

CHINLE WWTP

CONTINUOUS FLOW-INTERMITTENT DISCHARGE (CFID) POND SYSTEM

NAVAJO TRIBAL UTILITY AUTHORITY

CHINLE, ARIZONA



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



FINAL

PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

REVISIONS			
NO.	DATE	BY	APPROVED
Δ	01/22/24	A. ORRANTIA	S. TANDUKAR

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

SHEET TITLE:

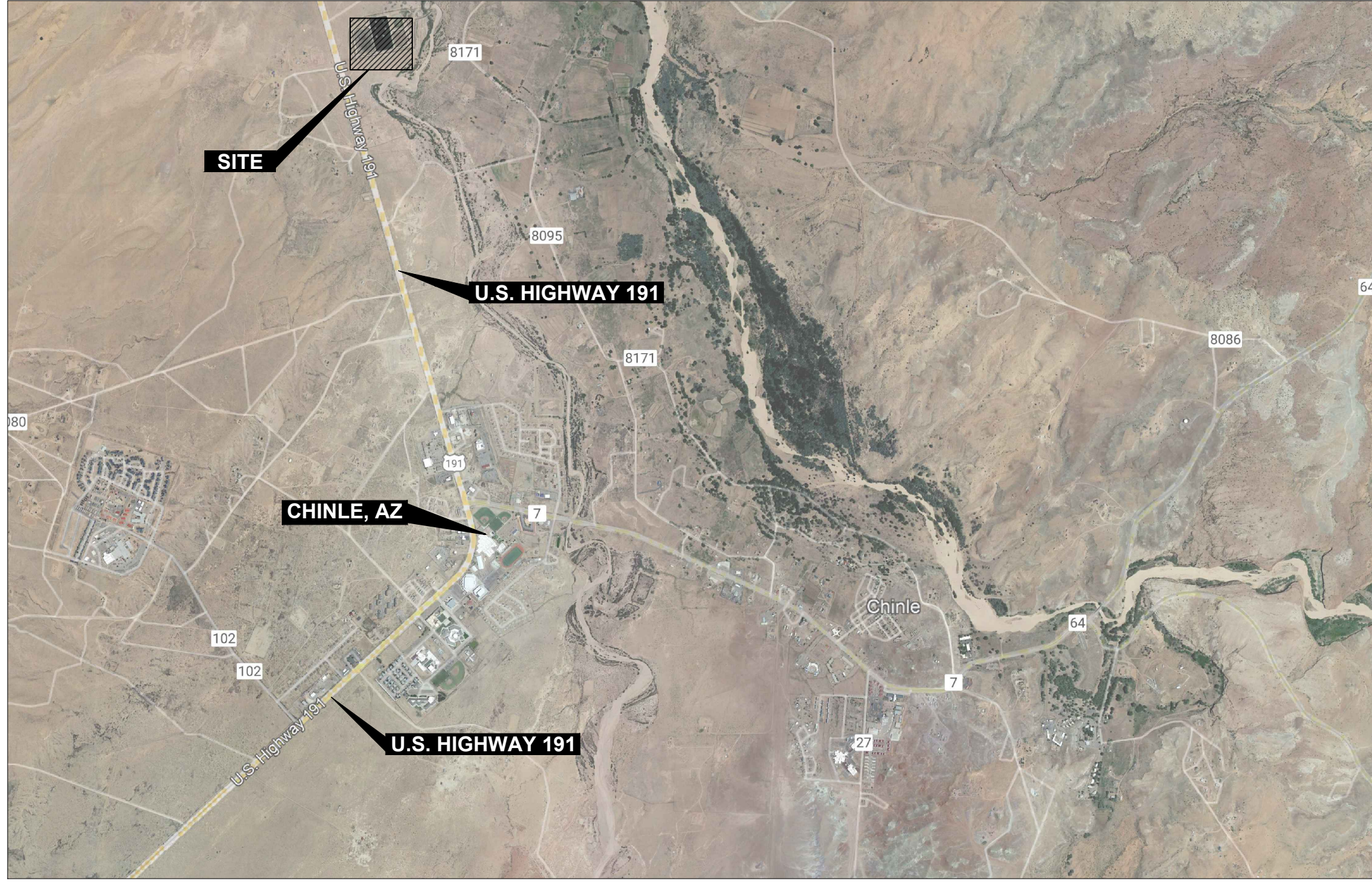
COVER SHEET

SHEET NUMBER:	REV. #
G-001	
SHEET 1 OF 52 SHEETS	

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SITE LOCATION
NTS



VICINITY MAP
NTS

DATE OF PREPARATION:
ORIGINAL ISSUE: 07/14/2023
REVISION 1: 01/22/2024

ENGINEER AND GEOTECHNICAL CONSULTANT:
WSP
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 DEFIANCE, 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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GENERAL NOTES:

QUALITY CONTROL

- 1.0 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.
- 2.0 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

- 3.0 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

- 4.0 THE LOCATION OF EXISTING UTILITIES, AS SHOWN ON THE DRAWINGS, ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR THE ACCURATE LOCATION IN THE FIELD.
- 5.0 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

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

LOCAL HORIZONTAL DATUM: AZSPCS EAST ZONE MODIFIED, C.S.F= 1.000364 TO BE UTILIZED AS "GROUND" COORDINATES.

VERTICAL DATUM: NAVD88 (2011)

BRASS CAP CONTROL POINTS THAT HAVE BEEN INSTALLED ONSITE AND ARE THE BASIS OF HORIZONTAL CONTROL. THE CONTROL POINTS SHALL BE MAINTAINED AND REMAIN UNDISTURBED DURING CONSTRUCTION AND WILL SERVE AS HORIZONTAL CONTROL POINTS FOR THE PROJECT.

Point Table				
Point #	Northing	Eastng	Elevation	Description
96	1889416.985	871408.932	5457.83	BCF BIA NAVAJO ROADS CDOT-4
97	1888984.260	869814.723	5458.41	FRB
98	1888015.160	870521.982	5462.40	FRB
99	1888143.586	870208.812	5464.88	SRB 1/2

- 7.0 SCALES IN THESE PLANS ARE VALID WHEN PLOTTED ON 22"x34" (ANSI).

