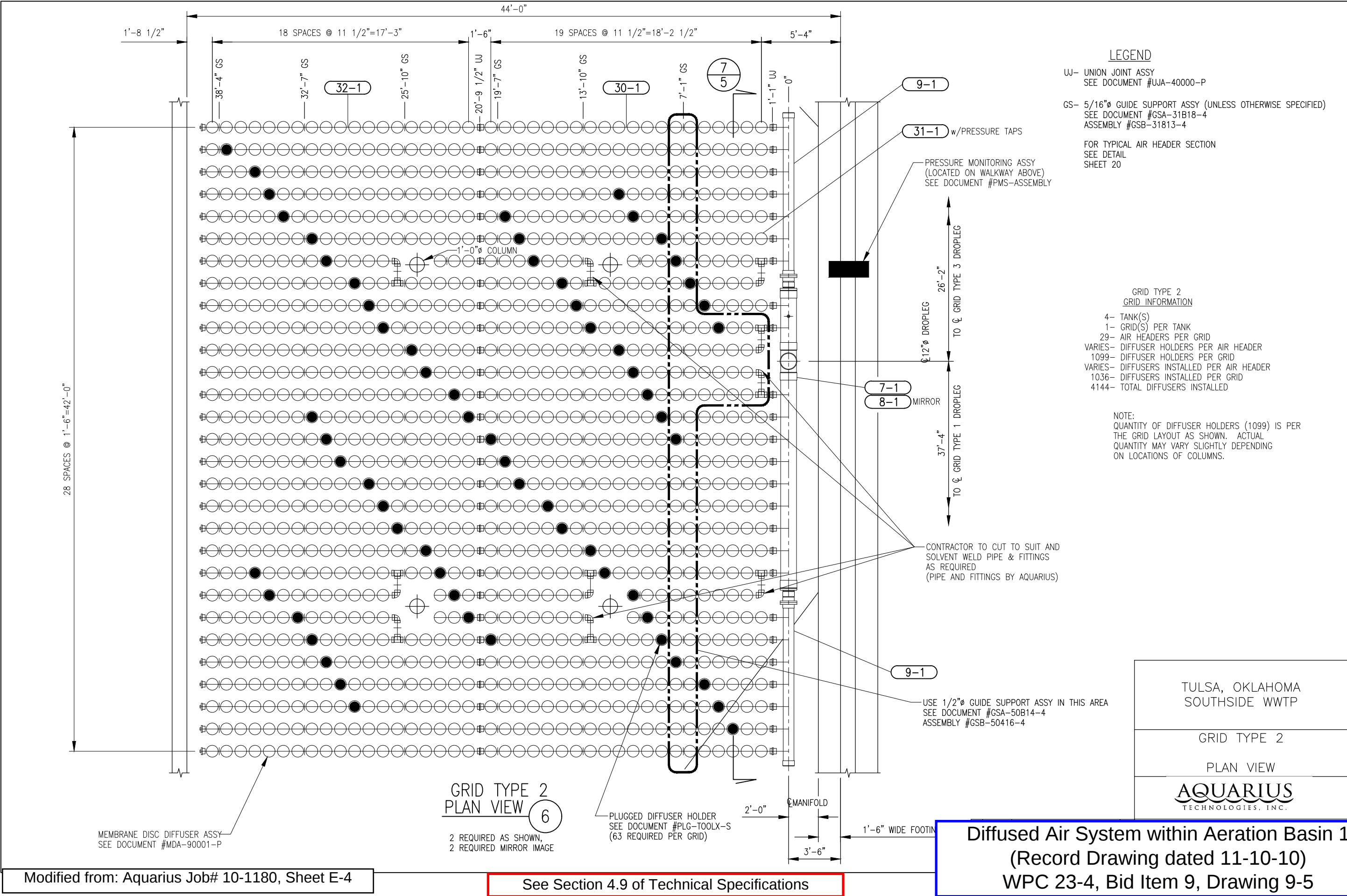


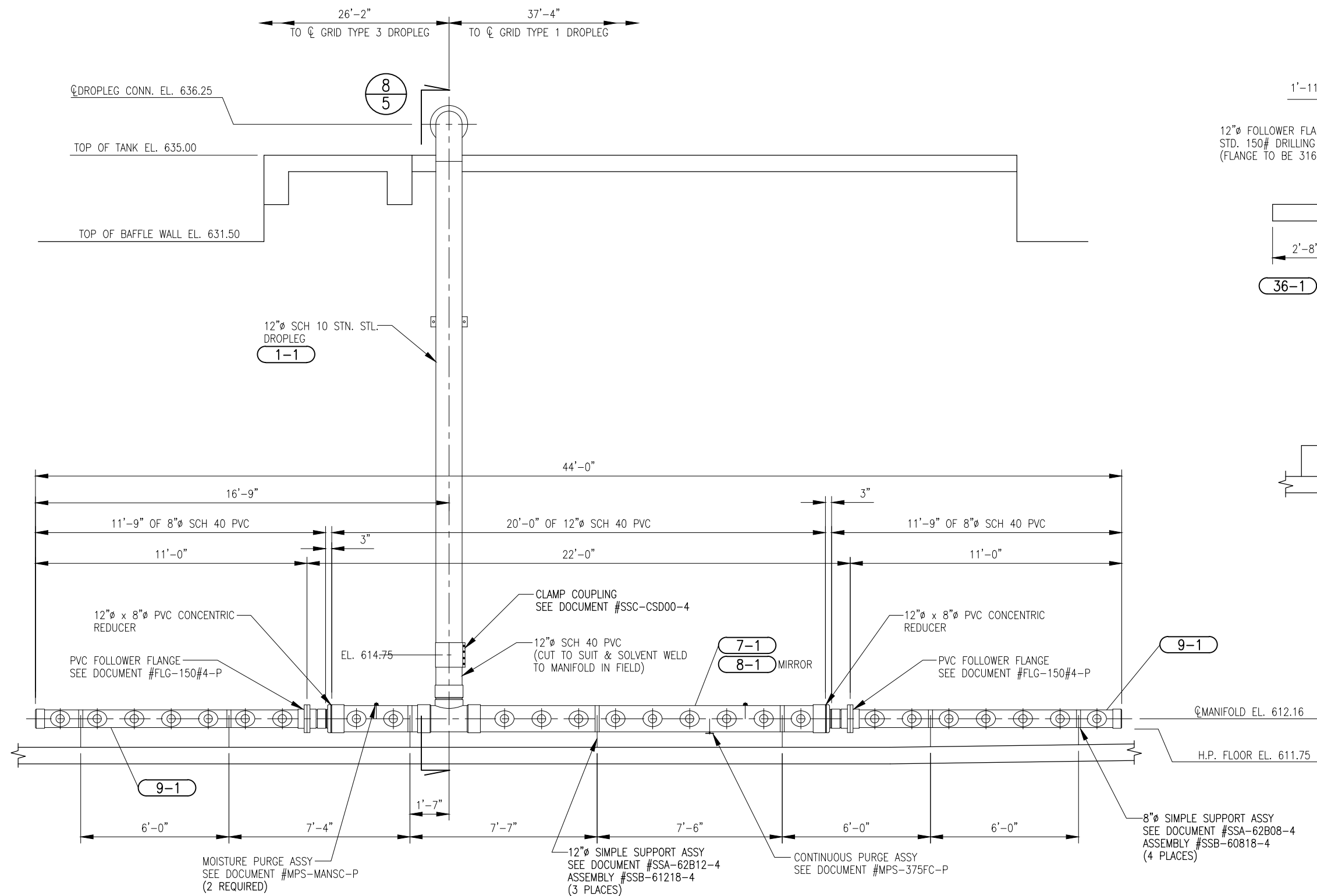
Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-3

