

TUBA CITY WWTP HIGH PERFORMANCE POND SYSTEM NAVAJO TRIBAL UTILITY AUTHORITY TUBA CITY, ARIZONA



4221 BALLOON PARK RD NE
ALBUQUERQUE, NM 87109
TEL: (505) 821-1801



FINAL

PROJECT:
**TUBA CITY WWTP
HIGH PERFORMANCE
POND SYSTEM
FINAL DESIGN**



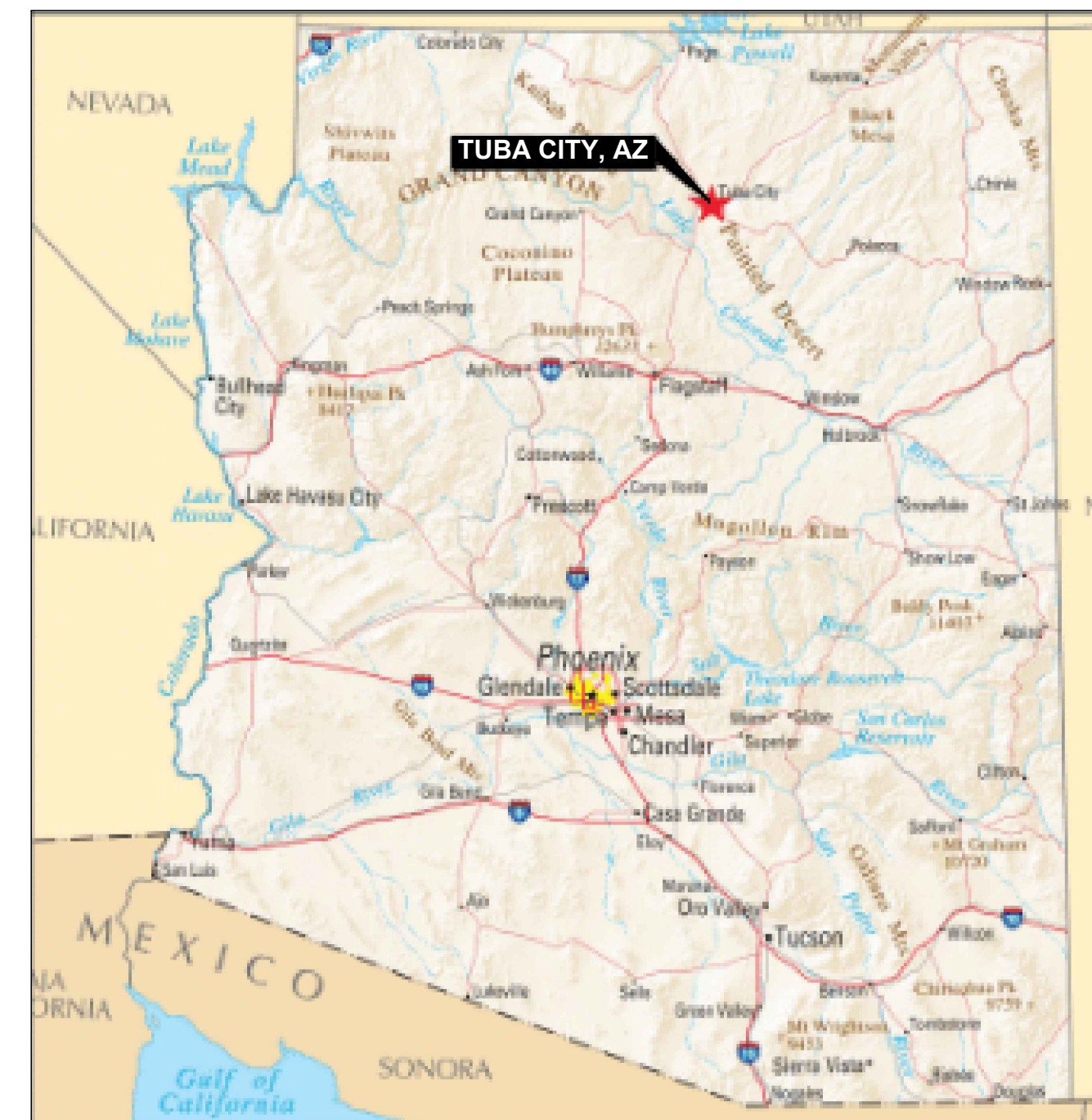
**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCIE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
1	2/15/2024	A. ORRANTIA	S. TANDUKAR

DESIGNED BY:	WSP - BM
DRAWN BY:	WSP - AO
CHECKED BY:	WSP - BM
APPROVED BY:	WSP - BM
DATE:	07/14/2023

SHEET TITLE:
COVER SHEET

SHEET NUMBER:	REV. #
G-001	
SHEET 1 OF 39 SHEETS	



SITE LOCATION
NTS



VICINITY MAP
NTS

DATE OF PREPARATION:

ORIGINAL ISSUE: 07/14/2023
REVISION 1: 02/15/2024

ENGINEER CONSULTANT:

WSP E&IS
4221 BALLOON PARK RD NE
ALBUQUERQUE, NM 87109 (505) 821-1801

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE EXISTING INFORMATION SHOWN ON THESE PLANS IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING LOCATIONS AND DEPTHS OF EXISTING UTILITIES BEFORE COMMENCING CONSTRUCTION. THE CONTRACTOR MUST ALSO CALL 811 AND NAVAJO TRIBAL UTILITY AUTHORITY, P.O. BOX 170, FORT DEFIANCIE, AZ, 86504 AT 928-729-5721 AT LEAST 3 WORKING DAYS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES.

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37	T-M01	ASSEMBLY DRAWING ENCLOSURE
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GENERAL NOTES:

QUALITY CONTROL

- UNLESS OTHERWISE STATED, INDIAN HEALTH SERVICE (IHS)/NAVAJO ENGINEERING AND CONSTRUCTION AUTHORITY (NECA) SPECIFICATIONS (REV 1.5) AND INDIAN HEALTH SERVICE STANDARD DETAILS FOR WATER (REV 3.2) AND SEWER (REV 1.9) SHALL CONTROL THE MATERIALS AND WORKMANSHIP OF THIS PROJECT WHETHER SPECIFICALLY CALLED OUT OR NOT. THE IHS/NECA SPECIFICATIONS ARE A SEPARATE VOLUME AND NOT ISSUED AS PART OF THE CONSTRUCTION SET. SPECIFICATION SECTIONS AND STANDARD DRAWINGS, WHEN NOTED HEREIN, REFER TO CORRESPONDING PARTS OF THESE DOCUMENTS.
- IF DURING THE COURSE OF WORK THE CONTRACTOR BECOMES AWARE OF A CONTRADICTION IN THE REQUIREMENTS BETWEEN THE STANDARD SPECIFICATIONS AND DRAWINGS AND THESE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

SAFETY

- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOBSITE SAFETY AND FOR KNOWLEDGE AND COMPLIANCE WITH APPLICABLE O.S.H.A. STANDARDS AND OTHER FEDERAL, STATE, TRIBAL AND LOCAL SAFETY AND WORKPLACE COMPLIANCE REQUIREMENTS.

EXISTING CONDITIONS

- THE LOCATION OF EXISTING UTILITIES, AS SHOWN ON THE DRAWINGS, ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR THEIR ACCURATE LOCATION IN THE FIELD.
- IF EVIDENCE OF SUBSURFACE ARCHAEOLOGICAL OR HISTORIC FEATURES ARE OBSERVED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY HALT CONSTRUCTION IN THE AREA, PROTECT THE SITE, AND NOTIFY THE ENGINEER. NO CONSTRUCTION ACTIVITY SHALL OCCUR WITHIN THE 50 FOOT BUFFER AROUND THE EXISTING ARCHAEOLOGICAL SITE UNTIL APPROVED.

PROJECT CONTROL

- PROJECT CONTROL SHOWN HEREON WAS ESTABLISHED USING REAL TIME KINEMATIC OBSERVATIONS FROM NATIONAL GEODETIC SURVEY CONTROL POINTS .

LOCAL HORIZONTAL DATUM: AZSPCS CENTRAL ZONE

VERTICAL DATUM: NAD 83 NAVD88 (2011)

CONTROL POINTS HAVE BEEN INSTALLED ONSITE AND ARE THE BASIS OF HORIZONTAL CONTROL FOR THE PROJECT. CONTROL POINTS SHALL BE MAINTAINED AND REMAIN UNDISTURBED DURING CONSTRUCTION.

Control Points				
Point #	Elevation	Northing	Easting	Description
AB2088	4905.00	1863150.90	905427.15	BLM MARKER
GP0470	5617.04	1857278.07	885964.10	NGS MARKER
CP1	4528.99	1853504.50	884002.95	REBAR/CAP
CP2	4525.96	1853416.74	884008.11	MAGNAIL
CP3	4531.03	1853485.03	884049.20	MAGNAIL
CP4	4531.64	1853495.11	884077.25	REBAR/CAP
CP5	4536.51	1853514.19	886674.73	REBAR/CAP
CP6	4538.14	1853476.33	886679.06	MAGNAIL
CP7	4540.40	1855113.29	887124.93	REBAR CAP
CP8	4551.15	1855229.93	887124.57	REBAR CAP
CP9	4545.59	1855853.46	887804.14	REBAR CAP
CP10	4545.33	1855829.39	887804.79	REBAR CAP

- SCALES IN THESE PLANS ARE VALID WHEN PLOTTED ON 22"X34" (ANSI).

WORK AREA

- THE CONTRACTOR SHALL CONFINE WORK TO WITHIN THE PRESCRIBED CONSTRUCTION LIMITS, EASEMENT, RIGHT-OF-WAY OR PROPERTY.
- THE CONTRACTOR SHALL COORDINATE ACTIVITIES WITH THE OWNER AND ENGINEER TO MINIMIZE ACCESS TO ADJACENT PROPERTIES AND TRAFFIC DISRUPTIONS.
- THE CONTRACTOR SHALL ACQUIRE THE NECESSARY LICENSES OR PERMITS WHEN WORKING WITHIN OR NEAR A RIGHT-OF-WAY, STREET, ROAD OR HIGHWAY, SIDEWALK, TRAIL, OR OTHER PUBLIC THOROUGHFARE AND SHALL INCORPORATE THE REQUIREMENTS OF SAID LICENSE/PERMIT.
- WHEN WORKING IN OR NEAR TRAFFIC THE CONTRACTOR SHALL (AT A MINIMUM) PROVIDE, ADEQUATE SIGNS, BARRICADES, WARNING LIGHTS, AND FLAGGERS TO ENSURE THE SAFETY/PROTECTION OF THE PUBLIC, EMPLOYEES, AND THE WORK IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), LATEST EDITION.
- IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ACCESS TO EXISTING RESIDENCES, BUSINESSES, TURNOUTS AND INTERSECTING ROADS AT ALL TIMES DURING CONSTRUCTION.
- IF A FENCED/SECURE STORAGE AREA FOR MATERIALS AND EQUIPMENT IS DESIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN AREA OFF THE PROJECT SITE. USING THE AREA FOR STORAGE SHALL COMPLY WITH LOCAL ZONING OR OTHER ORDINANCES AND SHALL BE PERMITTED, IF REQUIRED.
- OVERNIGHT PARKING OF CONTRACTOR'S EQUIPMENT SHALL NOT OBSTRUCT ACCESS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL PARK OR STORE EQUIPMENT AT SAFE DISTANCES FROM THE TRAVELED WAY.
- THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION, DRAINAGE CONTROL AND DUST DURING CONSTRUCTION AND MUST, WHEN APPLICABLE, PREPARE AND ADHERE TO A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED ACCORDING TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S CONSTRUCTION GENERAL PERMIT(CGP).

OTHER UTILITIES

- THE CARE AND PROTECTION OF OTHER UTILITIES, STREET APPURTENANCES, DRAINAGE STRUCTURES AND OTHER INFRASTRUCTURE, WHETHER PUBLIC OR PRIVATE, THAT ARE NOT PART OF THE INTENDED WORK ARE THE RESPONSIBILITY OF THE CONTRACTOR.
- WHERE TRENCHING AROUND OR BENEATH EXISTING UTILITY LINES OCCURS, THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING WITH THE UTILITY OWNER AND FOR SUPPORTING THE UTILITY LINE, AS REQUIRED BY THE UTILITY OWNER, DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURING THE UTILITY IS ADEQUATELY SUPPORTED BY COMPACTED BACKFILL OR OTHER MEANS AT THE COMPLETION OF CONSTRUCTION AS REQUIRED BY THE UTILITY OWNER. IF THE TECHNIQUES REQUIRED FOR STABILIZING OTHER UTILITIES CONFLICT WITH THE REQUIREMENTS OF THIS PROJECT THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

EXCESS MATERIAL & DEBRIS

- ANY EXTRA NATURAL SOIL (CLEAN OF OIL AND CHEMICALS) REMAINING AFTER BACKFILL AND COMPACTION MAY BE DISPOSED AT A SITE APPROVED BY THE OWNER. CONTRACTOR SHALL HAUL DEBRIS AND NON-NATURAL SOILS TO A CERTIFIED LANDFILL.

RECORD DRAWINGS

- THE CONTRACTOR SHALL PREPARE AND MAINTAIN AN UP-TO-DATE SET OF RECORD DRAWINGS FOR THE PROJECT. THESE PLANS SHALL BE KEPT CURRENT DAILY AND SHALL BE MADE AVAILABLE FOR REVIEW AS REQUESTED BY THE ENGINEER. THE COST OF PREPARING AND MAINTAINING A RECORD DRAWING SET SHALL BE INCIDENTAL TO THE PROJECT.

- SHOWN PIPE DIAMETERS MAY BE SHOWN ENLARGED AND NOT TO SCALE TO ENHANCE CLARITY.

STRUCTURAL NOTES:

FOUNDATIONS:

BELOW GRADE FOUNDATIONS SHALL BEAR ON A MINIMUM OF THREE (3) FEET OF GRANULAR NON-EXPANSIVE ENGINEERED FILL UNDERLAIN BY A REINFORCING GEOGRID.

SLABS SHOULD BEAR ON THREE (3) FEET OF NON-EXPANSIVE LOW PERMEABILITY ENGINEERED FILL.

FILL MATERIALS ARE TO CONFORM TO GRADATION AS FOLLOWS.

SIEVE SIZE	PERCENT PASSING
1"	100
NO. 4	50-100
NO.40	35 MAX.

ENGINEERED FILL OR OTHER APPROVED GRANULAR SOILS SHOULD BE PLACED IN A MAXIMUM LIFT NOT TO EXCEED 8", MATERIAL IS TO BE COMPACTED TO 95% ASTM D698 PER GETOECHEMNICAL REPORT.

THE GEOGRID SHOULD BE PER TESAR TRIAX TX 160 OR EQUIVALENT AS APPROVED BY THE ENGINEER.

ALL EARTH WORK, FOOTING DEPTHS, AND EXCAVATIONS FOR FOUNDATIONS SHALL BE INSPECTED BY THE ENGINEER TO VERIFY ASSUMED ALLOWABLE SOIL BEARING AND LOW SETTLEMENT AND SWELL POTENTIAL, AND TO MAKE ANY ADDITIONAL RECOMMENDATIONS.

CONCRETE:

SHALL MEET ALL THE REQUIREMENTS OF THE CURRENT ISSUE OF THE ACI MANUAL OF CONCRETE PRACTICE, WITH TYPE 1-11 CEMENT. MINIMUM 28 DAY STRENGTH, 3000 PSI, EXCEPT AS FOLLOWS:

- FOUNDATIONS, GRADE BEAMS, OR ANY OTHER CONCRETE IN CONTACT WITH EARTH.....3000 PSI (MAX W/C = 0.45)
- CAST IN PLACE SLABS NOT ON GRADE.....4000 PSI
- MAXIMUM SLUMP FOR ALL CONCRETE.....5"

CONTRACTOR SHALL SUBMIT FOR APPROVAL CONCRETE MIX DESIGNS FOR EACH CLASS OF CONCRETE. THE MIX SUBMITTAL SHALL INDICATE WHICH OF THE FOLLOWING ACI 318 METHODS THE CONCRETE SUPPLIER ALONG WITH THE TESTING LAB METHOD HE/SHE INTENDS TO USE FOR CONCRETE PROPORTIONING - THE FIELD EXPERIENCE METHOD, THE LABORATORY TRIAL MIXTURE METHOD OR A COMBINATION OF BOTH. IF CONSECUTIVE TESTS (15 TO 30) ARE BEING RELIED UPON PER ACI 318, SECTION 5.3 THOSE TESTS SHALL BE SUBMITTED ALONG WITH THE MIX DESIGNS. MIX DESIGNS SHALL BEAR THE STAMP OF A LICENSED ENGINEER.

NO ADMIXTURES SHALL BE USED WITHOUT APPROVAL. NO AIR ENTRAINMENT SHALL BE ALLOWED IN FLAT SLABS. ADMIXTURES CONTAINING CHLORIDES SHALL NOT BE USED. CONCRETE SHALL NOT BE IN CONTACT WITH ALUMINUM. MECHANICALLY VIBRATE ALL CONCRETE WHEN PLACED. EXCEPT THAT SLABS ON GRADE NEED BE VIBRATED ONLY AROUND EMBEDDED ITEMS. DO NOT TAMP SLABS. USE ROLLER BUG, VIBRATING SCREED OR BULL FLOAT TO FINISH. SEE SPECIFICATIONS FOR CURING.

MINIMUM STRENGTH FOR REMOVAL OF FORMS AND SHORING SHALL BE 75% OF SPECIFIED STRENGTH AT 28 DAYS.

FLY ASH (POZZOLAN) IF PERMITTED PER SPECIFICATIONS SHALL NOT EXCEED 25% REPLACEMENT OF TOTAL CEMENT CONTENT USING A 1:1 REPLACEMENT FACTOR.

LEGEND:

EXISTING	PROPOSED
6314 TOPOGRAPHIC CONTOUR	6311 TOPOGRAPHIC CONTOUR
FENCE	FENCE
SANITARY SEWER LINE	SANITARY SEWER LINE
MANHOLE	MANHOLE
POWER POLE	GATE VALVE
OVERHEAD ELECTRIC LINE	BIOLIC DIFFUSER
UNDERGROUND ELECTRIC LINE	FLUSH HYDRANT
WATERLINE	
ROAD	

REINFORCING:

LATEST ACI CODE AND DETAILING MANUAL APPLY. ALL REINFORCING BARS DEFORMED EXCEPT #2 BARS AND WIRE MESH.

ALL REINFORCING SHALL BE ASTM A-615 GRADE 60 EXCEPT AS FOLLOWS:

- SPIRALS.....GRADE 60 OR COLD DRAWN A-82
- #2 AND #3 BARS.....GRADE 40
- WIRE MESH.....A-185
- WELDED ANCHORS.....GRADE 40 CHEMICAL ANALYSIS LIMITED PER AWS SPECIFICATIONS FOR WELD WITHOUT PREHEAT.
- WELDED ANCHORS #5 AND LARGER.....ASTM A-706

CLEAR CONCRETE COVER TO REINFORCING ARE AS FOLLOWS:

- CAST-IN-PLACE CONCRETE (NON-PRESTRESSED):
- CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"
- EXPOSED TO EARTH OR WEATHER:
- #6 THROUGH #18.....2"
- #5 AND SMALLER.....1 1/2"

LAP SPLICES IN CONCRETE SHALL BE CLASS B TENSION LAPS 70 BAR Ø MIN.

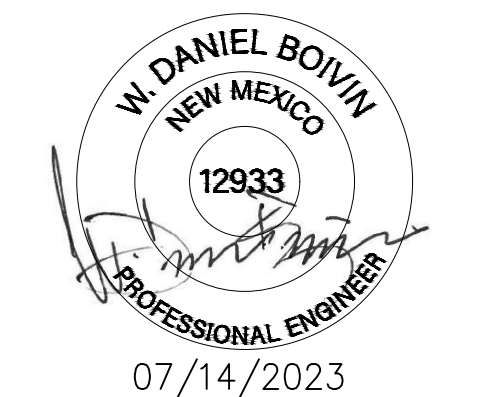
WHERE BARS ARE SHOWN SPLICED, THEY MAY RUN CONTINUOUS AT CONTRACTORS OPTION.

PROVIDE SHOP DRAWING AND FABRICATE AFTER THE CONTRACTORS REVIEW. ALL SPLICE LOCATIONS ARE SUBJECT TO APPROVAL, PLACE REBAR PER CRSI STANDARDS.

REBAR SPACING GIVEN IS MAXIMUM ON CENTER AND ALL REBAR IS CONTINUOUS UNLESS OTHERWISE NOTED. PROVIDE BENT CORNER REBAR TO MATCH AND LAP WITH HORIZONTAL REBAR AT CORNERS AND INTERSECTIONS OF WALLS. DOWEL ALL VERTICAL WALL REBAR TO FOUNDATIONS. SECURELY TIE ALL REBAR, INCLUDING DOWELS, IN LOCATION BEFORE PLACING CONCRETE OR GROUT.



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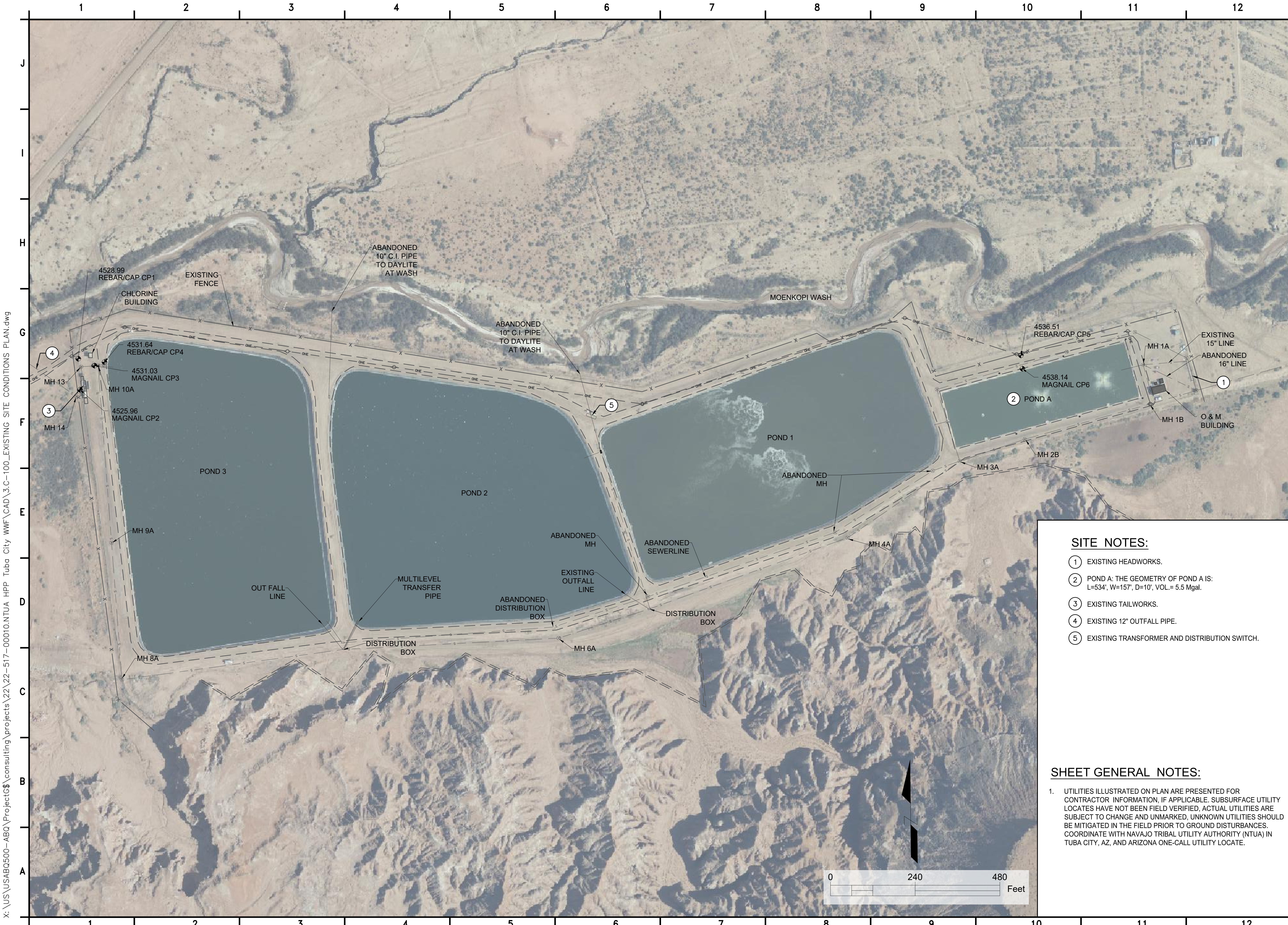
REVISIONS			
NO.	DATE	BY	APPROVED
1	2/15/2024	A.ORRANTIA	S.STANDUKAR

DESIGNED BY:	WSP -- BM
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DATE:	07/14/2023

SHEET TITLE:
**GENERAL NOTES
& LEGEND**

SHEET NUMBER:	REV. #
G-002	
SHEET 2 OF 39 SHEETS	

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- SITE NOTES:**
- ① EXISTING HEADWORKS.
 - ② POND A: THE GEOMETRY OF POND A IS:
L=534', W=157', D=10', VOL.= 5.5 Mgal.
 - ③ EXISTING TAILWORKS.
 - ④ EXISTING 12" OUTFALL PIPE.
 - ⑤ EXISTING TRANSFORMER AND DISTRIBUTION SWITCH.

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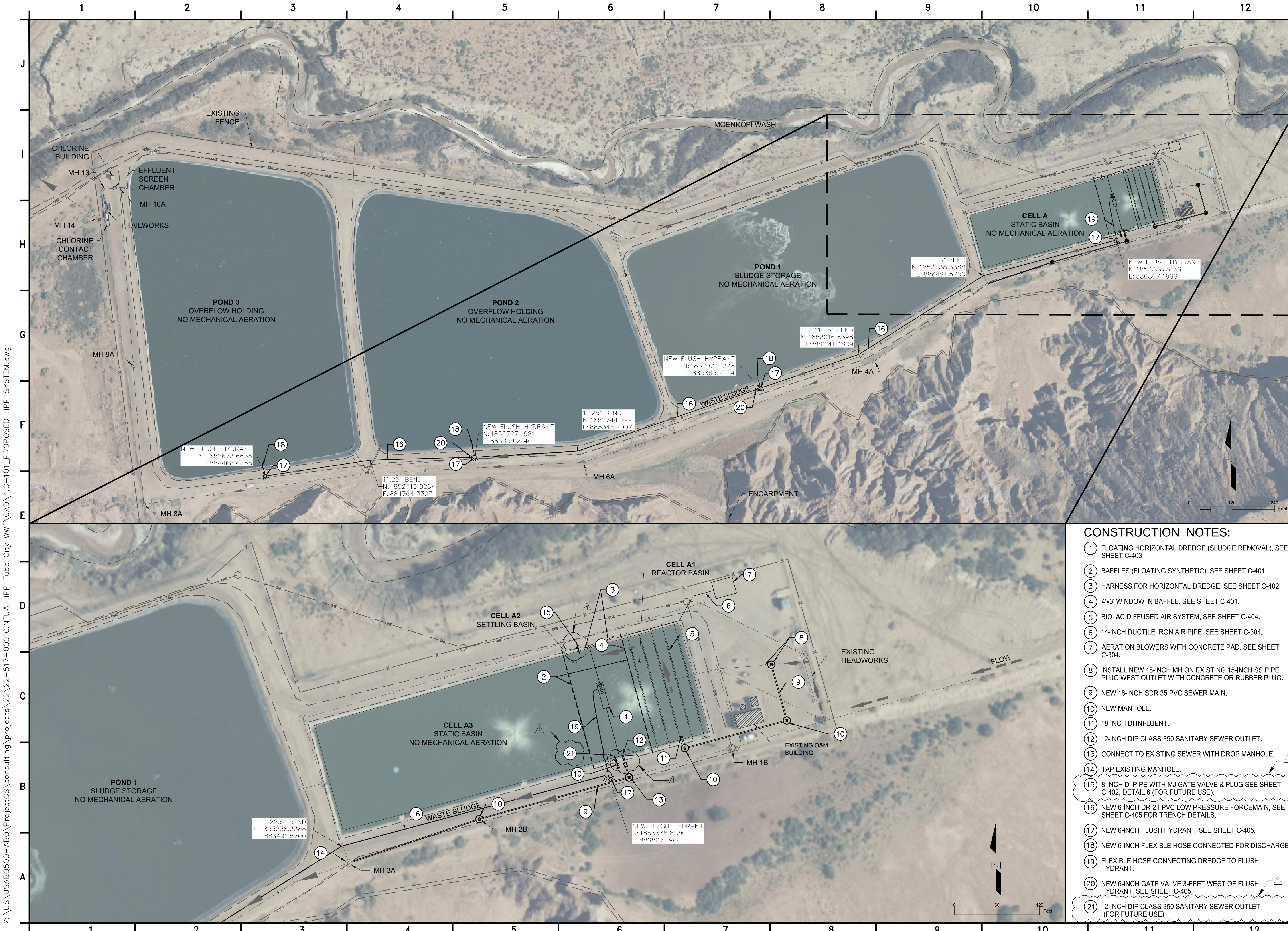
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SHEET GENERAL NOTES:


1. UTILITIES ILLUSTRATED ON PLAN ARE PRESENTED FOR CONTRACTOR INFORMATION, IF APPLICABLE. SUBSURFACE UTILITY LOCATES HAVE NOT BEEN FIELD VERIFIED. ACTUAL UTILITIES ARE SUBJECT TO CHANGE AND UNMARKED. UNKNOWN UTILITIES SHOULD BE MITIGATED IN THE FIELD PRIOR TO GROUND DISTURBANCES. COORDINATE WITH NAVAJO TRIBAL UTILITY AUTHORITY (NTUA) IN TUBA CITY, AZ, AND ARIZONA ONE-CALL UTILITY LOCATE.

SHEET TITLE:
**EXISTING
SITE LAYOUT AND
SURVEY CONTROL**

SHEET NUMBER:	REV. #
C-100	
SHEET 3 OF 39 SHEETS	





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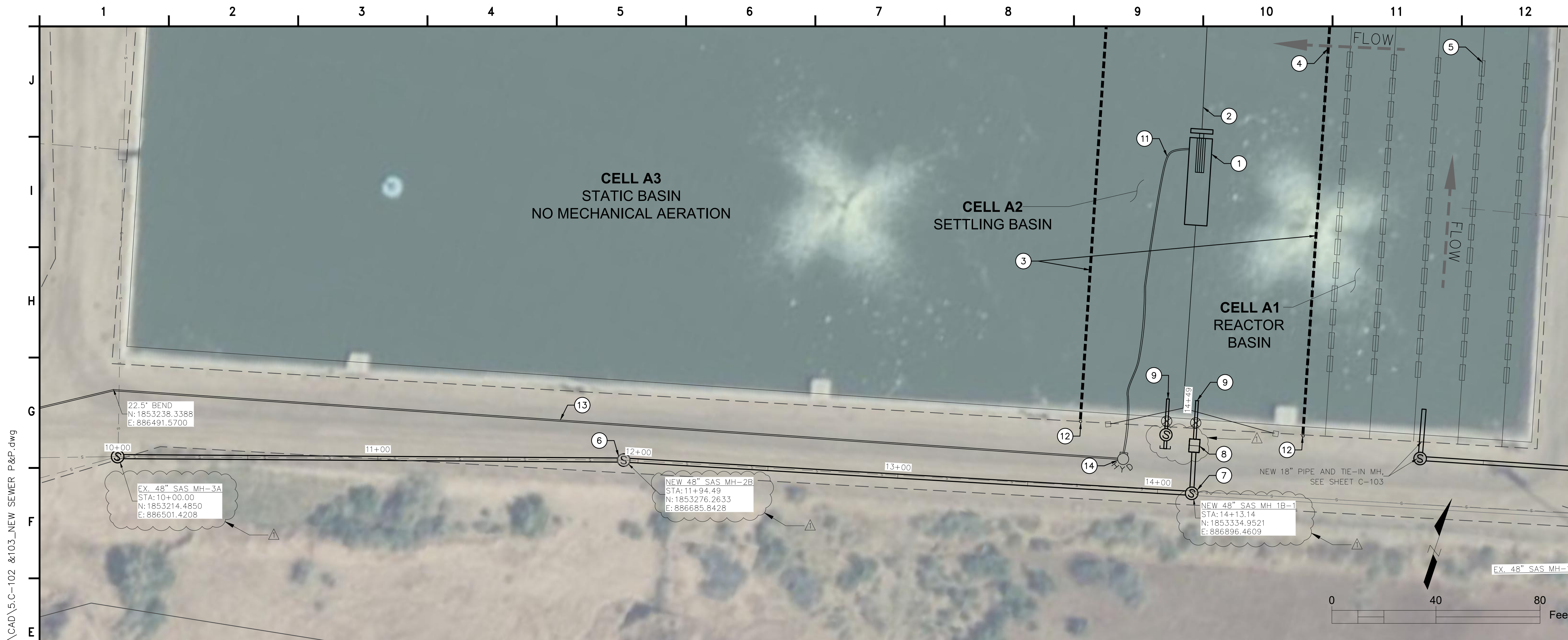
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SHEET TITLE:
**HIGH PERFORMANCE
POND SYSTEM**


SHEET NUMBER: **C-101**
REV. #
SHEET 4 OF 39 SHEETS

- CONSTRUCTION NOTES:**
- 1 FLOATING HORIZONTAL DREDGE (SLUDGE REMOVAL), SEE SHEET C-403.
 - 2 BAFFLES (FLOATING SYNTHETIC), SEE SHEET C-401.
 - 3 HARNESS FOR HORIZONTAL DREDGE, SEE SHEET C-402.
 - 4 4'x3' WINDOW IN BAFFLE, SEE SHEET C-401.
 - 5 BIOLAC DIFFUSED AIR SYSTEM, SEE SHEET C-404.
 - 6 14-INCH DUCTILE IRON AIR PIPE, SEE SHEET C-304.
 - 7 AERATION BLOWERS WITH CONCRETE PAD, SEE SHEET C-304.
 - 8 INSTALL NEW 48-INCH MH ON EXISTING 15-INCH SS PIPE. PLUG WEST OUTLET WITH CONCRETE OR RUBBER PLUG.
 - 9 NEW 18-INCH SDR 35 PVC SEWER MAIN.
 - 10 NEW MANHOLE.
 - 11 18-INCH DI INFLUENT.
 - 12 12-INCH DIP CLASS 350 SANITARY SEWER OUTLET.
 - 13 CONNECT TO EXISTING SEWER WITH DROP MANHOLE.
 - 14 TAP EXISTING MANHOLE.
 - 15 8-INCH DI PIPE WITH MJ GATE VALVE & PLUG SEE SHEET C-402, DETAIL 6 (FOR FUTURE USE).
 - 16 NEW 6-INCH DR-21 PVC LOW PRESSURE FORCEMAIN, SEE SHEET C-405 FOR TRENCH DETAILS.
 - 17 NEW 6-INCH FLUSH HYDRANT, SEE SHEET C-405.
 - 18 NEW 6-INCH FLEXIBLE HOSE CONNECTED FOR DISCHARGE.
 - 19 FLEXIBLE HOSE CONNECTING DREDGE TO FLUSH HYDRANT.
 - 20 NEW 6-INCH GATE VALVE 3-FEET WEST OF FLUSH HYDRANT, SEE SHEET C-405.
 - 21 12-INCH DIP CLASS 350 SANITARY SEWER OUTLET (FOR FUTURE USE)

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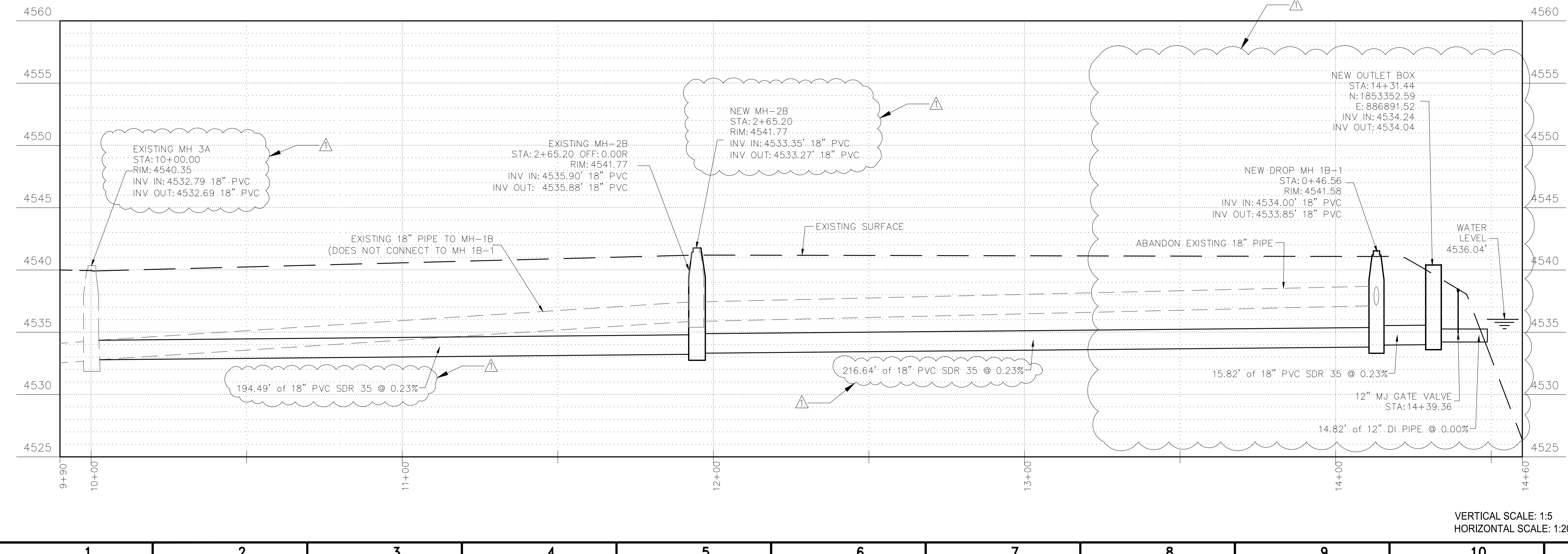
PROJECT:
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NEW MANHOLE TIE-IN



CONSTRUCTION NOTES:

- 1 FLOATING HORIZONTAL DREDGE (SLUDGE REMOVAL), SEE SHEET C-403.
- 2 HARNESS FOR HORIZONTAL DREDGE, SEE SHEET C-402.
- 3 BAFFLES (FLOATING SYNTHETIC), SEE SHEET C-401.
- 4 4'x3' WINDOW IN BAFFLE, SEE SHEET C-401.
- 5 BIOLAC DIFFUSED AIR SYSTEM, CAPACITY 3660 CFM, SEE SHEET C-404.
- 6 NEW MANHOLE TO REPLACE EXISTING.
- 7 NEW DROP MANHOLE (REPLACE EXISTING).
- 8 OUTLET BOX WITH WEIR, SEE SHEET C-301.
- 9 12-INCH DI SANITARY SEWER OUTLET WITH MJ GATE VALVE.
- 10 NOT USED
- 11 FLEXIBLE HOSE CONNECTING DREDGE TO FLUSH HYDRANT.
- 12 ANCHOR POST, SEE SHEET C-402.
- 13 NEW 6-INCH DR-21 PVC FORCEMAIN, SEE SHEET C-405 FOR TRENCH DETAILS.
- 14 NEW 6-INCH FLUSH HYDRANT, SEE SHEET C-405.