WORK AREA

- 8.0 THE CONTRACTOR SHALL CONFINE WORK TO WITHIN THE PRESCRIBED CONSTRUCTION LIMITS, EASEMENT, RIGHT-OF-WAY OR PROPERTY.
- 9.0 THE CONTRACTOR SHALL COORDINATE ACTIVITIES WITH THE OWNER AND ENGINEER TO MINIMIZE ACCESS TO ADJACENT PROPERTIES AND TRAFFIC DISRUPTIONS.
- 10.0 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.
- 11.0 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.
- 12.0 IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ACCESS TO EXISTING RESIDENCES, BUSINESSES, TURNOUTS AND INTERSECTING ROADS AT ALL TIMES DURING CONSTRUCTION.
- 13.0 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.
- 14.0 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.
- 15.0 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

- 16.0 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.
- 17.0 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

- 18.0 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

- 19.0 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.

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 GEOTECHNICAL 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.

LEGEND:

EXISTING

- 6314--- TOPOGRAPHIC CONTOUR
- 6314--- TOPOGRAPHIC CONTOUR
- X FENCE
- SS --- SANITARY SEWER LINE
- ⊙ MANHOLE
- ⊖ POWER POLE
- OH — OVERHEAD ELECTRIC LINE
- UE — UNDERGROUND ELECTRIC LINE
- W — WATERLINE

PROPOSED

- 6311--- TOPOGRAPHIC CONTOUR
- 6311--- TOPOGRAPHIC CONTOUR
- X FENCE
- SS --- SANITARY SEWER LINE
- ⊙ MANHOLE
- ⊗ GATE VALVE
- ⊠ BIOLIC DIFFUSER
- ⊠ AERATOR

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

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 (NONPRESTRESSED):
 CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"

EXPOSED TO EARTH OR WEATHER:
 #6 THROUGH #18.....2"
 #5 AND SMALLER.....1 1/2"

NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
 SLABS, WALLS: #11 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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 CFID
 POND SYSTEM
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 WSP PROJECT No:
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SHEET TITLE:
**GENERAL NOTES
 & LEGEND**

SHEET NUMBER:	REV. #
G-002	
SHEET 2 OF 52 SHEETS	

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DEMOLITION NOTES:

- ① POND 1: OFFLINE
- ② POND 2: ACTIVE WASTEWATER TREATMENT POND
- ③ POND 3: OFFLINE
- ④ POND 4: POND TO BE CLEANED AND LINED WITH 60 MIL HDPE. THE GEOMETRY OF POND 4 IS: L= 312', W=272', D=12', VOL.= 5.8 Mgal (POND 4 IS OFFLINE, SEE POND 4 GRADING PROFILE FOR MORE DETAILS)
- ⑤ REMOVE ABANDONED PIPING, ROCK, AND CONCRETE STRUCTURES FROM POND 4.
- ⑥ REMOVE SAS SEWER SECTION, SEE SHEET C-202
- ⑦ REMOVE MANUAL HAND PULL GATES/GUIDE RAILS
- ⑧ REMOVE MH-6 MULTI-LEVEL DRAW-OFF STRUCTURE. STORE TEMPORARILY ON-SITE FOR LATER DISPOSAL.

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 CHINLE, AZ, AND ARIZONA ONE-CALL UTILITY LOCATE.



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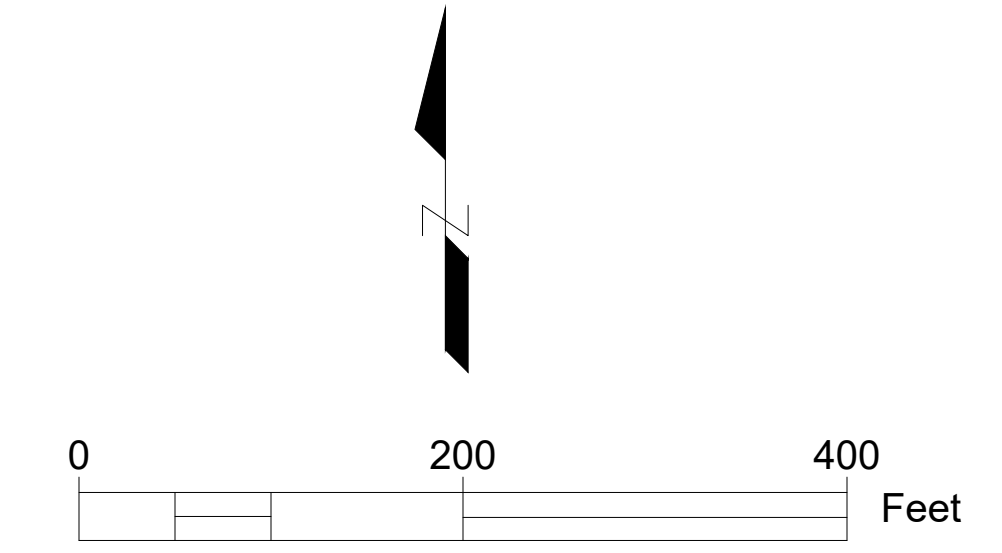
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SHEET TITLE:
**EXISTING SITE
CONDITIONS &
DEMOLITION
PLAN**

SHEET NUMBER:	REV. #
C-100	
SHEET 3 OF 52 SHEETS	



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CONSTRUCTION NOTES:

- 1 NEW HEADWORKS (MANUAL BAR SCREEN - EASTECH ACCURON 7200), SEE SHEET C-304 AND C-305
- 2 RE-GROUT MANHOLE INVERT AND INSTALL PORTABLE FLOW METER
- 3 4' x 3' WINDOW IN BAFFLE, SEE SHEET C-314
- 4 INSTALL 4-15 HP AIRE-O2 ASPIRATING AERATOR BY AERATION INDUSTRIES INTERNATIONAL, LLC. INCLUDES AERATORS, ELECTRICAL CABLES, AND MOORING CABLES, ETC. SEE SHEET C-315.
- 5 MOORING CABLES FOR AERATORS, 3 EA.
- 6 BAFFLES (FLOATING SYNTHETIC)
- 7 12" DIP CLASS 350 SANITARY SEWER SECTION WITH MJ GATE VALVE
- 8 NEW OUTLET BOX. SEE DISCHARGE STRUCTURE DETAILS SHEET C-303
- 9 NEW 15-INCH SDR 35 PVC SEWER
- 10 TAP EXISTING SEWER MAIN
- 11 NEW MANHOLE
- 12 AERATION BLOWERS WITH CONCRETE PAD, SEE SHEET C-401
- 13 14" DUCTILE IRON AIR PIPING
- 14 4' X 4' DIVERSION BOX WITH 2 SLUICE GATES, SEE SHEET C-310
- 15 TAP EXISTING MANHOLE
- 16 BIOLAC DIFFUSER AIR SYSTEM
- 17 6" PVC SCH 40 MLSS RECYCLE LINE
- 18 3" PVC WASTE MLSS LINE, SEE SHEET C-312
- 19 8" DIP WITH MJ GATE VALVE
- 20 MLSS PUMP STATION, SEE SHEET C-306
- 21 MLSS VALVE VAULT, SEE SHEET C-307
- 22 NEW FLOATING DECANter, SEE SHEET C-311
- 23 REPLACE 113' SAS WITH 18" SDR 35 PVC
- 24 DISINFECTION CONTACT EXTENSION CHAMBER, SEE SHEET C-312
- 25 NEW 12" DIP FORCEMAIN
- 26 EFFLUENT PUMP STATION AND VALVE VAULT, SEE SHEETS C-308 AND C-309