Modified from: Aquarius Job# 10-1180, Sheet E-2

See Section 4.9 of Technical Specifications

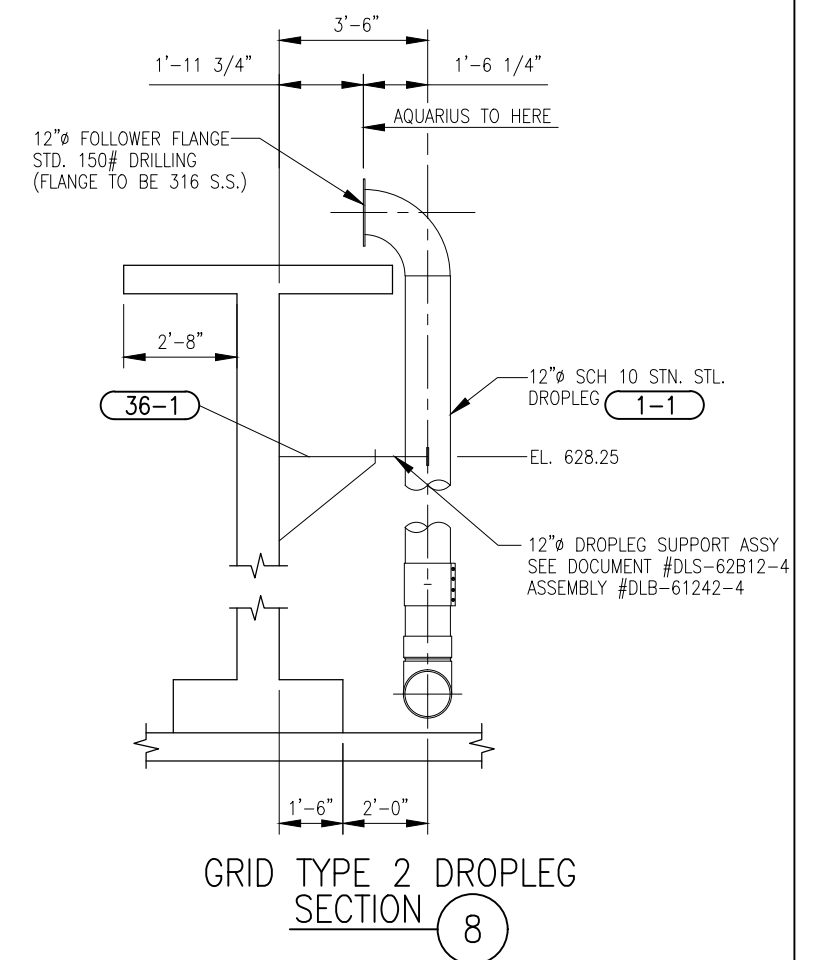






GRID TYPE 2 DROPLEG/MANIFOLD SECTION 7

2 REQUIRED AS SHOWN,
2 REQUIRED MIRROR IMAGE



GRID TYPE 2 DROPLEG SECTION 8

TULSA, OKLAHOMA
SOUTHSIDE WWTP

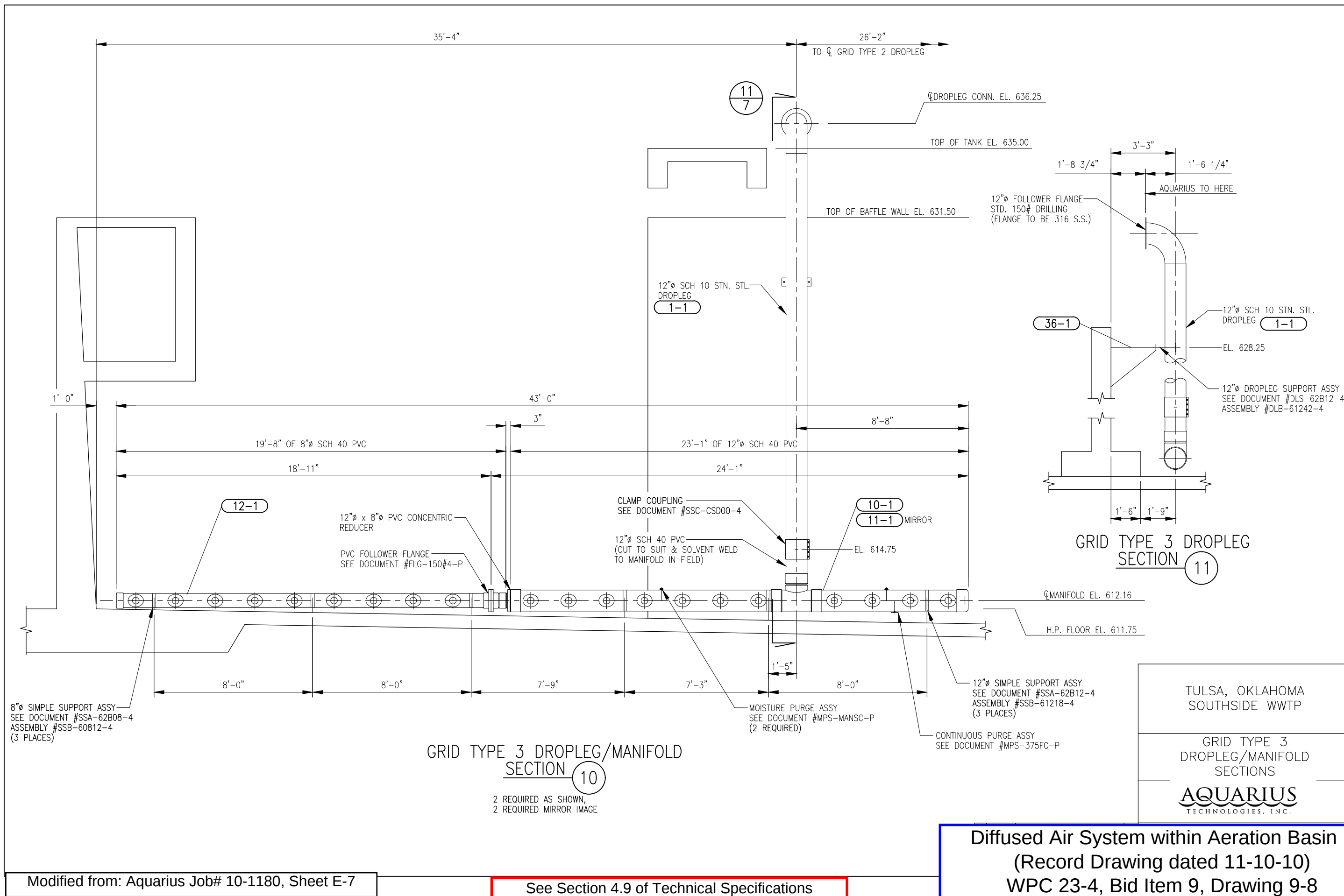
GRID TYPE 2
DROPLEG/MANIFOLD
SECTIONS

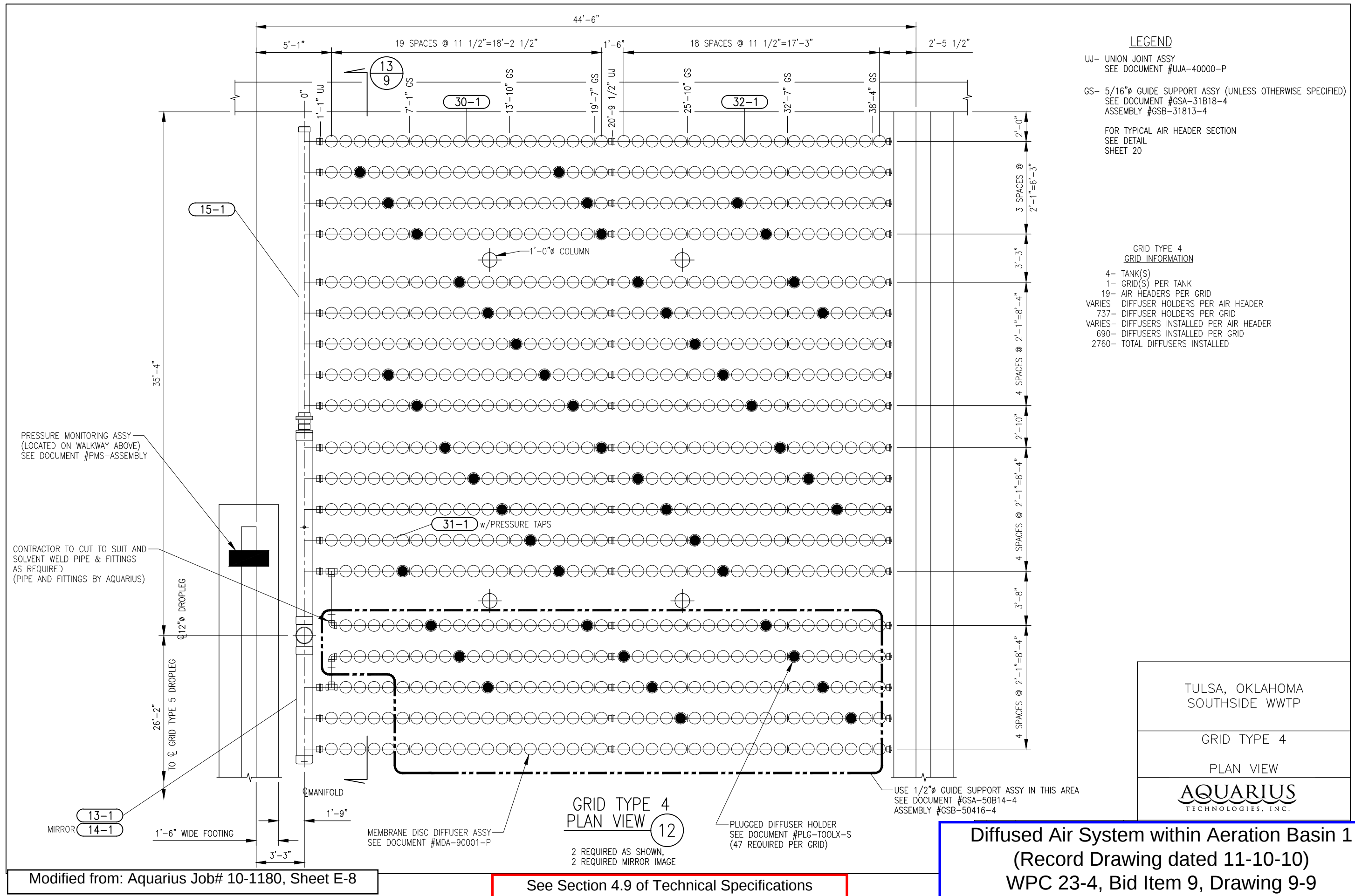
AQUARIUS
TECHNOLOGIES, INC.

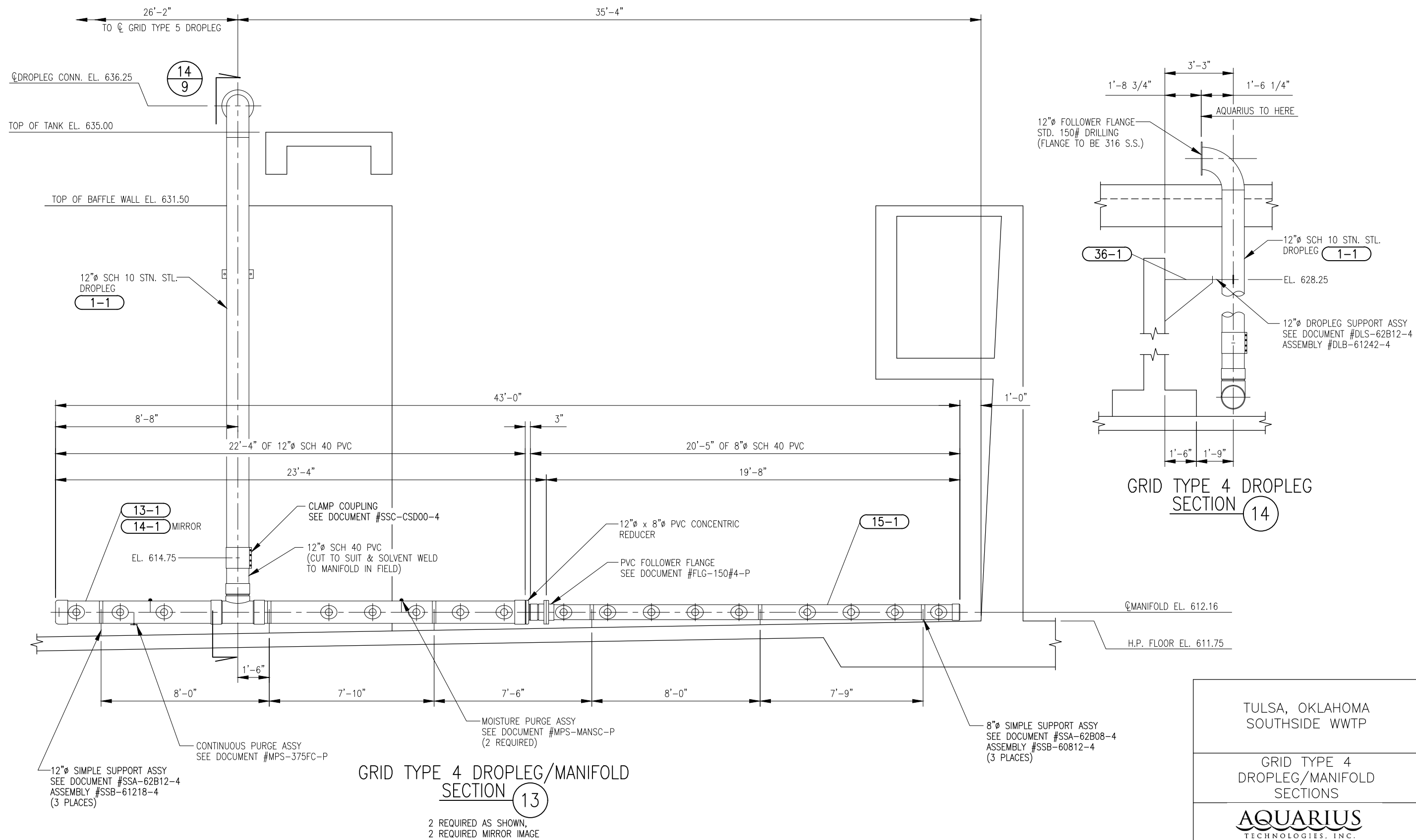
**Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-6**