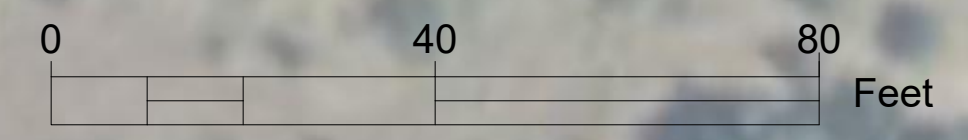
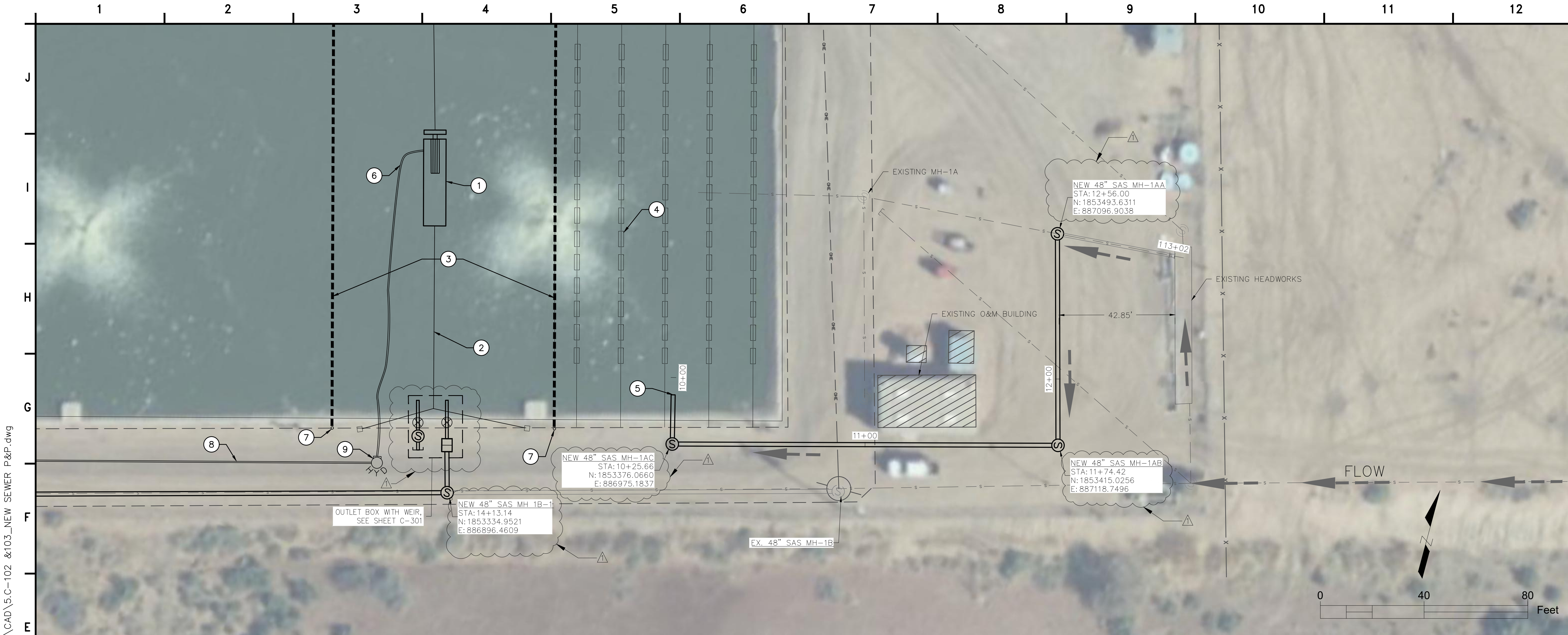
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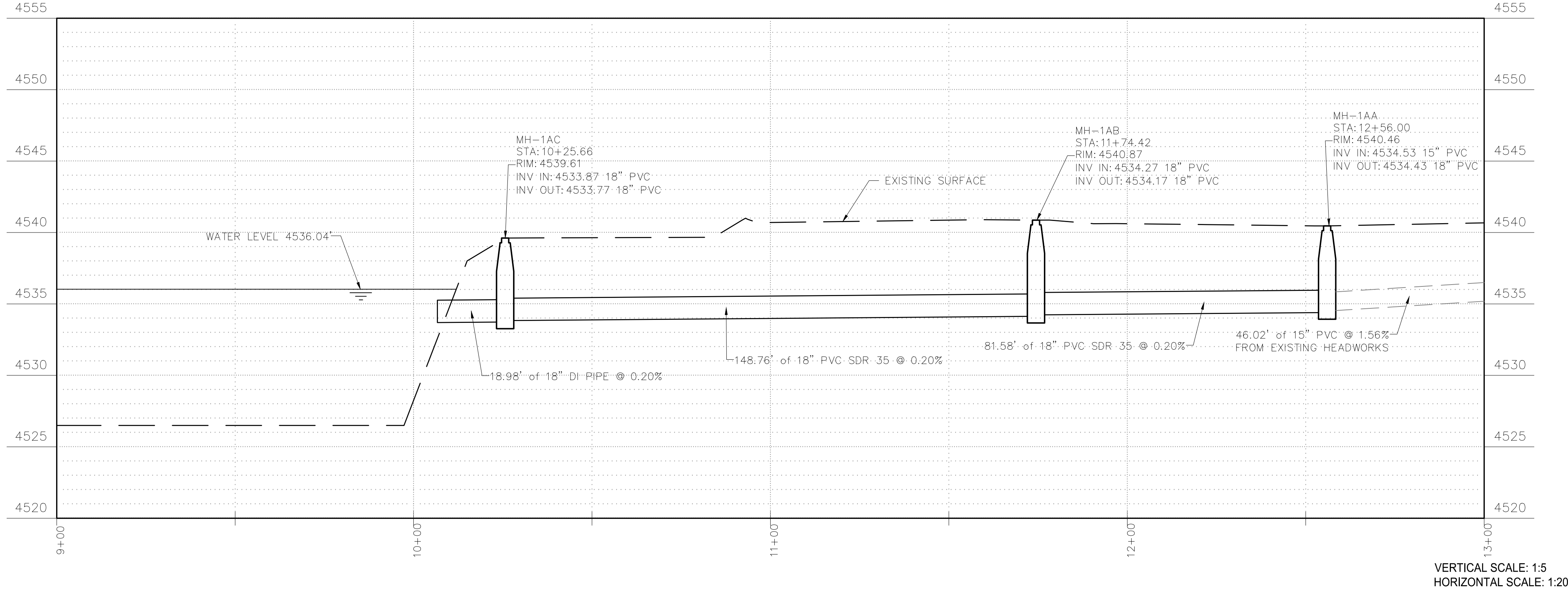
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SHEET TITLE:
**MANHOLE-TIE IN
PLAN
AND
PROFILE**

SHEET NUMBER:	REV. #
C-102	
SHEET 5 OF 39 SHEETS	



NEW 18-INCH PVC SEWER



CONSTRUCTION NOTES:

- 1 FLOATING HORIZONTAL DREDGE (SLUDGE REMOVAL), SEE SHEET C-403.
- 2 HARNESS FOR HORIZONTAL DREDGE, SEE SHEET C-402.
- 3 BAFFLES (FLOATING SYNTHETIC), SEE SHEET C-401.
- 4 BIOLAC DIFFUSED AIR SYSTEM, CAPACITY 3660 CFM, SEE SHEET C-404.
- 5 18-INCH DI SANITARY SEWER INFLUENT PIPE.
- 6 FLEXIBLE HOSE CONNECTING DREDGE TO FLUSH HYDRANT.
- 7 ANCHOR POST, SEE SHEET C-402.
- 8 NEW 6-INCH DR-21 PVC LOW PRESSURE FORCEMAIN, SEE SHEET C-405 FOR TRENCH DETAILS.
- 9 NEW 6-INCH FLUSH HYDRANT, SEE SHEET C-405.

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W. DANIEL BOYIN
NEW MEXICO
12933
PROFESSIONAL ENGINEER
07/14/2023
FINAL

PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**

NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
1	2/15/2024	A. ORRANTIA	S. TANDUKAR

DESIGNED BY:	WSP - BM
DRAWN BY:	WSP - AO
CHECKED BY:	WSP - BM
APPROVED BY:	WSP - BM
DATE:	07/14/2023

SHEET TITLE:
**MANHOLE-TIE IN
PLAN
AND
PROFILE**

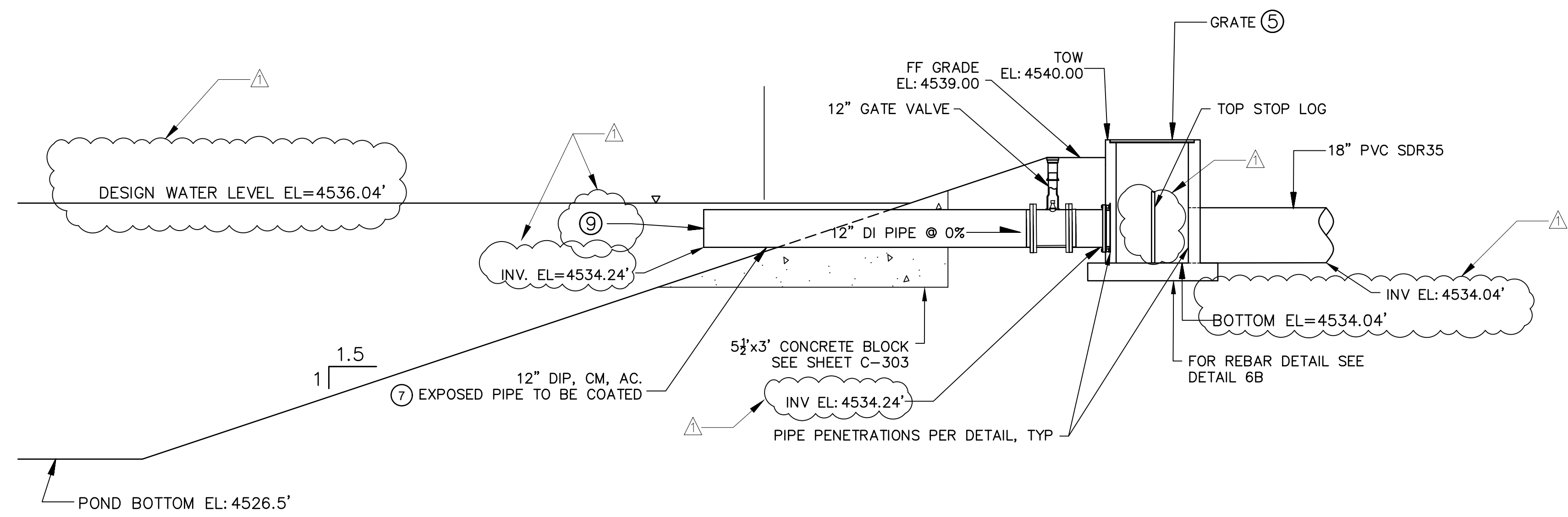
SHEET NUMBER:	REV. #
C-103	
SHEET 6 OF 39 SHEETS	

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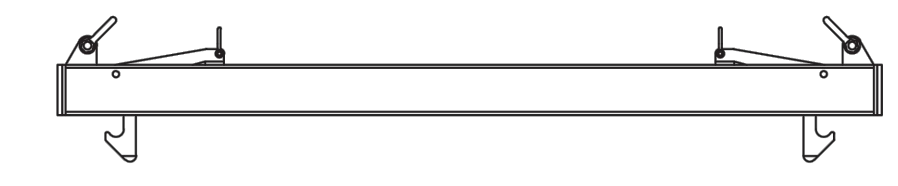
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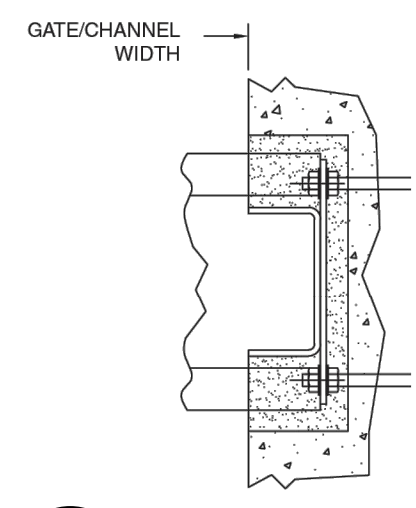
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6 DISCHARGE STRUCTURE PROFILE
NOT TO SCALE



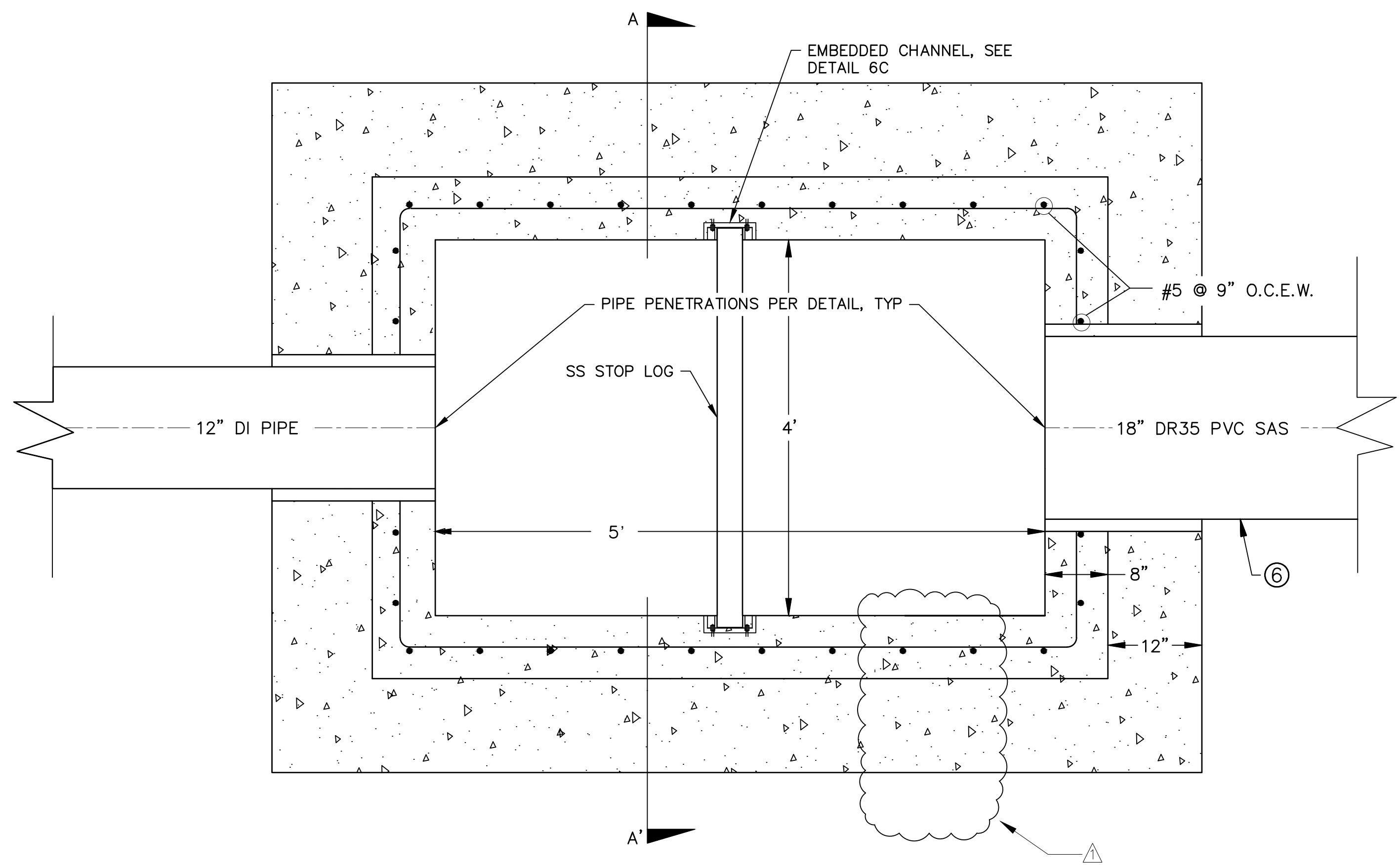
6D STOP LOG
NOT TO SCALE



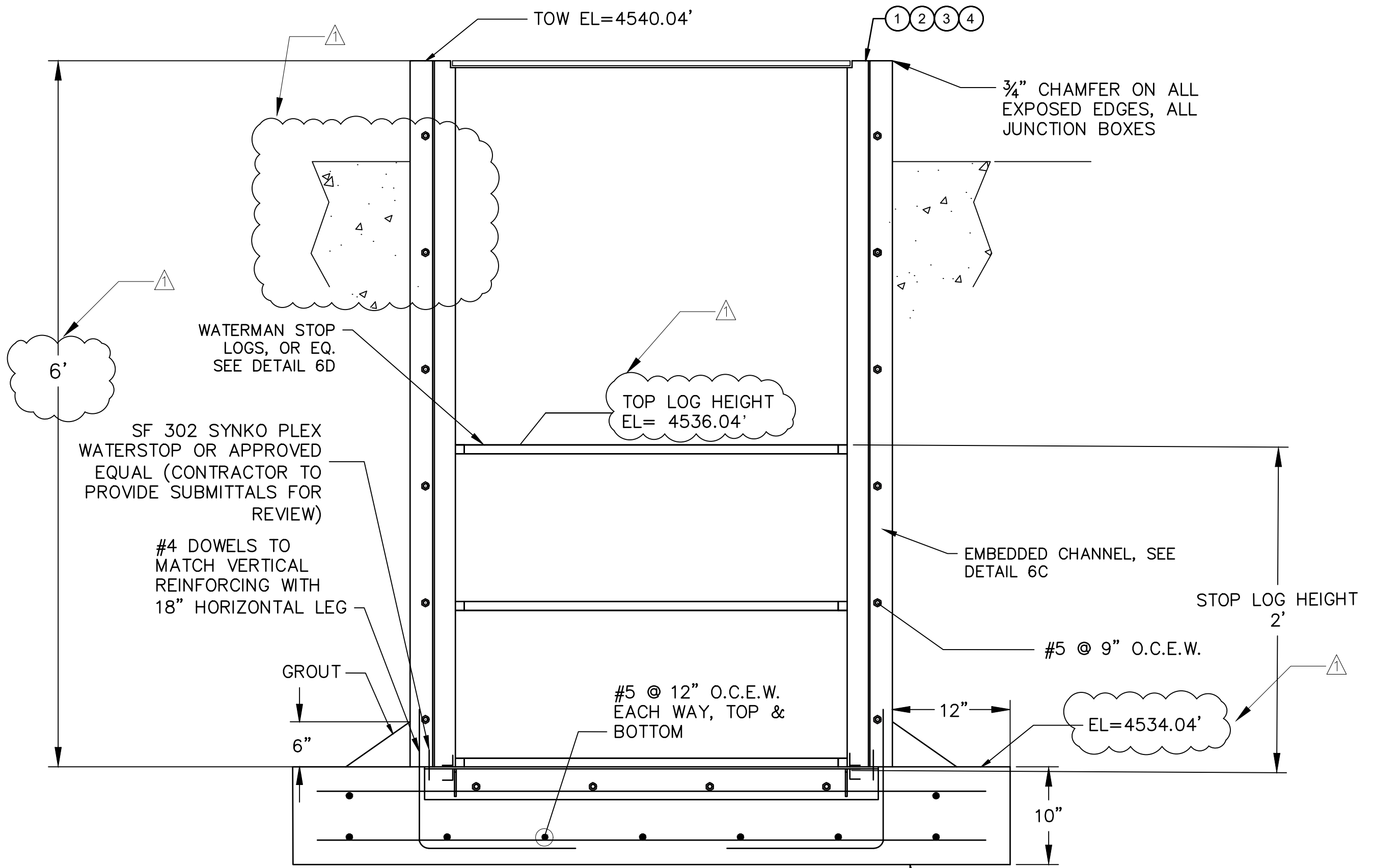
6C EMBEDDED CHANNEL
NOT TO SCALE

BUILD NOTES

- 1 STRUCTURAL CONCRETE: FURNISH AND INSTALL REINFORCED PORTLAND CEMENT CONCRETE PER STRUCTURAL SHEETS, COMPLETE IN PLACE.
- 2 SUBGRADE PREP: PREPARE SUBGRADE FOR STRUCTURES INCLUDES EXCAVATION (3FT BELOW BOTTOM FOUNDATION ELEV.) AND COMPACT TO 95% ASTM D698 PER GEOTECHNICAL REPORT
- 3 STRUCTURAL FILL: FILL CONSTRUCTION FOR STRUCTURES INCLUDING PLACEMENT AND COMPACTION OF SUITABLE ENGINEERED FILL MATERIAL AND REINFORCED GEOGRID.
- 4 EXCAVATE AND SPOIL UNSUITABLE MATERIAL.
- 5 FURNISH AND INSTALL GRATE, SEE SHEET C-402 FOR GRATE INSERT DETAIL.
- 6 FURNISH AND INSTALL 18-INCH SDR SAS PIPING INCLUDING FITTINGS, TRENCHING, COMPACTION, COMPLETE AND IN PLACE.
- 7 POND LINER AND PIPE PENETRATION DETAIL, SEE SHEET C-402.
- 8 24" COMPACTED FILL AT 95%.
- 9 12" DI PIPE TO TERMINATE APPROX. 5' FROM SIDE SLOPE



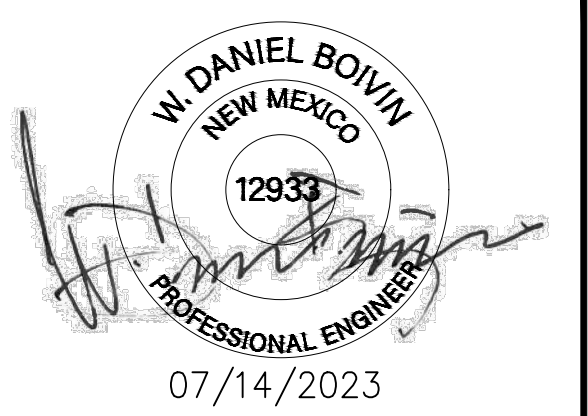
6A DISCHARGE STRUCTURE STRUCTURAL DETAILS (PLAN)
NOT TO SCALE



6B DISCHARGE STRUCTURE STRUCTURAL DETAILS (PROFILE)
NOT TO SCALE



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POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
1	2/15/2024	A. ORRANTIA	S. STANDUKAR

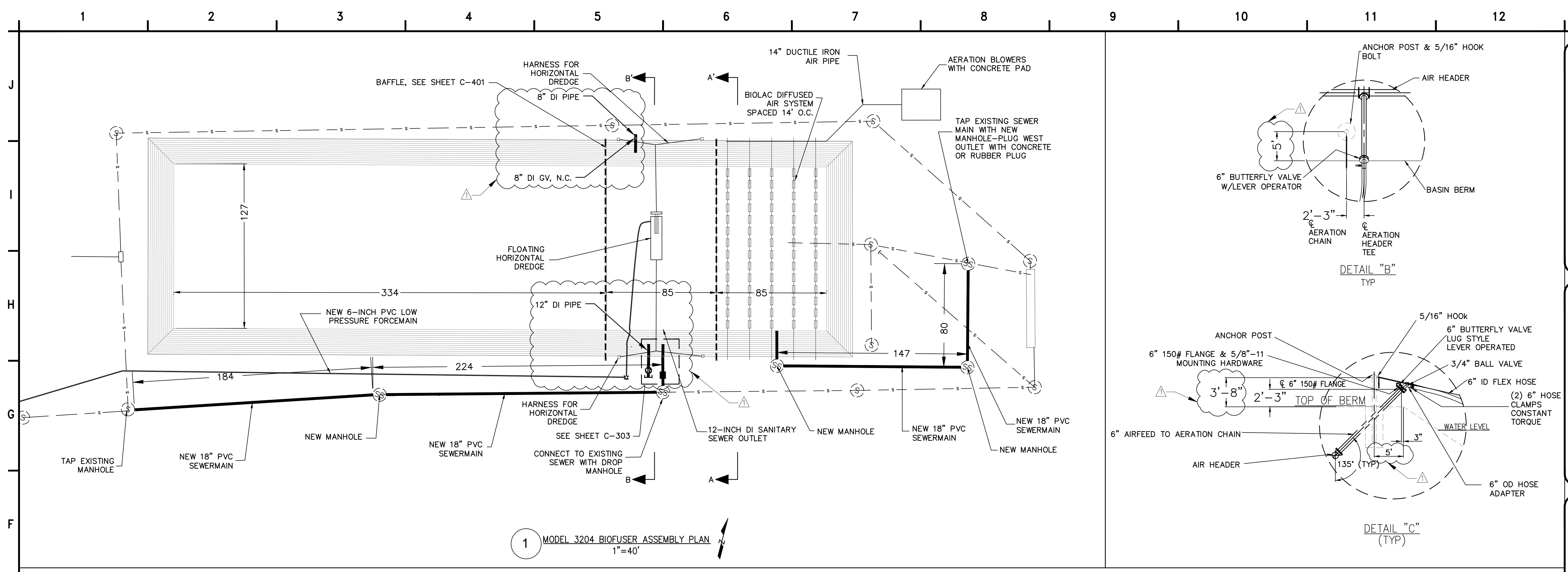
DESIGNED BY: WSP - BM
DRAWN BY: WSP - AO
CHECKED BY: WSP - BM
APPROVED BY: WSP - BM
DATE: 07/14/2023

SHEET TITLE:
**DISCHARGE
STRUCTURE DETAILS**

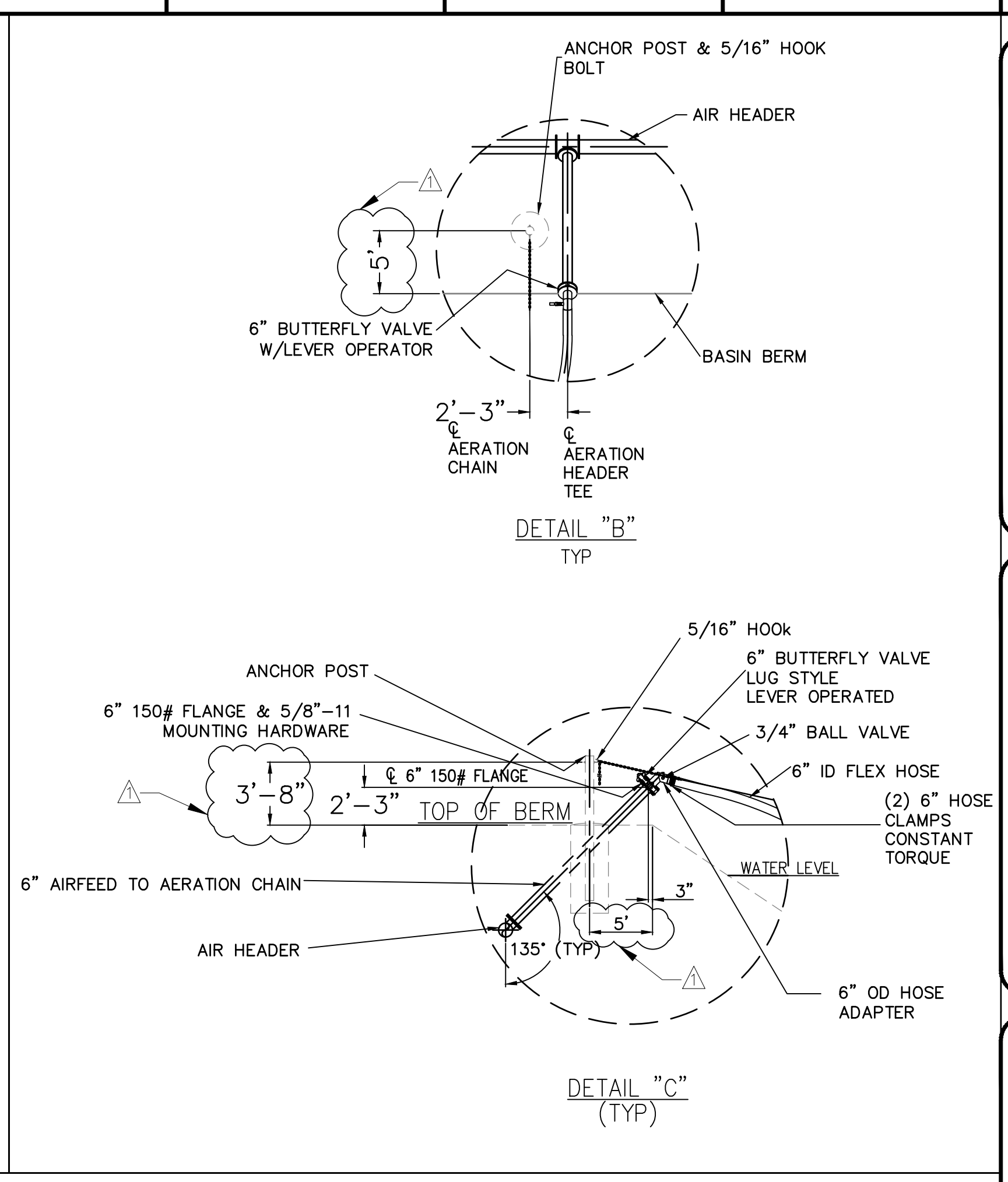
SHEET NUMBER: C-301
REV. #
SHEET 7 OF 39 SHEETS

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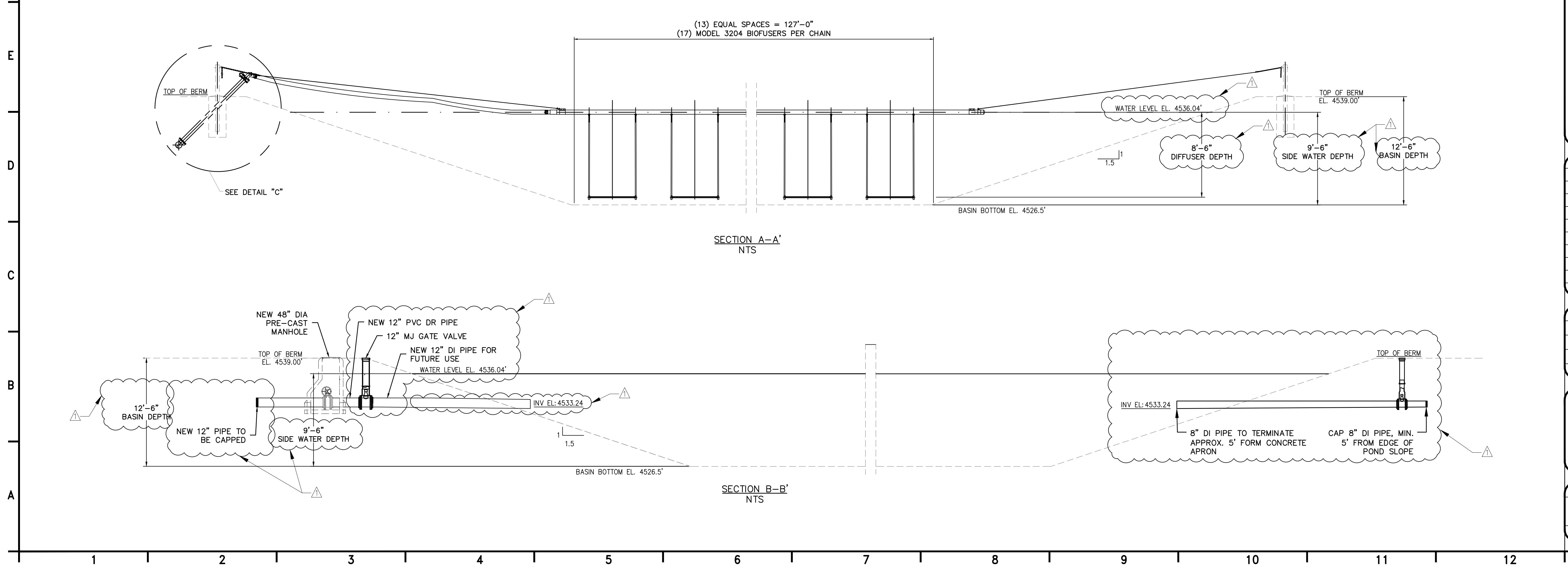


1 MODEL 3204 BIOFUSER ASSEMBLY PLAN
1"=40'



DETAIL "B"
TYP

DETAIL "C"
(TYP)



SECTION A-A'
NTS

SECTION B-B'
NTS

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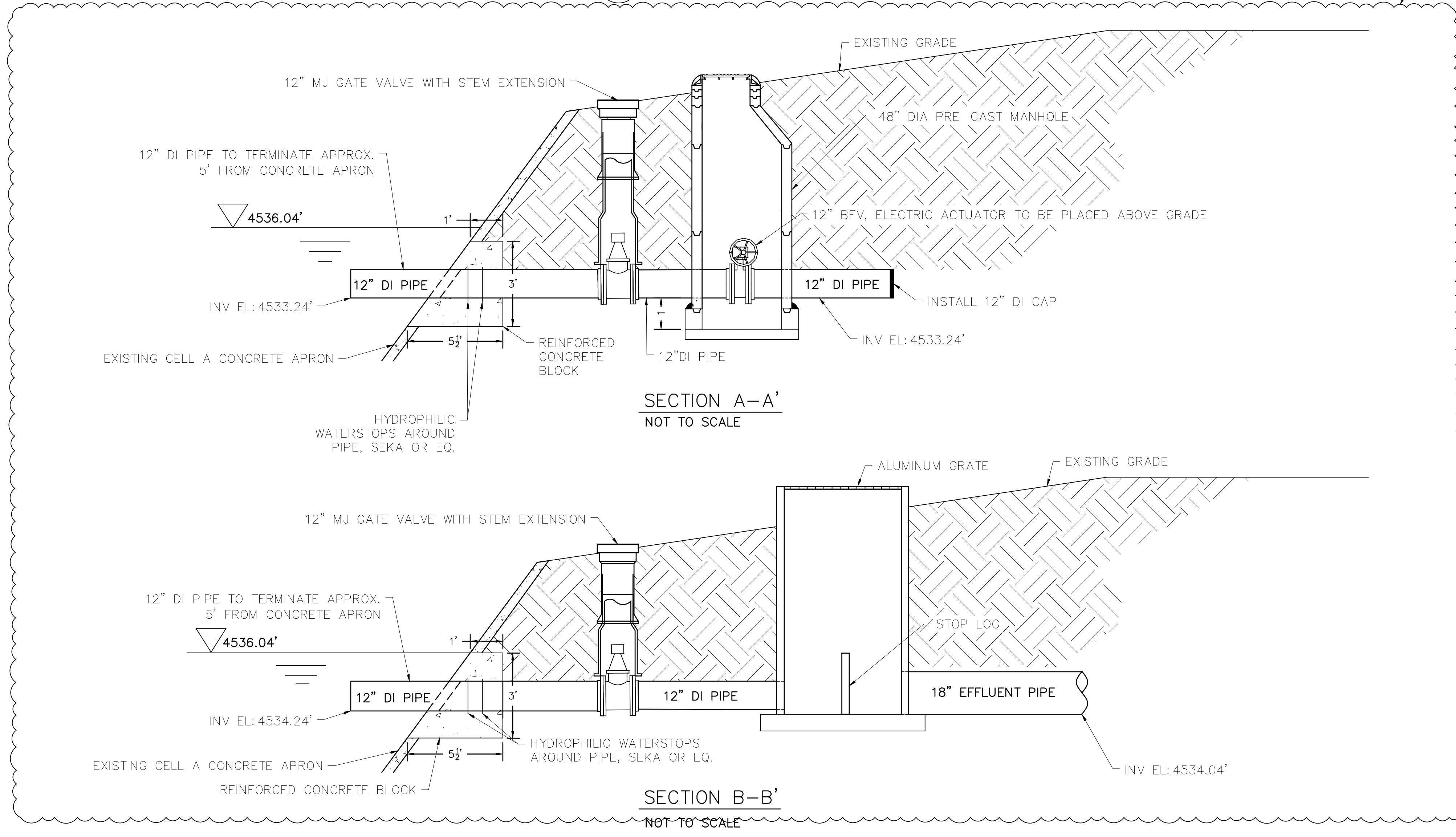
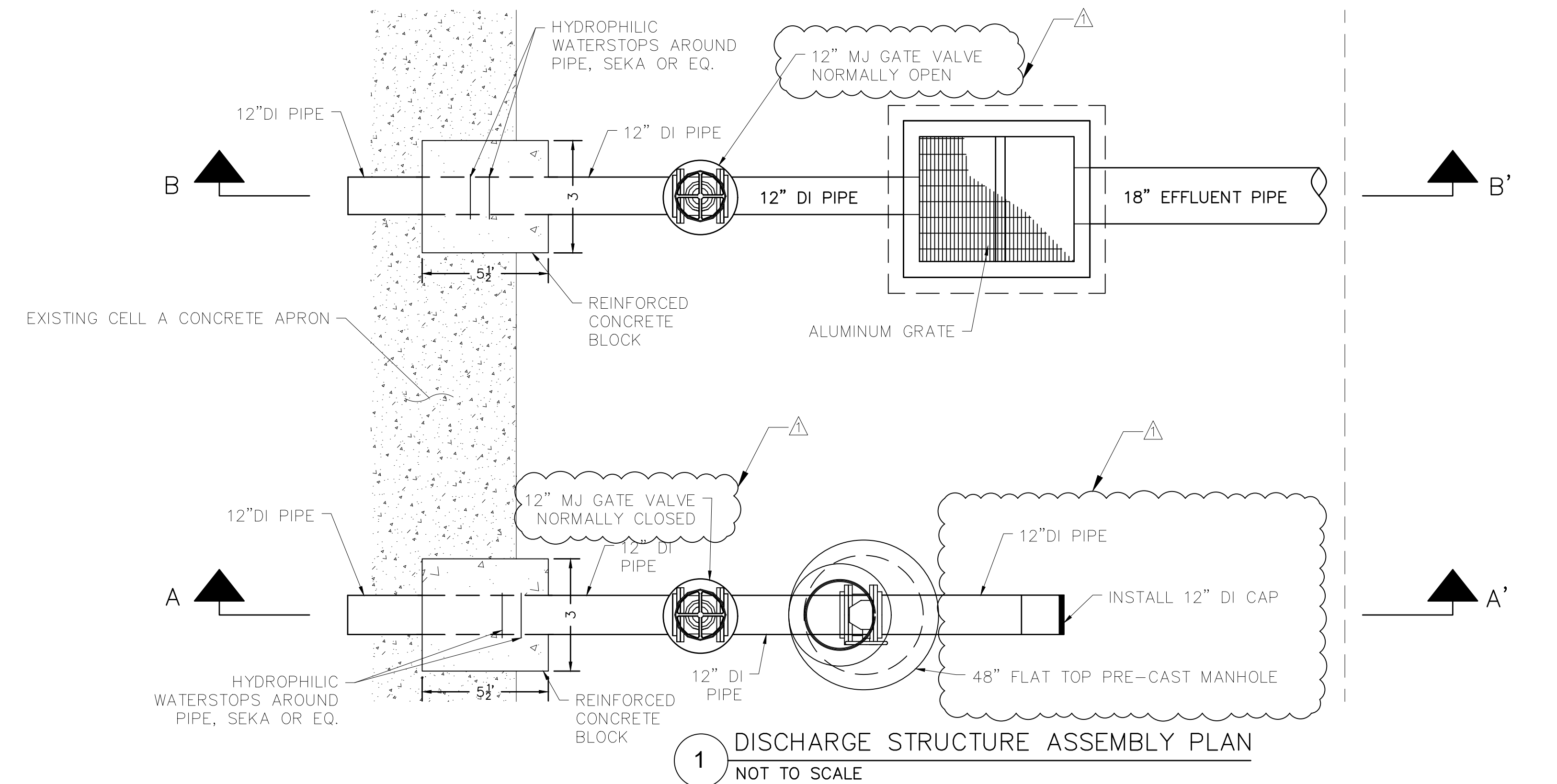
SHEET TITLE:
**DIFUSER
DETAILS**