SHEET GENERAL NOTES:

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- 2. FOR DETAILS OF NEW CONSTRUCTION SEE FOLLOWING DRAWING SHEETS.



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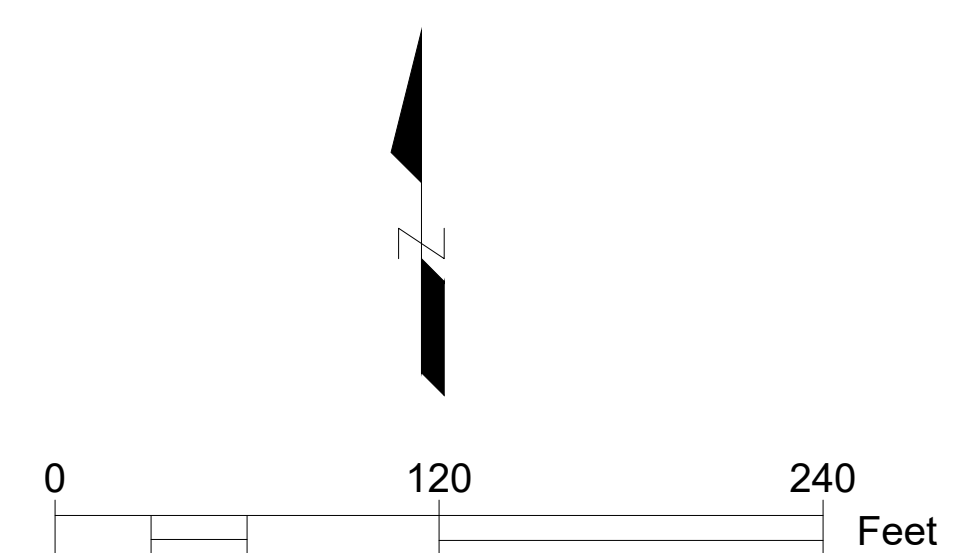
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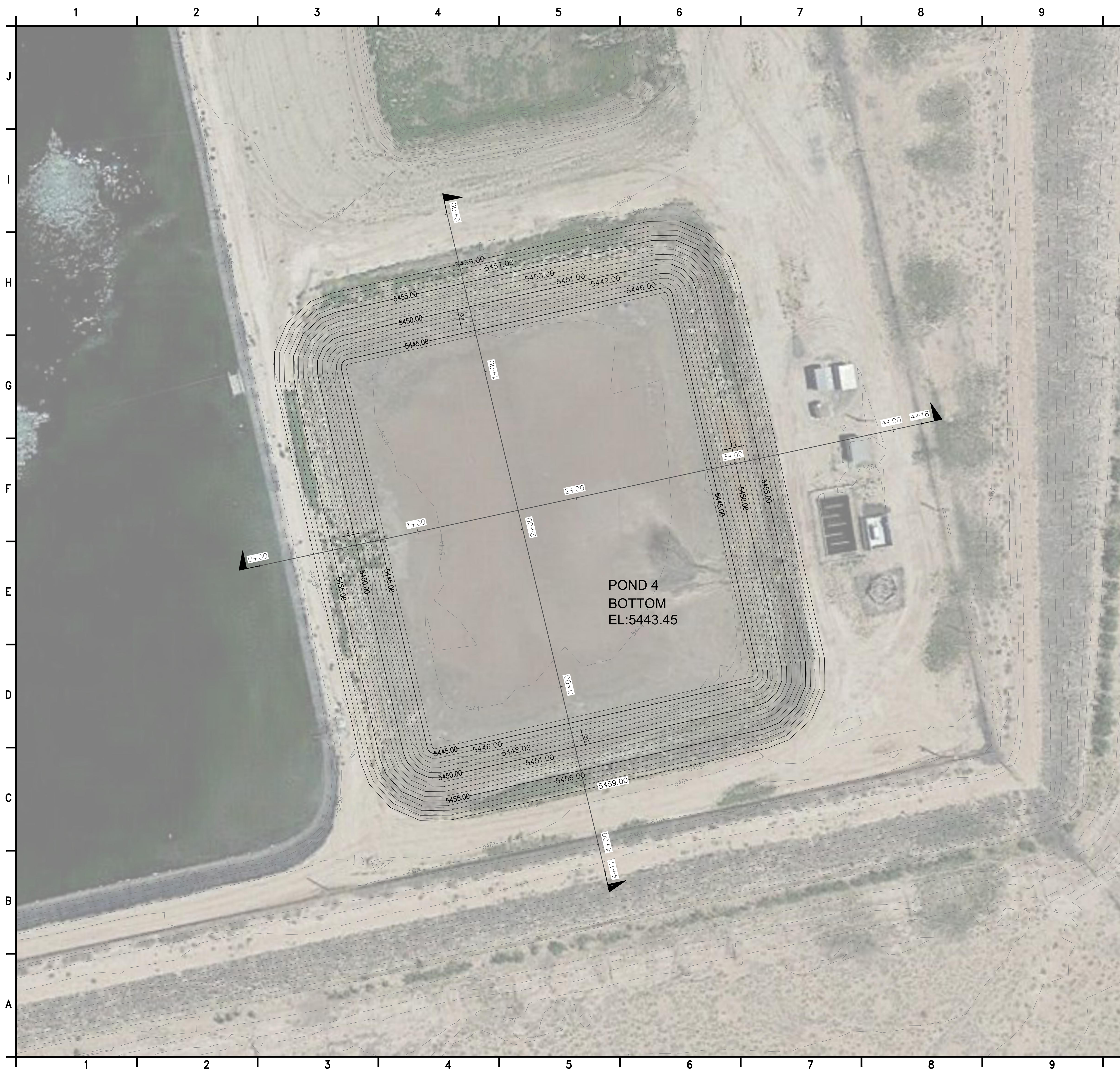
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CFID POND SYSTEM

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SHEET 4 OF 52 SHEETS	



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GRADING NOTES:

- ① RESTORE POND 4 TO AS-BUILT DIMENSIONS AND ELEVATIONS, SEE SHEET C-201 FOR GRADING PROFILE SECTIONS.
- ② REMOVE ABANDONED PIPING, ROCK, AND CONCRETE STRUCTURES FROM POND 4.