Modified from: Aquarius Job# 10-1180, Sheet E-5

See Section 4.9 of Technical Specifications







Modified from: Aquarius Job# 10-1180, Sheet E-9

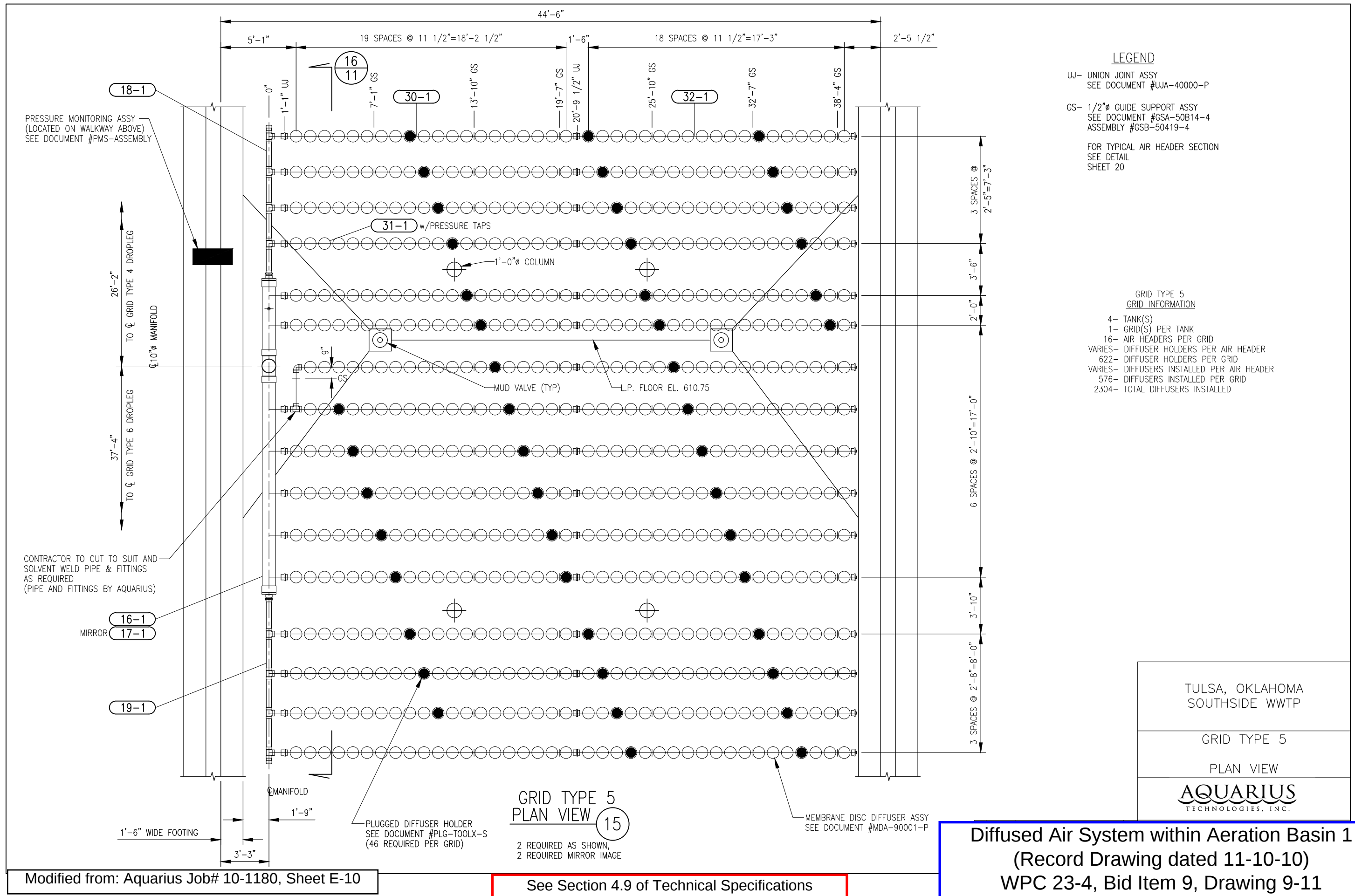
See Section 4.9 of Technical Specifications

Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-10

TULSA, OKLAHOMA
SOUTHSIDE WWTP

GRID TYPE 4
DROPLEG/MANIFOLD
SECTIONS

AQUARIUS
TECHNOLOGIES, INC.



LEGEND

UJ- UNION JOINT ASSY
SEE DOCUMENT #UJA-40000-P

GS- 1/2"Ø GUIDE SUPPORT ASSY
SEE DOCUMENT #GSA-50B14-4
ASSEMBLY #GSB-50419-4

FOR TYPICAL AIR HEADER SECTION
SEE DETAIL
SHEET 20

GRID TYPE 5
GRID INFORMATION

4- TANK(S)
1- GRID(S) PER TANK
16- AIR HEADERS PER GRID
VARIES- DIFFUSER HOLDERS PER AIR HEADER
622- DIFFUSER HOLDERS PER GRID
VARIES- DIFFUSERS INSTALLED PER AIR HEADER
576- DIFFUSERS INSTALLED PER GRID
2304- TOTAL DIFFUSERS INSTALLED

TULSA, OKLAHOMA
SOUTHSIDE WWTP

GRID TYPE 5

PLAN VIEW

AQUARIUS
TECHNOLOGIES, INC.

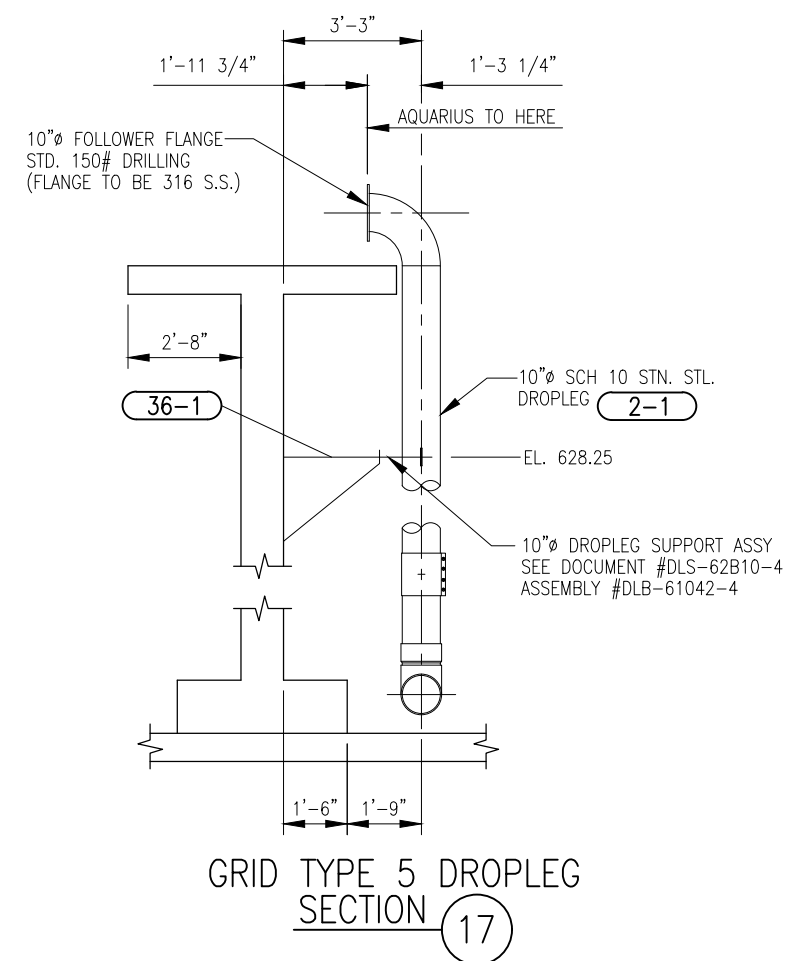
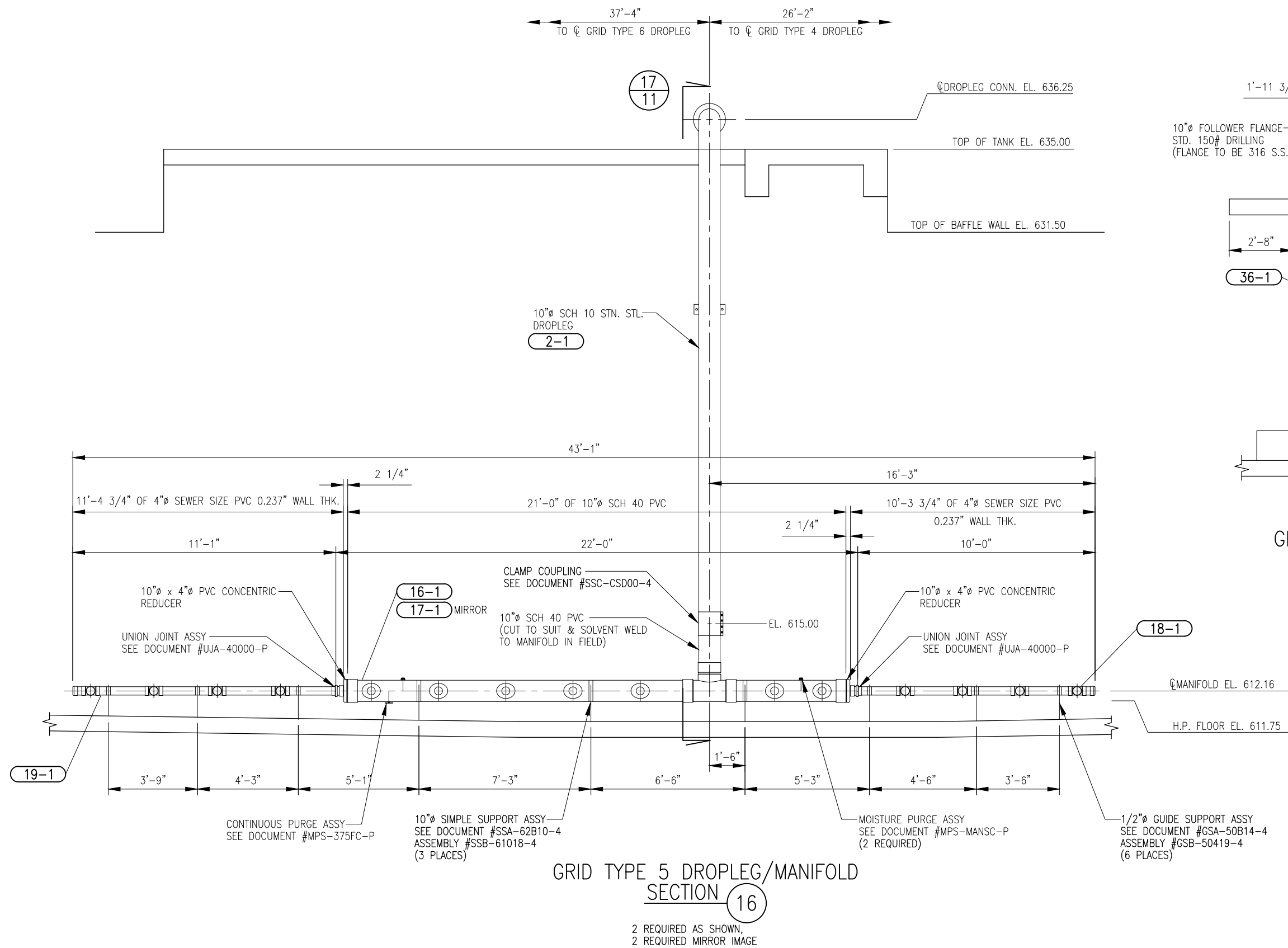
Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-11