SHEET NUMBER:	REV. #
C-302	
SHEET 8 OF 39 SHEETS	

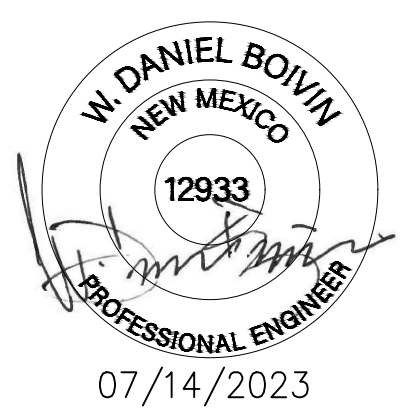
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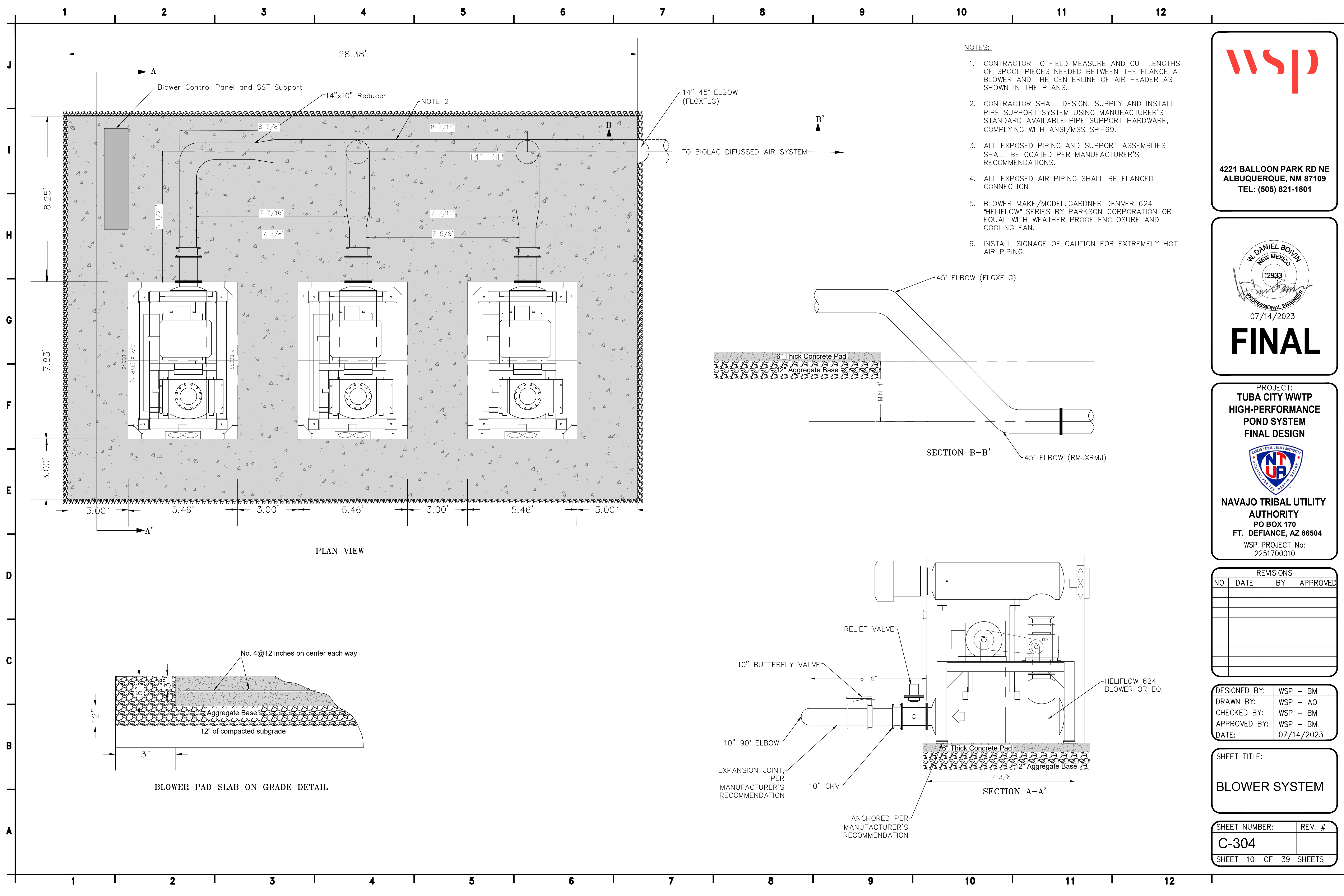
DESIGNED BY:	WSP - BM
DRAWN BY:	WSP - AO
CHECKED BY:	WSP - BM
APPROVED BY:	WSP - BM
DATE:	07/14/2023

SHEET TITLE:
**DISCHARGE
STRUCTURE DETAILS**

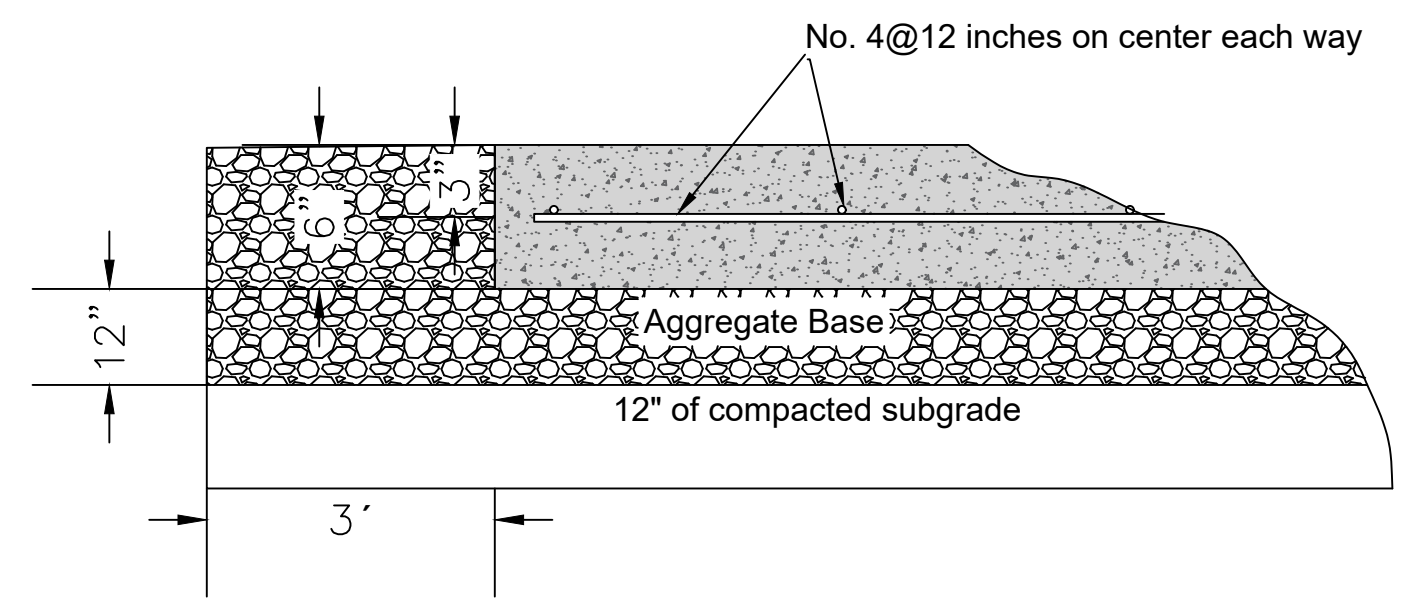
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C-303	
SHEET 9 OF 39 SHEETS	

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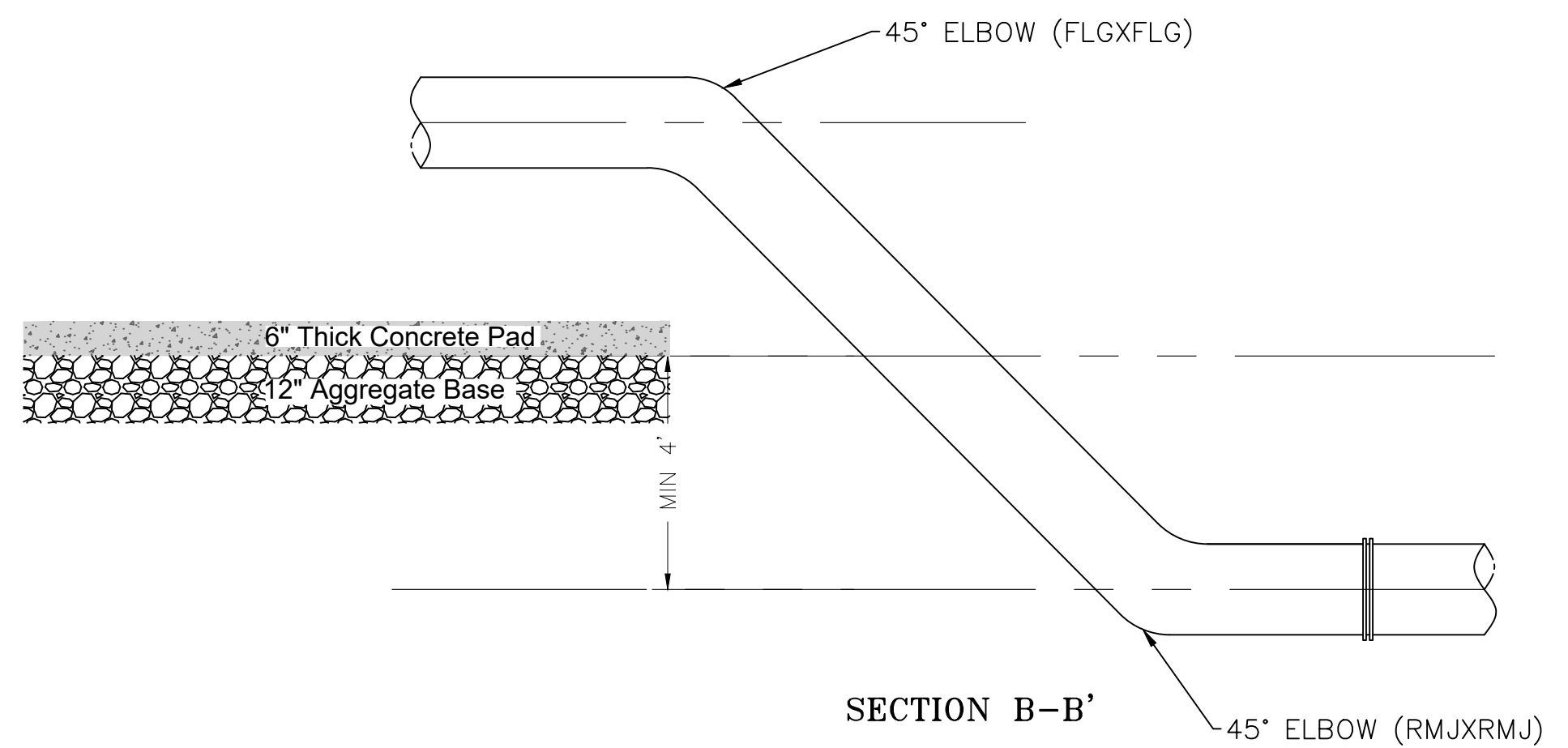
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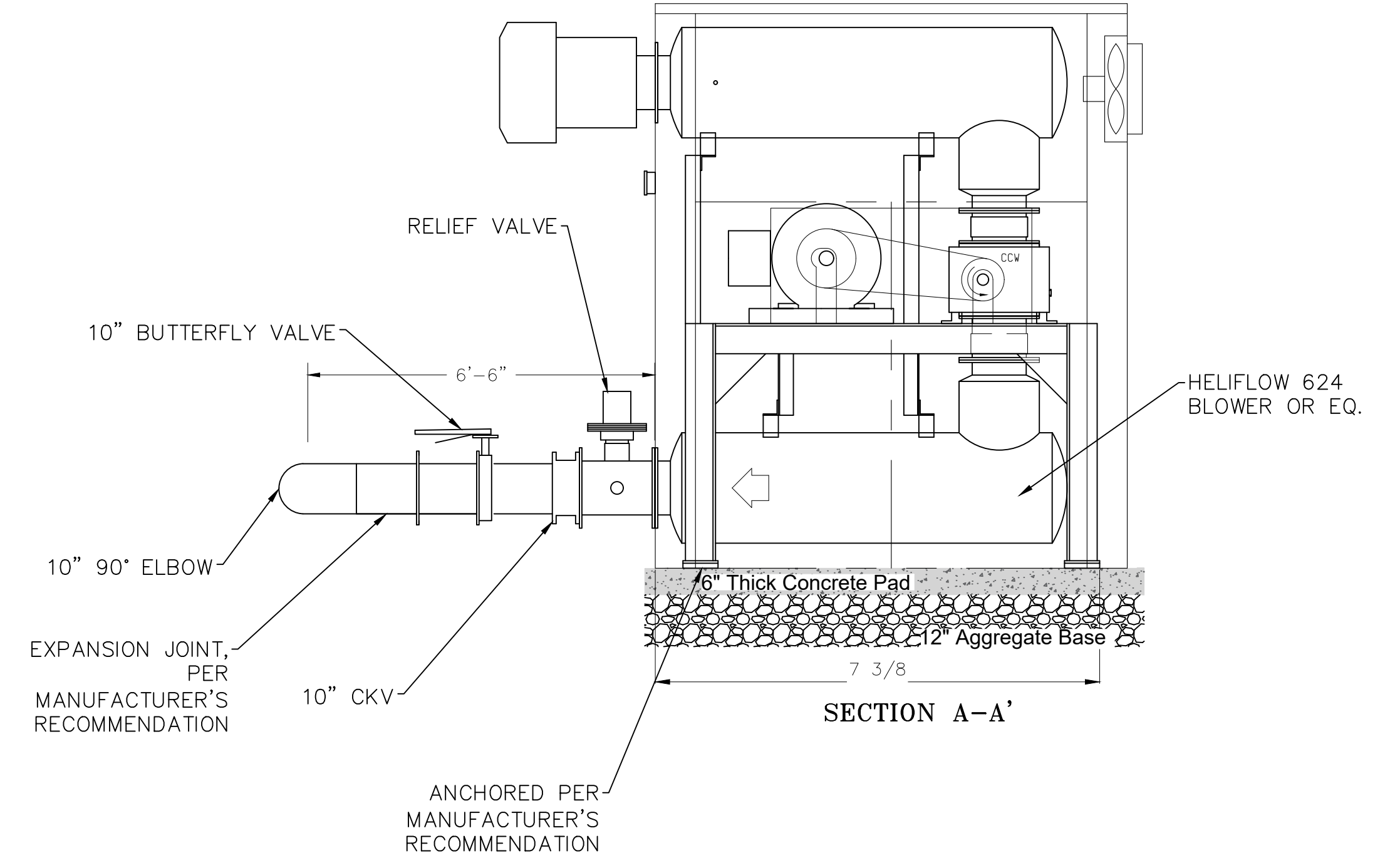
PLAN VIEW



BLOWER PAD SLAB ON GRADE DETAIL



SECTION B-B'




SECTION A-A'

NOTES:

1. CONTRACTOR TO FIELD MEASURE AND CUT LENGTHS OF SPOOL PIECES NEEDED BETWEEN THE FLANGE AT BLOWER AND THE CENTERLINE OF AIR HEADER AS SHOWN IN THE PLANS.
2. CONTRACTOR SHALL DESIGN, SUPPLY AND INSTALL PIPE SUPPORT SYSTEM USING MANUFACTURER'S STANDARD AVAILABLE PIPE SUPPORT HARDWARE, COMPLYING WITH ANSI/MSS SP-69.
3. ALL EXPOSED PIPING AND SUPPORT ASSEMBLIES SHALL BE COATED PER MANUFACTURER'S RECOMMENDATIONS.
4. ALL EXPOSED AIR PIPING SHALL BE FLANGED CONNECTION
5. BLOWER MAKE/MODEL: GARDNER DENVER 624 "HELIFLOW" SERIES BY PARKSON CORPORATION OR EQUAL WITH WEATHER PROOF ENCLOSURE AND COOLING FAN.
6. INSTALL SIGNAGE OF CAUTION FOR EXTREMELY HOT AIR PIPING.




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PO BOX 170
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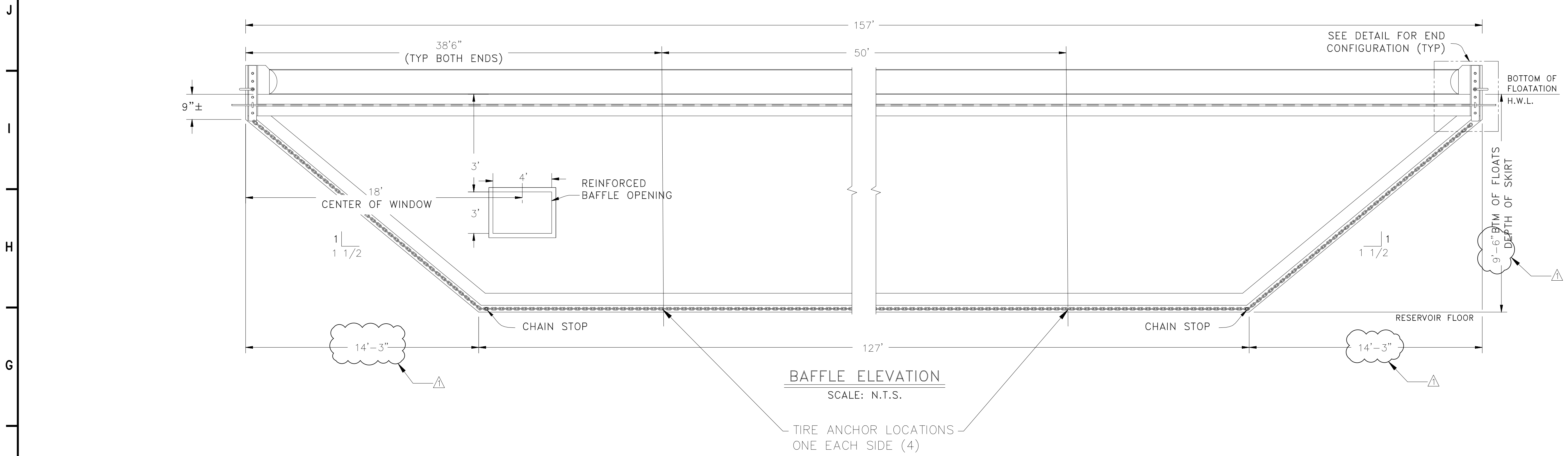
DESIGNED BY:	WSP - BM
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SHEET TITLE:
BLOWER SYSTEM

SHEET NUMBER:	REV. #
C-304	
SHEET 10 OF 39 SHEETS	

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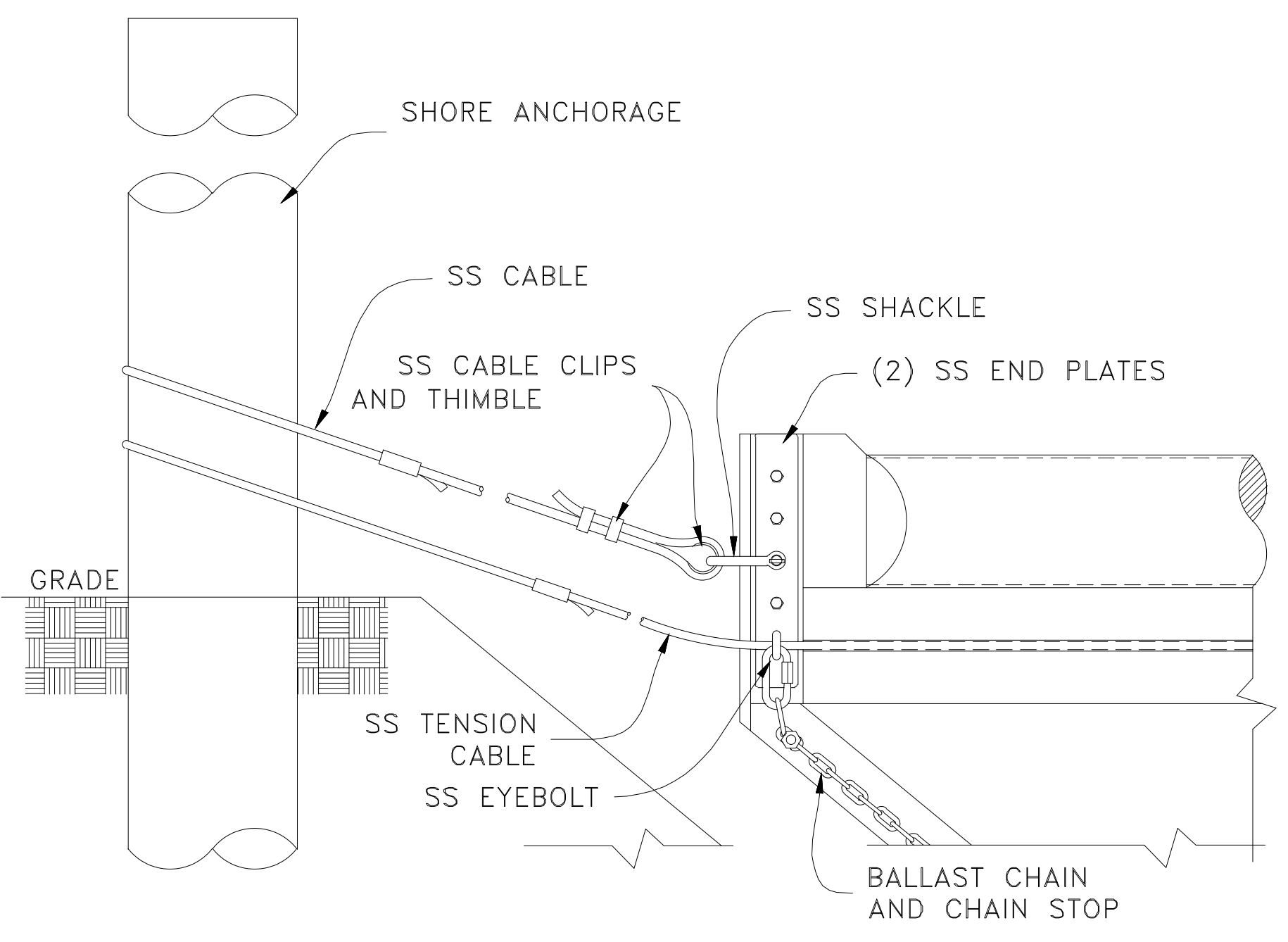
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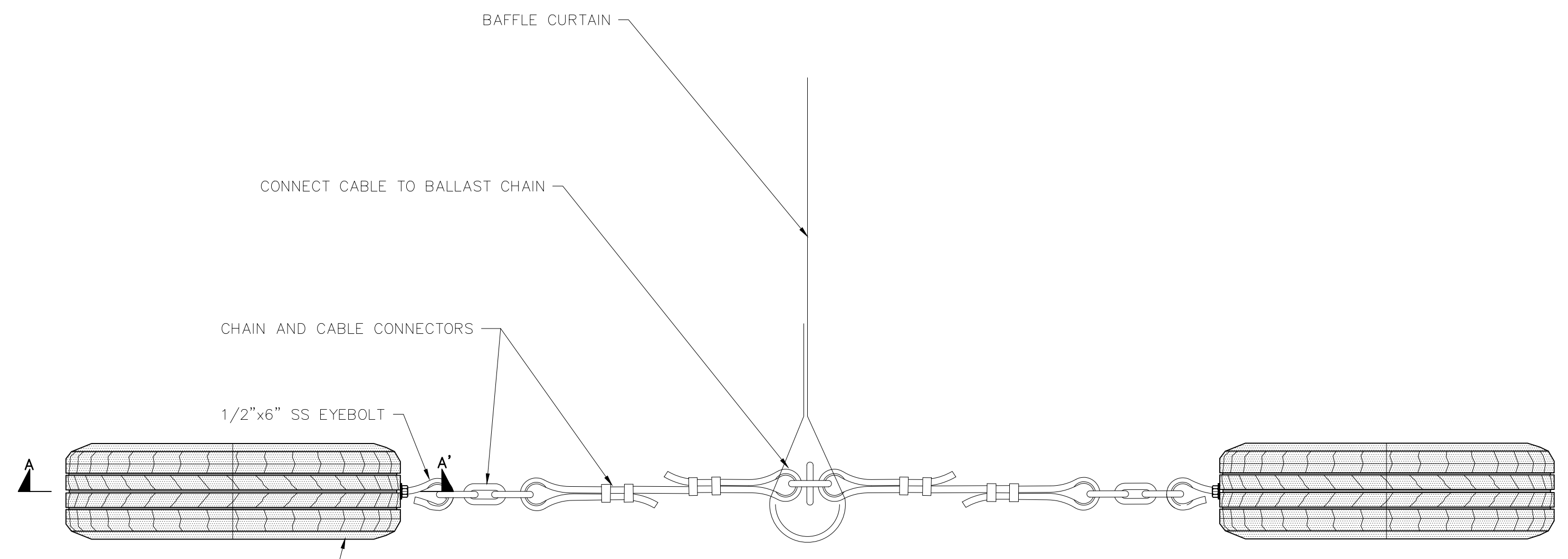
BAFFLE ELEVATION
SCALE: N.T.S.

TIRE ANCHOR LOCATIONS
ONE EACH SIDE (4)

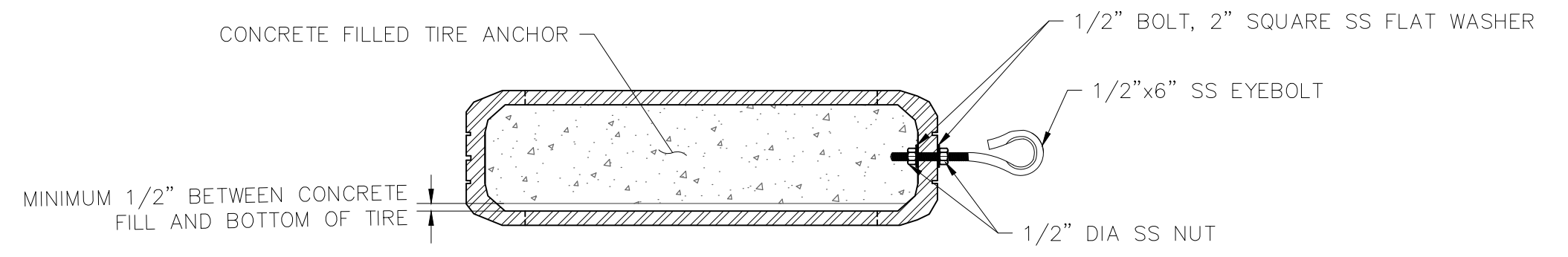
1 BAFFLE CURTAIN DETAIL PROFILE
NOT TO SCALE



2 END CONNECTION DETAIL
NOT TO SCALE



3 TIRE ANCHOR DETAIL
NOT TO SCALE



SECTION A-A'
NOT TO SCALE



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WSP PROJECT No:
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1	2/15/2024	A.ORRANTIA	S.TANDUKAR

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DATE:	07/14/2023

SHEET TITLE:
**BAFFLE CURTAIN
DETAILS**

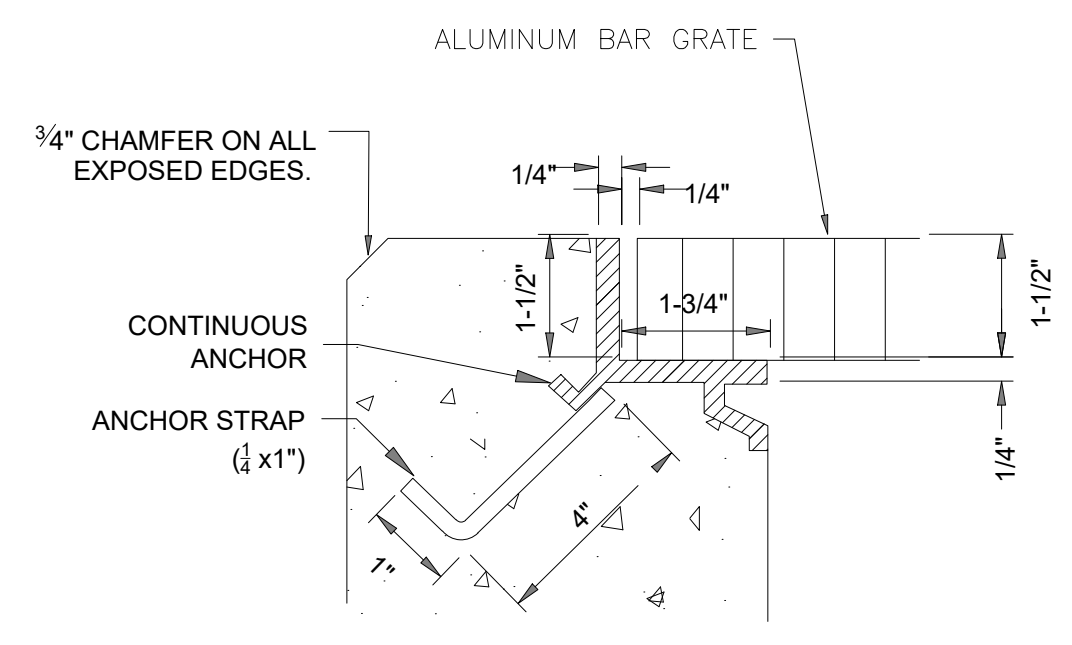
SHEET NUMBER:	REV. #
C-401	
SHEET 11 OF 39 SHEETS	

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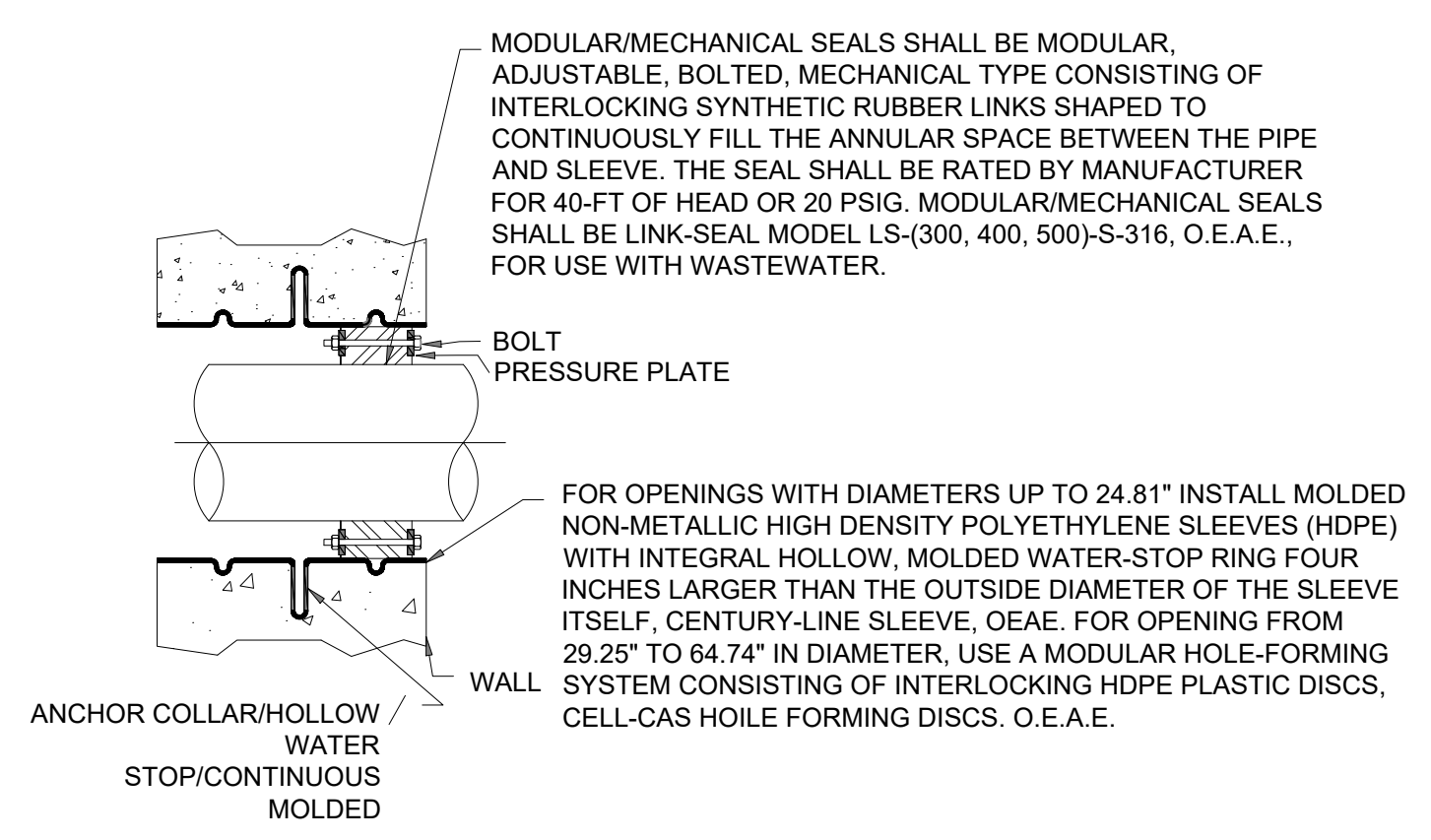
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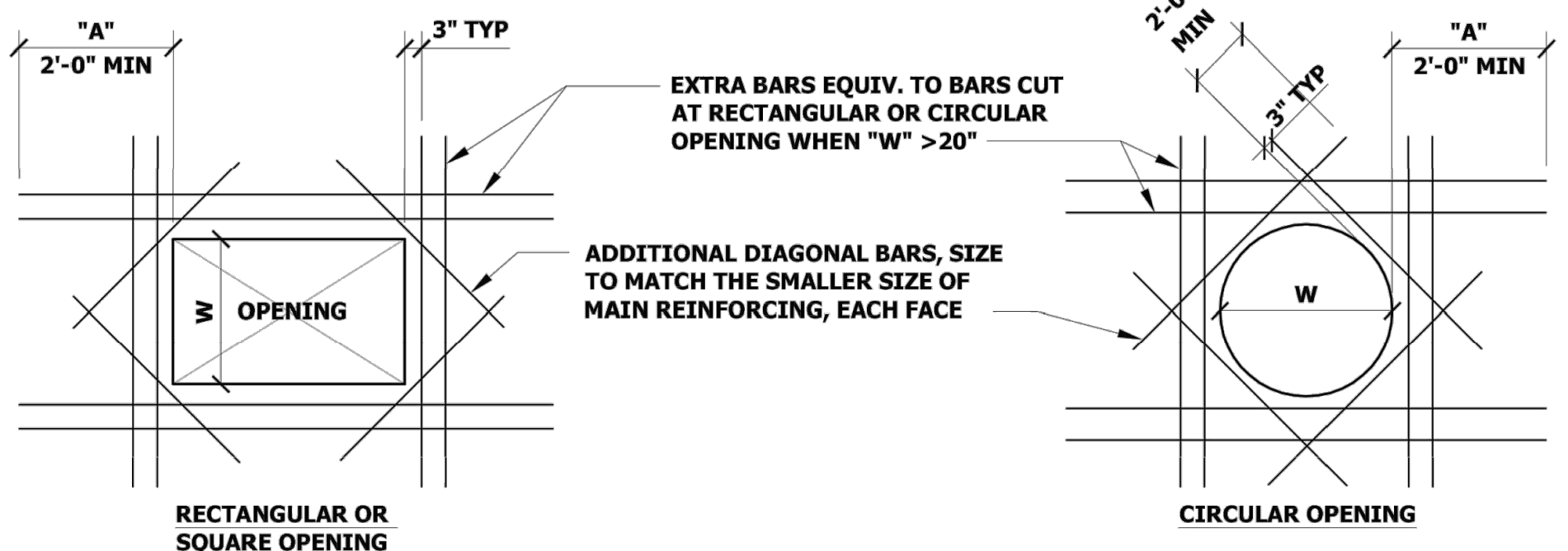


- NOTES:
1. ALL NEW STRUCTURES WITH GRATING SHALL USE EMBEDDED GRATING FRAMES.
 2. FRAMES SHALL HAVE MITRED CORNERS AND WELDED JOINTS AND SHALL BE SIZED TO MATCH GRATING DEPTHS.
 3. VERTICAL AND HORIZONTAL LEGS OF THE FRAME SHAPE SHALL HAVE 1/4" INCH WALL THICKNESS. FRAME SHALL BE DESIGNED TO PROVIDE CONTINUOUS EXTRUDED ANCHOR.
 4. SURFACES COMING INTO CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF BITUMINOUS PAINT.