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LEGEND

- EXISTING GROUND TOPOGRAPHIC CONTOUR
- PROPOSED GRADING TOPOGRAPHIC CONTOUR



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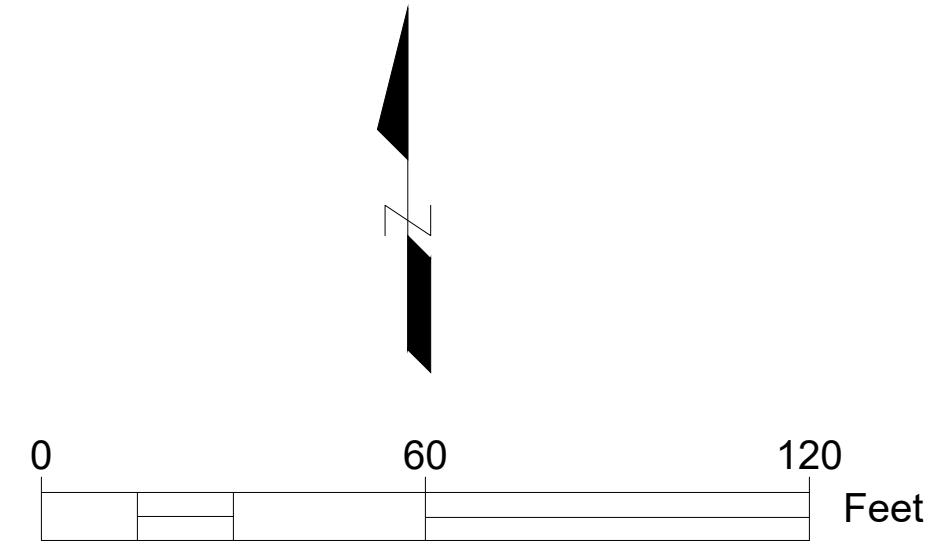
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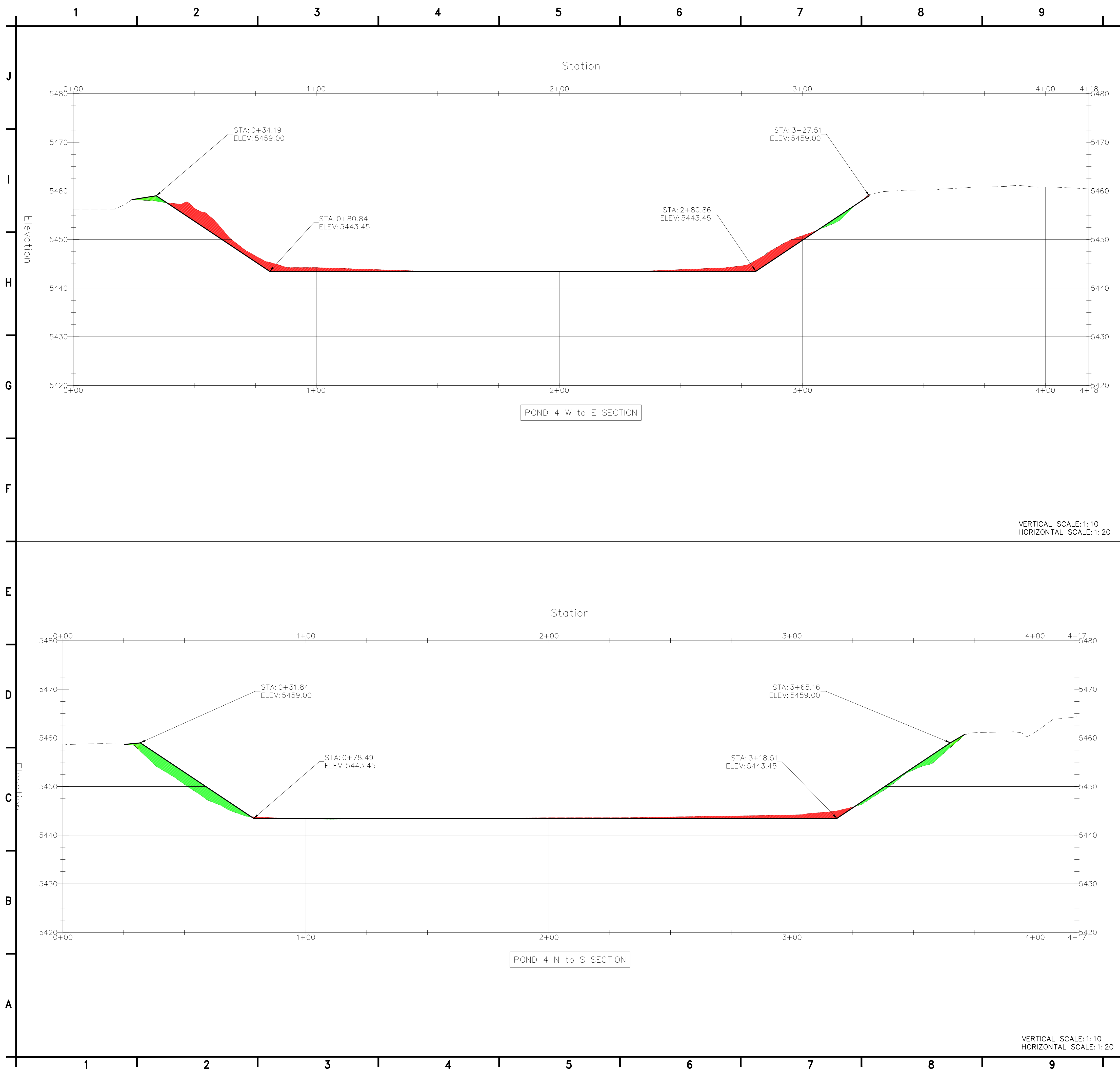
DESIGNED BY:	WSP - BM
DRAWN BY:	WSP - AO
CHECKED BY:	WSP - DB
APPROVED BY:	WSP - DB
DATE:	07/14/2023