GRID TYPE 5
PLAN VIEW
15

2 REQUIRED AS SHOWN,
2 REQUIRED MIRROR IMAGE

See Section 4.9 of Technical Specifications

Modified from: Aquarius Job# 10-1180, Sheet E-10



TULSA, OKLAHOMA
SOUTHSIDE WWTP

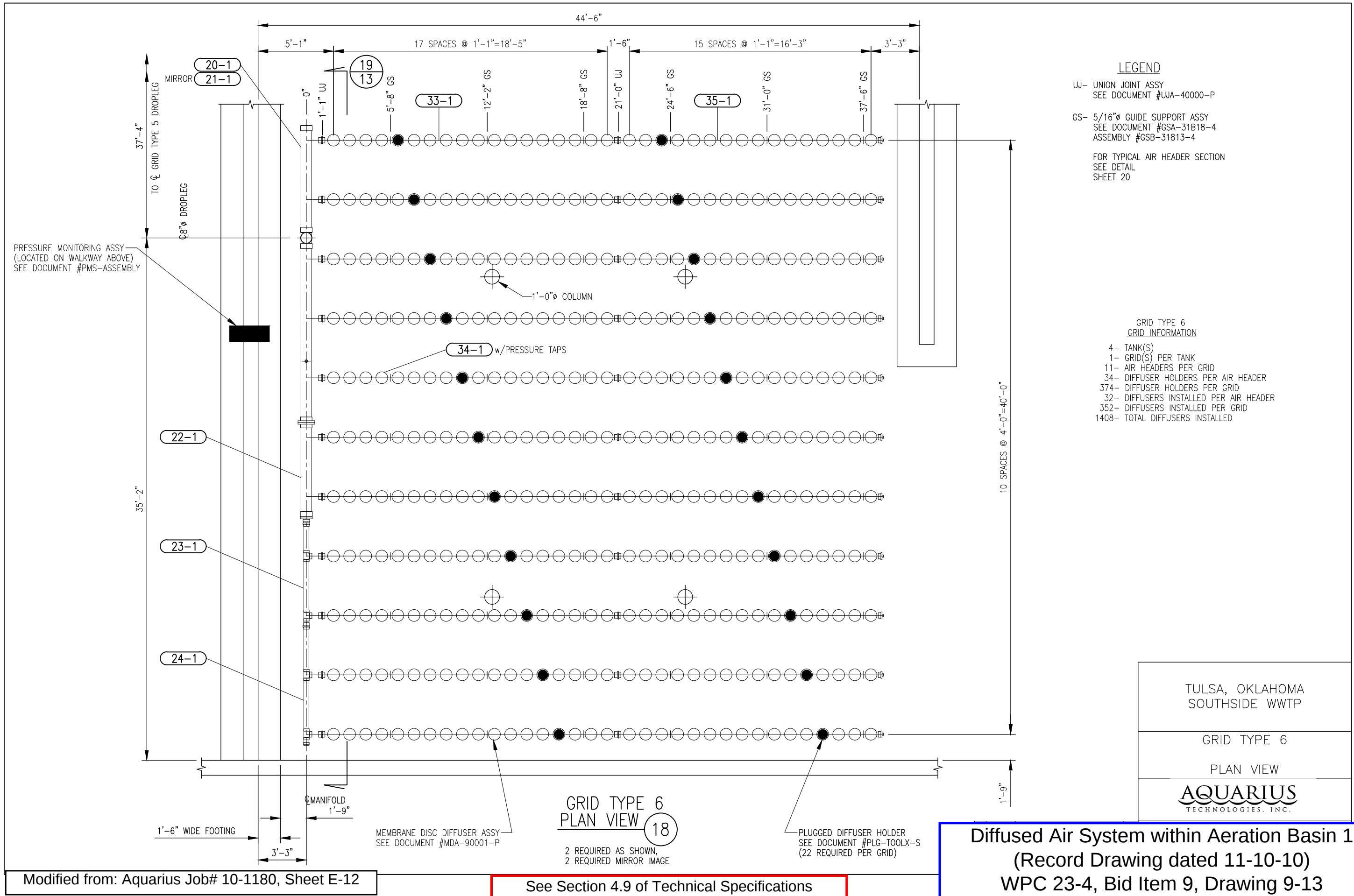
GRID TYPE 5
DROPLEG/MANIFOLD
SECTIONS

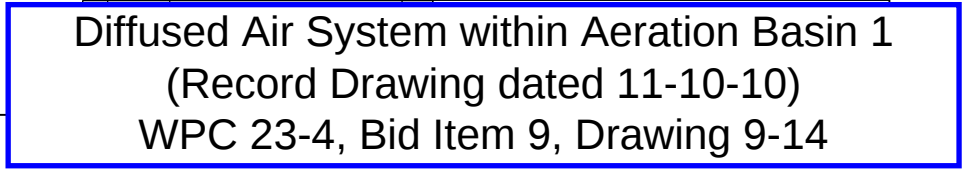
AQUARIUS
TECHNOLOGIES, INC.

Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-12

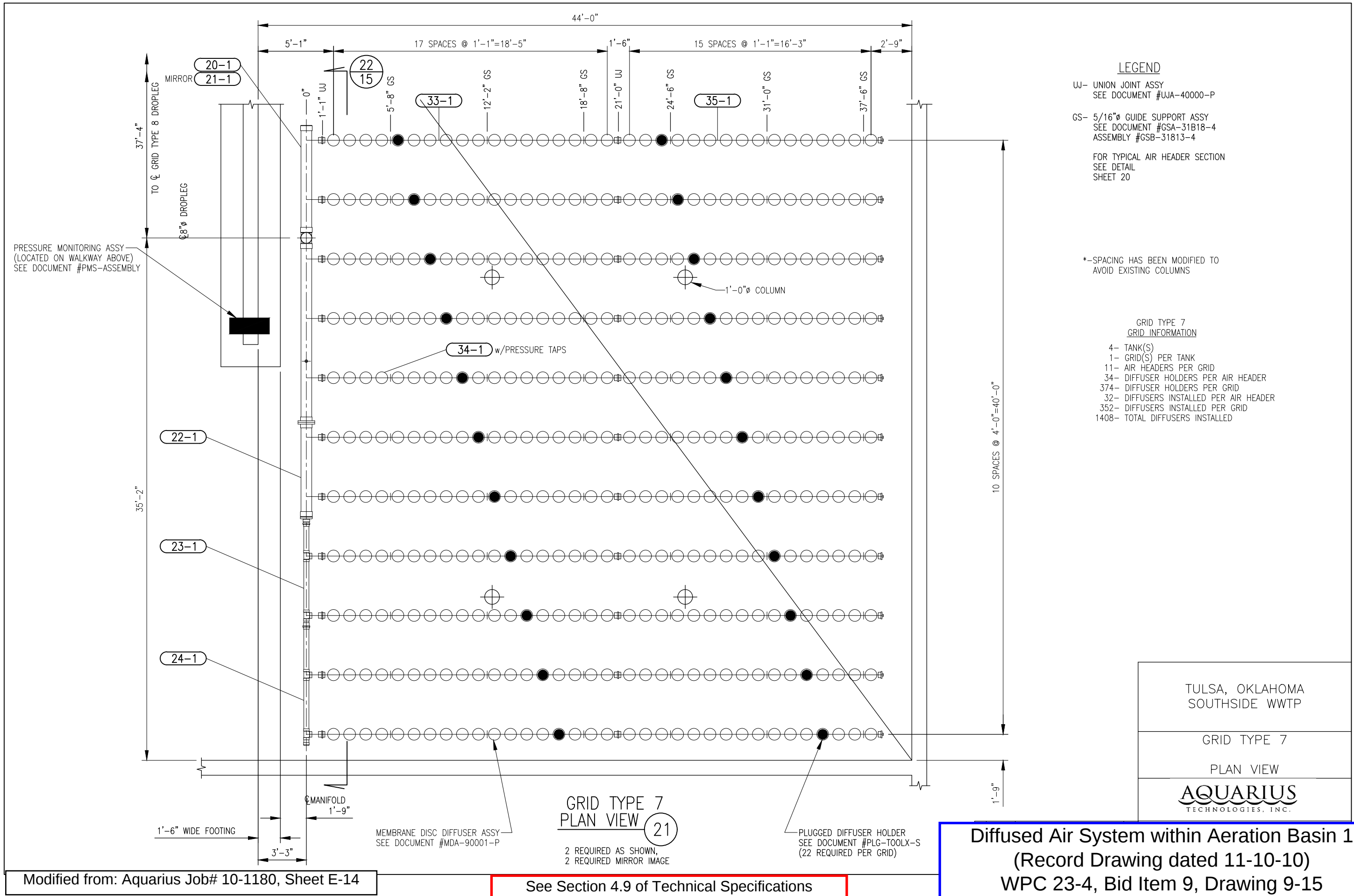
Modified from: Aquarius Job# 10-1180, Sheet E-11

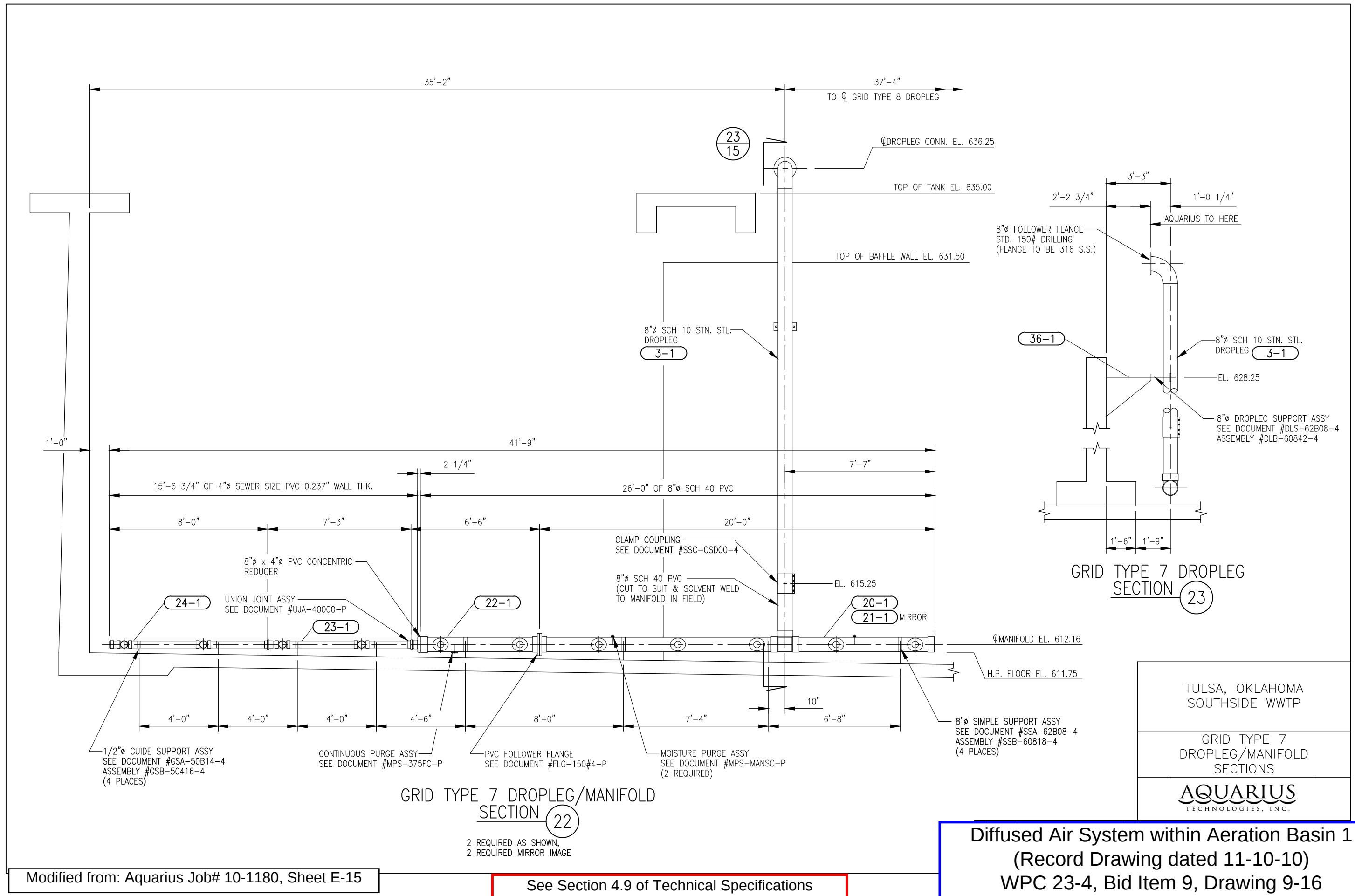
See Section 4.9 of Technical Specifications