1 TYPICAL GRATE INSET (NEW STRUCTURES)
NOT TO SCALE

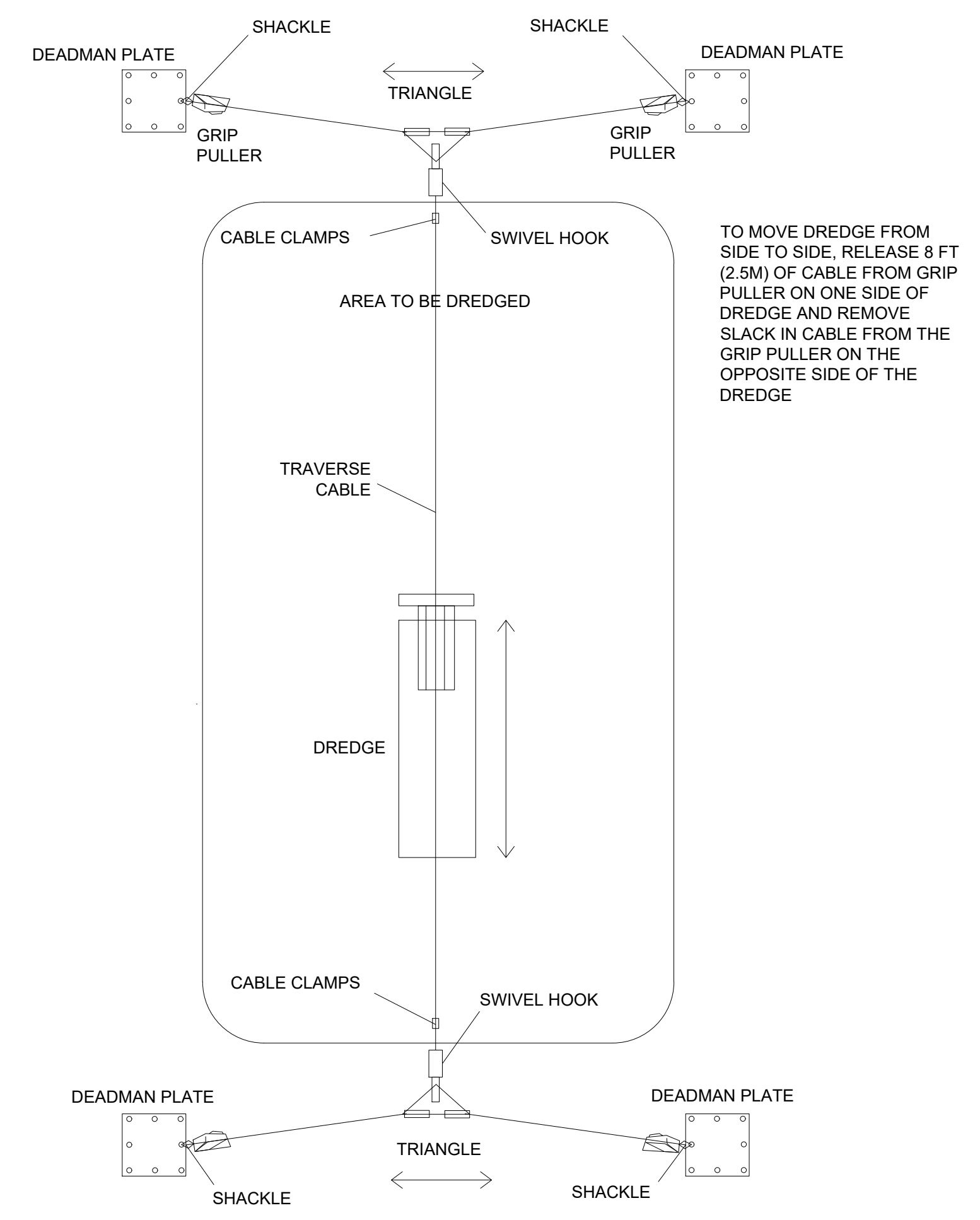


4 PIPE PENETRATION NEW WALLS OR FLOORS
NOT TO SCALE

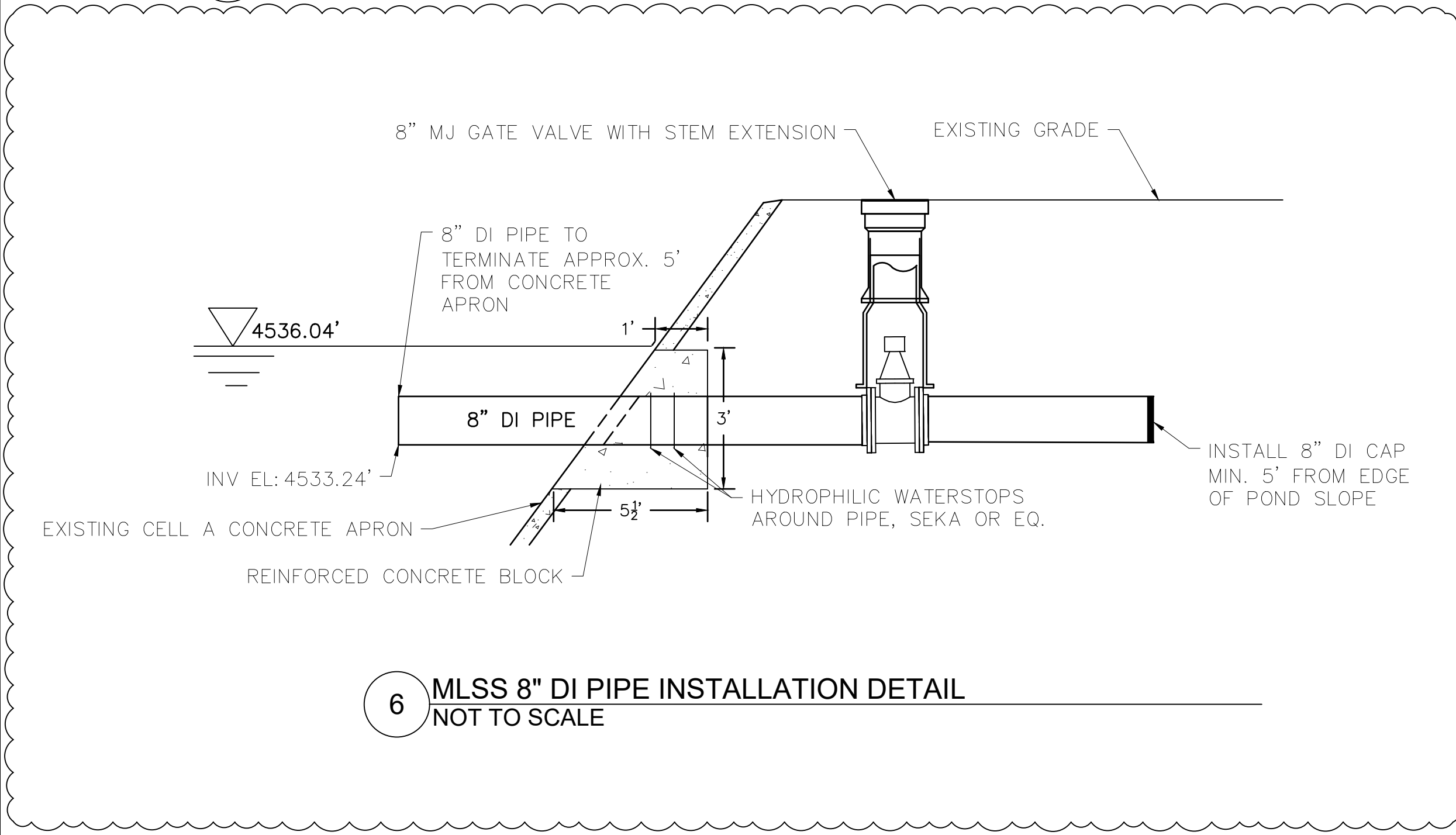


- NOTES:
1. DISCONTINUE TYPICAL REINFORCING AT OPENING.
 2. PLACE ADDITIONAL BARS IN SAME ORIENTATION AND POSITION AS BARS CUT BY OPENING. PROVIDE ONE SET OF BARS FOR EACH LAYER OF REINFORCING CUT.
 3. "A" = TOP BAR EMBEDMENT LENGTH (24" MINIMUM). PROVIDE STANDARD HOOK IF FULL EMBEDMENT LENGTH IS NOT POSSIBLE.
 4. REINFORCING STEEL IS TO BE CARRIED ACROSS ALL CONSTRUCTION JOINTS.
 5. SEE MECHANICAL, ELECTRICAL, PLUMBING AND ARCHITECTURAL DRAWINGS FOR SLAB AND WALL OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.
 6. ADDITIONAL REINFORCING MAY BE OMITTED ONLY WHERE OPENING IS FRAMED BY BEAMS OR WALLS.
 7. ADDITIONAL REINFORCING NOT REQUIRED WHEN SPECIFIED REINFORCING IS NOT CUT.

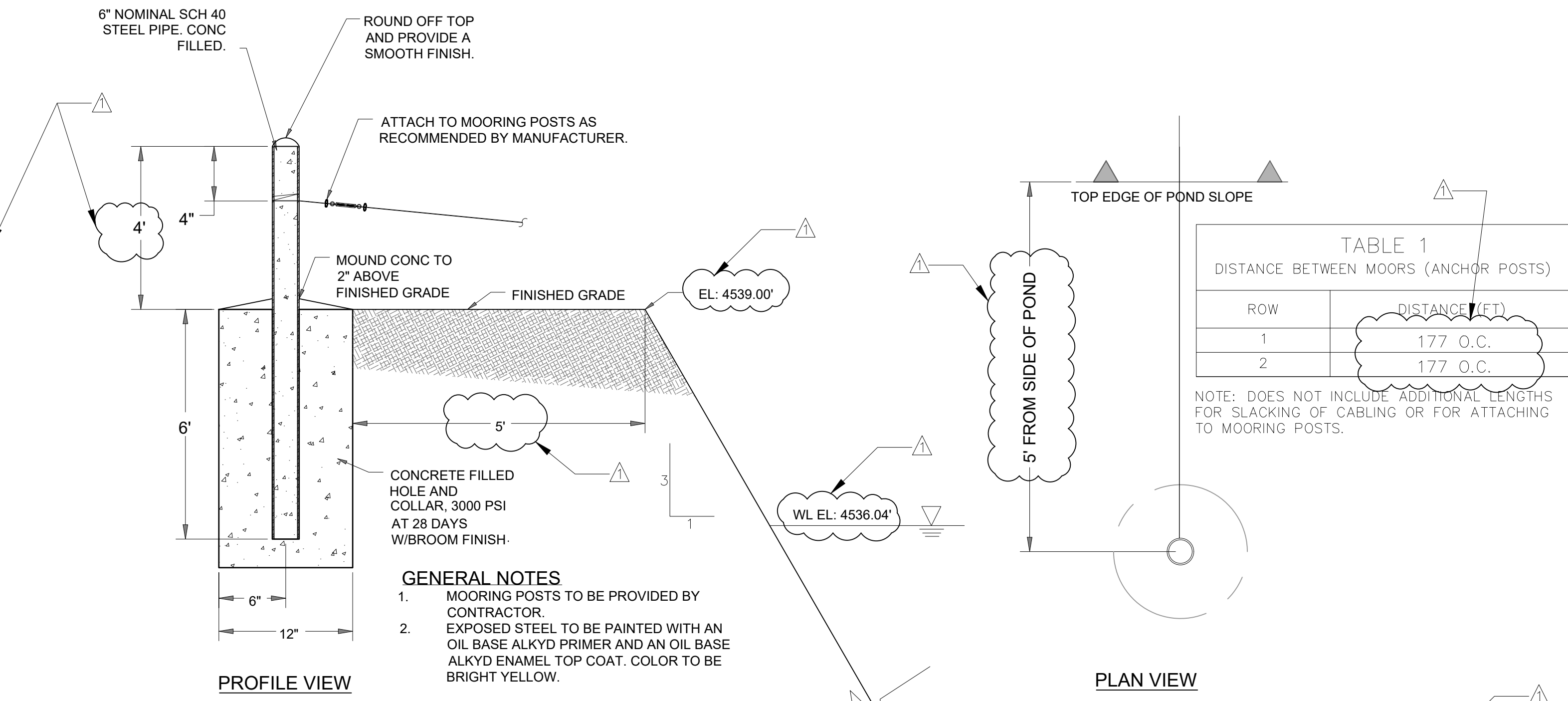
2 CONCRETE PIPE PENETRATION (OPENINGS 12" TO 48")
NOT TO SCALE



3 CABLE HARNESS DIAGRAM
NOT TO SCALE



6 MLSS 8" DI PIPE INSTALLATION DETAIL
NOT TO SCALE



5 ANCHOR POST, FOR DIFFUSERS, AERATORS, AND BAFFLES
NOT TO SCALE

TABLE 1
DISTANCE BETWEEN MOORS (ANCHOR POSTS)

ROW	DISTANCE (FT)
1	177 O.C.
2	177 O.C.

NOTE: DOES NOT INCLUDE ADDITIONAL LENGTHS FOR SLACKING OF CABLING OR FOR ATTACHING TO MOORING POSTS.

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REVISIONS

NO.	DATE	BY	APPROVED
1	2/15/2024	A. ORRANTIA	S. TANDUKAR

DESIGNED BY: WSP - BM
DRAWN BY: WSP - AO
CHECKED BY: WSP - BM
APPROVED BY: WSP - BM
DATE: 07/14/2023

SHEET TITLE:
DETAILS

SHEET NUMBER: **C-402**
REV. #
SHEET 12 OF 39 SHEETS

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Specifications			
	MD-415	MD-615	MD-815
GENERAL			
Length	33' 6" (10.21 m) O.A.		
Height (without A/C)	8' (2.44 m)		
Width	8' 6" (2.59 m) (transport)		
Weight (Approx.)	20,000 lbs (9,100 kg)		
Draft	22" (55.88 cm)		
Fuel Capacity	160 U.S. gallons (606 L)		
ENGINE			
Type	Cummins		
Model	QSB 6.7		
Power	173 BHP (129 kW) @ 2500 RPM		
PUMP			
Type	Hi-chrome cast iron, centrifugal, recessed impeller		
Impeller	18" (45.72 cm)		
Suction	4" (10.16 cm)		
Discharge	4" (10.16 cm)		
Capacity (water @ 68°F)	3.75" (95mm) Sphere - Variable to 1,000 GPM (3,785 L/min) @ 130' (39.6 m) head @ 1400 RPM		
CUTTER ASSEMBLY			
Type	Horizontal with full-width, flow-through suction (Paddle and cutting teeth available)		
Size	8' 6" (2.59 m) wide x 21" (53.34 cm) diameter		
Speed	Variable 0-80 RPM (forward and reverse)		
Torque	56,000 in-lbs. (6,328 N-m)		
Operating Depth	Variable to 15' (4.57 m) maximum (optional depths available upon request)		
PONTOONS			
Dimensions	Two - 32" (81.28 cm) x 34" (86.36 cm) x 29" 6" (8.99 m)		
Description	10 gauge steel, integral bulkheads and stiffeners, formed for rigidity, core-foam filled		
PROPULSION			
Type	Trebble sheave hydraulic winch		
Traverse Speed	Variable 0-50 ft/min (0-15.2 m/min)		
Cutting Speed	0-15 ft/min (0-4.57 m/min)		
HYDRAULIC SYSTEM			
Pumps	Variable displacement, axial piston		
Motors	Fixed displacement		
Capacity	Total, 80 GPM (302.8 L/min) @ 2200 RPM		
Reservoir	100 U.S. gallons (378.5 L)		
DRIVE			
Description	Hydraulic pump drive, direct from engine		
FILTERS			
Description	Protected hydrostatic loop, high pressure suction & return		
RELIEF SETTINGS			
Centrifugal Pump	4000 psi (276 bar)		
Cutter Head	3000 psi (207 bar)		
Accessories	3000 psi (207 bar)		
Boom	1500 psi (103 bar)		
ELECTRICAL SYSTEM			
Alternator	Output - 100 amp		
Battery	Heavy Duty - 12 volt		
PRIME FINISH			
Lower Structure	Shear Tar Epoxy Paint		
Upper Structure	Blue and White Epoxy Paint		



www.vmi-dredges.com

VMI, Inc.
1125 N. Maitlen Drive
Cushing, Oklahoma 74023

Toll Free: (800) 762-2257
Phone: (918) 225-7000
info@vmi-dredges.com



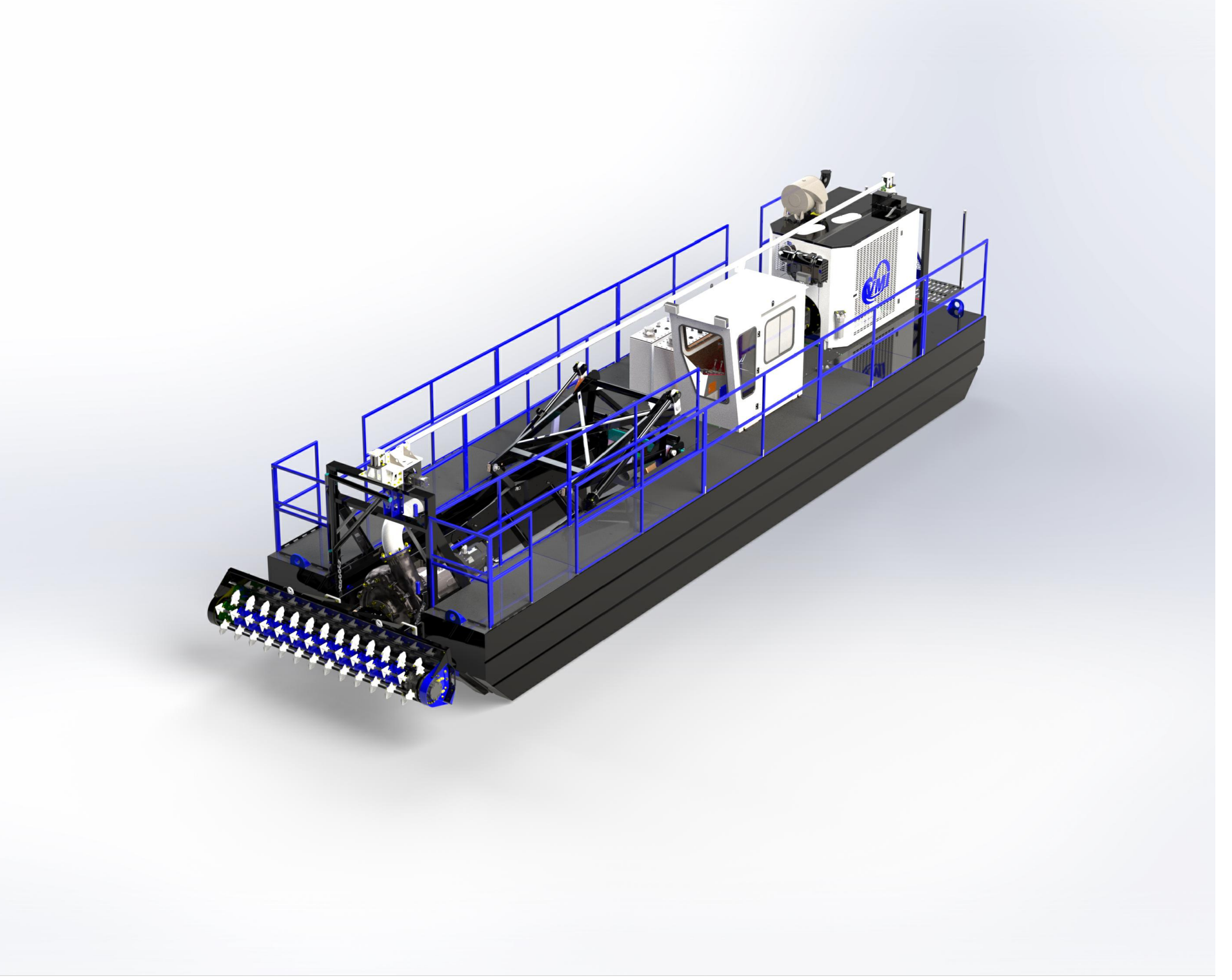
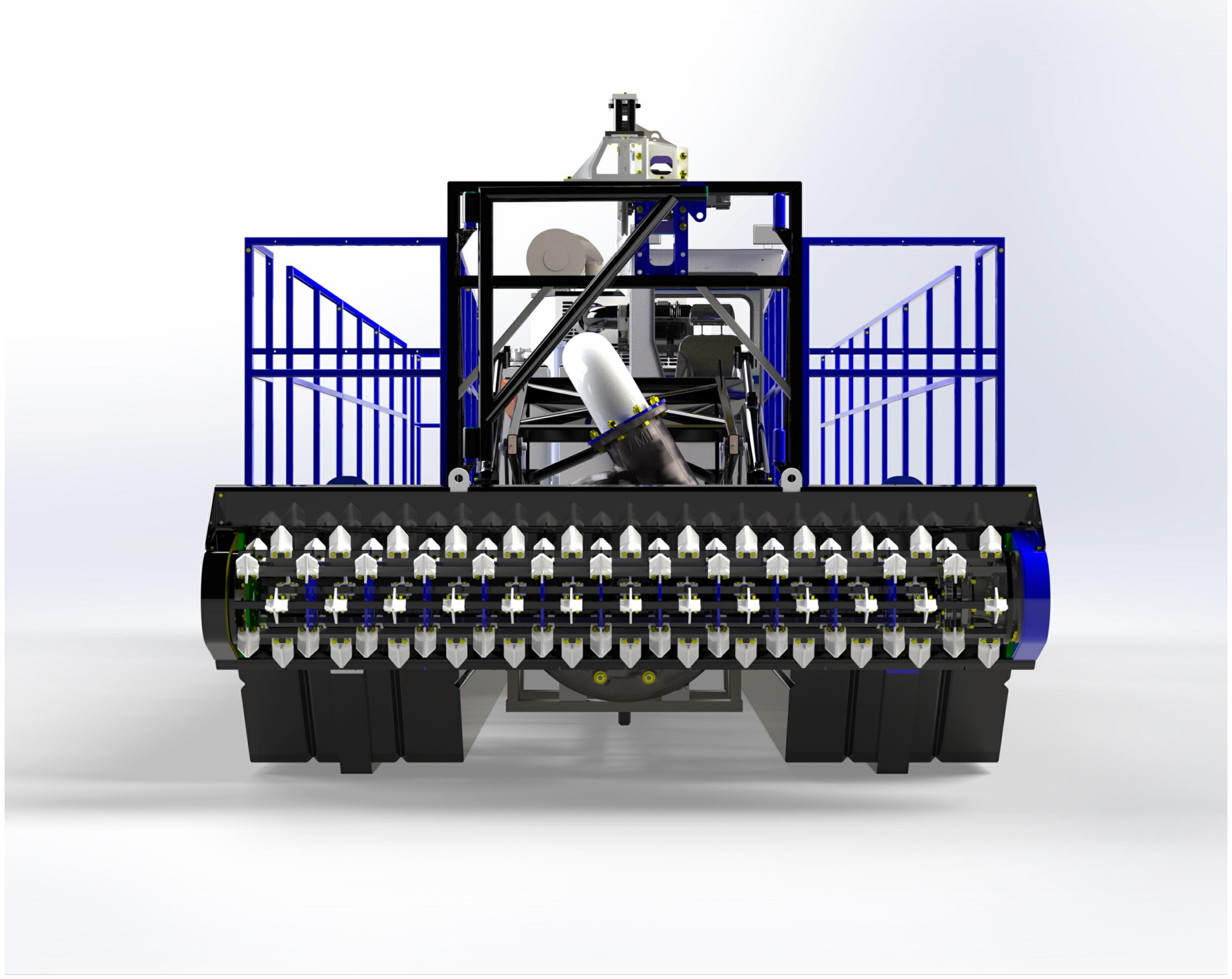
VMI, INC.

HORIZONTAL DREDGES

MD-415

MD-615

MD-815



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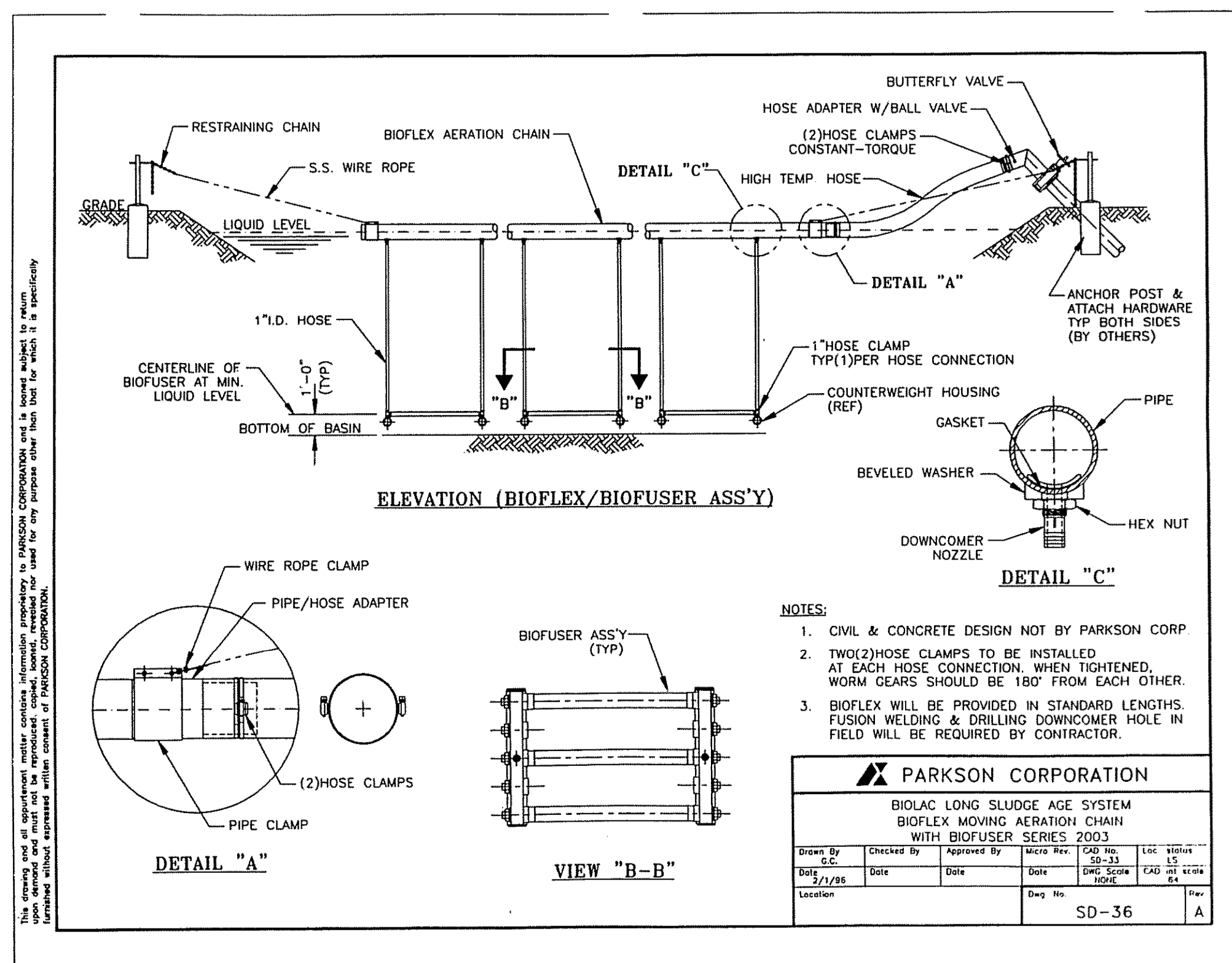
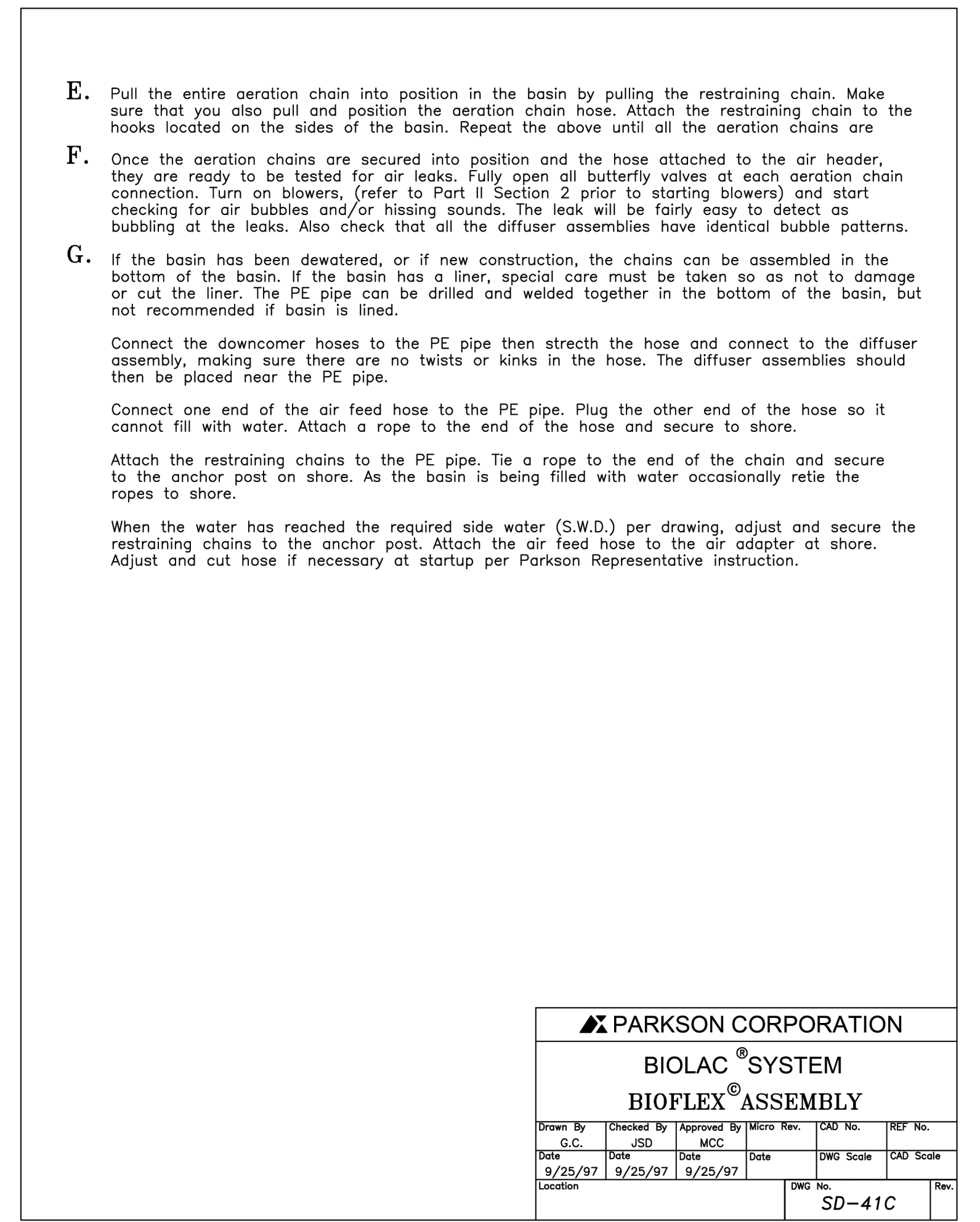
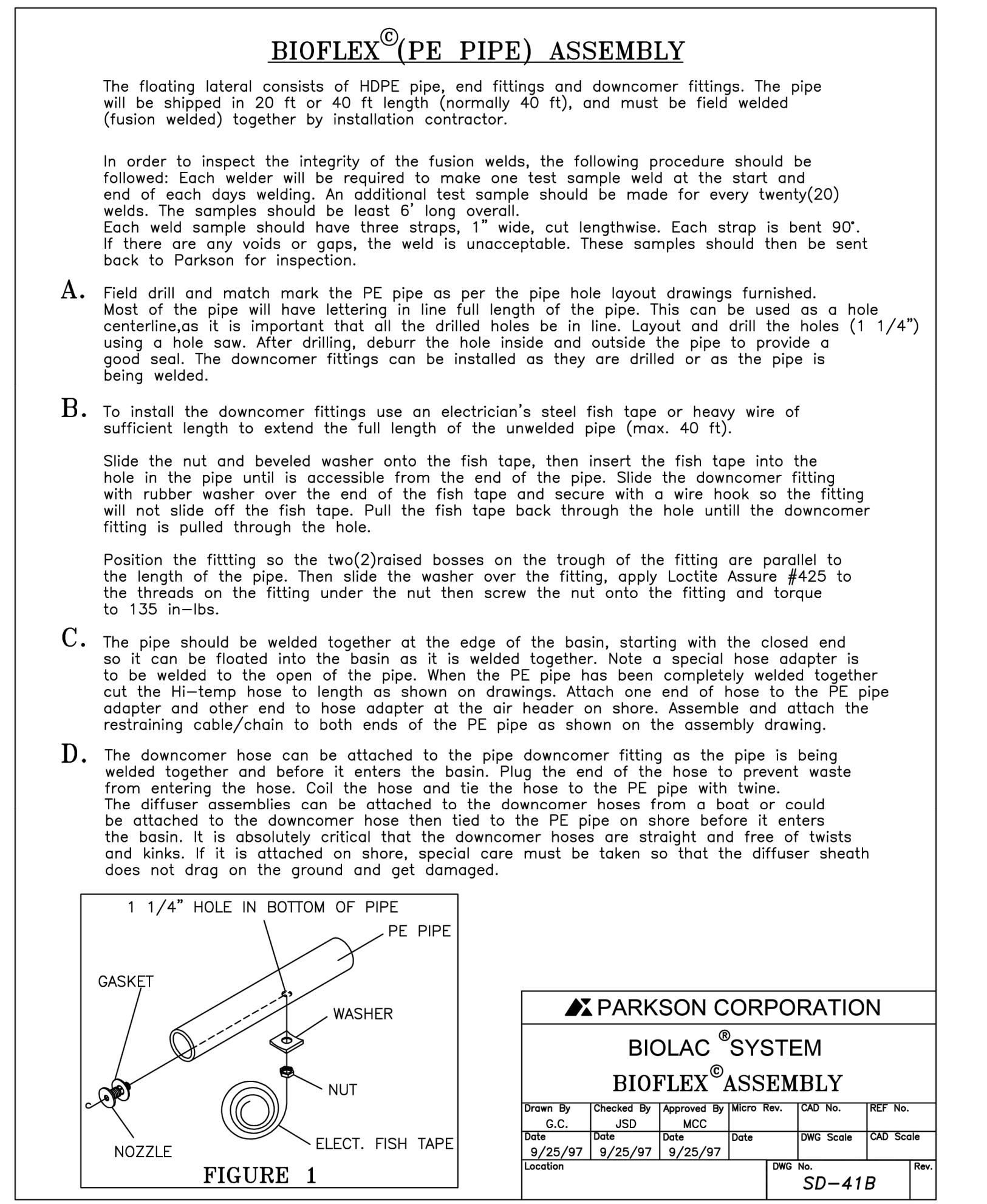
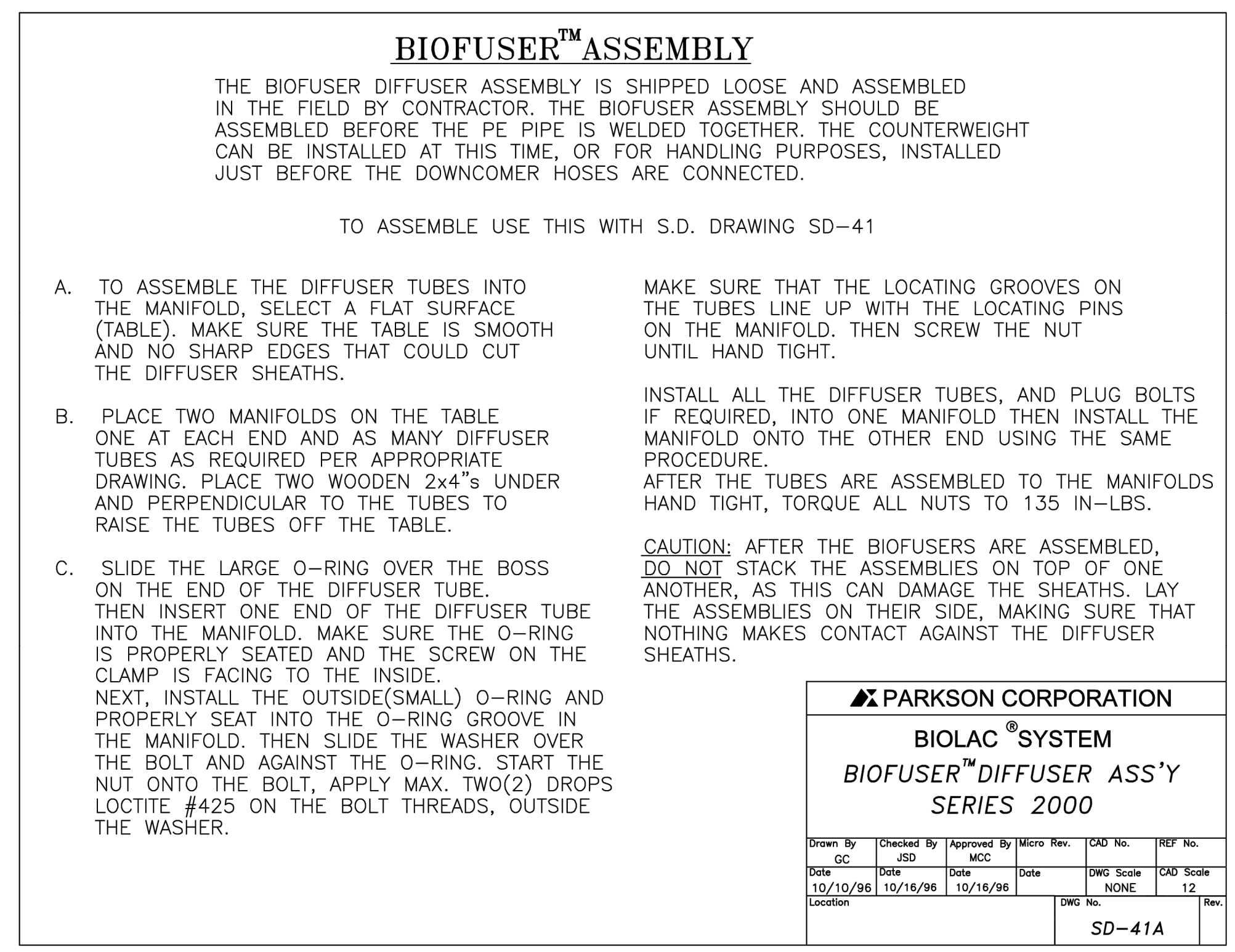
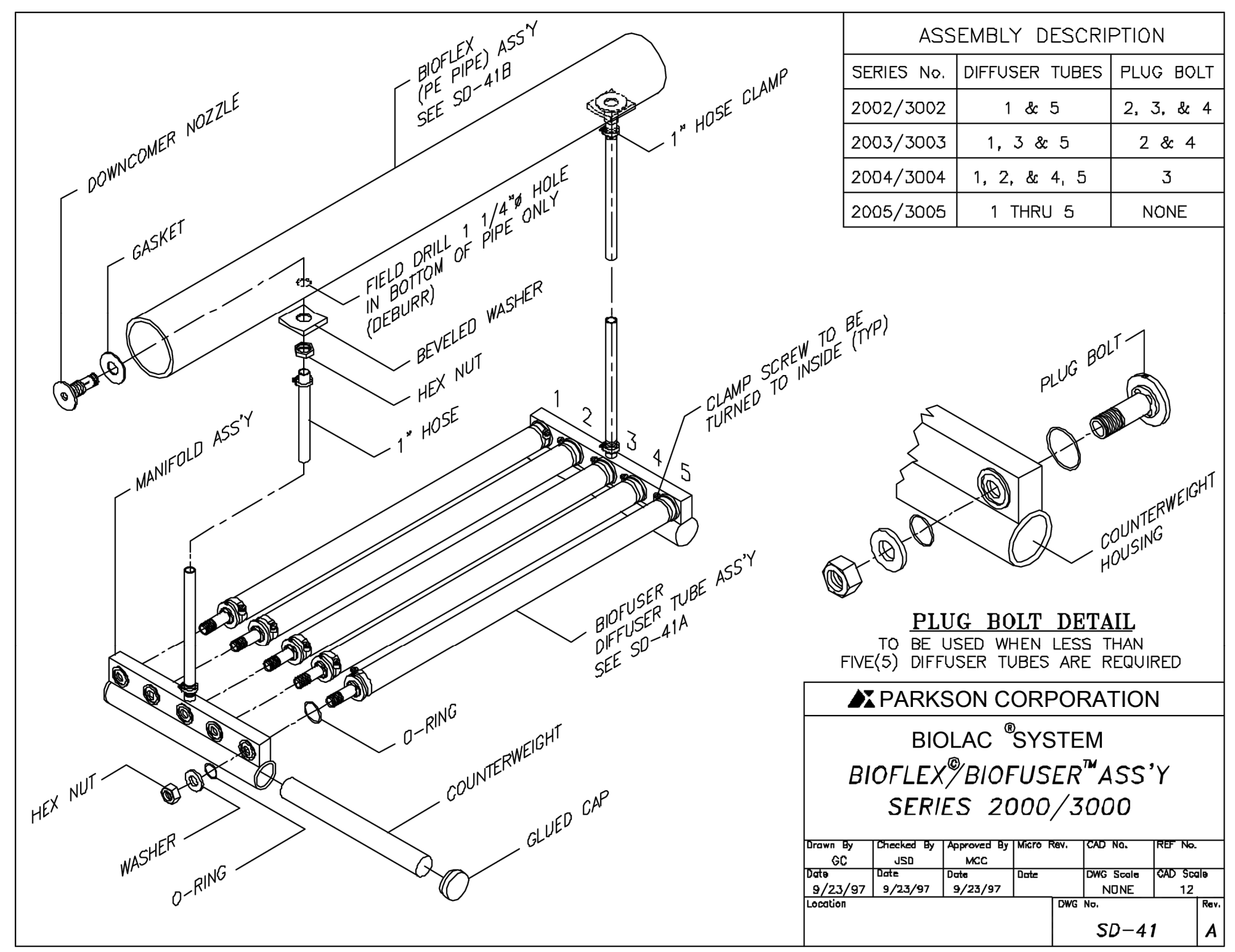
DESIGNED BY:	WSP - BM
DRAWN BY:	WSP - AO
CHECKED BY:	WSP - BM
APPROVED BY:	WSP - BM
DATE:	07/14/2023