SHEET TITLE:
GRADING PLAN

SHEET NUMBER:	REV. #
C-200	
SHEET 5 OF 52 SHEETS	



X:\US\USABQ500-ABQ\ProjectG\$\consulting\projects\21\517-00051.NTUA HPP Chinle WWF\CAD\5-C-200_GRADING PLAN with rbm edits_2.dwg



CUT AND FILL REPORT:

Volume Summary							
Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
POND 4 CUT AND FILL	full	1.00	1.00	95724	2236.70	837.48	1399.22<Cut>
Totals				2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total				95724	2236.70	837.48	1399.22<Cut>

* Value adjusted by cut or fill factor other than 1.0



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FINAL

PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

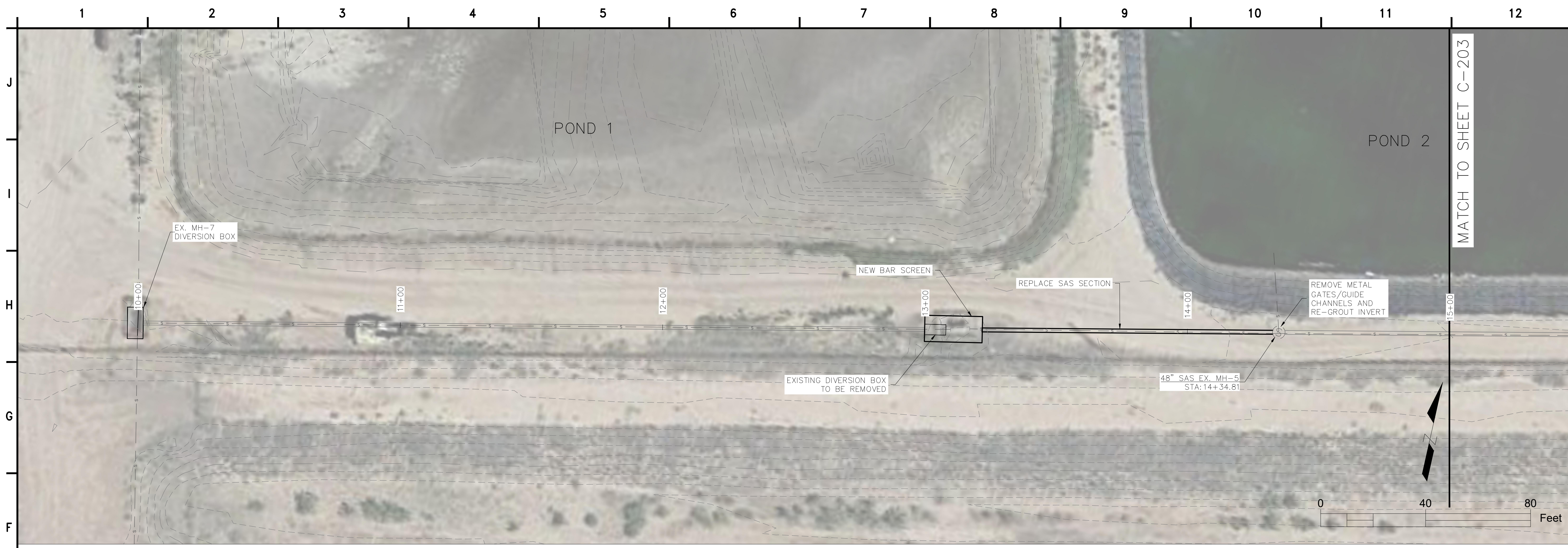
REVISIONS			
NO.	DATE	BY	APPROVED

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

SHEET TITLE:
**GRADING PLAN
PROFILES**

SHEET NUMBER:	REV. #
C-201	
SHEET 6 OF 52 SHEETS	

X:\US\ABQ500-ABQ\Project\GSS\consulting\projects\21\21-517-00051.NTUA.HPP.Chinle.WWF\CAD\7.C-202_C-205_SEWER LINE PLAN & PROFILE_WITHOUT_OVERFLOW.dwg



wsp

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TEL: (505) 821-1801

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

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**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**

NAVAJO TRIBAL UTILITY AUTHORITY
PO BOX 170
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WSP PROJECT No:
2151700051

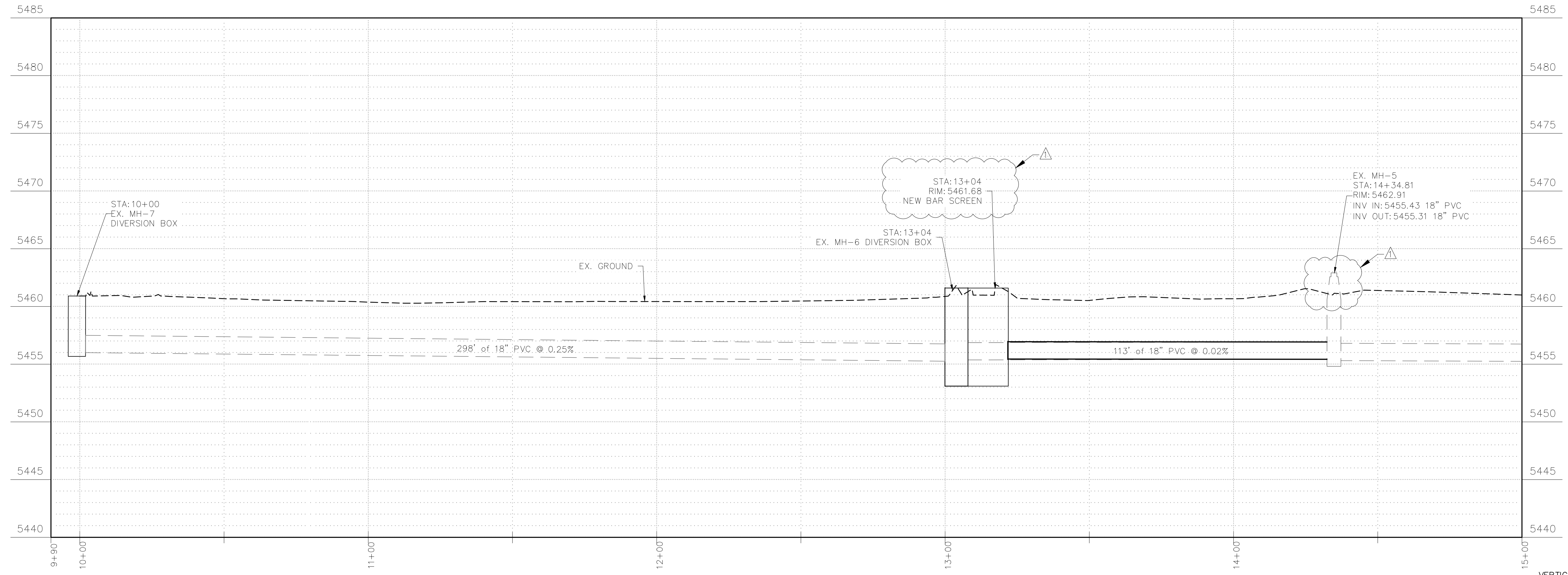
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A. ORRANTIA	S. TANDUKAR