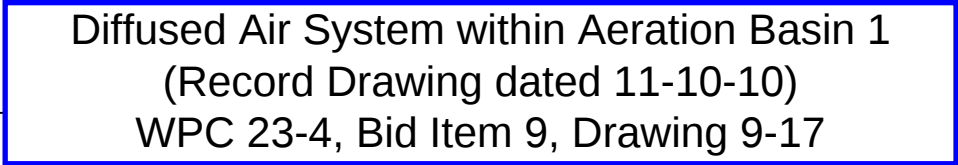


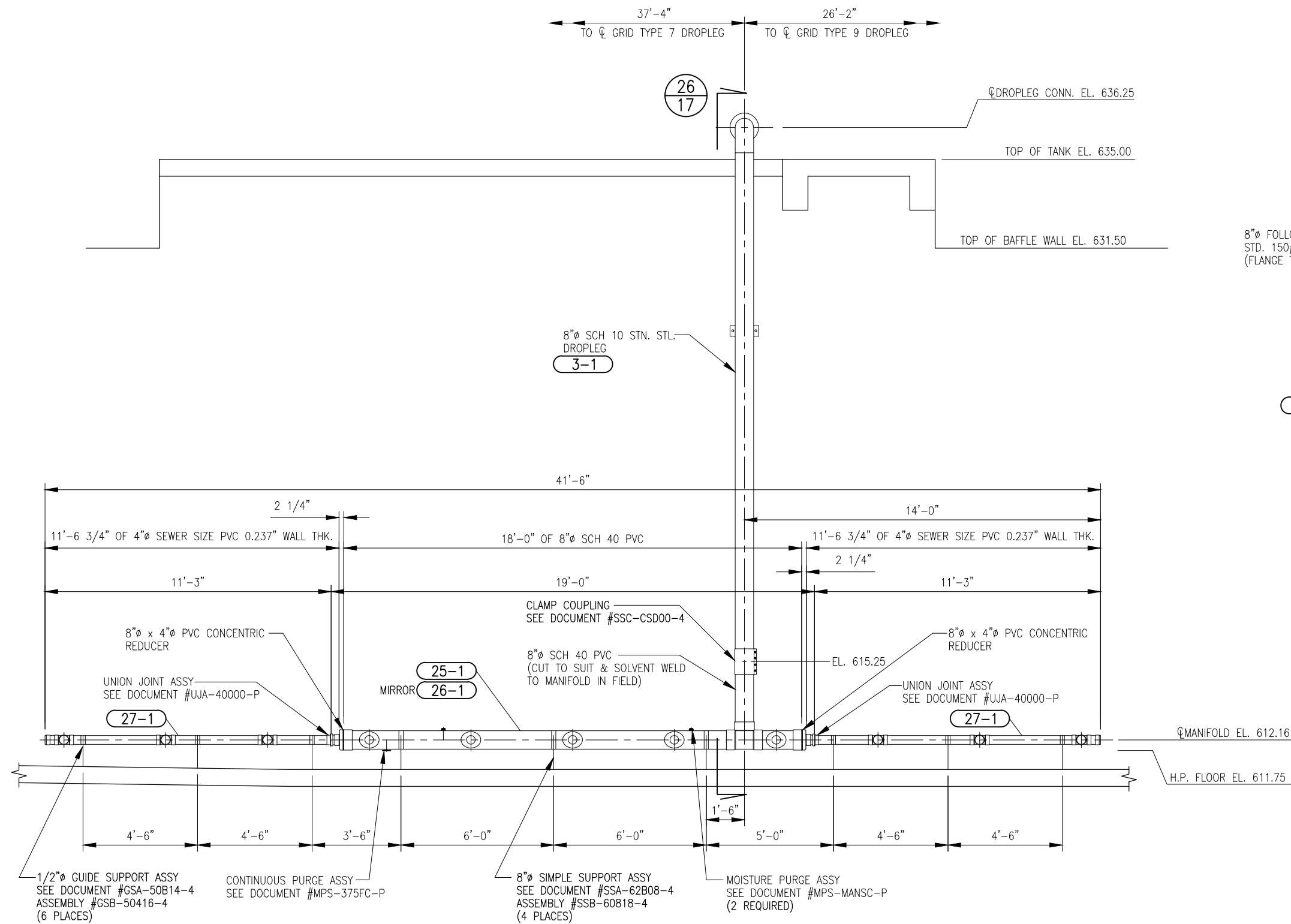


See Section 4.9 of Technical Specifications



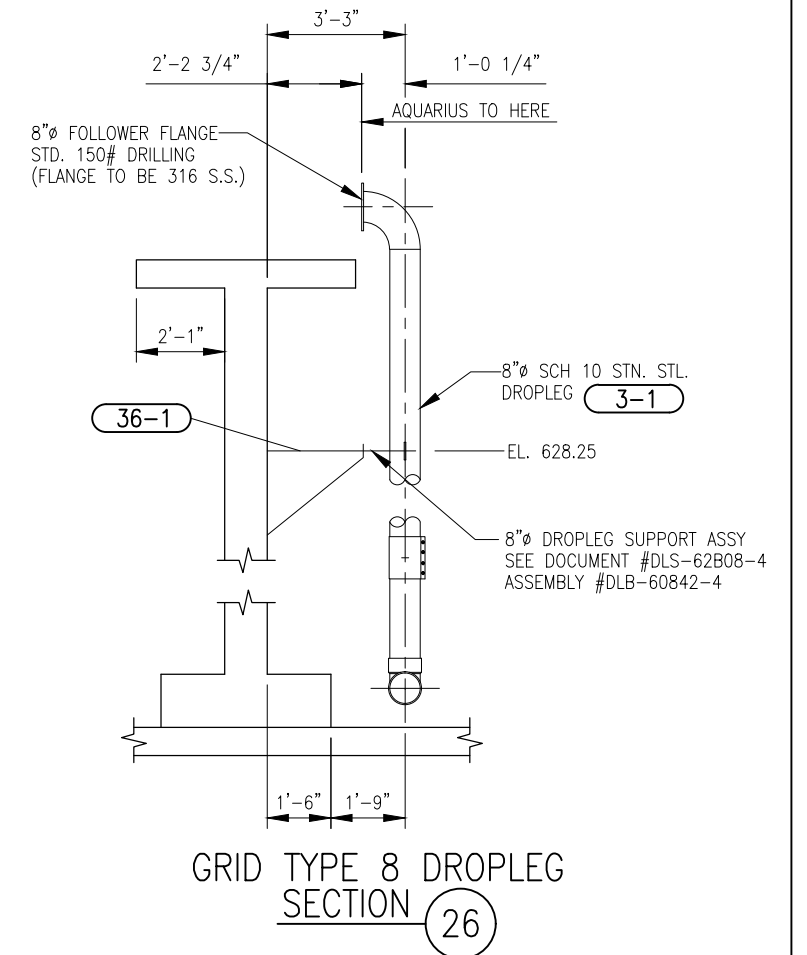






GRID TYPE 8 DROPLEG/MANIFOLD SECTION 25

2 REQUIRED AS SHOWN,
2 REQUIRED MIRROR IMAGE



TULSA, OKLAHOMA
SOUTHSIDE WWTP

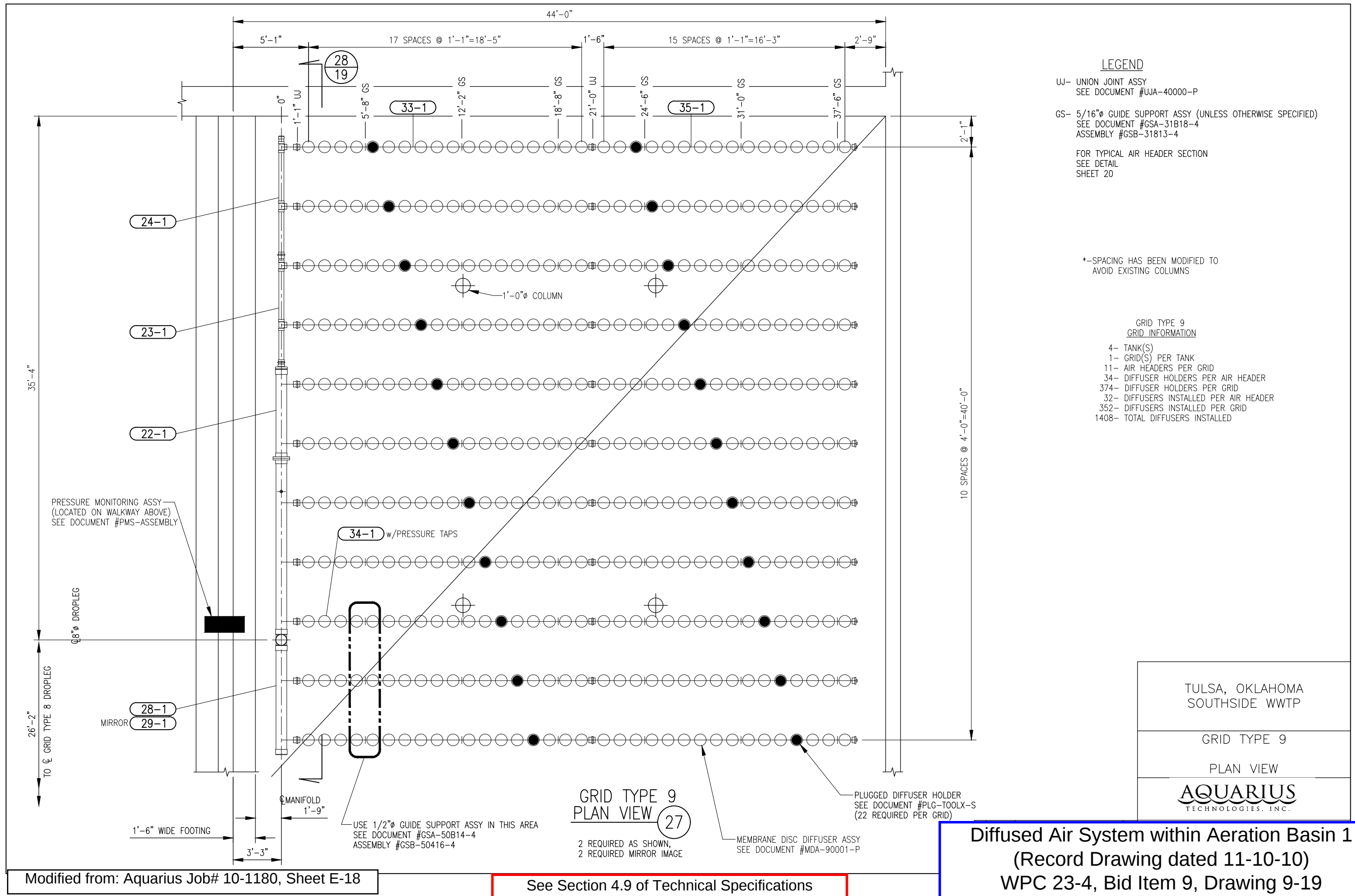
GRID TYPE 8
DROPLEG/MANIFOLD
SECTIONS

AQUARIUS
TECHNOLOGIES, INC.

Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-18

Modified from: Aquarius Job# 10-1180, Sheet E-17

See Section 4.9 of Technical Specifications



LEGEND

- UJ- UNION JOINT ASSY
SEE DOCUMENT #UJA-40000-P
- GS- 5/16"Ø GUIDE SUPPORT ASSY (UNLESS OTHERWISE SPECIFIED)
SEE DOCUMENT #GSA-31B18-4
ASSEMBLY #GSB-31813-4
- FOR TYPICAL AIR HEADER SECTION
SEE DETAIL
SHEET 20

*-SPACING HAS BEEN MODIFIED TO
AVOID EXISTING COLUMNS

**GRID TYPE 9
GRID INFORMATION**

- 4- TANK(S)
- 1- GRID(S) PER TANK
- 11- AIR HEADERS PER GRID
- 34- DIFFUSER HOLDERS PER AIR HEADER
- 374- DIFFUSER HOLDERS PER GRID
- 32- DIFFUSERS INSTALLED PER AIR HEADER
- 352- DIFFUSERS INSTALLED PER GRID
- 1408- TOTAL DIFFUSERS INSTALLED

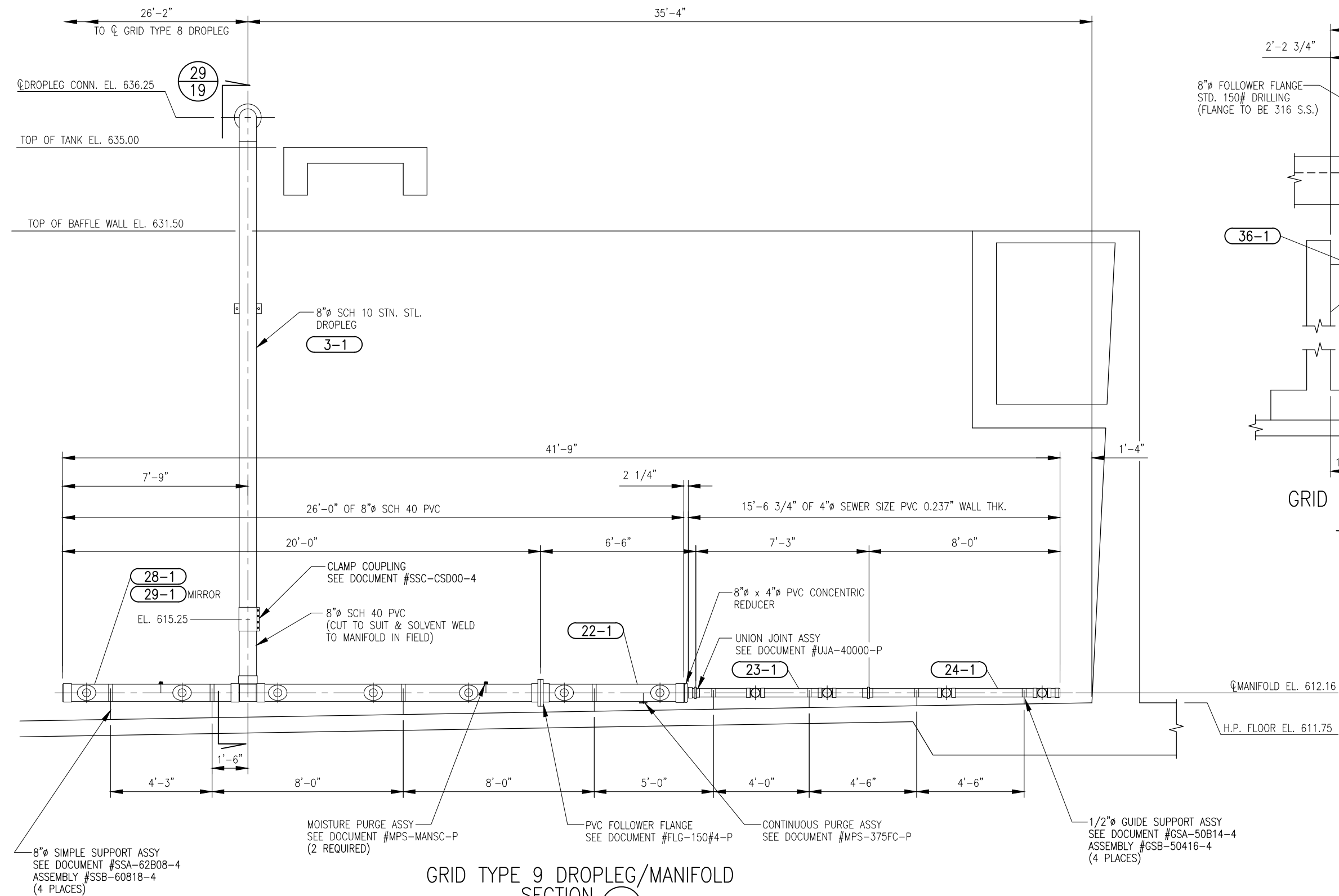
TULSA, OKLAHOMA
SOUTHSIDE WWTP

GRID TYPE 9

PLAN VIEW

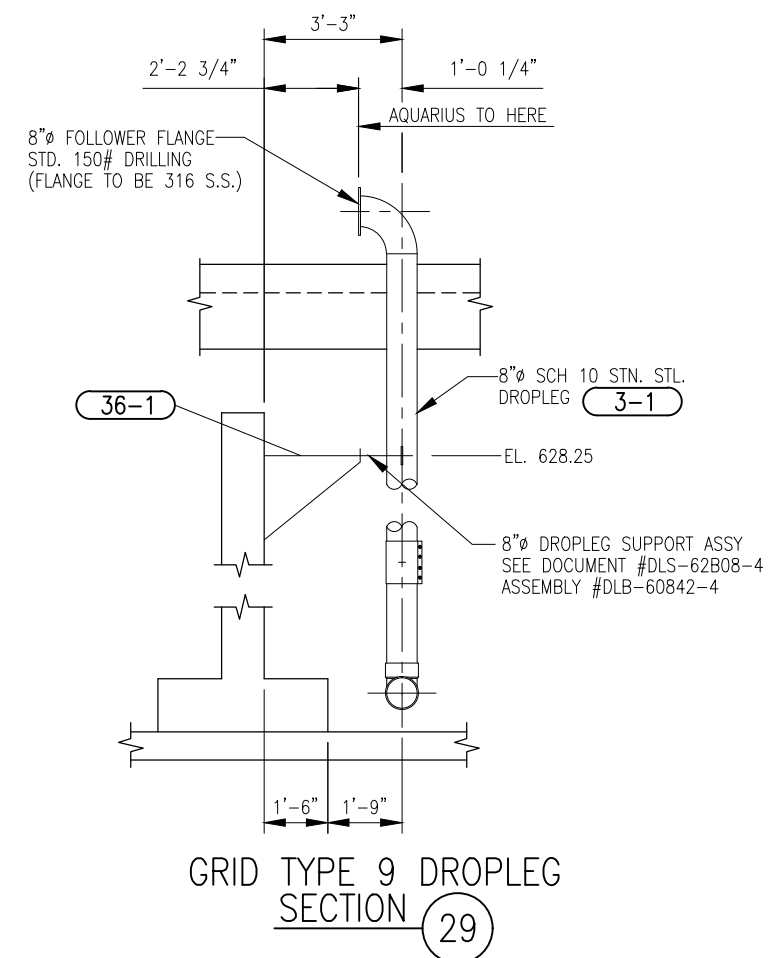


Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-19



GRID TYPE 9 DROPLEG/MANIFOLD
SECTION 28

2 REQUIRED AS SHOWN,
2 REQUIRED MIRROR IMAGE



GRID TYPE 9 DROPLEG
SECTION 29

TULSA, OKLAHOMA
SOUTHSIDE WWTP

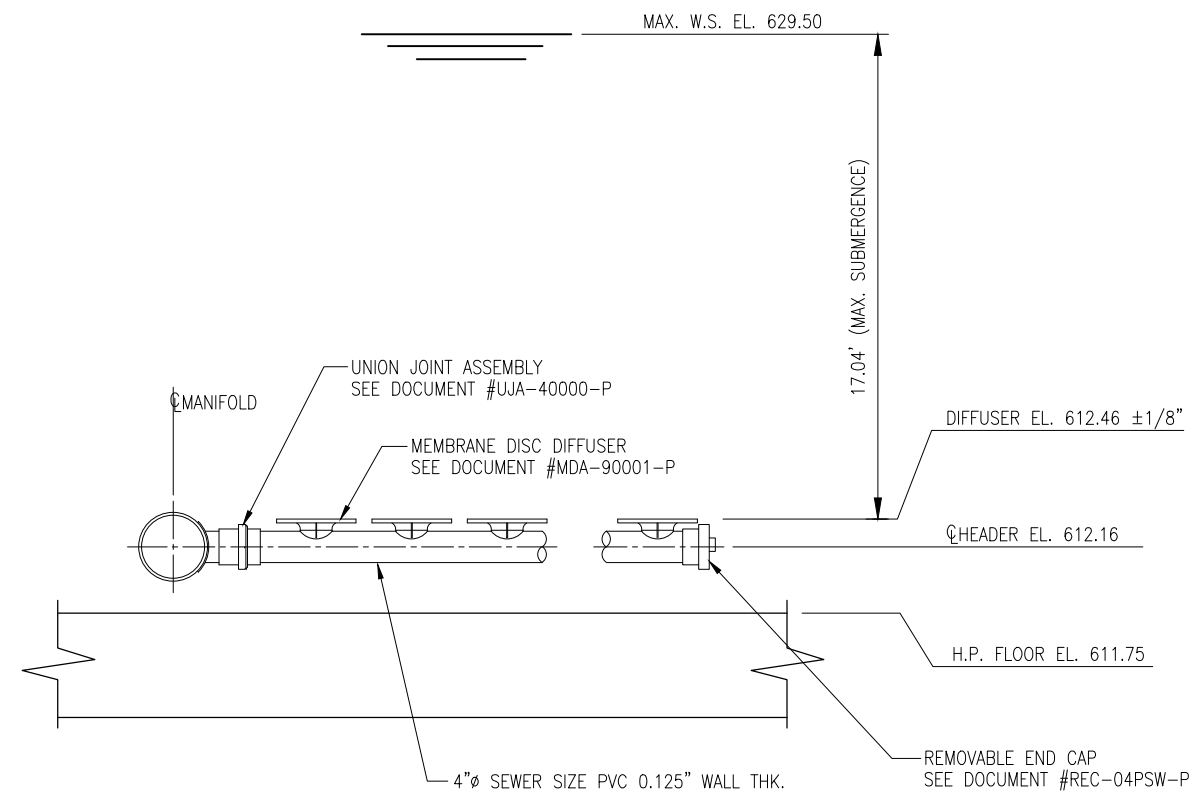
GRID TYPE 9
DROPLEG/MANIFOLD
SECTIONS

AQUARIUS
TECHNOLOGIES, INC.