SHEET TITLE:
**FLOATING DREDGE
COMPONENTS
LAYOUT**

SHEET NUMBER: C-403	REV. #
SHEET 13 OF 39 SHEETS	

1 2 3 4 5 6 7 8 9 10 11 12

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**4221 BALLOON PARK RD NE
ALBUQUERQUE, NM 87109
TEL: (505) 821-1801**

07/14/2023

FINAL

PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**

**NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANCIE, AZ 86504
WSP PROJECT No:
2251700010**

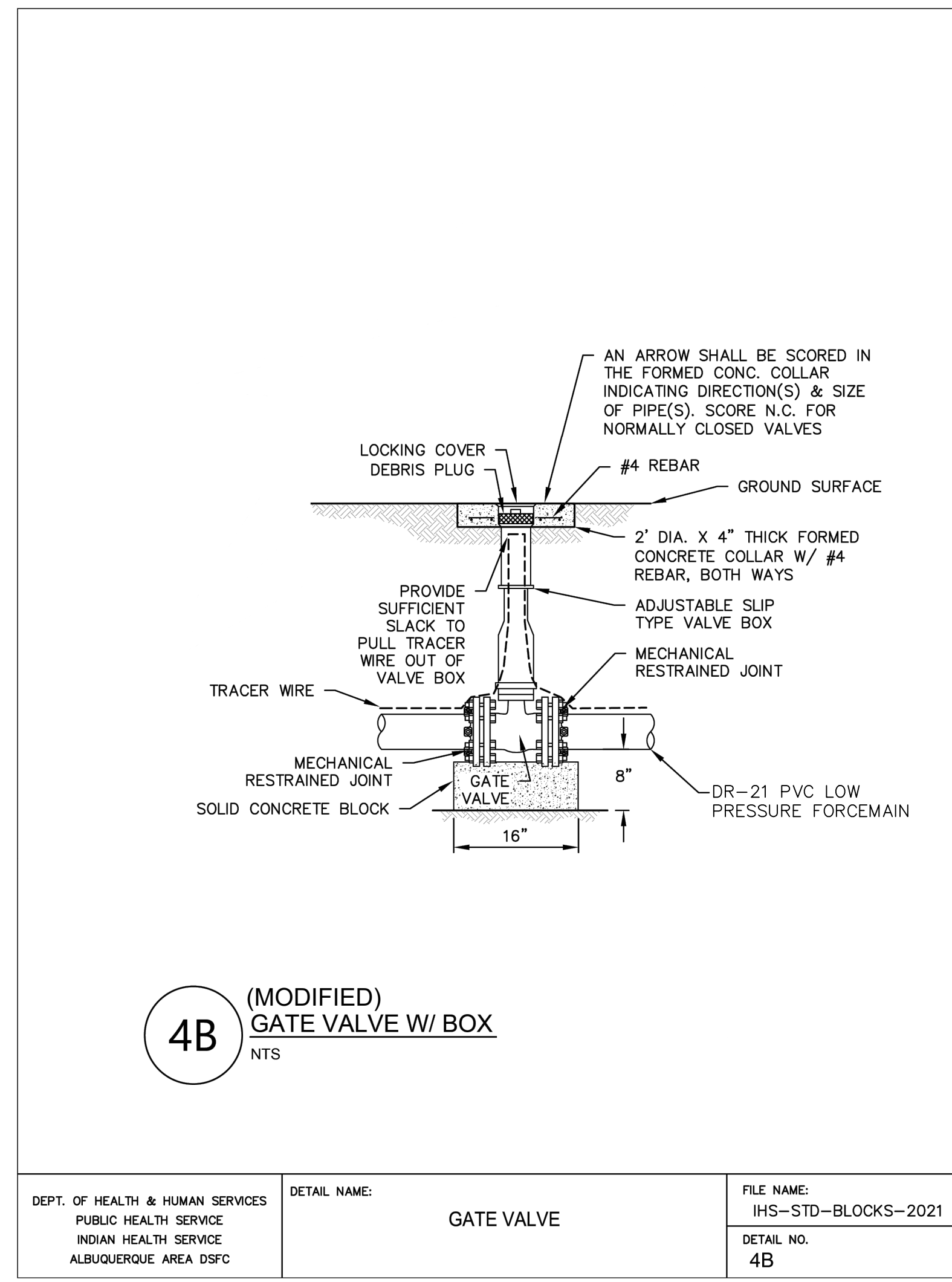
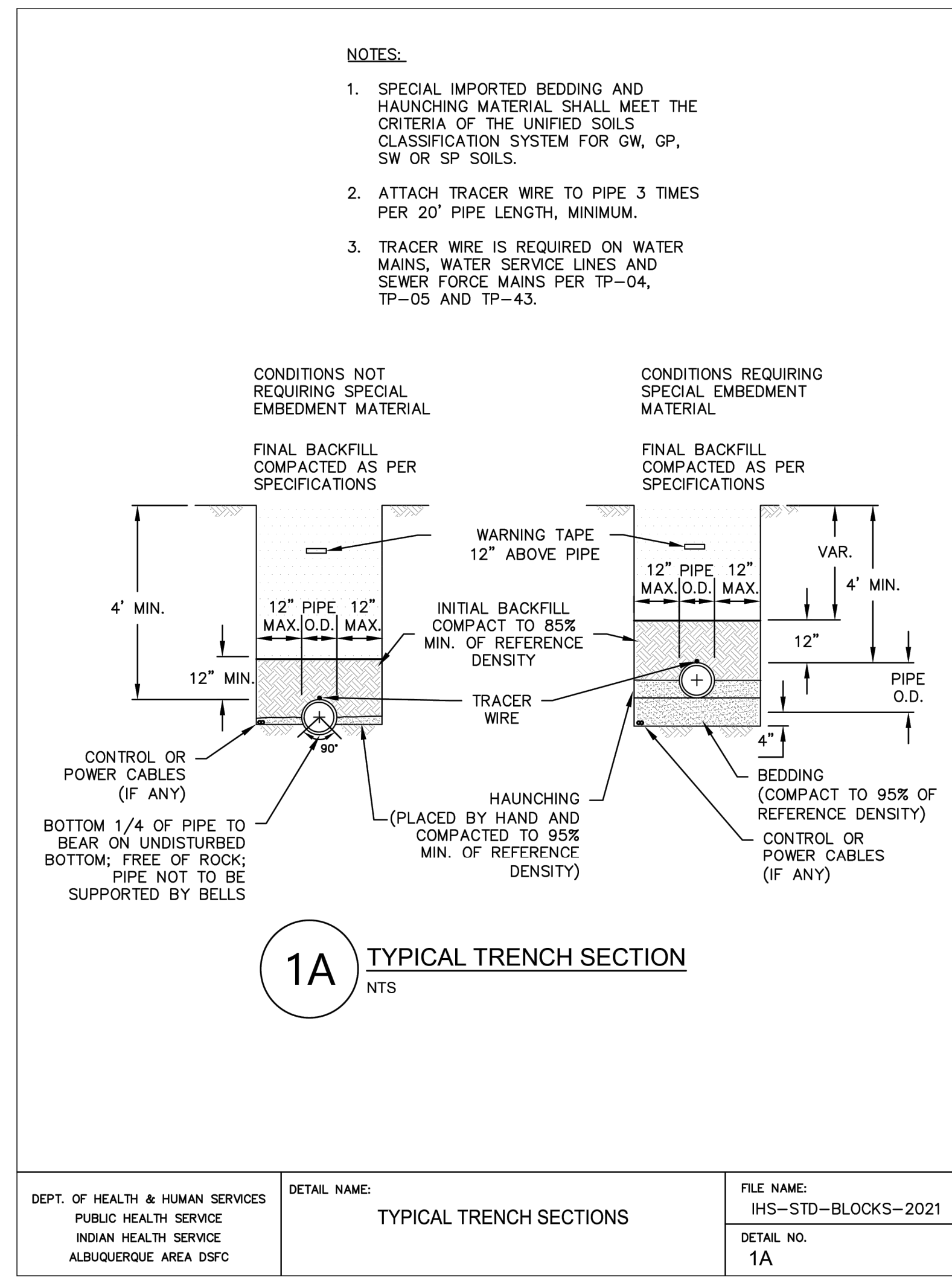
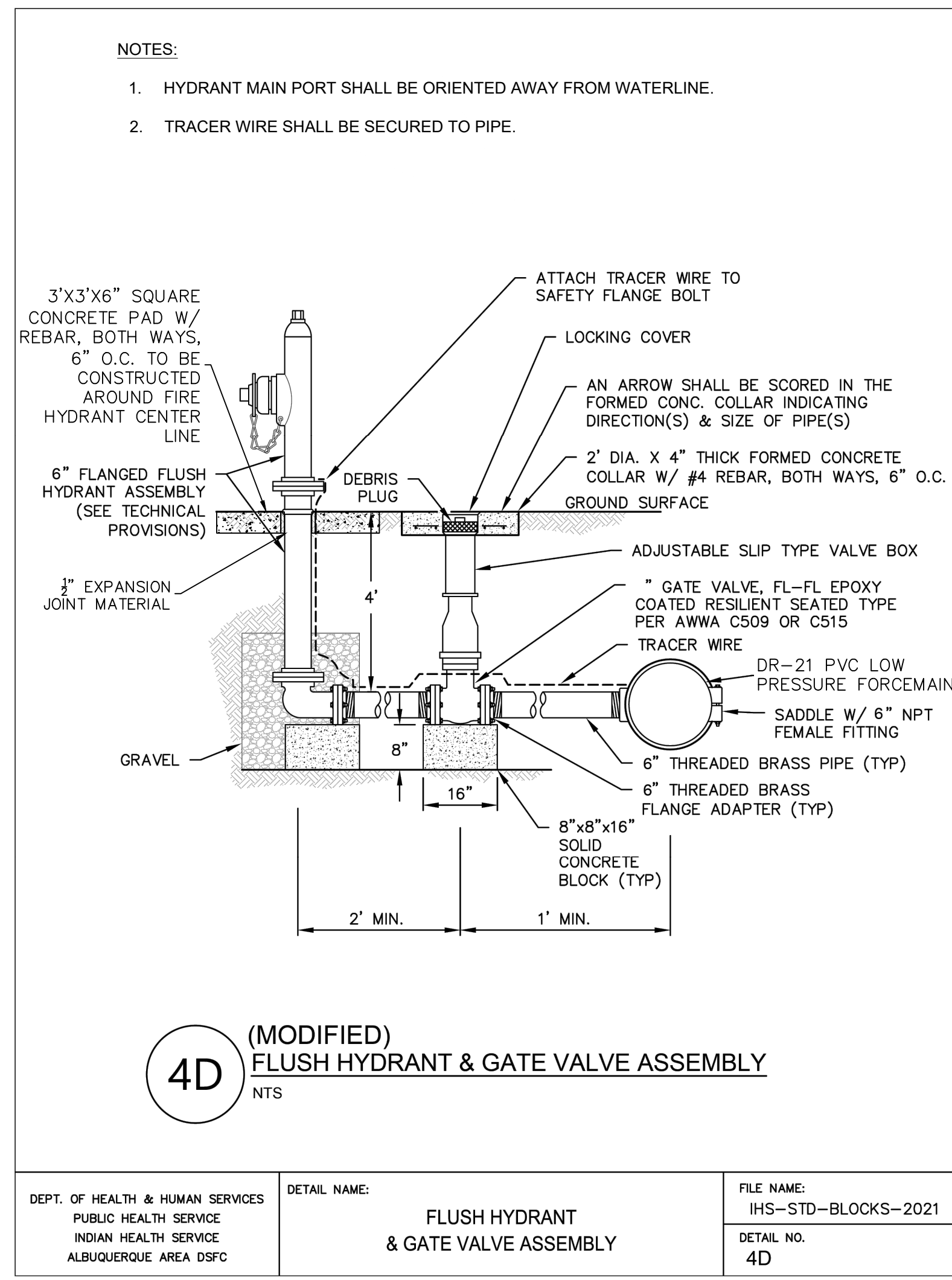
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NO.	DATE	BY	APPROVED

DESIGNED BY: WSP - BM
DRAWN BY: WSP - AO
CHECKED BY: WSP - BM
APPROVED BY: WSP - BM
DATE: 07/14/2023

SHEET TITLE:
**BIOFUSER
DETAILS**

SHEET NUMBER: C-404
REV. #
SHEET 14 OF 39 SHEETS

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PROJECT:
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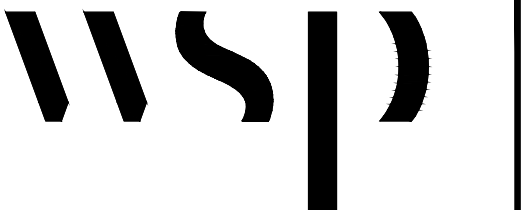
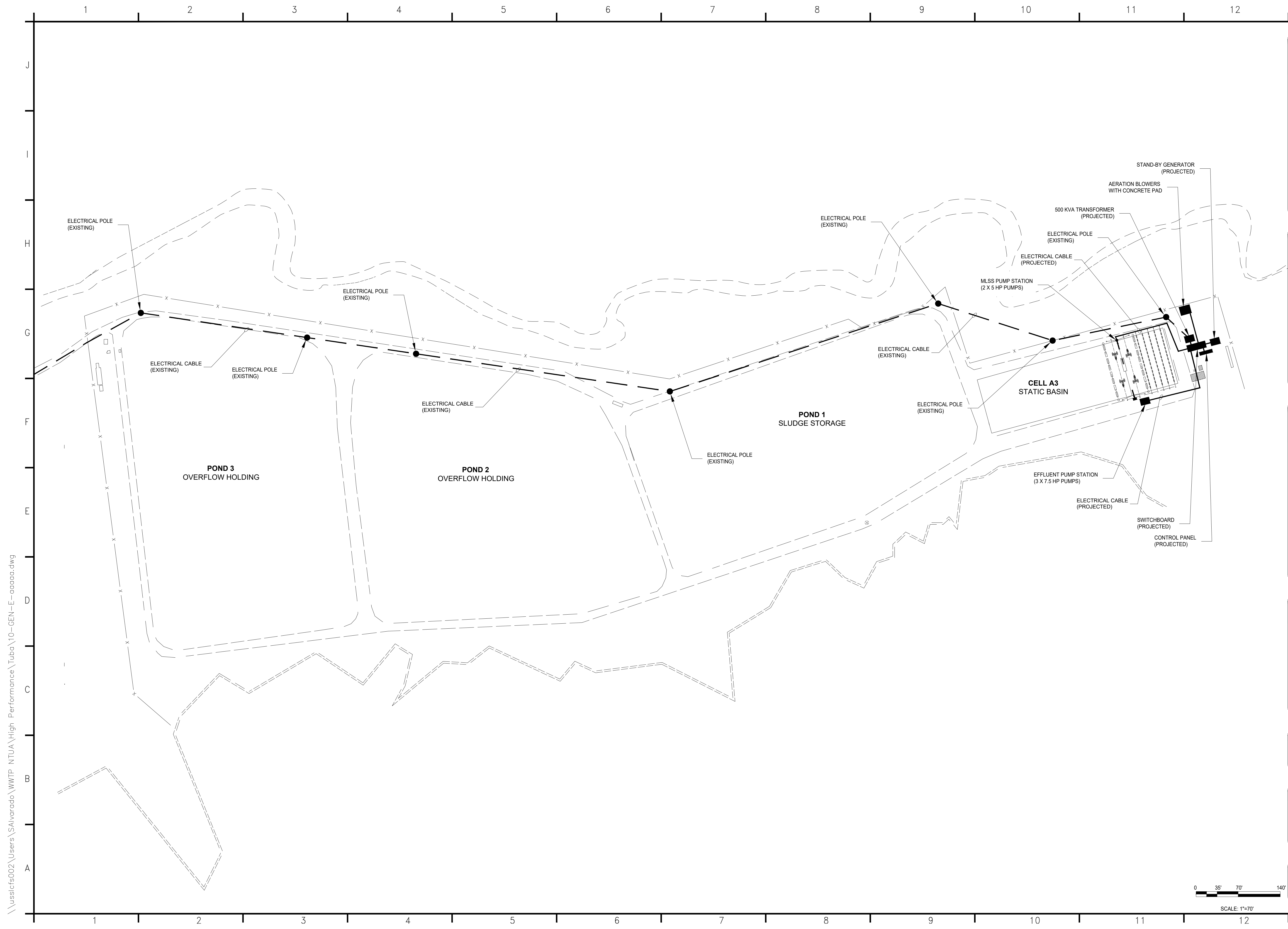
**NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANCE, AZ 86504**
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
1	2/15/2024	A.ORRANTIA	S.TANDUKAR

DESIGNED BY:	WSP - BM
DRAWN BY:	WSP - AO
CHECKED BY:	WSP - BM
APPROVED BY:	WSP - BM
DATE:	07/14/2023

SHEET TITLE:
DETAILS

SHEET NUMBER:	REV. #
C-405	
SHEET 15 OF 39 SHEETS	



4221 BALLOON PARK RD NE
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PROJECT:
**TUBA CITY WWTW
CFID
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL
UTILITY AUTHORITY**

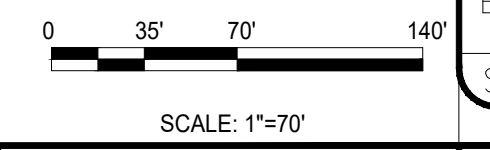
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

REVISIONS		
NO.	DATE	DESCRIPTION

DESIGNED BY:	SA
DRAWN BY:	JJ
CHECKED BY:	JJ
DATE:	16JUN2023

SHEET TITLE:
**ELECTRICAL
SITE LAYOUT
DRAWING**

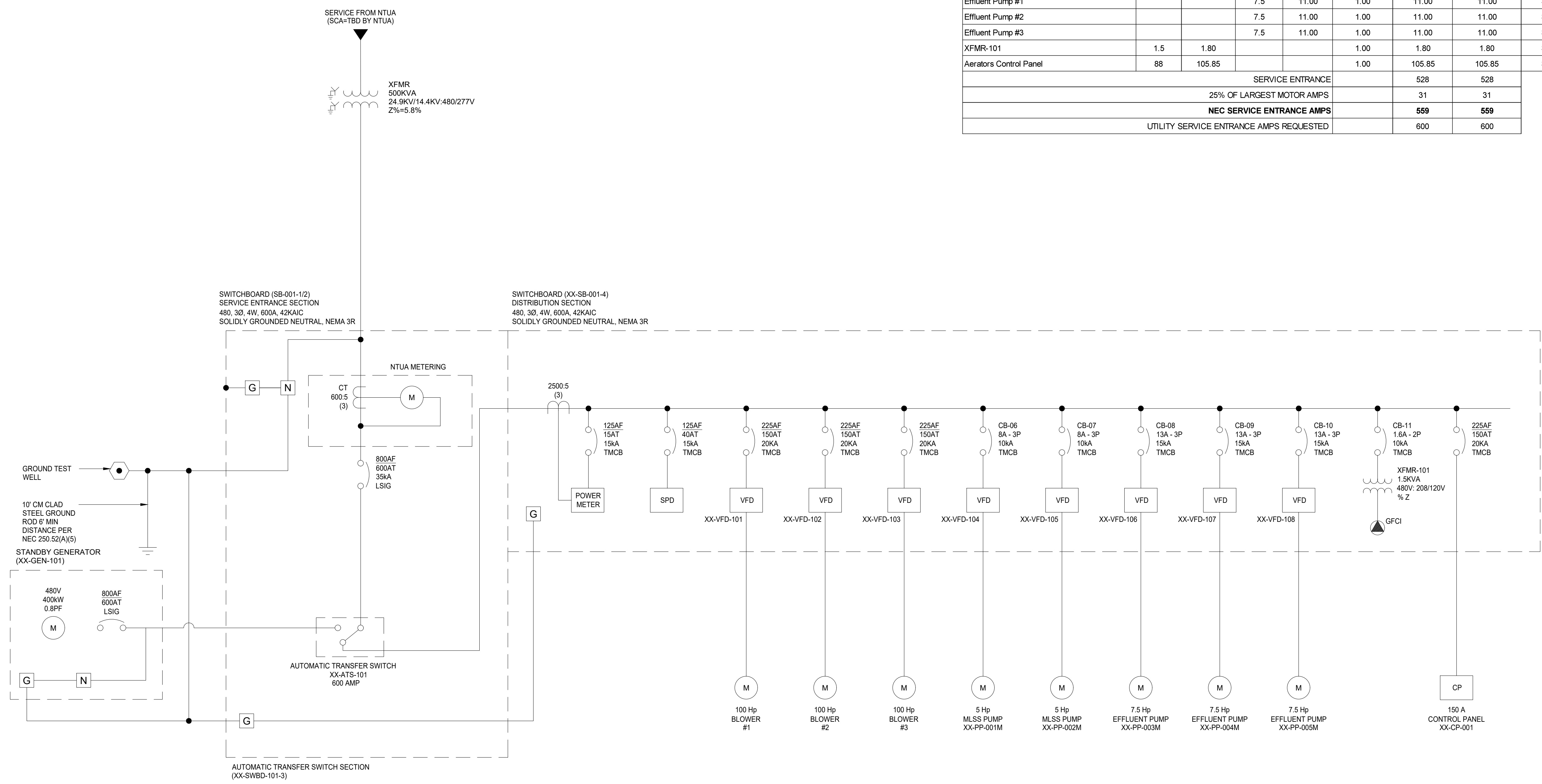
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E-100	
SHEET 16 OF 39	



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LOAD DESCRIPTION	NON MOTOR LOAD KVA	NON MOTOR LOAD AMPS	MOTOR HP	MOTOR AMPS	DEMAND FACTOR	DEMAND SERVICE ENTRANCE AMPS	CONNECTED SERVICE ENTRANCE AMPS	POWER SOURCE
Blower #1			100	124.00	1.00	124.00	124.00	SB-001
Blower #2			100	124.00	1.00	124.00	124.00	SB-001
Blower #3			100	124.00	1.00	124.00	124.00	SB-001
MLSS Pump #1			5	7.60	1.00	7.60	7.60	SB-001
MLSS Pump #2			5	7.60	1.00	7.60	7.60	SB-001
Effluent Pump #1			7.5	11.00	1.00	11.00	11.00	SB-001
Effluent Pump #2			7.5	11.00	1.00	11.00	11.00	SB-001
Effluent Pump #3			7.5	11.00	1.00	11.00	11.00	SB-001
XFMR-101	1.5	1.80			1.00	1.80	1.80	SB-001
Aerators Control Panel	88	105.85			1.00	105.85	105.85	SB-001
SERVICE ENTRANCE						528	528	
25% OF LARGEST MOTOR AMPS						31	31	
NEC SERVICE ENTRANCE AMPS						559	559	
UTILITY SERVICE ENTRANCE AMPS REQUESTED						600	600	



wsp

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PROJECT:
**TUBA CITY WWTP
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POND SYSTEM
FINAL DESIGN**

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UTILITY AUTHORITY**

PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

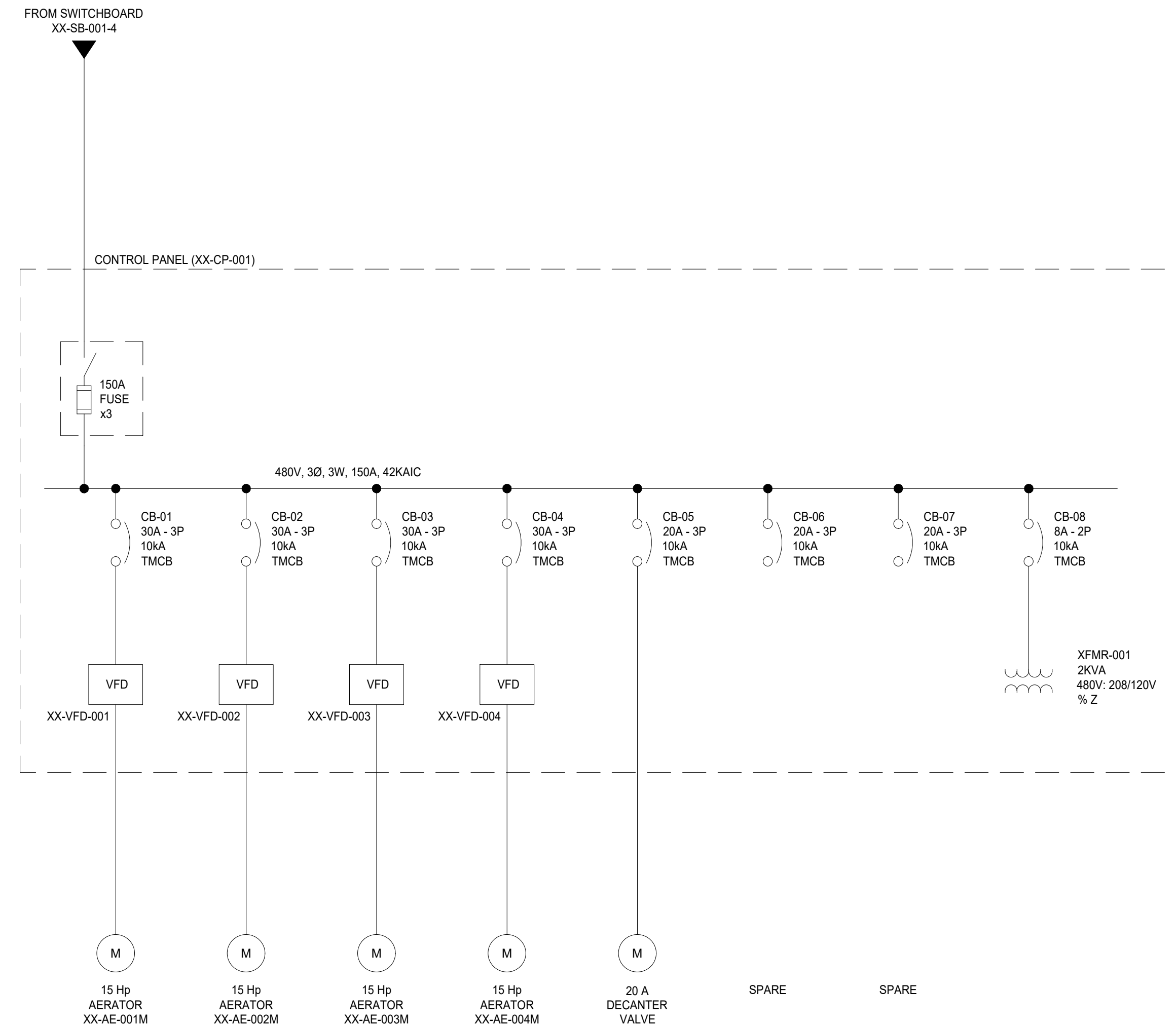
REVISIONS		
NO.	DATE	DESCRIPTION

DESIGNED BY:	SA
DRAWN BY:	JJ
CHECKED BY:	JJ
DATE:	16JUN2023

SHEET TITLE:
**SWITCHBOARD
SINGLE LINE
DIAGRAM**

SHEET NUMBER:	REV. #
E-101	
SHEET 17 OF 39	

LOAD DESCRIPTION	NON MOTOR LOAD KVA	NON MOTOR LOAD AMPS	MOTOR HP	MOTOR AMPS	DEMAND FACTOR	DEMAND SERVICE ENTRANCE AMPS	CONNECTED SERVICE ENTRANCE AMPS	POWER SOURCE
Aerator #1			15	21.00	1.00	21.00	21.00	PP-001
Aerator #2			15	21.00	1.00	21.00	21.00	PP-001
Aerator #3			15	21.00	1.00	21.00	21.00	PP-001
Aerator #4			15	21.00	1.00	21.00	21.00	PP-001
Decanter Valve	16	19.25			1.00	19.25	19.25	PP-001
Spare #1					1.00	0.00	0.00	PP-001
Spare #2					1.00	0.00	0.00	PP-001
XFMR-001	2	2.41			1.00	2.41	2.41	PP-001
SERVICE ENTRANCE						106	106	
25% OF LARGEST MOTOR AMPS						5	5	
NEC SERVICE ENTRANCE AMPS						111	111	
UTILITY SERVICE ENTRANCE AMPS REQUESTED						150	150	



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PROJECT:

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WSP PROJECT No:
2151700051

REVISIONS

NO.	DATE	DESCRIPTION

DESIGNED BY:	SA
DRAWN BY:	JJ
CHECKED BY:	JJ
DATE:	16JUN2023

SHEET TITLE:
CONTROL PANEL
SINGLE LINE
DIAGRAM

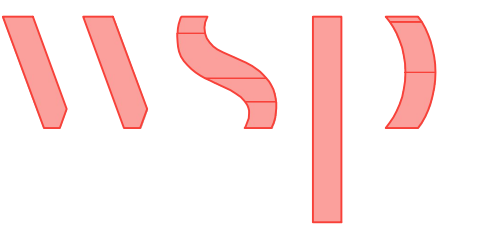
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E-102	
SHEET 18 OF 39	

NAVAJO TRIVAL UTILITY AUTHORITY HIGH-PERFORMANCE POND SYSTEM - TUBA CITY

FOR: N.T.U.A.
LOCATION: TUBA CITY, AZ
PROJECT No.: 2251700010
DRAWING PKG No.: 23-045_TBCTY

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T-M02	M	ASSEMBLY DRAWING BACKPLATE
T-M03	M	BILL OF MATERIALS



8519 JEFFERSON NE
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PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
PROCESS FLOW SYMBOLS &
NOTES PG. 2 - P & ID