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

SHEET TITLE:
**SEWER LINE
PLAN AND PROFILE
STA 10+00 TO STA 15+00**

SHEET NUMBER:	REV. #
C-202	
SHEET 7 OF 52 SHEETS	

EX. SEWER LINE AND MH TIE-IN

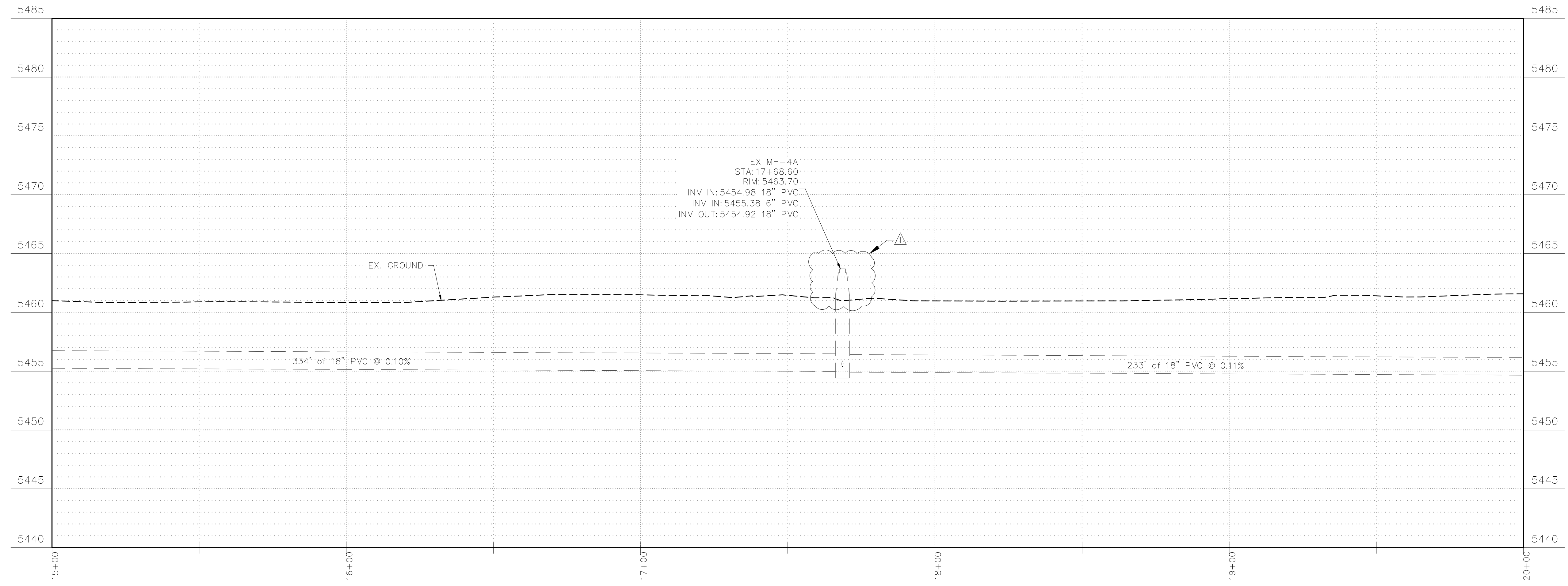


VERTICAL SCALE: 1:5
HORIZONTAL SCALE: 1:20

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EX. SEWER LINE AND MH TIE-IN



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PROJECT:
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POND SYSTEM
FINAL DESIGN**



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WSP PROJECT No:
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REVISIONS			
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CHECKED BY:	WSP - DB
APPROVED BY:	WSP - DB
DATE:	07/14/2023