Diffused Air System within Aeration Basin 1
(Record Drawing dated 11-10-10)
WPC 23-4, Bid Item 9, Drawing 9-20

Modified from: Aquarius Job# 10-1180, Sheet E-19

See Section 4.9 of Technical Specifications



TYPICAL HEADER SECTION

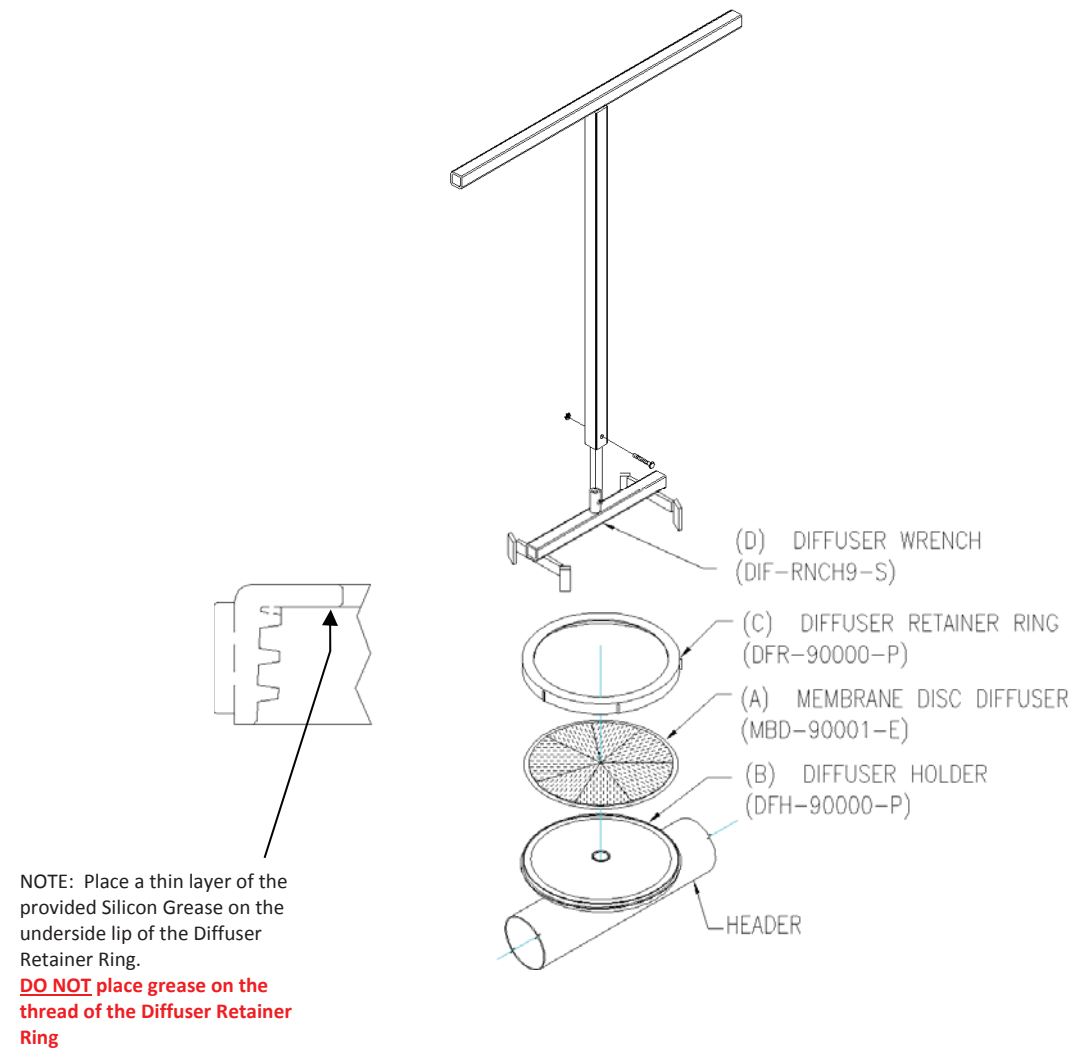
TULSA, OKLAHOMA
SOUTHSIDE WWTP

DETAILS

AQUARIUS
TECHNOLOGIES, INC.

NAME: MEMBRANE DISC DIFFUSER ASSEMBLY
MATERIAL: PVC

DATE: 7/25/2017
DOCUMENT #: MDA-90001-P



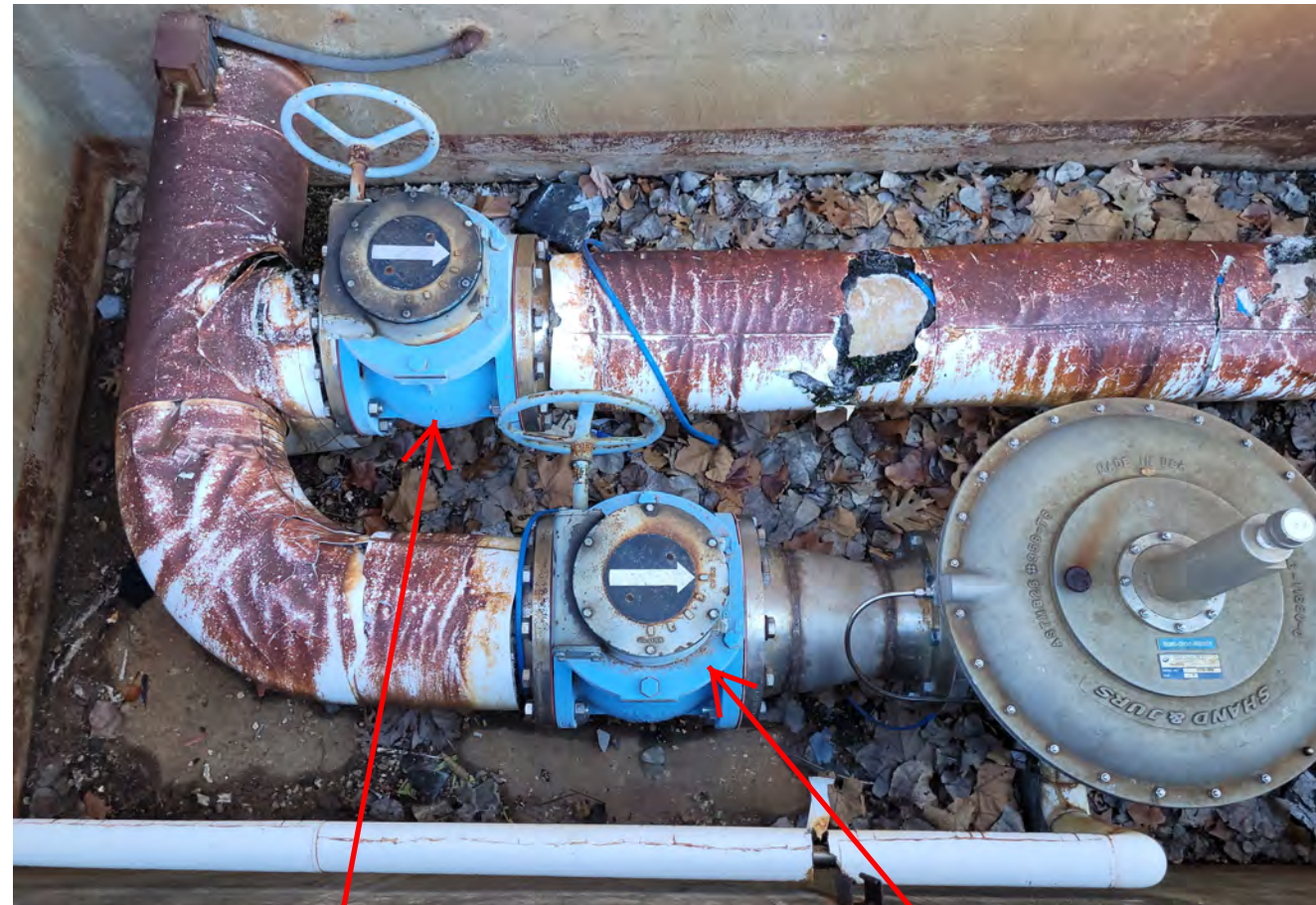
Membrane Disc Assembly Installation Procedure:

- 1) Place the Membrane Disc Diffuser (item A) on the Diffuser Holder (item B)
- 2) Place a thin layer of the provide Silicon Grease on the underside lip of the Diffuser Retainer Ring (item C). **Caution – do not place grease on the thread of the Diffuser Retainer Ring.**
- 3) Install the Diffuser Retainer Ring (item C) on the Diffuser Holder and tighten “Hand-Tight”. **Caution – do not cross thread the Diffuser Retainer Ring.**
- 4) Use the Diffuser Wrench (item D) and continue tightening the Diffuser Retainer Ring to a position approximately $\frac{1}{4}$ - $\frac{1}{2}$ Maximum turn past hand tight.

CAUTION:

DO NOT USE TEFLON TAPE OR PASTE OR PIPE DOPE OR GREASE OR ANY OTHER LUBRICANT OR SEALANT ON THE THREADS OF THIS ASSEMBLY! PVC DOES NOT REQUIRE LUBRICATION OR SEALANT! USE OF SUCH PRODUCTS ON PVC FITTINGS CAN CONTRIBUTE TO OVER-TIGHTENING WHICH WILL LEAD TO STRESS FRACTURES OF THE ASSEMBLY.