T-A01

SHEET NUMBER:	REV. #
T-A01	RCA
SHEET 19 OF 39 SHEETS	

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ELECTRICAL SYMBOLS LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	EXISTING		EMERGENCY LIGHTING UNIT		MEDIUM VOLTAGE DISCONNECT SWITCH
	REMOVE		CEILING MOUNTED EXIT SIGN - ARROW AS INDICATED		MEDIUM VOLTAGE DRAWOUT CIRCUIT BREAKER
	NEW WORK		TWO FACED EXIT SIGN		TRANSFORMER (DELTA-WYE CONN.)
	HIDDEN OR BURIED		WALL MOUNTED EXIT SIGN		SHIELDED TRANSFORMER
	HOMERUN CONDUIT		SWITCHBOARD, POWER PANELBOARD		TRANSFORMER (DELTA-WYE CONN.)
	GROUND		LIGHTING PANELBOARD		SHIELDED TRANSFORMER
	PHASE		TRANSFORMER		DRAWOUT CIRCUIT BREAKER (TRIP FRAME)
	SWITCHED		NON-FUSIBLE SAFETY SWITCH (NUMBER INDICATES SWITCH SIZE)		CIRCUIT BREAKER (TRIP FRAME) WITH GROUND FAULT INTERRUPTER
	NEUTRAL		FUSED SAFETY SWITCH (NUMBERS INDICATE FUSE/SWITCH SIZES)		MOTOR CIRCUIT PROTECTOR
	ISOLATED GROUND		COMBINATION MAGNETIC STARTER AND CIRCUIT BREAKER 2 - INDICATES NEMA STARTER SIZE 20 - INDICATES CIRCUIT BREAKER TRIP		MOTOR CONTROL CENTER STARTER UNIT
	FLEXIBLE CONDUIT		ADJUSTABLE SPEED DRIVE		FUSE
	CONDUIT TURNING DOWN		MOTOR (NUMBER INDICATES HP)		GROUND
	CONDUIT TURNING UP		BELL		GENERATOR
	CONDUIT UP AND DOWN		HORN "H" OR SIREN "S"		CURRENT TRANSFORMER (NUMBERS INDICATE RATIO AND QUANTITY)
	CONDUIT SEAL		PUSHBUTTON		POTENTIAL TRANSFORMER (NUMBER INDICATES QUANTITY)
	CONDUIT CAP		MANUAL PULL STATION		AMMETER SWITCH
	BUSWAY WITH DESCRIPTION		FIRE ALARM HORN (V=VISUAL SIGNAL)		VOLTMETER SWITCH
	GROUNDING CONDUCTOR		PHOTOELECTRIC SMOKE DETECTOR		VOLTMETER
	CABLE TRAY WITH DESCRIPTION		IONIZATION SMOKE DETECTOR		AMMETER
	CEILING JUNCTION BOX		THERMAL DETECTOR		KILOWATT METER
	WALL JUNCTION BOX		DUCT SMOKE DETECTOR (PHOTOELECTRIC)		TRANSFER SWITCH
	DUPLEX RECEPTACLE OUTLET		MAGNETIC DOOR HOLDER		BATTERY
	SINGLE RECEPTACLE OUTLET		PRESSURE SWITCH		NORMALLY CLOSED CONTACT
	DOUBLE DUPLEX RECEPTACLE OUTLET		FLOW SWITCH		NORMALLY OPEN CONTACT
	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX OUTLET WITH WEATHERPROOF COVER		VALVE SUPERVISORY SWITCH		PROTECTIVE RELAY, SOLENOID COIL
	SPLIT WIRED DUPLEX RECEPTACLE		FIRE ALARM CONTROL PANEL		THERMAL OVERLOAD
	DUPLEX ISOLATED GROUND		FIRE ALARM RACEWAY		CONNECTION
	SPECIAL PURPOSE OUTLET - USE SUBSCRIPT TO IDENTIFY TYPE IN SPECS		CEILING SPEAKER		CROSS, NO CONNECTION
	FLOOR RECEPTACLE OUTLET USE SUBSCRIPT TO IDENTIFY TYPE IN SPECS		WALL SPEAKER		SURGE ARRESTOR
	RECEPTACLE RACEWAY		TELECOMMUNICATIONS OUTLET		TRANSIENT VOLTAGE SURGE SUPPRESSOR
	SINGLE POLE SWITCH - USE SUBSCRIPT TO DESIGNATE CONTROL OF PARTICULAR OUTLETS		FLOOR MOUNTED TELECOMMUNICATIONS OUTLET		CAPACITOR
	DOUBLE POLE SWITCH		INTERCOM OUTLET		CONTROL RELAY #1
	THREE-WAY SWITCH		TELECOMMUNICATIONS RACEWAY		BUS PLUG CIRCUIT BREAKER
	FOUR-WAY SWITCH		PROTECTED TRANSMISSION SYSTEM (PTS) DATA TERMINAL CONNECTION		THERMOSTAT
	WEATHERPROOF SWITCH		TELEVISION OUTLET		KEYED NOTE DESIGNATION
	KEY OPERATED SWITCH		CARD READER		ELECTRICAL EQUIPMENT DESIGNATION (SEE SCHEDULE)
	DIMMER SWITCH - NUMBER INDICATES WATTAGE		ELECTRIC DOOR STRIKE		MECHANICAL EQUIPMENT DESIGNATION (SEE SCHEDULE)
	OCCUPANCY SENSING SWITCH		REMOTE ACCESS PANEL		NAMEPLATE DESIGNATION (SEE SCHEDULE)
	PHOTOCELL		HAND GEOMETRY UNIT		WEATHERPROOF
	REMOTE CONTROL SWITCH 6 POLE, 30 AMPS		MOTION DETECTOR		ABOVE FINISH FLOOR
	FLUORESCENT LUMINAIRE A=FIXTURE TYPE 1=CIRCUIT NUMBER b=SWITCH CONTROLLING FIXTURE		CLOSED CIRCUIT TV CAMERA		
	FLUORESCENT STRIP LUMINAIRE				
	WALL MOUNTED FLUORESCENT LUMINAIRE				
	CEILING MOUNTED LUMINAIRE				
	WALL MOUNTED LUMINAIRE				
	EMERGENCY LUMINAIRE				
	LIGHT POLE WITH LUMINAIRE				

GENERAL ELECTRICAL NOTES

(NOT ALL SYMBOLS & NOTES WILL APPLY TO THIS PROJECT)

- PERFORM INSTALLATION IN ACCORDANCE WITH THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA), AND APPLICABLE DOE ORDERS. EQUIPMENT SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL).
- PROVIDE AND MAINTAIN A CLEAR WORKING SPACE ABOUT ELECTRIC EQUIPMENT (SWITCHBOARDS, PANELBOARDS, ETC.) IN ACCORDANCE WITH NEC ARTICLES 110.26 AND 110.34.
- USE 600 VAC CIRCUIT BREAKERS IN 480V AND 480Y/277V SWITCHBOARDS, PANELBOARDS AND MOTOR CONTROL CENTERS.
- PROVIDE CIRCUIT BREAKERS WITH UL LISTED INTERRUPTING RATING (RMS SYMMETRICAL AMPERES) GREATER THAN THE AVAILABLE FAULT CURRENT SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM.
- PROVIDE PADLOCKING PROVISIONS FOR EACH TWO- AND THREE-POLE CIRCUIT BREAKER.
- BOND RACEWAYS AND THE FRAMES AND ENCLOSURES OF MOTORS, BREAKERS, SWITCHES, AND OTHER ELECTRICAL EQUIPMENT TO THE BUILDING GROUNDING SYSTEM. INSTALL AN INSULATED EQUIPMENT GROUND CONDUCTOR IN EACH RACEWAY OR CONDUIT. SIZE EQUIPMENT GROUND CONDUCTOR IN ACCORDANCE WITH NEC TABLE 250.122.
- IDENTIFY NEW BRANCH CIRCUITS AT THE PANEL AND AT THE LOAD OUTLET, RECEPTACLE AND SWITCH. IDENTIFY THE PURPOSE OF INDIVIDUAL CIRCUIT BREAKERS, SAFETY SWITCHES AND MOTOR STARTERS BY MEANS OF NAMEPLATES AS INDICATED.
- ROUTE CONDUITS TO SUIT EQUIPMENT AND BUILDING STRUCTURE. LIMIT THE USE OF ELECTRICAL METALLIC TUBING (EMT) TO AREAS WHERE IT WILL NOT BE SUBJECT TO PHYSICAL DAMAGE OR CORROSION. USE INTERMEDIATE METAL CONDUIT (IMC) OR RIGID GALVANIZED STEEL CONDUIT (RGS) FOR WORK EMBEDDED IN CONCRETE OR EXPOSED TO PHYSICAL DAMAGE. USE MINIMUM 3/4 INCH CONDUIT EXCEPT AS FOLLOWS: 1/2" CONDUIT MAY BE USED FOR 20 AMP GENERAL LIGHT AND POWER CIRCUITS AND FOR CONTROL CIRCUITS; 3/8" FLEXIBLE METAL CONDUIT MAY BE USED TO CONNECT LIGHT FIXTURES IN SUSPENDED CEILINGS. USE LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR FLEXIBLE CONNECTIONS TO EQUIPMENT IN MECHANICAL ROOMS OR OUTDOORS.
- SEAL AROUND CONDUIT PENETRATIONS THROUGH INTERIOR WALLS AND FLOORS SEPARATING AREAS TO RESTORE ORIGINAL FIRE RATING; USE A UL CLASSIFIED FIRE SEALANT. SEAL PENETRATIONS THROUGH ROOF AND EXTERIOR WALLS TO MAKE WATERPROOF. REQUEST INSPECTION OF FIRE SEALS BY ELECTRICAL INSPECTOR FROM AUTHORITY HAVING JURISDICTION BEFORE AND AFTER PLACEMENT OF FIRE SEAL MATERIALS.
- USE 12 AWG OR LARGER CONDUCTORS FOR POWER WIRING. USE 14 AWG STRANDED CONDUCTORS FOR CONTROL WIRING UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE DRAWINGS.
- USE ONLY COPPER CONDUCTORS ON CIRCUITS 600V AND LESS. CONDUCTORS 10 AWG AND SMALLER SHALL BE SOLID AND 8 AWG AND LARGER AWG SHALL BE STRANDED. PROVIDE TYPE THHN/THWN WIRE INSULATION; XHHW INSULATION MAY BE USED FOR 1 AWG AND LARGER.
- USE THE FOLLOWING CONDUCTOR COLOR CODES:

	208Y/120 VOLT	480Y/277 VOLT
PHASE A	BLACK	BROWN
PHASE B	RED	ORANGE
PHASE C	BLUE	YELLOW
NEUTRAL	WHITE	GRAY
EQUIP. GROUND	GREEN	GREEN

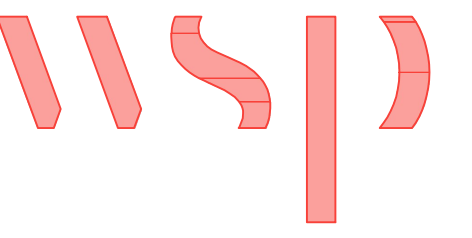
ISOLATED GROUND SHALL BE GREEN WITH YELLOW TRACER.
- ARRANGE CONNECTIONS FOR SINGLE PHASE CIRCUITS TO ACHIEVE THREE PHASE LOAD BALANCE WITHIN 20% OF THE AVERAGE PHASE LOAD CURRENT. UNGROUNDED CONDUCTORS USING A COMMON NEUTRAL MUST ORIGINATE FROM DIFFERENT PHASES.
- INSTALL OUTDOOR EQUIPMENT TO BE WEATHERPROOF AND TO EXCLUDE BIRDS AND RODENTS WITH MAXIMUM 1/2" DIAMETER UNPROTECTED OPENINGS IN ENCLOSURES.
- PROVIDE LIGHTNING PROTECTION IN ACCORDANCE WITH NFPA 780. PROVIDE MATERIAL THAT IS UL LABELED FOR LIGHTNING PROTECTION SERVICE. THE LIGHTNING PROTECTION SYSTEM DESIGN AND INSTALLATION SHALL FOLLOW THAT SHOWN ON THE DRAWINGS.
- TEST CONDUCTORS FOR CONTINUITY AND FREEDOM FROM SHORTS AND UNINTENTIONAL GROUNDS.
- ELECTRICAL EQUIPMENT SPECIFIED IN THIS DOCUMENT SHALL BE ACCEPTANCE TESTED AND INSPECTED IN ACCORDANCE WITH UL.
- ELECTRICAL MATERIALS AND CONSTRUCTION SHALL CONFORM TO OWNERS/PROJECT MANAGERS STANDARD CONSTRUCTION SPECIFICATIONS WHERE APPLICABLE.
- DISPOSE OF ITEMS REMOVED AS DIRECTED BY THE OWNER/PROJECT CONSTRUCTION INSPECTOR.
- REPAIR AREAS DAMAGED DURING CONSTRUCTION TO MATCH ADJACENT AREAS WITH RESPECT TO BOTH COLOR AND FINISH.
- KEEP JOB SITE IN AN ORDERLY CONDITION AND AT PROJECT COMPLETION, REMOVE ALL WASTE. LEAVE THE JOB SITE IN A CONDITION ACCEPTABLE TO THE OWNER/PROJECT CONSTRUCTION INSPECTOR.
- IF A CONFLICT ARISES BETWEEN THE FIELD CONDITIONS AND THESE GENERAL ELECTRICAL REQUIREMENTS, CONTACT THE OWNER/PROJECT LEADER FOR DIRECTIONS.
- TIE-INS TO EXISTING POWER SYSTEMS WILL BE PERFORMED BY THE PROJECT SUPPORT SERVICES SUB-CONTRACTOR.

DRAWING NOTES

- DRAWINGS ARE MEANT TO BE A REPRESENTATION ONLY, DEVICES MAY LOOK DIFFERENT THAN WHAT WE HAVE SHOWN.
- REFER TO PRODUCT SPECIFICATIONS FOR EXACT DIMENSIONS OF ENCLOSURE, BACK PANEL & ALL DEVICES DRAWN IN THESE DRAWINGS.

NOTING SYMBOLS & DESIGNATIONS

- # CORRESPONDS TO A BILL OF MATERIALS #
- 55 CORRESPONDS TO A KEYED NOTE #
- (INDICATES DETAIL DESIGNATION)
- TITLE NOTATION & SEE DETAIL SYMBOL
- (INDICATES SHEET NUMBER)



8519 JEFFERSON NE
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PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

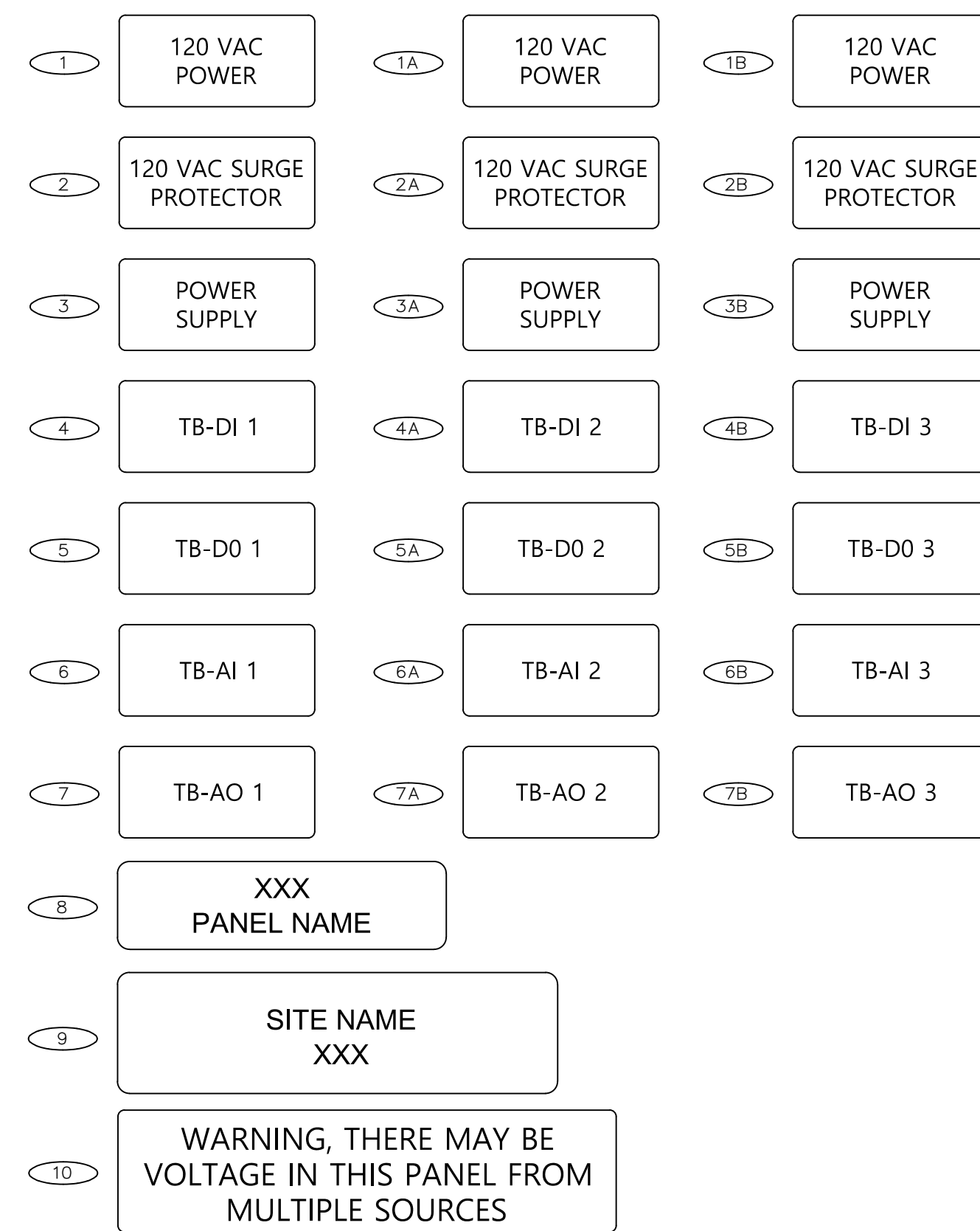
SHEET TITLE:
**PROCESS FLOW SYMBOLS &
NOTES PG. 1 - P & ID**

T-A02

SHEET NUMBER:	REV. #
T-A02	RCA
SHEET 20 OF 39 SHEETS	

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SIGNAGE & LABELS KEY



LINE TYPES

SYMBOL	LINE TYPE	DESCRIPTION
—	CONTINUOUS	PRIMARY PROCESS FLOW LINE
- - -	CONTINUOUS	SECONDARY PROCESS FLOW LINE
- - -	CONTINUOUS	INSTRUMENT SUPPLY OR CONNECTION TO PROCESS
— / — / — /	CONTINUOUS	UNDEFINED SIGNAL
— // — // — //	CONTINUOUS	PNEUMATIC SIGNAL *
- - - - -	HIDDEN2	ELECTRIC SIGNAL
- - - - -	CONTINUOUS	HYDRAULIC SIGNAL
- x - x -	CONTINUOUS	CAPILLARY TUBE
- ~ - ~ -	CONTINUOUS	ELECTROMAGNETIC OR SONIC SIGNAL** (GUIDED)
- ~ - ~ -	CONTINUOUS	ELECTROMAGNETIC OR SONIC SIGNAL** (NOT GUIDED)
- o - o -	CONTINUOUS	INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
- • - • -	CONTINUOUS	MECHANICAL LINK
- x - x -	CONTINUOUS	PNEUMATIC BINARY SIGNAL
- - - - -	DASHED2	ELECTRIC BINARY SIGNAL
- E - E -	CONTINUOUS	ELECTRICAL HEAT TRACING
- S - S -	CONTINUOUS/DASHED2	STEAM HEAT TRACING
- - - - -	DASHED2	BURIED LINES
- - - - -	PHANTOM	EXISTING
- - - - -	CENTER	FP - FLOOR PENETRATION RP - ROOF PENETRATION WP - WALL PENETRATION SB - SYSTEM BREAK

NOTES:
"OR" MEANS USER CHOICE. CONSISTENCY IS RECOMMENDED.

* THE PNEUMATIC SIGNAL SYMBOL APPLIES TO A SIGNAL USING ANY GAS AS THE * SIGNAL MEDIUM. IF GAS OTHER THAN AIR IS USED, THE GAS MAY BE IDENTIFIED BY A NOTE ON THE SIGNAL SYMBOL OR OTHERWISE.

* ELECTROMECHANIC PHENOMENA INCLUDE HEAT, RADIO WAVES, NUCLEAR RADIATION, ** AND LIGHT.

PROCESS FLOW DIAGRAMS AND P&ID SYMBOLS

(GENERAL INSTRUMENT OR FUNCTION SYMBOLS) (NOT ALL SYMBOLS & NOTES WILL APPLY TO THIS PROJECT)

ACRONYMS

EQUIPMENT

AHU - AIR HANDLING UNIT
ASV - AIR SWITCH VALVE
CA - AIR COMPRESSOR
CAE - COOLER, AIR EVAPORATIVE
D - DAMPER
DAD - DESICCANT AIR DRYER
DAMD - DUCT AIR MONITOR DEVICE
ES - EXHAUST STACK
FAB - FILTER AIR BOX
FANE - FAN EVALUATOR
FAR - FILTER AIR REPLACEABLE
FC - FAN CIRCULATING
FD - FIRE DAMPER
FE - FAN EXHAUST
FRA - FAN, RETURN AIR
FRL - FILTER AIR ROLL
FS - FAN SUPPLY
HEPA - HIGH EFFICIENCY PARTICULATE AIR FILTER
HX - HEAT EXCHANGER
MT - MOISTURE TRAP
OIM - OPERATOR INTERFACE MODULE
SST - SYSTEM STATIC TOTALIZER
TCA - TANK COMPRESSED AIR
TK - TANK
T - TRAP
V - VALVE
VFD - VARIABLE FREQUENCY DRIVE/MOTOR CONTROLLER
YS - PLC CONTROL OUTPUT

MINOR EQUIPMENT

OPEN DRAIN ANNOTATIONS

RD - RADIOACTIVE DRAIN TO DRAIN HEADER
ND - NONRADIOACTIVE DRAIN
AW - ACID WASTE
NW - NORMAL WASTE
OW - OIL WASTE
SW - SANITARY WASTE

P

TYPICAL VALVE ANNOTATIONS

FO - FAIL OPEN
FC - FAIL CLOSED
FL - FAIL LOCKED (POSITION DOES NOT CHANGE)
FI - FAIL INDETERMINATE
FAI - FAIL AS IS
NO - NORMALLY OPEN
NC - NORMALLY CLOSED
LO - LOCKED OPEN
LC - LOCKED CLOSED

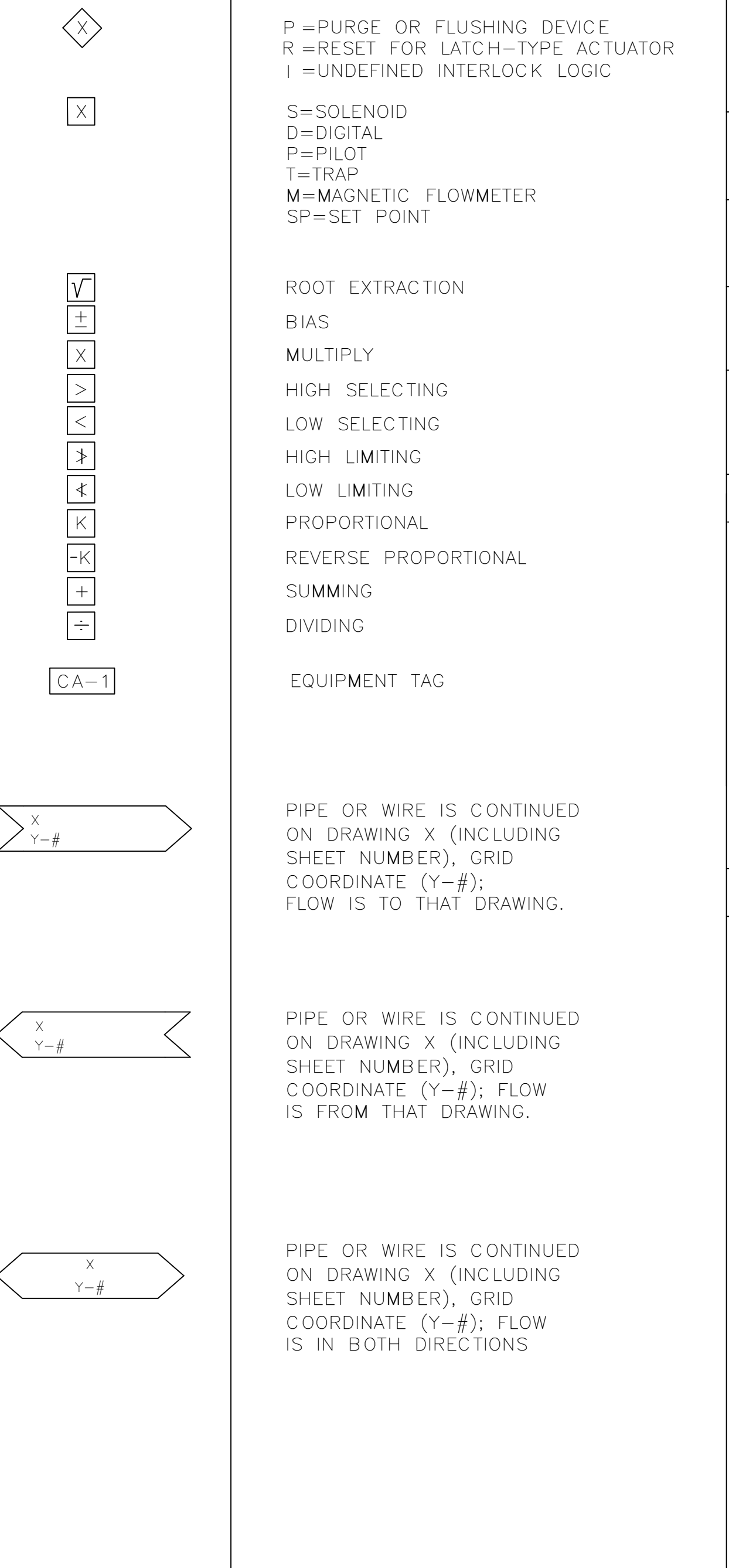
MISCELLANEOUS ACRONYMS

WP - WALL PENETRATION
FP - FLOOR PENETRATION
RP - ROOF PENETRATION
AO - ANALOG OUTPUT
AI - ANALOG INPUT
DI - DIGITAL INPUT
RO - RELAY OUTPUT

GENERAL NOTES

xx

SYMBOL



INSTRUMENT/FUNCTION SYMBOLS

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A
SHARED DISPLAY, SHARED CONTROL	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A
COMPUTER FUNCTION	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A
PROGRAMMABLE LOGIC CONTROL	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A	J1 J2 J2A

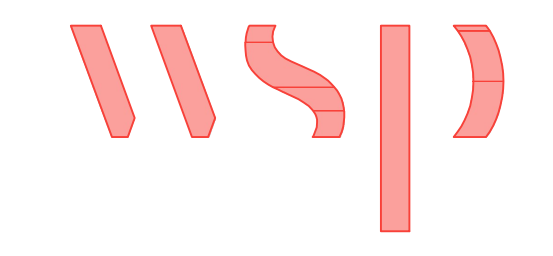
SYMBOL	DESCRIPTION
▶	FLOW INDICATOR TO BE USED IN CONJUNCTION WITH P016
J1 J2 J2A	INSTRUMENTS SHARING COMMON HOUSING
J1 J2 J2A	PANEL MOUNTED PATCHBOARD POINT 12

INSTRUMENTATION IDENTIFICATION

TABLE

J-1	COMPONENT FUNCTION NUMBER
J-2	COMPONENT SEQUENCE NUMBER
J-2A	COMPONENT SEQUENCE # CONT'D
J-3	VENDOR DESIGNATION
J-4	PANEL NUMBER
J-5	APPLICABLE NOTES
J-6	SYSTEM ACRONYM
J-7	ASME TEST SYMBOL FOR TEST ONLY OR TEST PLUS NORMAL USE
J-8	SET-POINT(S)
J-9	FUNCTION (SEE INSTRUMENT/FUNCTION SYMBOLS)

NOTE:
INSTRUMENTATION FUNCTION IDENTIFIERS (J-1) AND FUNCTION SYMBOLS PER ANSI/ISA 55.1.



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**TUBA CITY WWTP
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POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANC, AZ 86504
WSP PROJECT NO:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

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PROCESS FLOW SYMBOLS &
NOTES PG. 2 - P & ID

T-A03

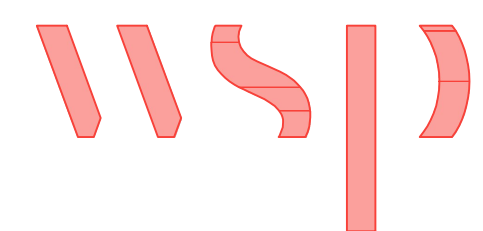
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T-A03	RCA
SHEET 21 OF 39 SHEETS	

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PROCESS FLOW DIAGRAMS AND P&ID SYMBOLS (GENERAL INSTRUMENT OR FUNCTION SYMBOLS)

(NOT ALL SYMBOLS & NOTES WILL APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	GENERAL NOTES
	ANGLE VALVE		RUPTURE DISK OR SAFETY HEAD FOR PRESSURE RELIEF		IN-LINE FILTER		AXIAL FAN		SINGLE DUCT VARIABLE VOLUME BOX	XX
	BUTTERFLY VALVE		PILOT LIGHT X=COLOR R=RED G=GREEN		ATMOSPHERIC FILTER		AXIAL FAN WITH VARIABLE INLET VANES		WING TYPE FACE AND BYPASS DAMPER (A) HW HEATING WATER DX DIRECT EXPANSION CH CHILLED WATER STM STEAM (B) HCL HEATING COIL CCL COOLING COIL	
	ROTARY VALVE		FLEX CONNECTION (RUBBER)		DOUBLE BASKET STRAINER		2-STAGE RECIPROCATING AIR COMPRESSOR		COLLECTION BIN	
	3-WAY VALVE		FLEX CONNECTION (STEEL BRAIDED)		HOSE REEL		SINGLE STAGE RECIPROCATING AIR COMPRESSOR		CYCLONE SEPARATOR	
	4-WAY VALVE		SINGLE PITOT TUBE OR PITOT VENTURI TUBE		OPEN DRAIN (SHOWN)		SPACE PENETRATIONS		FLUID RECOVERY PUMP	
	OS & Y VALVE		FLOW METER		CLEANOUT (PLAN VIEW)		FIXED LOUVERS		DUAL SERVICE HEAT EXCHANGER	
	DIAPHRAGM VALVE		FLOW NOZZLE OR VENTURI		SANITARY VENT		TRAP XX ANNOTATES FUNCTION		MULTI BLADE DAMPER	
	PRESSURE RELIEF		REDUCER		SCREWED CAP		LUBRICATOR		SINGLE BLADE DAMPER	
	DIAPHRAGM ACTUATOR		PIPE CAP		HOSE CONNECTION		55 GALLON DRUM		MOTOR	
	TWO-WAY VALVE, FAIL CLOSED		FLANGED CONNECTION (PIPING OR EQUIP)		FLOW ORIFICE FIXED		THERMOSTATIC VENT		TEST PORT	
	TWO-WAY VALVE, FAIL OPEN		FLOW ORIFICE FIXED		STRAINER WITH VALVE		SPRINKLER ALARM (WATER MOTOR GONG)		PILOT LIGHT	
	3-WAY VALVE W/DIAPHRAM ACTUATOR		Y-STRAINER		CAPPED AIR DUCT		FLOW ALARM VALVE		COOLING TOWER	
	4-WAY VALVE W/DIAPHRAM ACTUATOR		COMPRESSED AIR		GATE VALVE (OPEN)		CHILLER		HORIZONTAL CENTRIFUGAL PUMP	
	SPRING-OPERATED SINGLE-ACTING ACTUATOR		DUCTED AIR FLOW FROM SPACE		GATE VALVE (CLOSED)		CENTRIFUGAL FAN WITH VARIABLE INLET VANES		ROTARY PUMP	
	SPRING-OPERATED DOUBLE-ACTING ACTUATOR		RESTRICTION ORIFICE IN PROCESS LINE		GLOBE VALVE (OPEN)		BLOWER/CENTRIFUGAL FAN		VERTICAL WET PIT PUMP	
	ELECTROHYDRAULIC ACTUATOR		RESTRICTION ORIFICE DRILLED IN VALVE		GLOBE VALVE (CLOSED)		ROTARY PUMP		PROGRESSIVE CAVITY PUMP	
	HAND ACTUATOR OR HANDWHEEL		FLOW STRAIGHTENING VANE		NEEDLE VALVE (OPEN)		HEATER		HEAT EXCHANGER	
	RESTRICTION ORIFICE IN PROCESS LINE		DIAPHRAGM PRESSURE-BALANCED		NEEDLE VALVE (CLOSED)		OPPOSED BLADE DAMPER FOR HVAC EQUIPMENT		BACKDRAFT DAMPER	
	RESTRICTION ORIFICE DRILLED IN VALVE		PRESSURE-REDUCING REGULATOR, SELF-CONTAINED, WITH HANDWHEEL ADJUSTABLE SET POINT		PLUG VALVE (OPEN)					
	FLOW STRAIGHTENING VANE		PRESSURE-REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP		PLUG VALVE (CLOSED)					
	DIAPHRAGM PRESSURE-BALANCED		DIFFERENTIAL-PRESSURE-REDUCING REGULATOR WITH INTERNAL AND EXTERNAL TAPS		BALL VALVE (OPEN)					
	PRESSURE-REDUCING REGULATOR, SELF-CONTAINED, WITH HANDWHEEL ADJUSTABLE SET POINT		BACKPRESSURE REGULATOR, SELF-CONTAINED		BALL VALVE (CLOSED)					
	PRESSURE-REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP		DIFFERENTIAL-PRESSURE-REDUCING REGULATOR WITH INTERNAL AND EXTERNAL TAPS		CHECK VALVE					
	BACKPRESSURE REGULATOR, SELF-CONTAINED		BACKPRESSURE REGULATOR WITH EXTERNAL PRESSURE TAP		SPRING CHECK VALVE					
	PRESSURE-REDUCING REGULATOR WITH INTEGRAL OUTLET PRESSURE RELIEF VALVE, AND OPTIONAL PRESSURE INDICATOR		PRESSURE-REDUCING REGULATOR WITH INTEGRAL OUTLET PRESSURE RELIEF VALVE, AND OPTIONAL PRESSURE INDICATOR		ANGLE VALVE (OPEN)					
	PRESSURE INDICATOR		FLOW DIRECTION		ANGLE VALVE (CLOSED)					
	FLOW DIRECTION		PRESSURE RELIEF OR SAFETY VALVE		SAFETY OR RELIEF VALVE (INLET PORT SHOWN CLOSED)					
	PRESSURE RELIEF OR SAFETY VALVE		VACUUM RELIEF VALVE		THREE-WAY VALVE (CLOSED PORT DARKENED)					
	VACUUM RELIEF VALVE		ALARM VALVE		FOUR-WAY VALVE (ARROWS INDICATE FLOW DIRECTION)					
	PRESSURE RELIEF OR SAFETY VALVE, STRAIGHT-THROUGH PATTERN, SPRING- OR WEIGHT-LOADED, OR WITH INTEGRAL PILOT		AIR INTAKE FILTER		BALL-CHECK VALVE					
	RUPTURE DISK OR SAFETY HEAD FOR VACUUM RELIEF		ALARM		DUAL PURGE VALVE					
	RUPTURE DISK OR SAFETY HEAD FOR VACUUM RELIEF		BUBBLE GAUGE							



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FINAL DESIGN**

**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
**PROCESS FLOW SYMBOLS &
NOTES PG. 3 - P & ID**

T-A04

SHEET NUMBER:	REV. #
T-A04	RCA
SHEET 22 OF 39 SHEETS	

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VALVE & INSTRUMENTATION FUNCTION IDENTIFIERS (SELECTED)

FIRST-LETTERS	INDICATING MEASURED OR CONTROLLED VARIABLE	CONTROLLERS			VALVES	READOUT DEVICE		SWITCHES AND * ALARM DEVICES			TRANSMITTERS			SOLENOIDS RELAYS COMPUTING DEVICES	PRIMARY ELEMENT	TEST POINT	WELL OR PROBE	VIEWING DEVICE GLASS	SAFETY DEVICE	FINAL ELEMENT
		RECORDING	INDICATING	BLIND		RECORDING	INDICATING	HIGH**	LOW	COMB	RECORDING	INDICATING	BLIND							
A	ANALYSIS	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW		AV	
B	BURNER/ COMBUSTION	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE		BW	BG	BZ	
C	CONDUCTIVITY		CIC	CC											CE					
D	USER'S CHOICE																			
E	VOLTAGE	ERC	EIC	EC		ER	EI	ESH	ESL	ESHL	ERT	EIT	ET	EY	EE				EZ	
F	FLOW RATE	FRC	FIC	FC	FCV FICV	FR	FI	FSH	FSL	FSHL	FRT	FIT	FT	FY	FE	FP		FG	FV	
G	FLOW QUANTITY	FQRC	FQIC			FQR	FQI	FQSH	FQSL		FQIT	FQT	FQY	FQE					FQV	
H	FLOW RATIO	FFRC	FFIC	FFC		FFR	FFI	FFSH	FFSL					FE					FFV	
I	USER'S CHOICE																			
J	HAND		HIC	HC	HV					HS									HV	
K	CURRENT	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE				IZ	
L	POWER	JRC	JIC	ARC		JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE				JV	
M	TIME	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE				KV	
N	LEVEL	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG	LV	
O	NOISTURE/ HUMIDITY						MI					MT								
P	USER'S CHOICE																			
Q	USER'S CHOICE																			
R	PRESSURE VACUUM	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PTP		PSV PSE	PV	
S	PRESSURE DIFFERENTIAL	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDRT	PDIT	PDT	PDY	PE	PTP			PDV	
T	QUALITY	QRC	QIC			QR	QI	QSH	QSL	QSHL	QRT	QIT	QT	QY	QE				QZ	
U	RADIATION	RRC	RIC	RC		RR	RI	RSH	RSL	RSHL	RRT	RIT	RT	RY	RE		RW		RZ	
V	SPEED	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSHL	SRT	SIT	ST	SY	SE				SV	
W	TEMPERATURE	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSHL	TRT	TIT	TT	TY	TE	TP	TW		TV	
X	TEMPERATURE DIFFERENTIAL	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	TDT	TDY	TDE	TDP TP	TDW TW		TSE TDV	
Y	MULTIVARIABLE					UR	UI							UY					UV	
Z	MACHINERY VIBRATION ANALYSIS					VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE				VZ	
AA	WEIGHT FORCE	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE				WZ	
AB	WEIGHT FORCE DIFFERENTIAL	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDRT	WDIT	WDT	WDY	WE				WDZ	
AC	USER'S CHOICE																			
AD	EVENT STATE PRESENCE		YIC	YC		YR	YI	YSH	YSL			YT	YY	YE					YZ	
AE	POSITION DIMENSION	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSHL	ZRT	ZIT	ZT	ZY	ZE				ZV	
AF	GAUGING DEVIATION	ZDRC	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDRT	ZDIT	ZDT	ZDY	ZDE				ZDV	


GENERAL NOTES

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 THIS TABLE IS NOT ALL-INCLUSIVE, SEE ANSI/ISA STANDARD ISA-S5.1-1984 (R 1992)
 *A, ALARM, THE ANNUNCIATING DEVICE, MAY BE USED IN THE SAME FASHION AS, SWITCH, THE ACTING DEVICE.
 ** THE LETTERS H AND L MAY BE OMITTED IN THE UNDEFINED CASE.