SHEET TITLE:
**SEWER LINE
PLAN AND PROFILE
STA 15+00 TO STA 20+00**

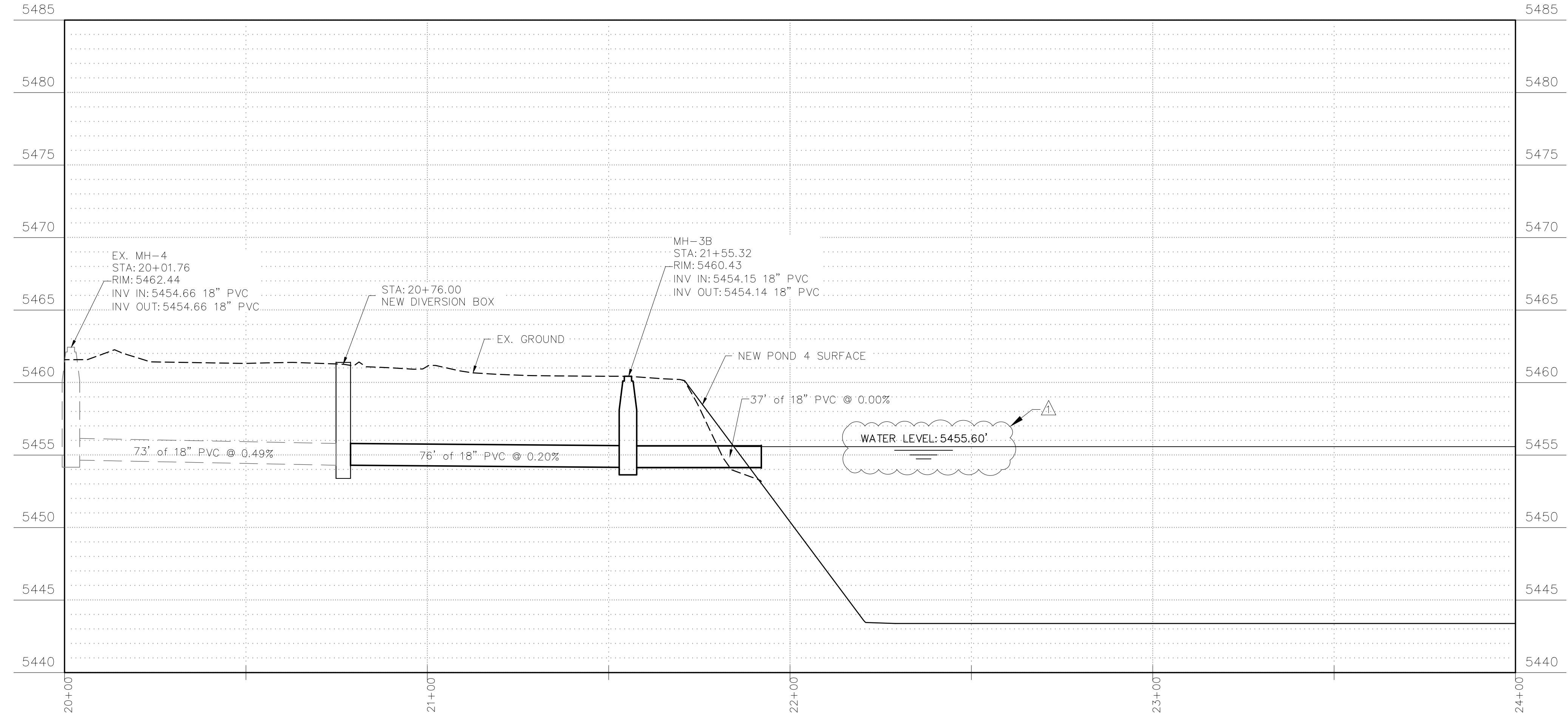
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C-203	
SHEET 8 OF 52 SHEETS	

VERTICAL SCALE: 1:5
HORIZONTAL SCALE: 1:20

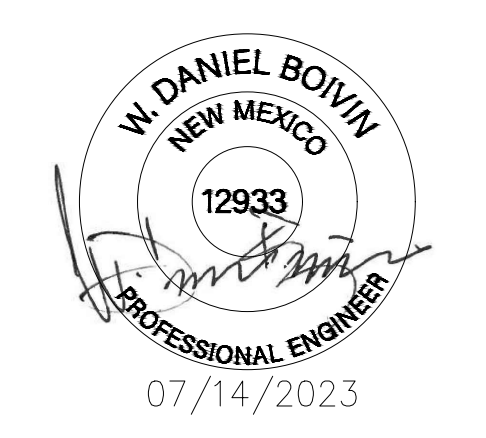
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EX. SEWER LINE AND MH TIE-IN



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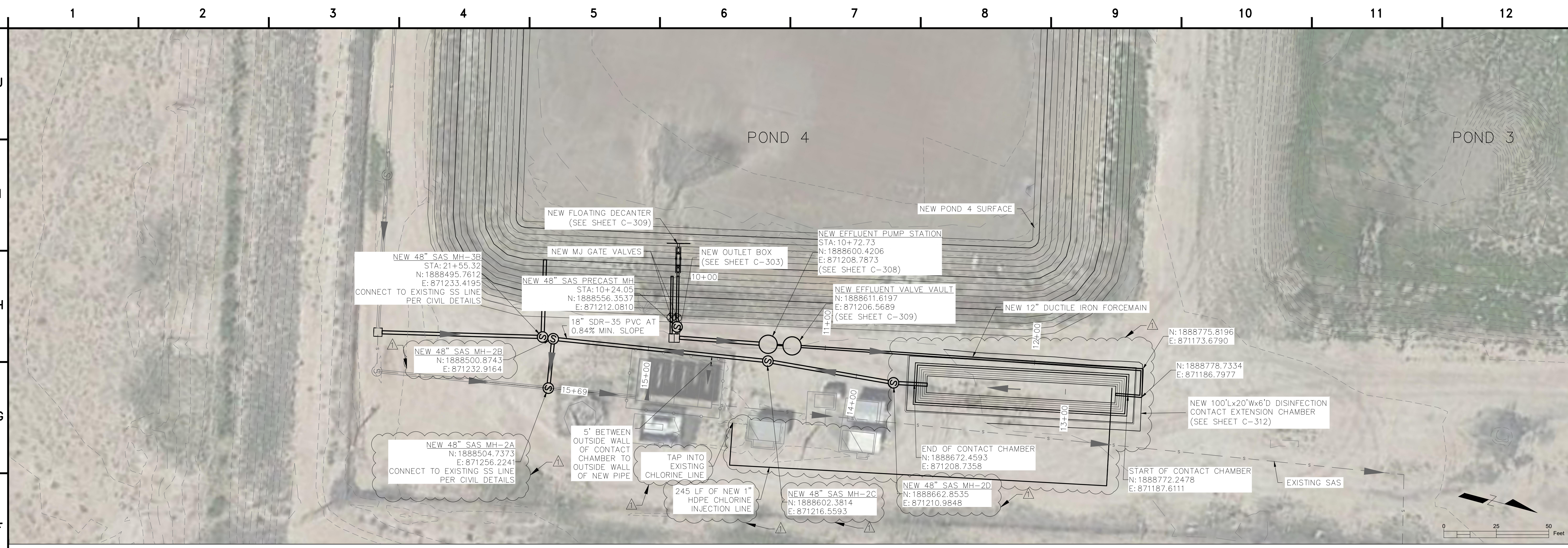
DESIGNED BY: WSP - BM
DRAWN BY: WSP - AO
CHECKED BY: WSP - DB
APPROVED BY: WSP - DB
DATE: 07/14/2023