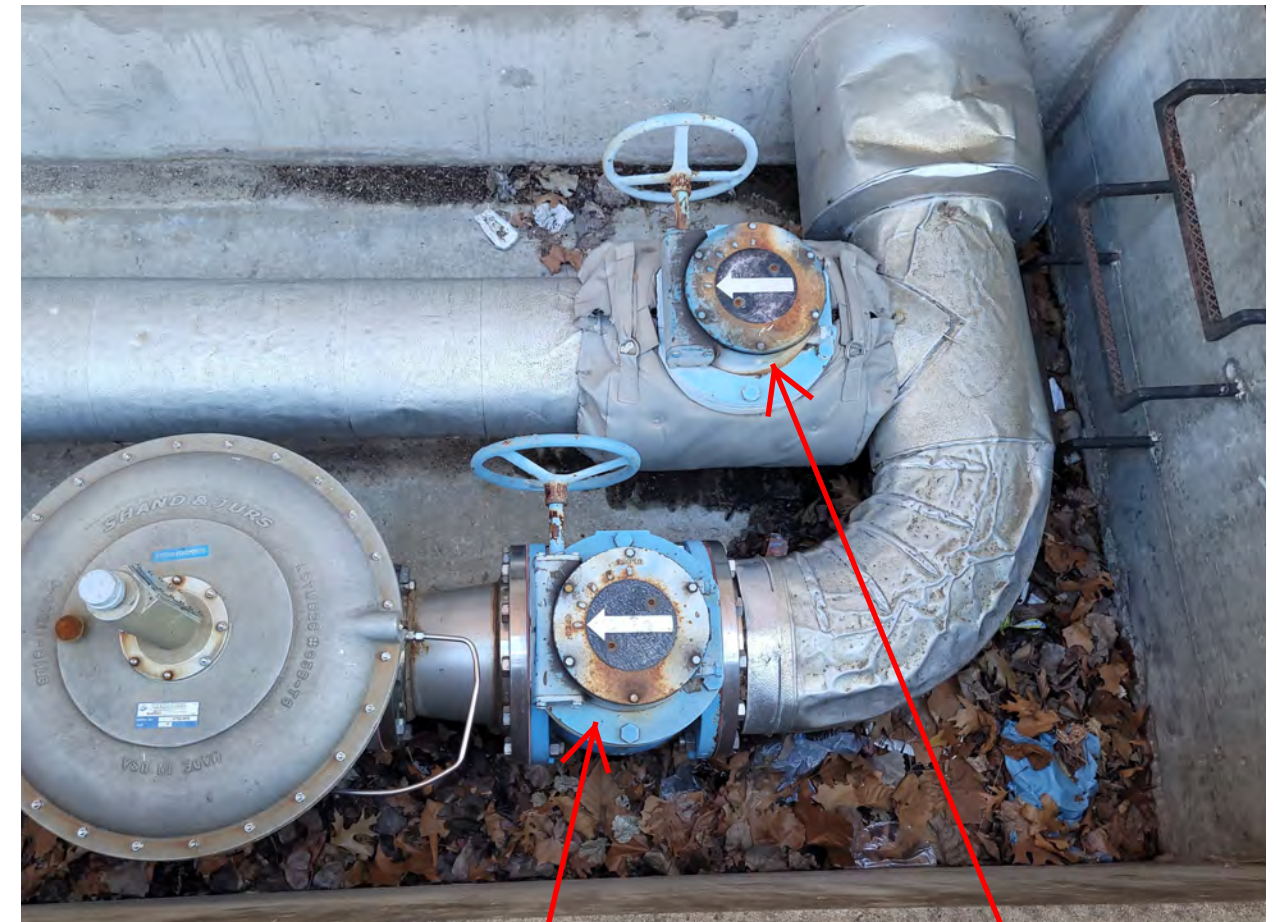
North Valve Pit



Valve to Transfer Pipe

Valve to North Flare

South Valve Pit



Valve to South Flare

Valve to Transfer Pipe

See Section 4.10 of Technical Specifications

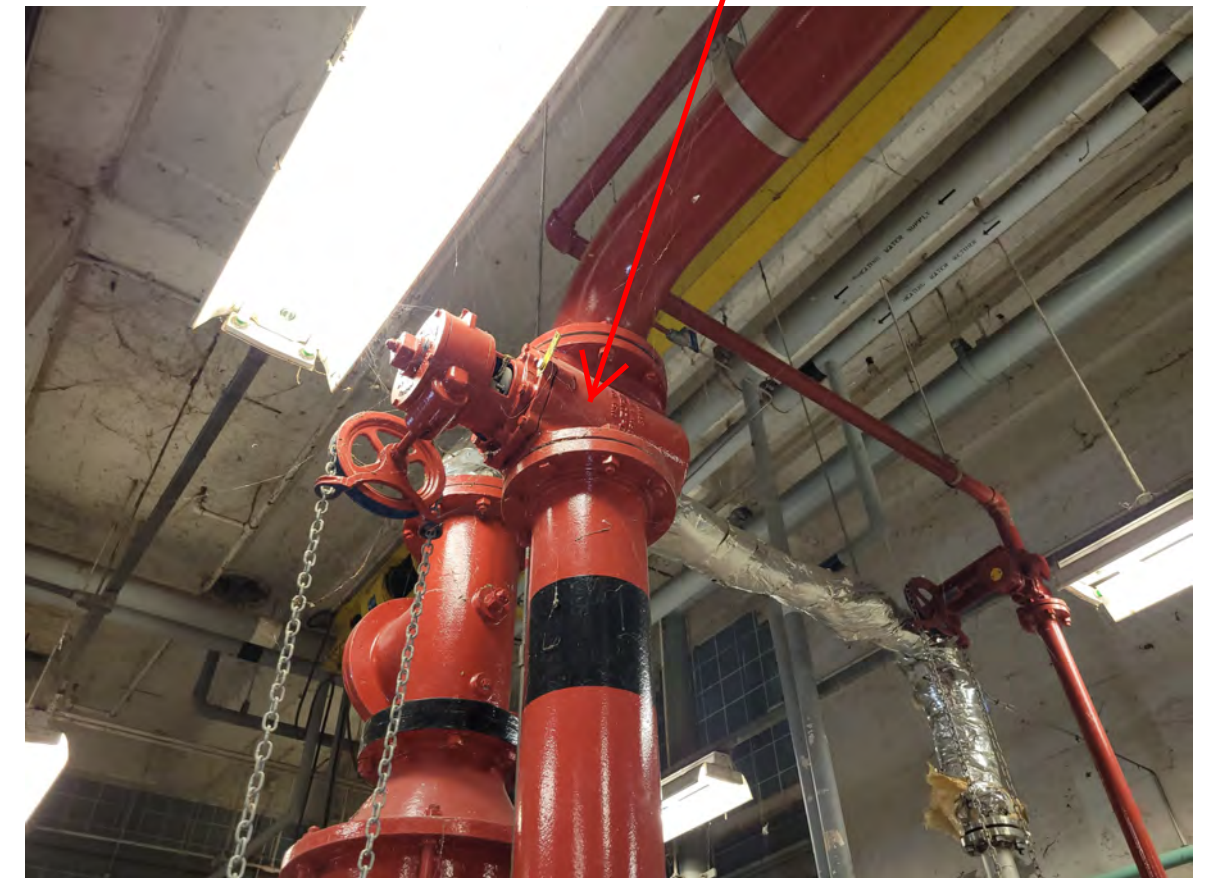
Digester Gas Valves in Valve Pits
(Existing)
WPC 23-4, Bid Item 10, Drawing 10-1

Valve to Boiler 1

Valve to Boiler 2

Valve to Boiler 3

Valve to Boiler 4



See Section 4.10 of Technical Specifications

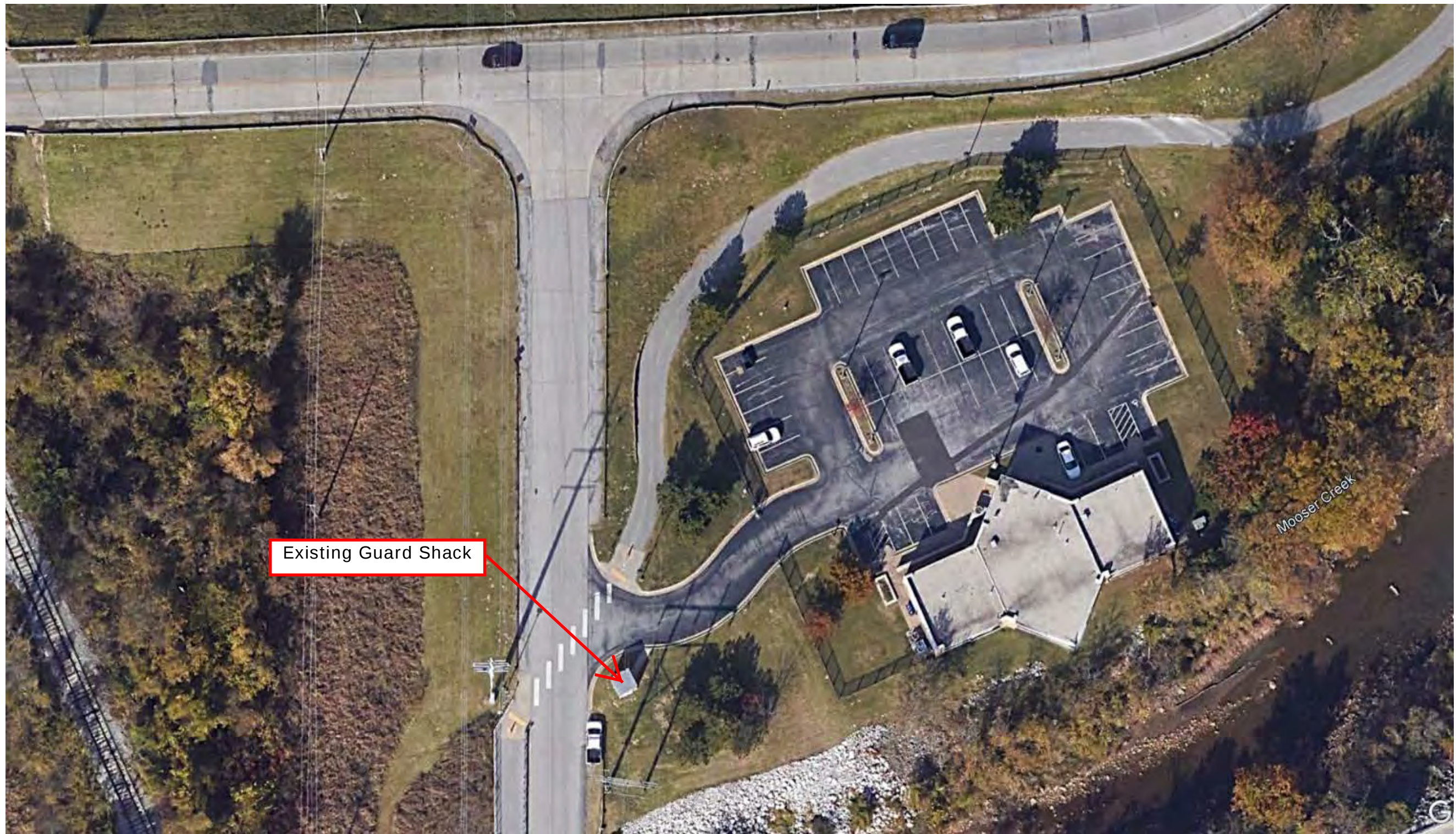
Digester Gas Valves at Boilers
(Existing)
WPC 23-4, Bid Item 10, Drawing 10-2



Existing Guard Shack

See Section 4.13 of Technical Specifications

Guard Shack at Southside WWTP
(Existing)
WPC 23-4, Bid Item 13, Drawing 13-1



Existing Guard Shack

Mooser Creek

See Section 4.13 of Technical Specifications

Guard Shack at Southside WWTP
(Existing)
WPC 23-4, Bid Item 13, Drawing 13-2