OTHER POSSIBLE COMBINATIONS:
 FO (RESTRICTION ORIFICE) PFR (RATIO)
 FRK, HIK (CONTROL STATIONS) KQI (RUNNING TIME INDICATOR)
 FX (ACCESSORIES) QQI (INDICATING COUNTER)
 TJR (SCANNING RECORDER) WKIC (RATE-OF-WEIGHT-LOSS CONTROLLER)
 LLH (PILOT LIGHT) HMS (HAND MOMENTARY SWITCH)



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PROJECT:
**TUBA CITY WWTP
 HIGH-PERFORMANCE
 POND SYSTEM
 FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
 AUTHORITY**
 PO BOX 170
 FT. DEFIANCE, AZ 86504
 WSP PROJECT No:
 2251700010

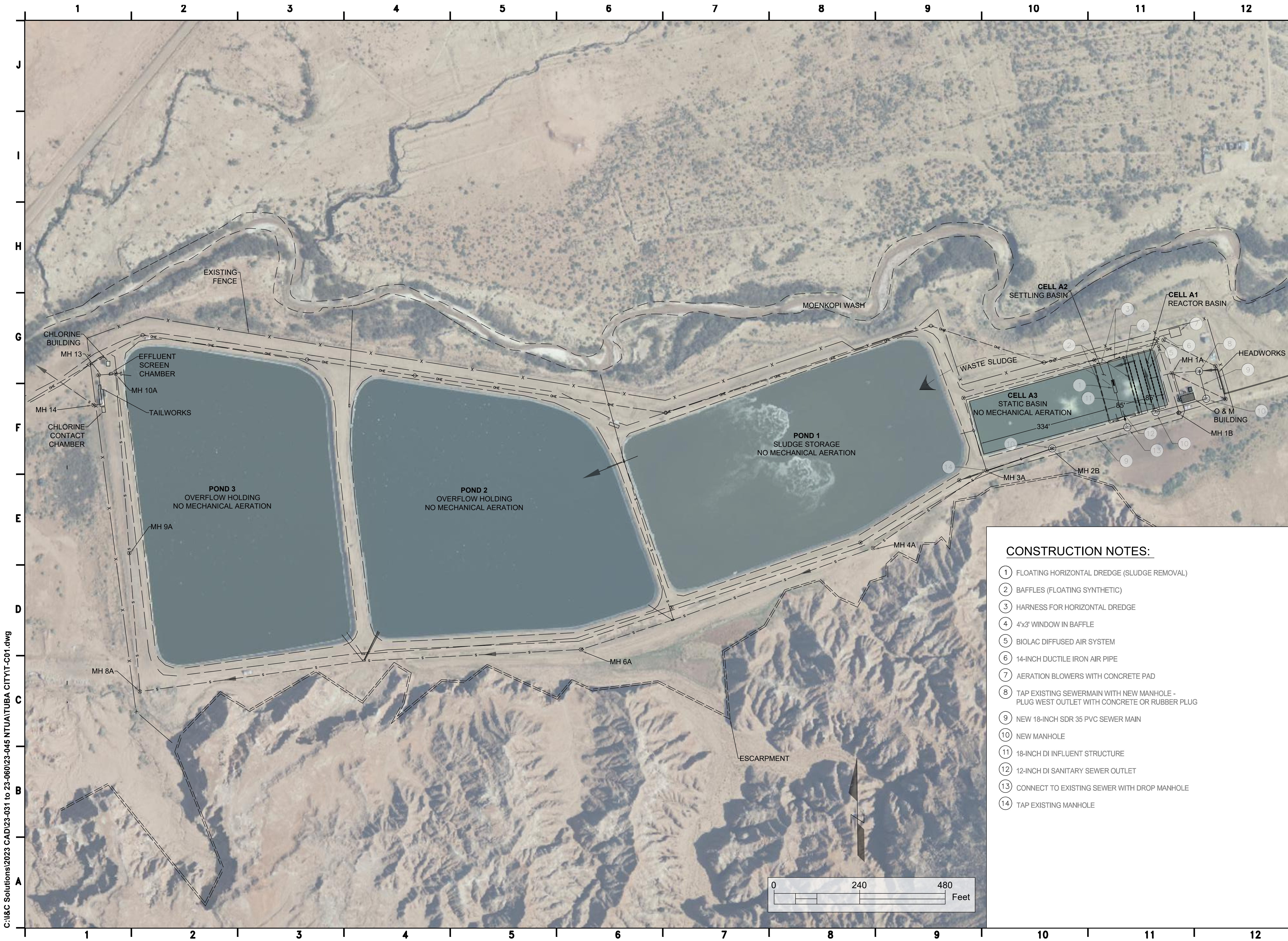
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NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
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APPROVED BY:	PP
DATE:	20230324

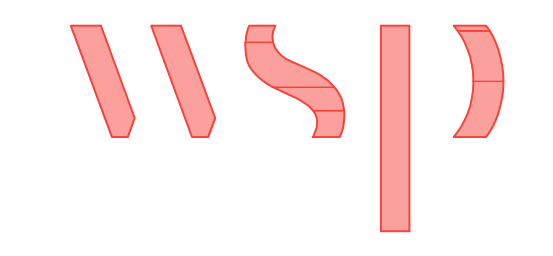
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**PROCESS FLOW SYMBOLS &
 NOTES PG. 4 - P & ID**

T-A05

SHEET NUMBER:	REV. #
T-A05	RCA
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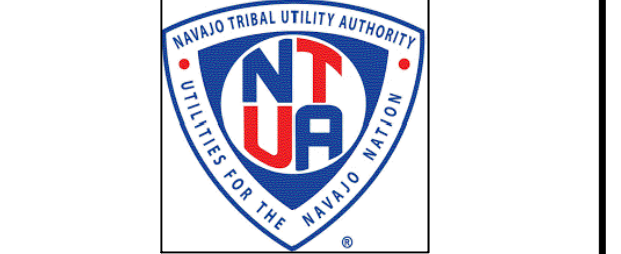
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- CONSTRUCTION NOTES:**
- ① FLOATING HORIZONTAL DREDGE (SLUDGE REMOVAL)
 - ② BAFFLES (FLOATING SYNTHETIC)
 - ③ HARNESS FOR HORIZONTAL DREDGE
 - ④ 4'x3' WINDOW IN BAFFLE
 - ⑤ BIOLAC DIFFUSED AIR SYSTEM
 - ⑥ 14-INCH DUCTILE IRON AIR PIPE
 - ⑦ AERATION BLOWERS WITH CONCRETE PAD
 - ⑧ TAP EXISTING SEWERMAIN WITH NEW MANHOLE - PLUG WEST OUTLET WITH CONCRETE OR RUBBER PLUG
 - ⑨ NEW 18-INCH SDR 35 PVC SEWER MAIN
 - ⑩ NEW MANHOLE
 - ⑪ 18-INCH DI INFLUENT STRUCTURE
 - ⑫ 12-INCH DI SANITARY SEWER OUTLET
 - ⑬ CONNECT TO EXISTING SEWER WITH DROP MANHOLE
 - ⑭ TAP EXISTING MANHOLE

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SHEET TITLE:
AREA MAP AND
CONSTRUCTION
NOTES

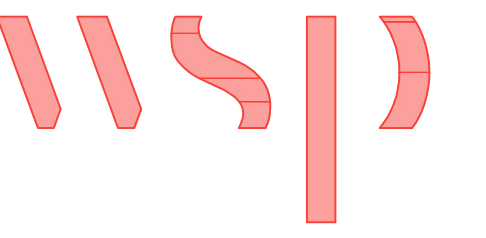
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SHEET NUMBER:	REV. #
T-C01	RCA
SHEET 24 OF 39 SHEETS	

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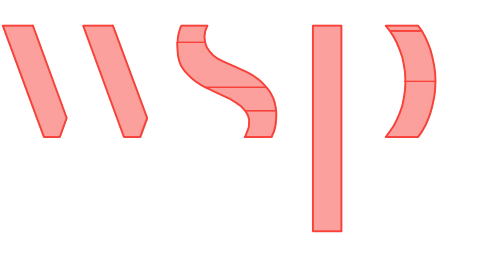
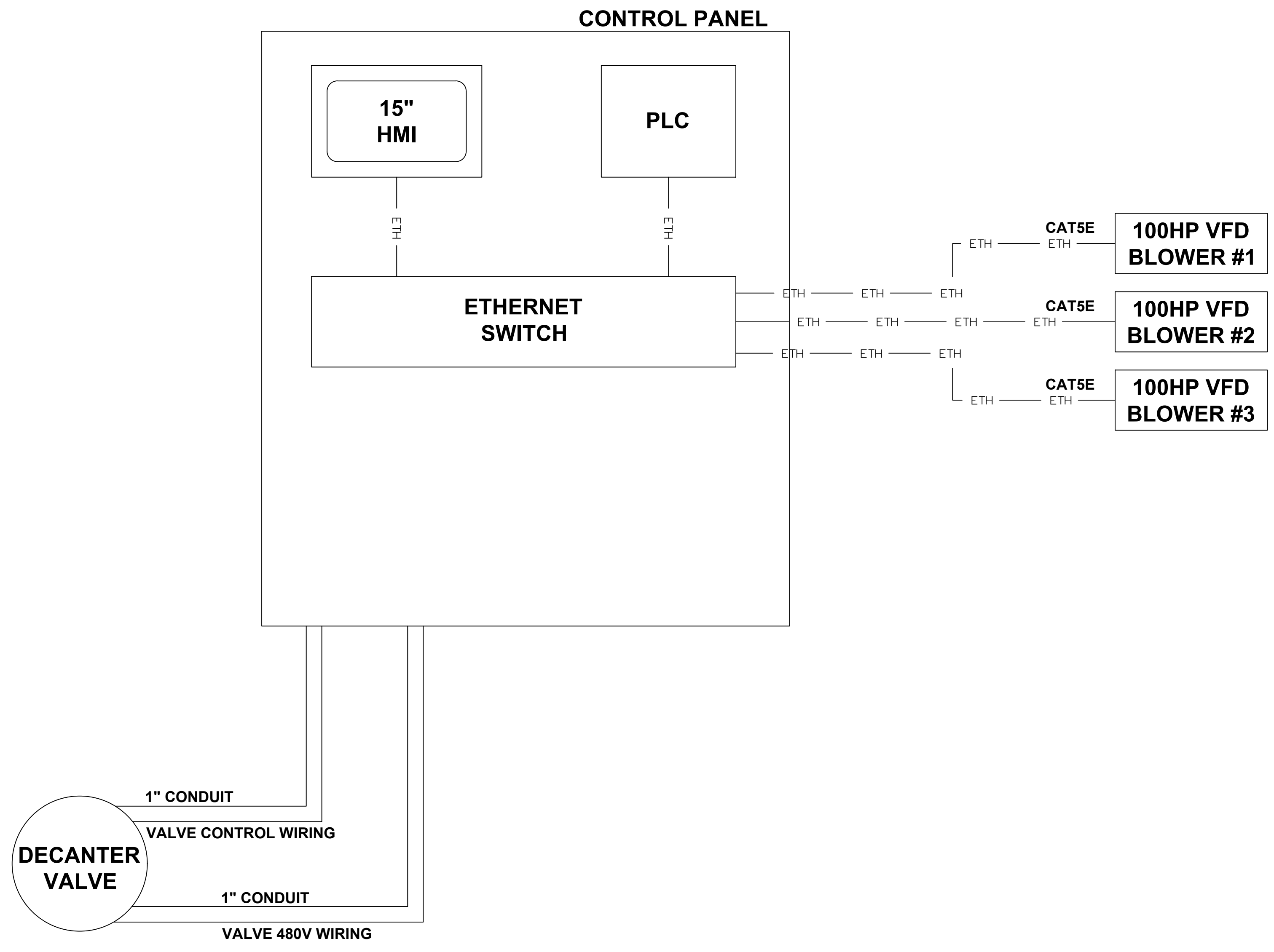
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T-C02	RCA
SHEET 25 OF 39 SHEETS	

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SHEET TITLE:
NETWORK AND CONDUIT
DIAGRAM: PANEL AND FIELD

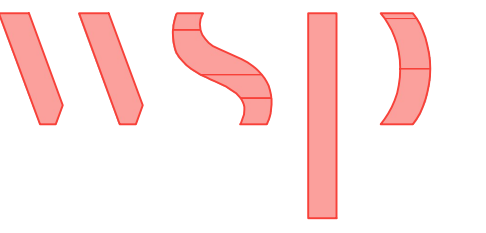
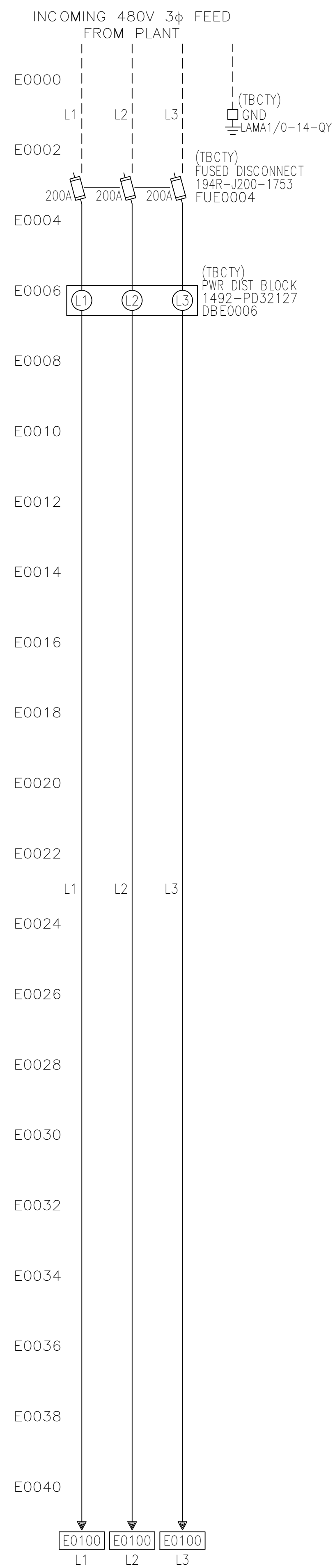
T-D01

SHEET NUMBER:	REV. #
T-D01	RCA
SHEET 26 OF 39 SHEETS	

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NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

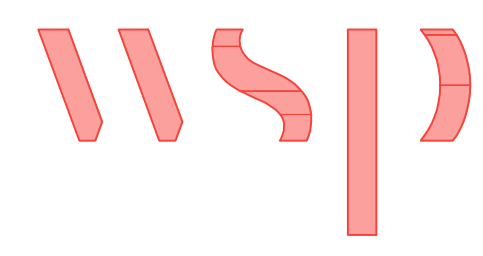
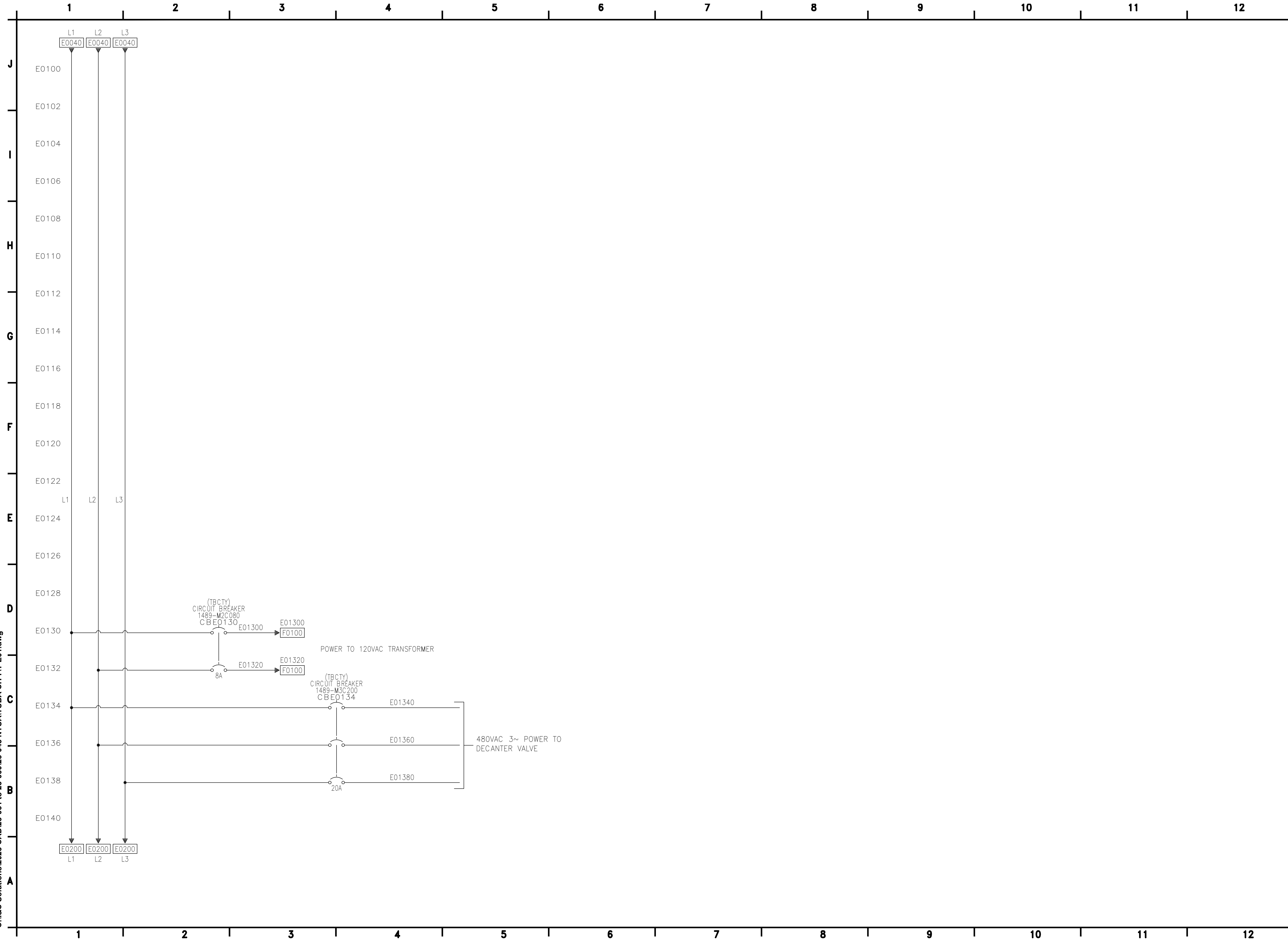
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
480VAC
THREE-LINE
SCHEMATIC

T-E00

SHEET NUMBER:	REV. #
T-E00	RCA
SHEET 27 OF 39 SHEETS	

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TEL: (505) 821-1801



PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

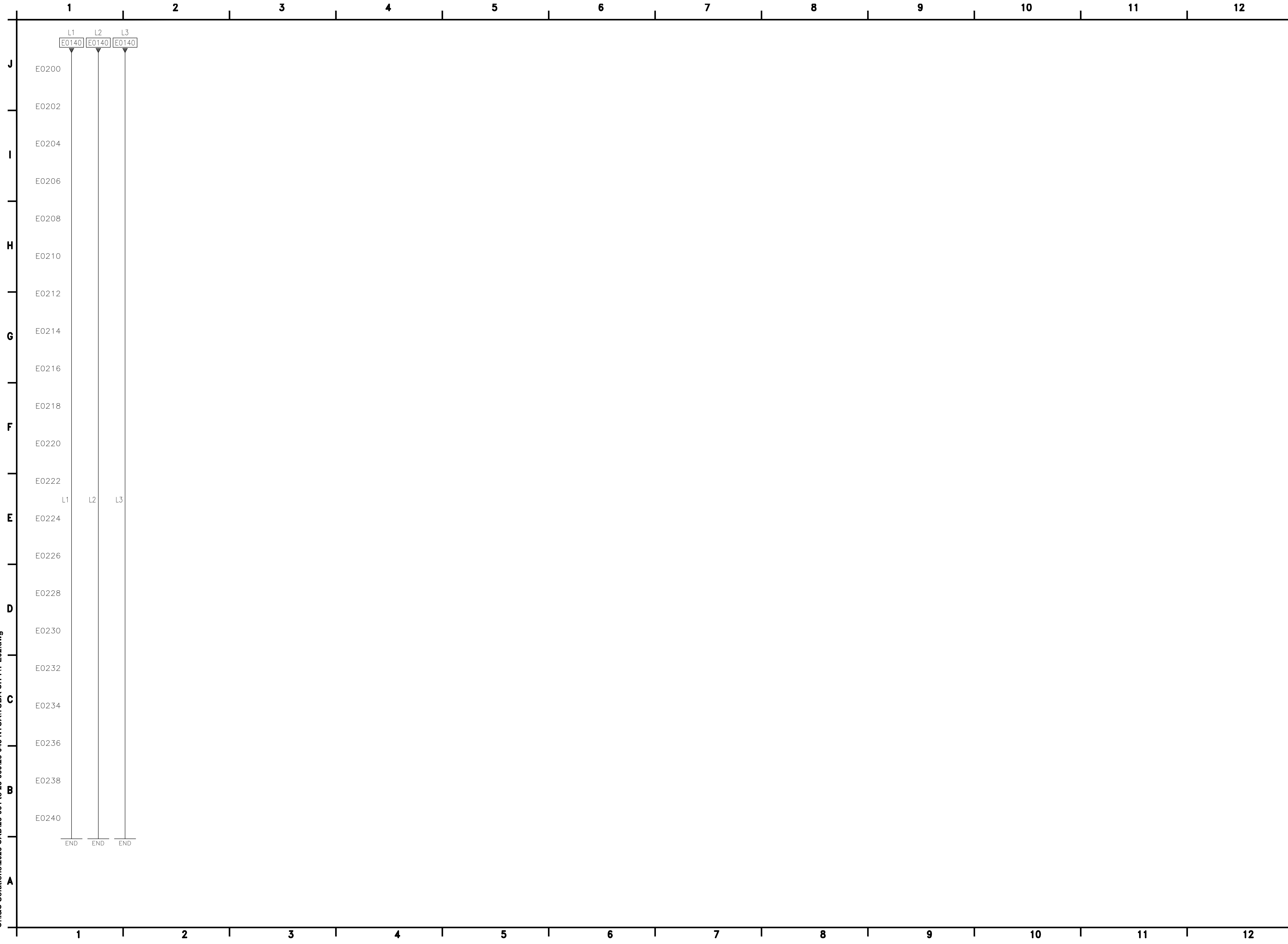
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DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
480VAC
THREE-LINE
SCHEMATIC


T-E01

SHEET NUMBER:	REV. #
T-E01	RCA
SHEET 28 OF 39 SHEETS	


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WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

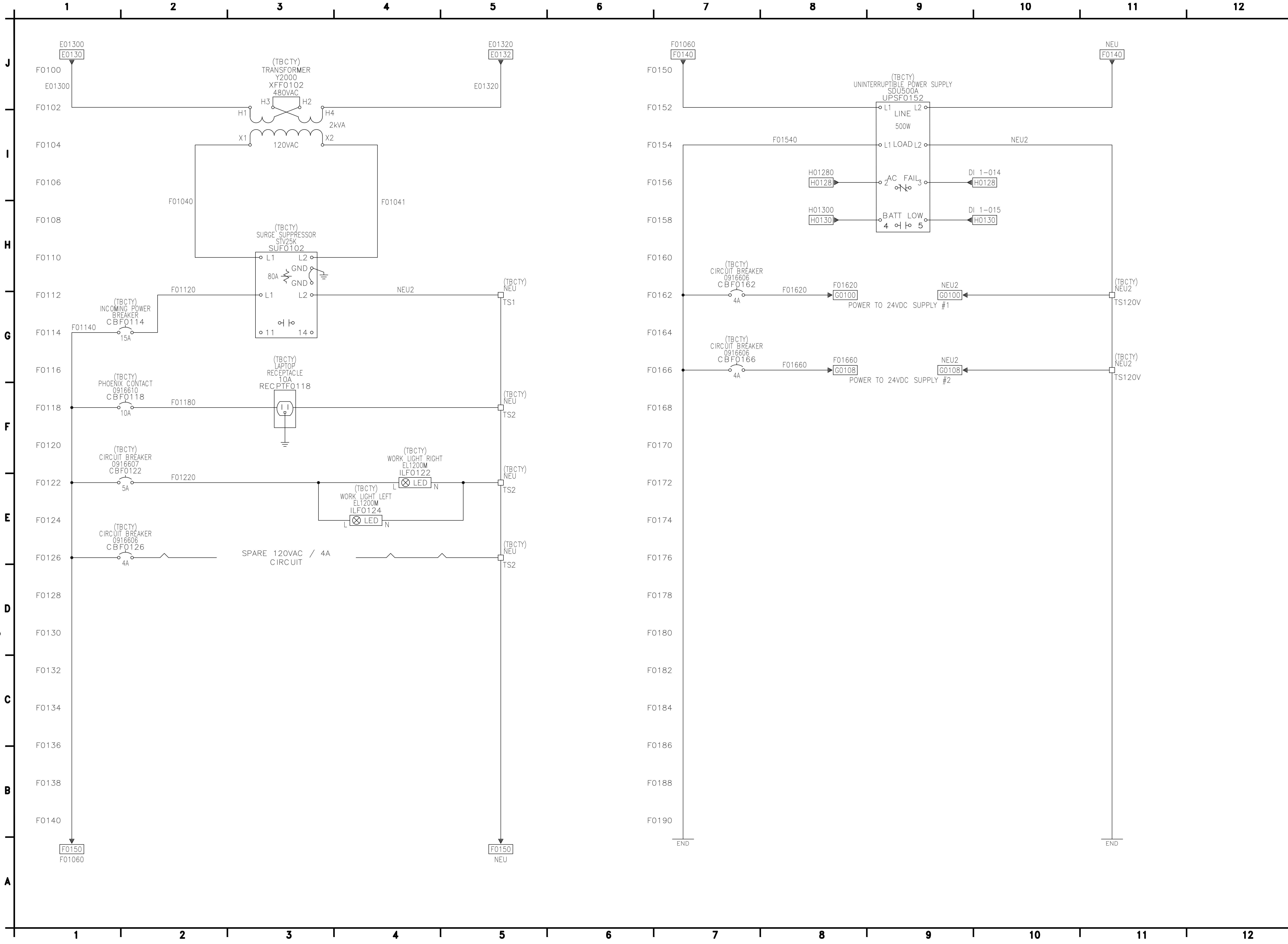
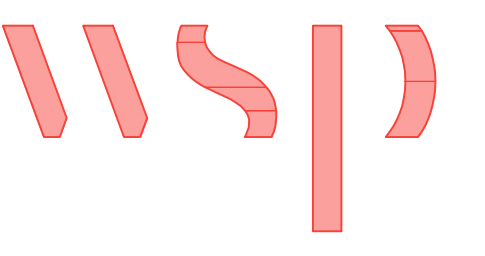
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
480VAC
THREE-LINE
SCHEMATIC


T-E02

SHEET NUMBER:	REV. #
T-E02	RCA
SHEET 29 OF 39 SHEETS	

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**8519 JEFFERSON NE
ALBUQUERQUE, NM 87113
TEL: (505) 821-1801**



**JEFFREY L. JORGENSEN
NEW MEXICO
19288
03/21/23
PROFESSIONAL ENGINEER**

PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANC, AZ 86504
WSP PROJECT No:
2251700010**

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

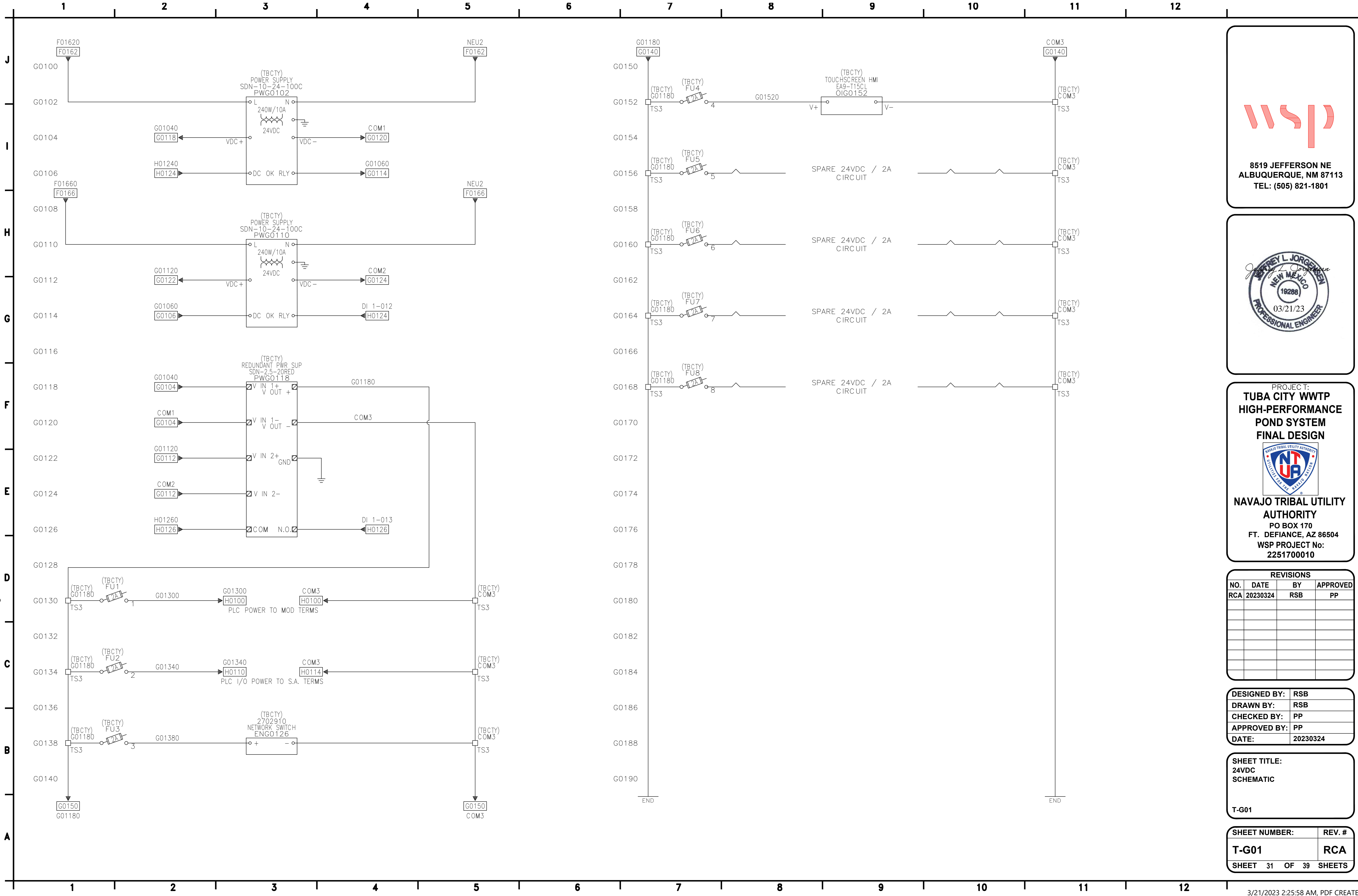
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DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
120VAC
SCHEMATIC


T-F01

SHEET NUMBER:	REV. #
T-F01	RCA
SHEET 30 OF 39 SHEETS	

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**8519 JEFFERSON NE
ALBUQUERQUE, NM 87113
TEL: (505) 821-1801**



**JEFFREY L. JORGENSEN
NEW MEXICO
19288
03/21/23
PROFESSIONAL ENGINEER**

PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
POND SYSTEM
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AUTHORITY
PO BOX 170
FT. DEFIANC, AZ 86504
WSP PROJECT No:
2251700010**

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RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
24VDC
SCHEMATIC

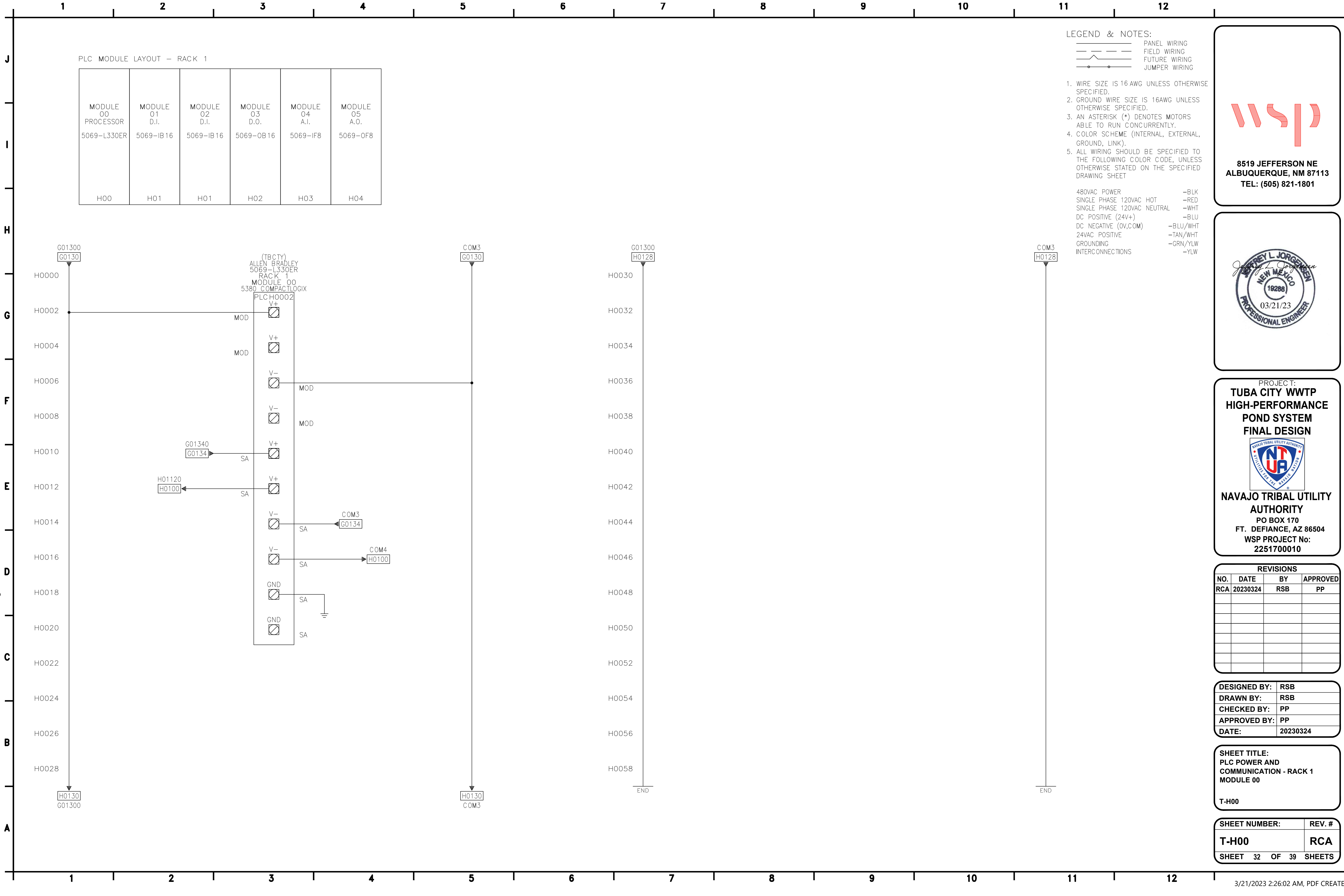
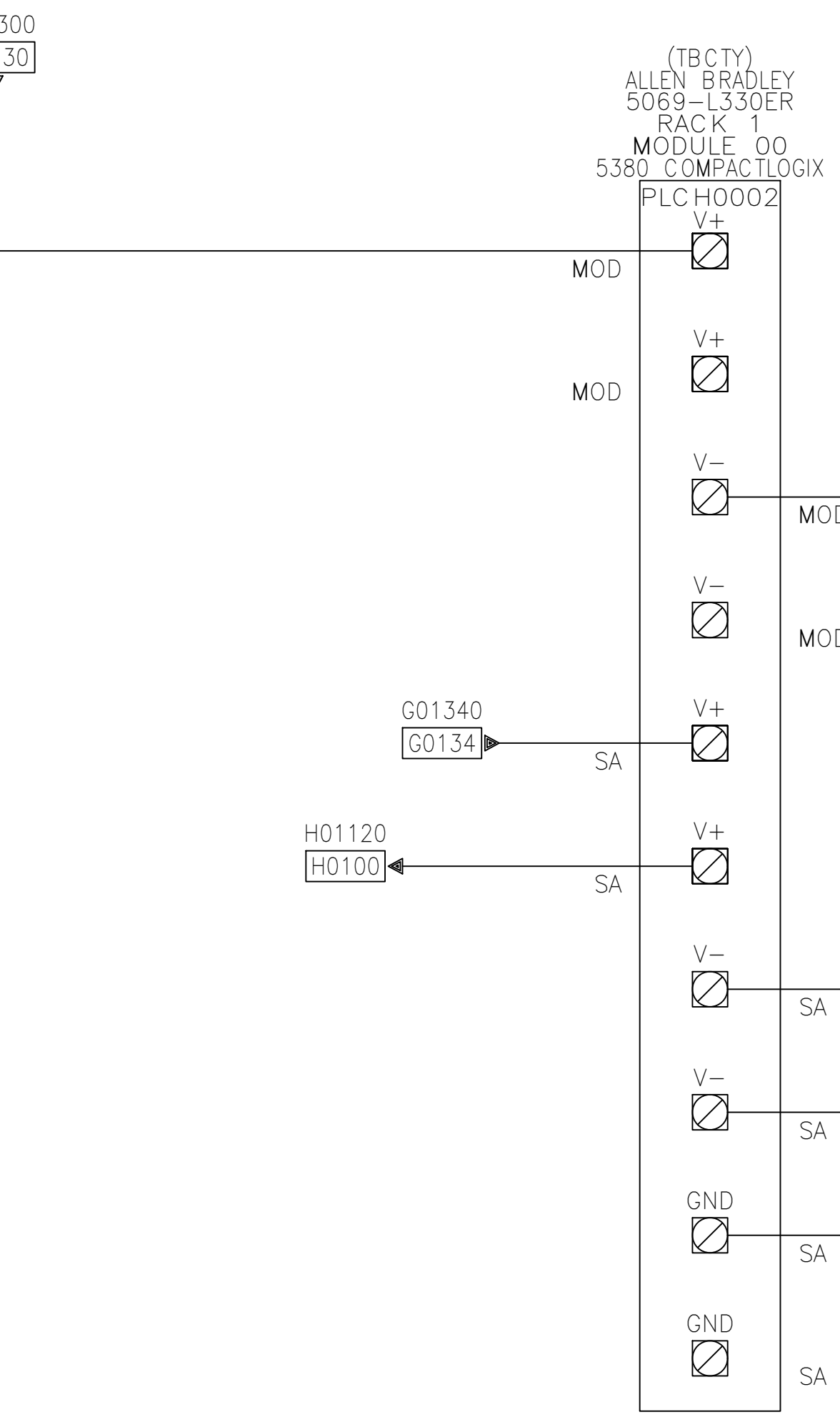
T-G01

SHEET NUMBER:	REV. #
T-G01	RCA
SHEET 31 OF 39 SHEETS	

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PLC MODULE LAYOUT - RACK 1

MODULE 00 PROCESSOR	MODULE 01 D.I.	MODULE 02 D.I.	MODULE 03 D.O.	MODULE 04 A.I.	MODULE 05 A.O.
5069-L330ER	5069-IB16	5069-IB16	5069-OB16	5069-IF8	5069-OF8
H00	H01	H01	H02	H03	H04



- LEGEND & NOTES:**
- PANEL WIRING
 - FIELD WIRING
 - FUTURE WIRING
 - JUMPER WIRING
- WIRE SIZE IS 16 AWG UNLESS OTHERWISE SPECIFIED.
 - GROUND WIRE SIZE IS 16AWG UNLESS OTHERWISE SPECIFIED.
 - AN ASTERISK (*) DENOTES MOTORS ABLE TO RUN CONCURRENTLY.
 - COLOR SCHEME (INTERNAL, EXTERNAL, GROUND, LINK).
 - ALL WIRING SHOULD BE SPECIFIED TO THE FOLLOWING COLOR CODE, UNLESS OTHERWISE STATED ON THE SPECIFIED DRAWING SHEET
- 480VAC POWER -BLK
 SINGLE PHASE 120VAC HOT -RED
 SINGLE PHASE 120VAC NEUTRAL -WHT
 DC POSITIVE (24V+) -BLU
 DC NEGATIVE (0V,COM) -BLU/WHT
 24VAC POSITIVE -TAN/WHT
 GROUNDING -GRN/YLW
 INTERCONNECTIONS -YLW

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RCA	20230324	RSB	PP

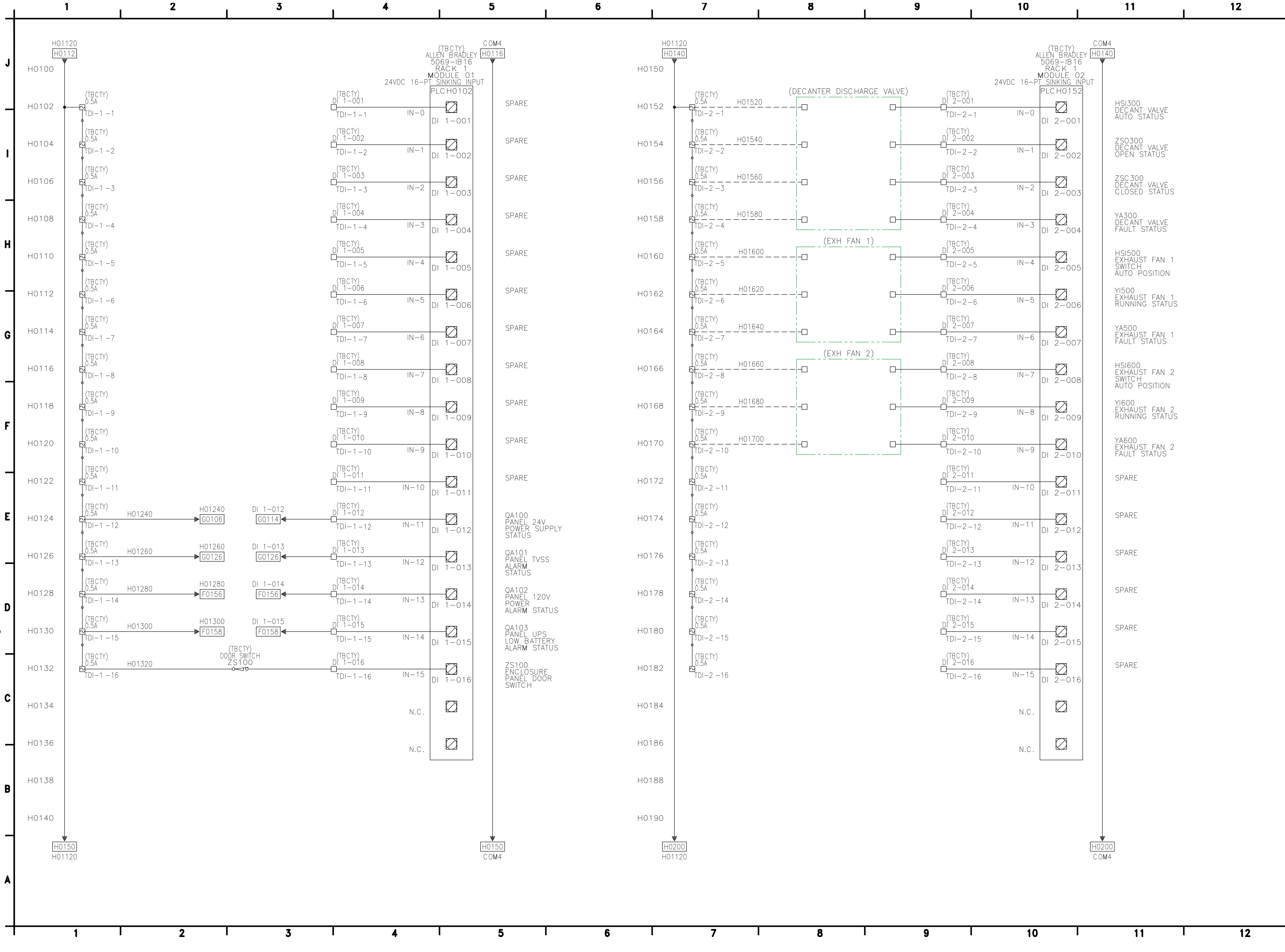
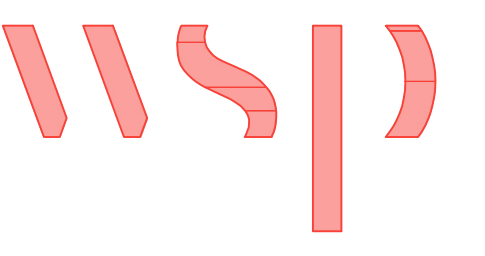
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
 PLC POWER AND
 COMMUNICATION - RACK 1
 MODULE 00


T-H00

SHEET NUMBER:	REV. #
T-H00	RCA
SHEET 32 OF 39 SHEETS	


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PROJECT:
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WSP PROJECT No:
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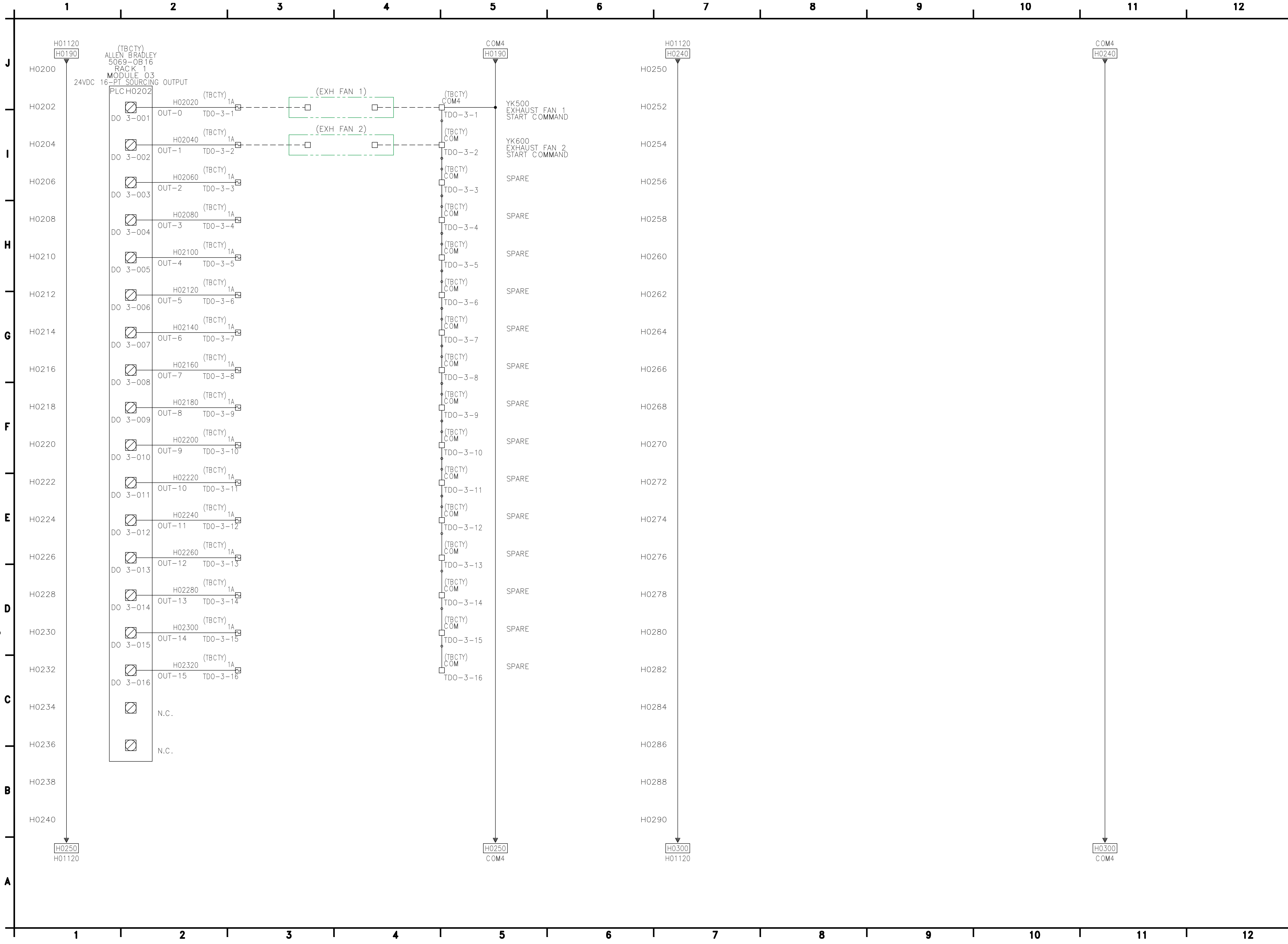
REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324


SHEET TITLE:
I/O SCHEMATIC
PLC RACK 1
MODULES 01 & 02

T-H01


SHEET NUMBER:	REV. #
T-H01	RCA
SHEET 33 OF 39 SHEETS	




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PROJECT:
**TUBA CITY WWTP
HIGH-PERFORMANCE
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WSP PROJECT No:
2251700010

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NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

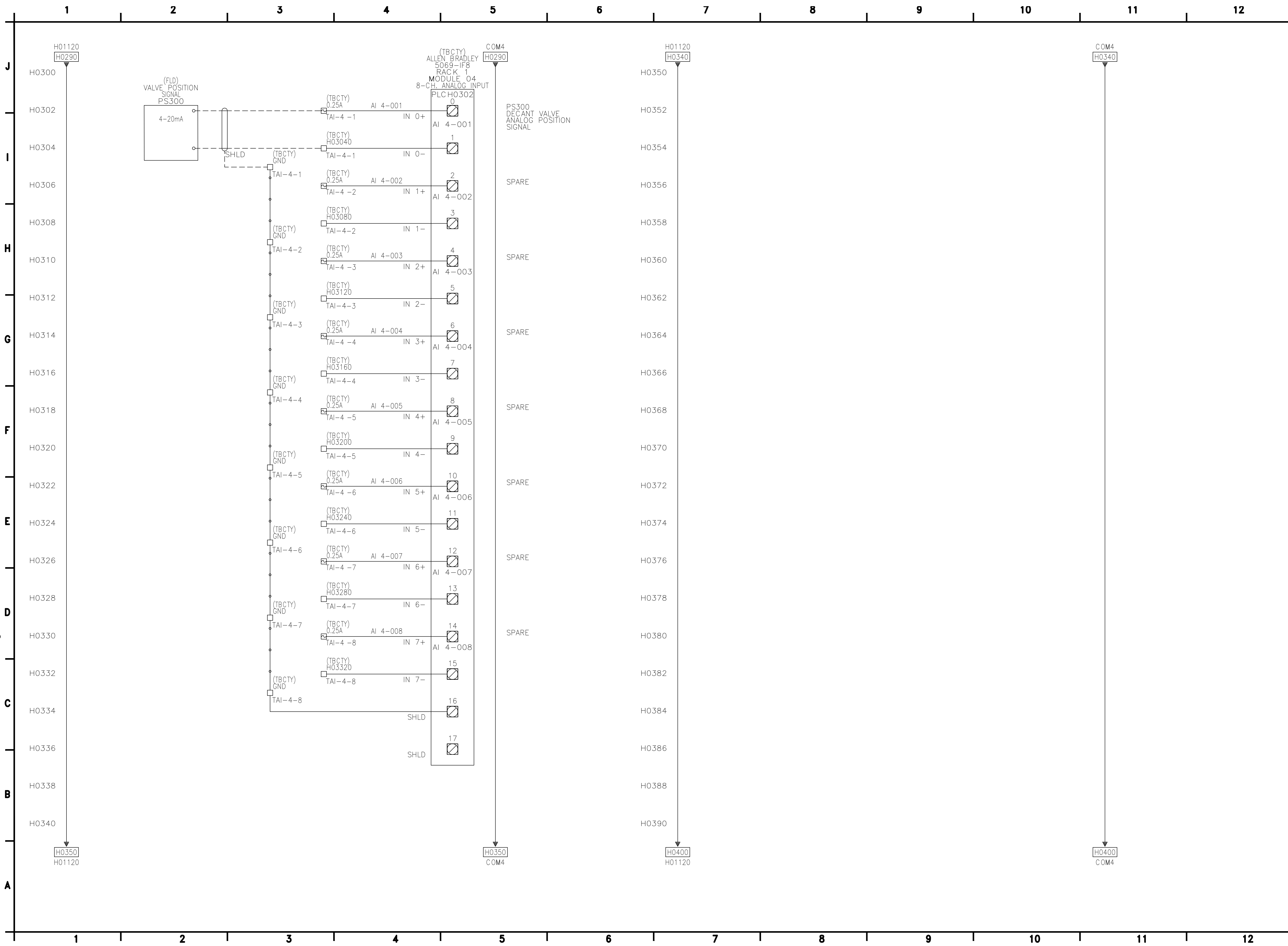
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
I/O SCHEMATIC
PLC RACK 1
MODULE 03

T-H02

SHEET NUMBER:	REV. #
T-H02	RCA
SHEET 34 OF 39 SHEETS	

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RCA	20230324	RSB	PP

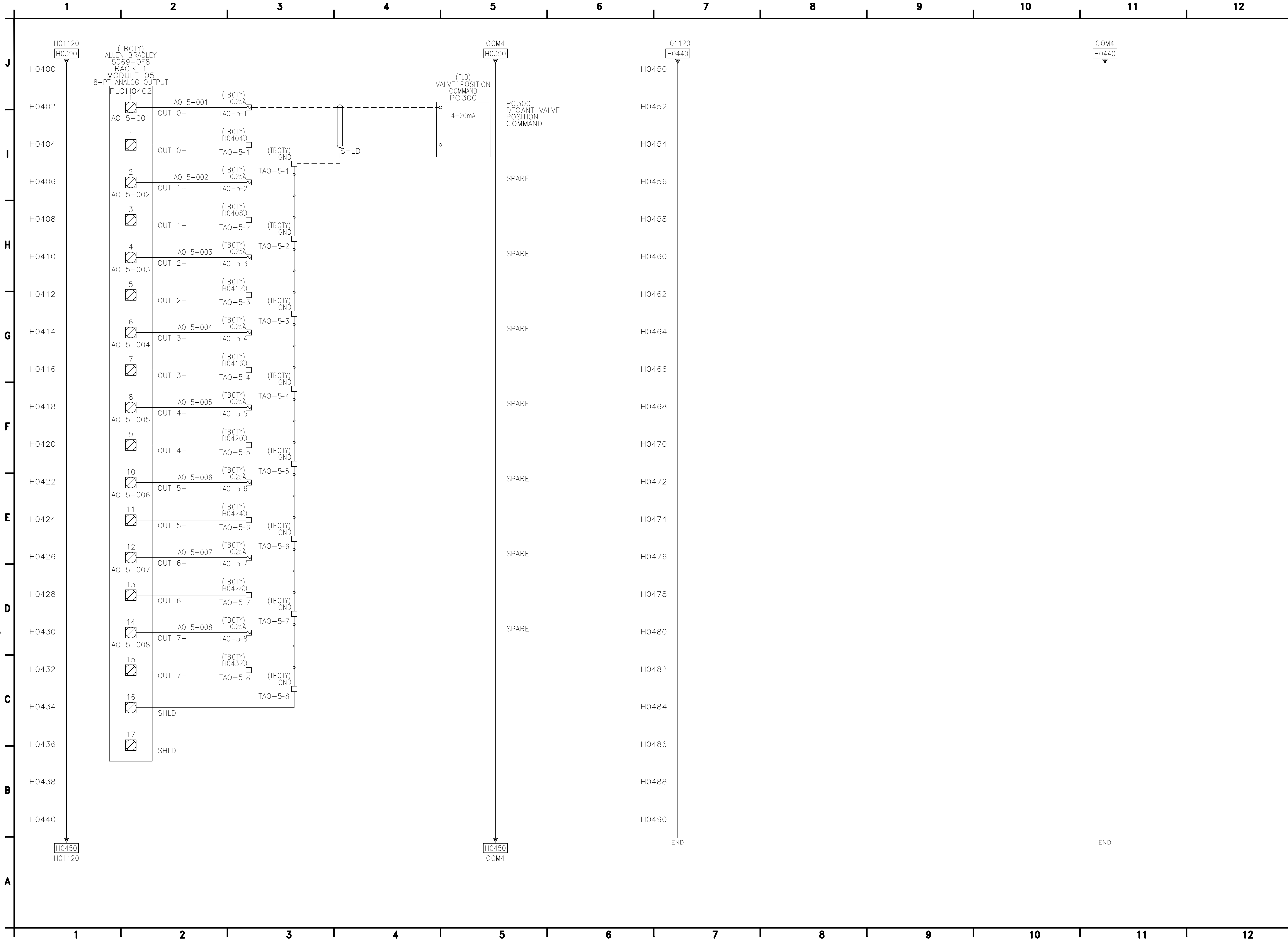
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
I/O SCHEMATIC
PLC RACK 1
MODULE 04


T-H03

SHEET NUMBER:	REV. #
T-H03	RCA
SHEET 35 OF 39 SHEETS	

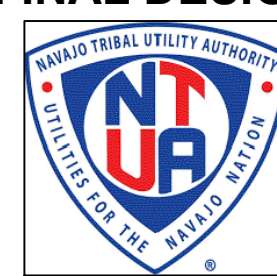
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WSP PROJECT No:
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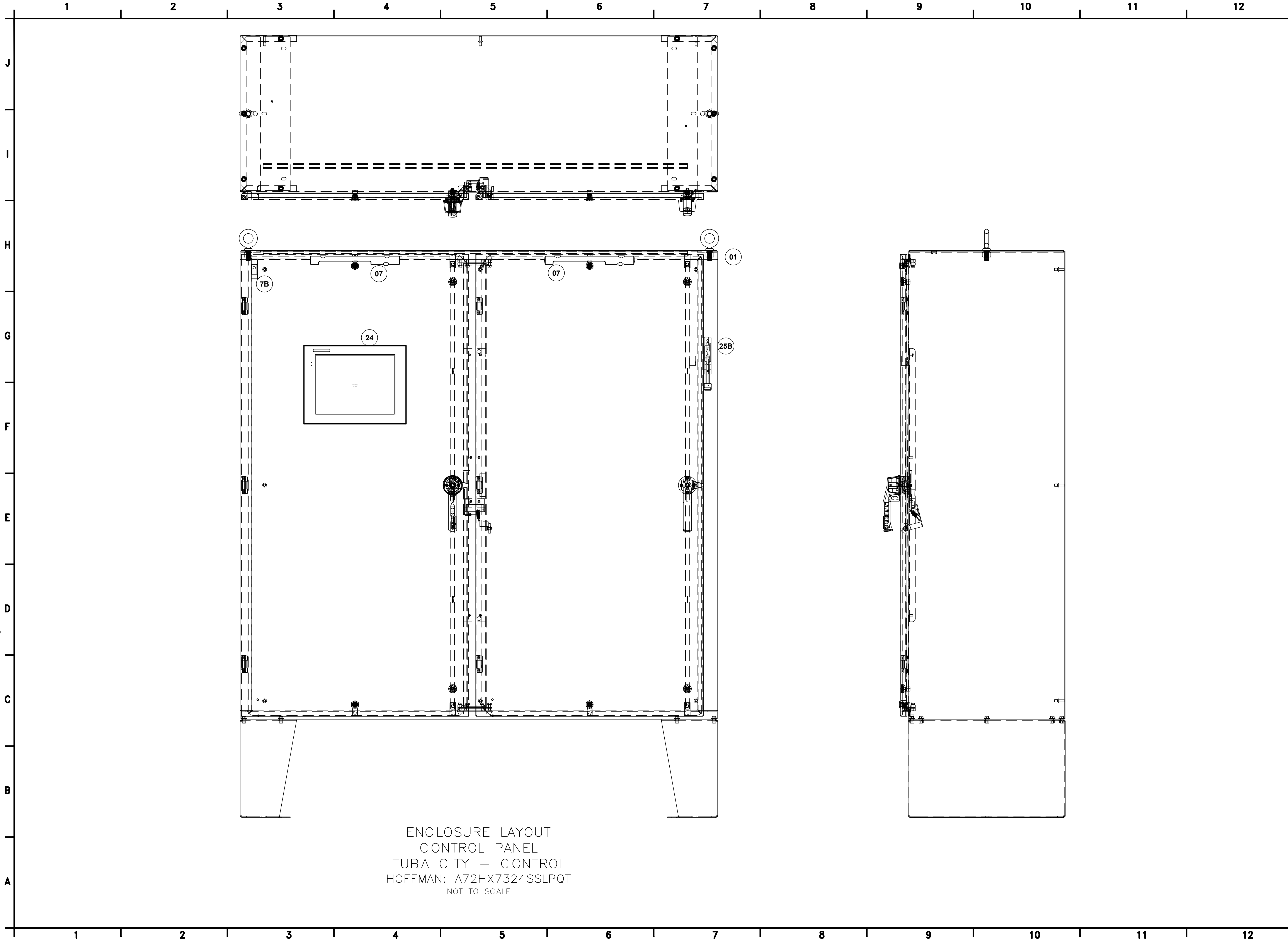
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NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

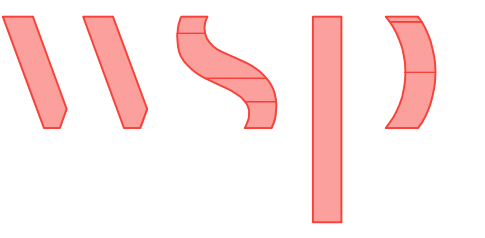
SHEET TITLE:
I/O SCHEMATIC
PLC RACK 1
MODULE 05
T-H04

SHEET NUMBER:	REV. #
T-H04	RCA
SHEET 36 OF 39 SHEETS	

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ENCLOSURE LAYOUT
 CONTROL PANEL
 TUBA CITY – CONTROL
 HOFFMAN: A72HX7324SSLPQT
 NOT TO SCALE



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PROJECT:
**TUBA CITY WWTP
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 FT. DEFIANCE, AZ 86504
 WSP PROJECT No:
 2251700010

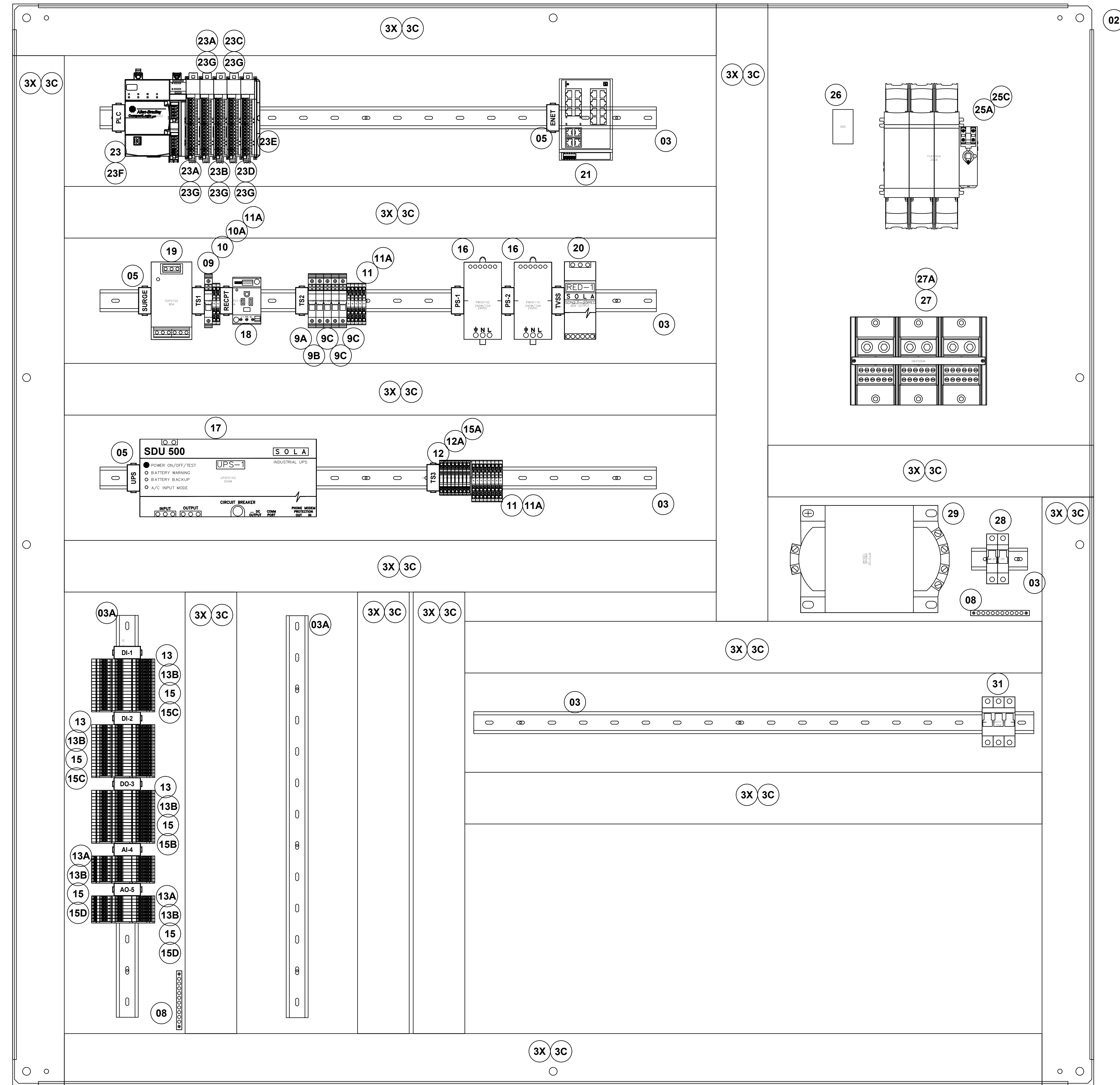
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NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

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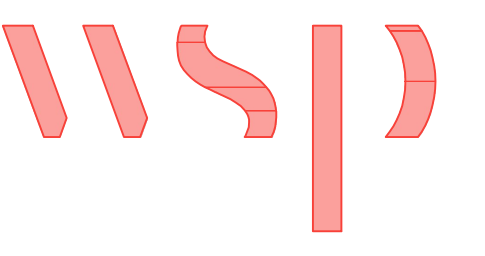
SHEET TITLE:
 ASSEMBLY DRAWING
 ENCLOSURE
 T-M01

SHEET NUMBER:	REV. #
T-M01	RCA
SHEET 37 OF 39 SHEETS	

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BACKPLATE LAYOUT
 CONTROL PANEL
 TUBA CITY – CONTROL
 HOFFMAN: A72P72
 NOT TO SCALE



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NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

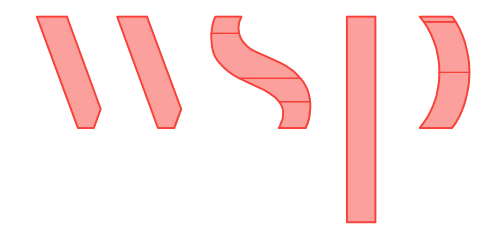
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
 ASSEMBLY DRAWING
 BACKPLATE
 T-M02

SHEET NUMBER:	REV. #
T-M02	RCA
SHEET 38 OF 39 SHEETS	

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ITEM	QTY	CATALOG	MFG	DESC	TAGS
01	1	A72HX7324SSLPQT	HOFFMAN	FLOOR-MOUNT DISCONNECT, 2-DOOR ENCLOSURE, 3-PT LATCH, TYPE 4X, 72x74x24, BRUSHED, SS304	
02	1	A72P72	HOFFMAN	BACKPLATE, 68x68, MILD STEEL, PAINTED	
03	A/R	0801733	PHOENIX CONTACT	DIN RAIL (35mm X 7.5mm X 1m)	
03A	A/R	XUS001736	ENTRELEC	DIN RAIL, RAISED, (35mm X 50mm X 1m)	
04	A/R	3022276	PHOENIX CONTACT	DIN RAIL ANCHOR, CLIP-FIX 35-5	(not shown)
05	A/R	0800307	PHOENIX CONTACT	DIN RAIL MARKER, UBE-D	
07	2	EL1200M	HOFFMAN	ENCLOSURE LAMP KIT, LED, MOTION SENSOR	ILF0122,ILF0124
7B	1	ALFSWD	HOFFMAN	DOOR SWITCH, ENCLOSURE	ZS100
08	2	PK15GTA	SCHNEIDER ELECTRIC	GROUND BAR KIT, 10 POSITION, #14-#4AWG	
09	1	0916612	PHOENIX CONTACT	120VAC CIRCUIT BREAKER 15A RATED (UT 6-TMC M 15A)	CBF0114
9A	1	0916610	PHOENIX CONTACT	120VAC CIRCUIT BREAKER 10A RATED (UT 6-TMC M 10A)	CBF0118
9B	1	0916607	PHOENIX CONTACT	120VAC CIRCUIT BREAKER 5A RATED (UT 6-TMC M 5A)	CBF0122
9C	3	0916606	PHOENIX CONTACT	120VAC CIRCUIT BREAKER 4A RATED (UT 6-TMC M 4A)	CBF0126,CBF0162,CBF0166
10	1	3211775	PHOENIX CONTACT	FEED THRU TERMINAL BLOCK, 32A, BLUE (PT4-TWIN-BU)	TS1
10A	1	3211780	PHOENIX CONTACT	FEED THRU TERMINAL BLOCK, 32A, GND (PT4-TWIN-PE)	TS1
11	11	3211771	PHOENIX CONTACT	FEED THRU TERMINAL BLOCK, 32A, GRAY (PT4-TWIN)	TS2,TS3
12	8	3211903	PHOENIX CONTACT	FUSE MODULAR TERMINAL BLOCK, LED (PT4-HESILED 24)	TS3
13	48	3213961	PHOENIX CONTACT	DI/DO TERMINAL BLOCK	TDI-1,TDI-2,TDO-3
13A	16	3213960	PHOENIX CONTACT	AI/AO TERMINAL BLOCK	TAI-4,TAO-5
13B	5	3213976	PHOENIX CONTACT	END PLATE FOR I/O TERMINAL BLOCK	TDI-1,TDI-2,TDO-3,TAI-4,TAO-5
15	64	3209248	PHOENIX CONTACT	5x20 24VDC FUSE HOLDER (P-FU 5X20 LED 24-5)	TDI-1,TDI-2,TDO-3,TAI-4,TAO-5
15A	8	GMA-2-R	BUSSMAN	2A FUSE, 5mm X 20mm	TS3
15B	16	GMA-1-R	BUSSMAN	1A FUSE, 5mm X 20mm	TDO-3
15C	32	GMA-500-R	BUSSMAN	500mA FUSE, 5mm X 20mm	TDI-1,TDI-2
15D	16	GMA-250-R	BUSSMAN	250mA FUSE, 5mm X 20mm	TAI-4,TAO-5
16	2	SDN-10-24-100C	SOLA	24VDC POWER SUPPLY, 10A/240W RATED	PWG0102,PWG0110
17	1	SDU500A	SOLA	UNINTERRUPTIBLE POWER SUPPLY, 500W	UPSF0152
18	1	0804155	PHOENIX CONTACT	120VAC DIN RAIL MOUNT RECEPTACLE	RECPTF0118
19	1	STV25K	SOLA	SURGE PROTECTION DEVICE	SUF0102
20	1	SDN-2.5-20RED	SOLA	TVSS DEVICE	PWG0118
21	1	2702910	PHOENIX CONTACT	ETHERNET SWITCH, 10x RJ45	ENG0126
23	1	5069-L330ER	ALLEN BRADLEY	COMPACTLOGIX 5380 SERIES PLC, 60 NODE, 3MB MEM, 3 IO RACK	PLCH0002
23A	2	5069-IB16	ALLEN BRADLEY	COMPACT 5000 I/O DIGITAL 16-POINT SINKING INPUT MODULE 24VDC	PLCH0102,PLCH0152
23B	1	5069-OB16	ALLEN BRADLEY	COMPACT 5000 I/O DIGITAL 16-POINT OUTPUT MODULE 24VDC	PLCH0202
23C	1	5069-IF8	ALLEN BRADLEY	COMPACT 5000 I/O ANALOG 8-POINT INPUT MODULE	PLCH0302
23D	1	5069-OF8	ALLEN BRADLEY	COMPACT 5000 I/O ANALOG 8-POINT OUTPUT MODULE	PLCH0402
23E	1	5069-ECR	ALLEN BRADLEY	COMPACT 5000 I/O END CAP, RIGHT	
23F	1	5069-RTB64-SPRING	ALLEN BRADLEY	COMPACT 5000, 4&6 POS, SPRING TERMINAL	PLCH0002
23G	5	5069-RTB18-SPRING	ALLEN BRADLEY	COMPACT 5000, 18 POS, SPRING TERMINAL	PLCH0102,PLCH0152,PLCH0202,PLCH0302,PLCH0402
24	1	EA9-T15CL	AUTOMATION DIRECT	15" TOUCHSCREEN HMI	OIG0152
25A	1	194R-J200-1753	ALLEN BRADLEY	3PH FUSED DISCONNECT, 200A RATED	FUE0004
25B	1	194R-HM4	ALLEN BRADLEY	DISCONNECT HANDLE KIT, WITH CABLE	FUE0004
25C	3	JTD200ID	LITTELFUSE	J-SERIES FUSE, 200A RATED	FUE0004
26	1	LAMA1/0-14-QY	PANDUIT	GROUND LUG, #14-1/0AWG	
27	1	1492-PD32127	ALLEN BRADLEY	POWER DISTRIBUTION BLOCK, 3PH, 760A RATED, AL, (2) 1/0AWG LINE, (14)#14-#4AWG LOAD	DBE0006
27A	1	1492-PBC3	ALLEN BRADLEY	COVER KIT FOR 1492-PD32127	DBE0006
28	1	1489-M2C080	ALLEN BRADLEY	CIRCUIT BREAKER, MINIATURE, 2-POLE, 8A, 480/277VAC, C-TRIP, NO NEUTRAL	CBE0130
29	1	Y2000	SOLA	CONTROL XFMR, 240X480V PRI, 120V SEC, 2KVA, SBE SERIES, OPEN STYLE, COPPER WOUND	XFF0102
30		NOT USED			
31	1	1489-M3C200	ALLEN BRADLEY	CIRCUIT BREAKER, MINIATURE, 3-POLE, 20A, 480/277VAC, C-TRIP, NO NEUTRAL	CBE0134
32		NOT USED			
33		NOT USED			



8519 JEFFERSON NE
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PROJECT:
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**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2251700010

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
BILL OF
MATERIALS

T-M03

SHEET NUMBER:	REV. #
T-M03	RCA
SHEET 39 OF 39 SHEETS	