SHEET TITLE:
**SEWER LINE
PLAN AND PROFILE
STA 20+00 TO STA 24+00**

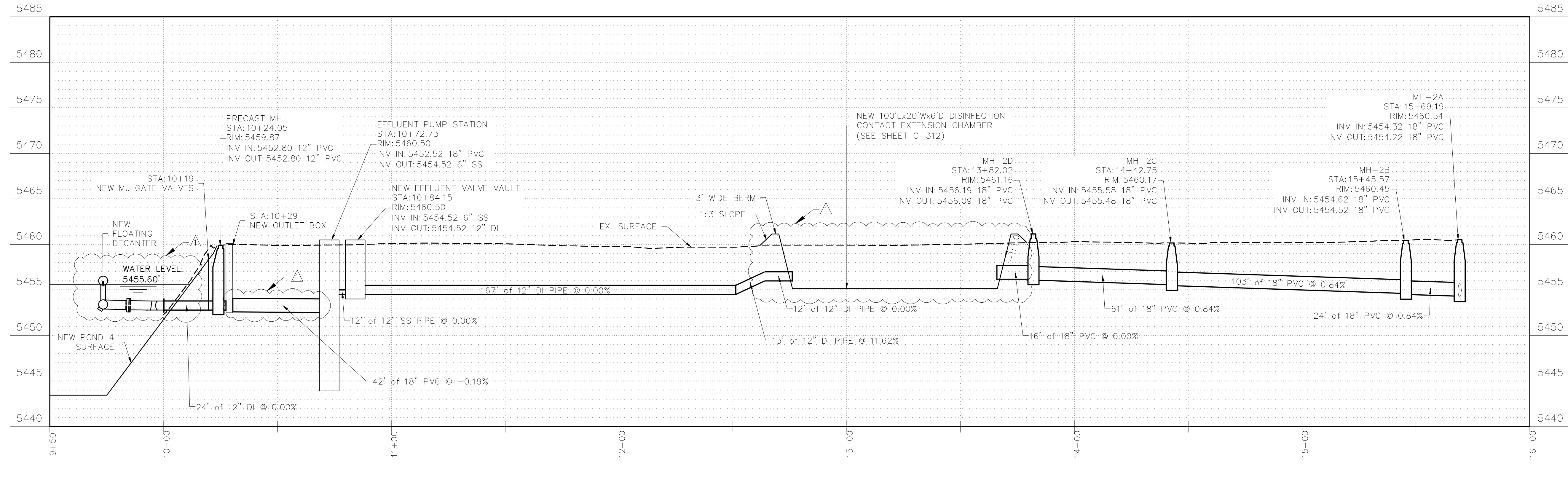
SHEET NUMBER: **C-204**
REV. #
SHEET 9 OF 52 SHEETS

VERTICAL SCALE: 1:5
HORIZONTAL SCALE: 1:20

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MH TIE-IN SEWERLINE



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FINAL

PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



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WSP PROJECT No:
2151700051

REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A. ORRANTIA	S. TANDUKAR

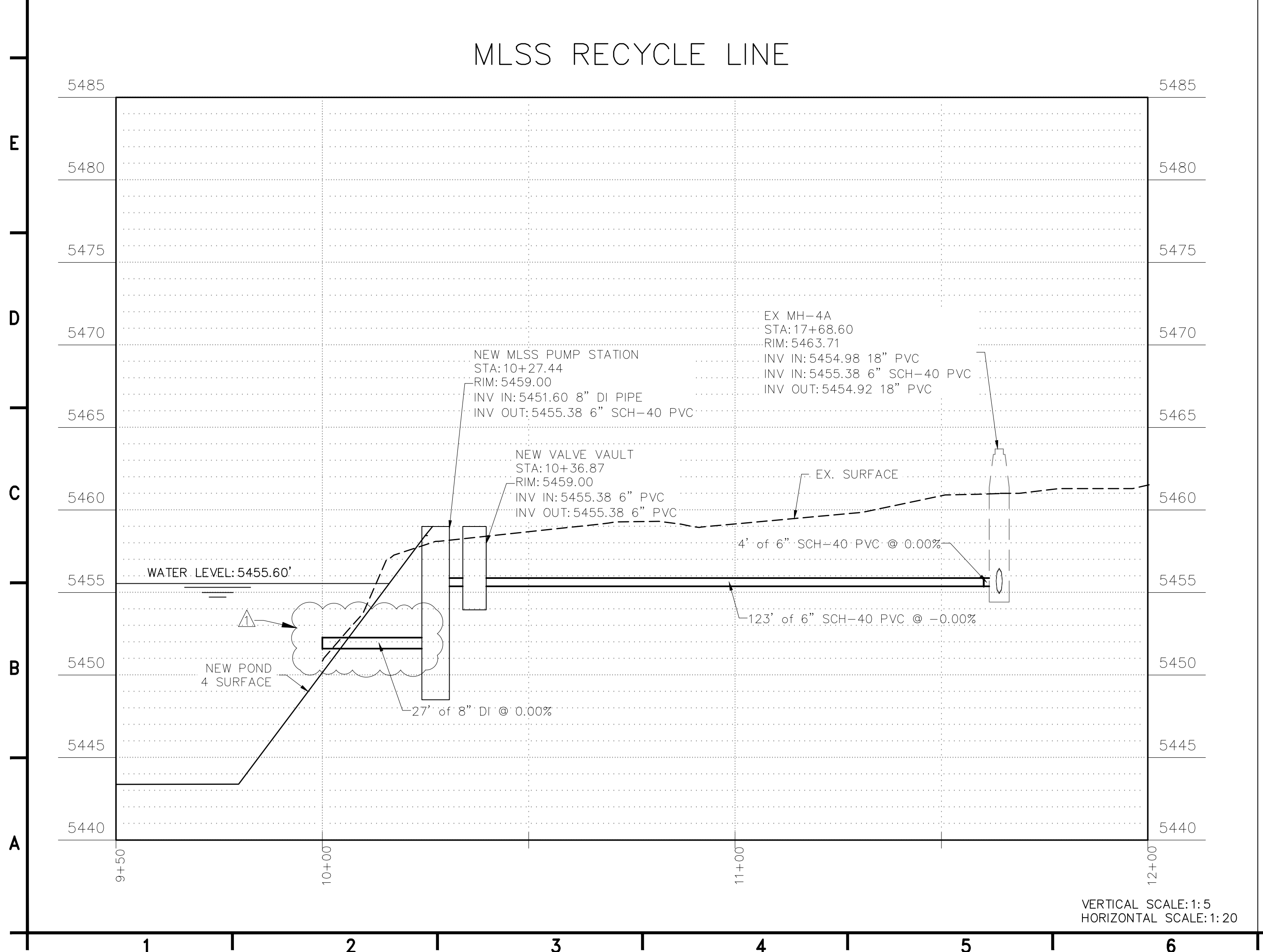
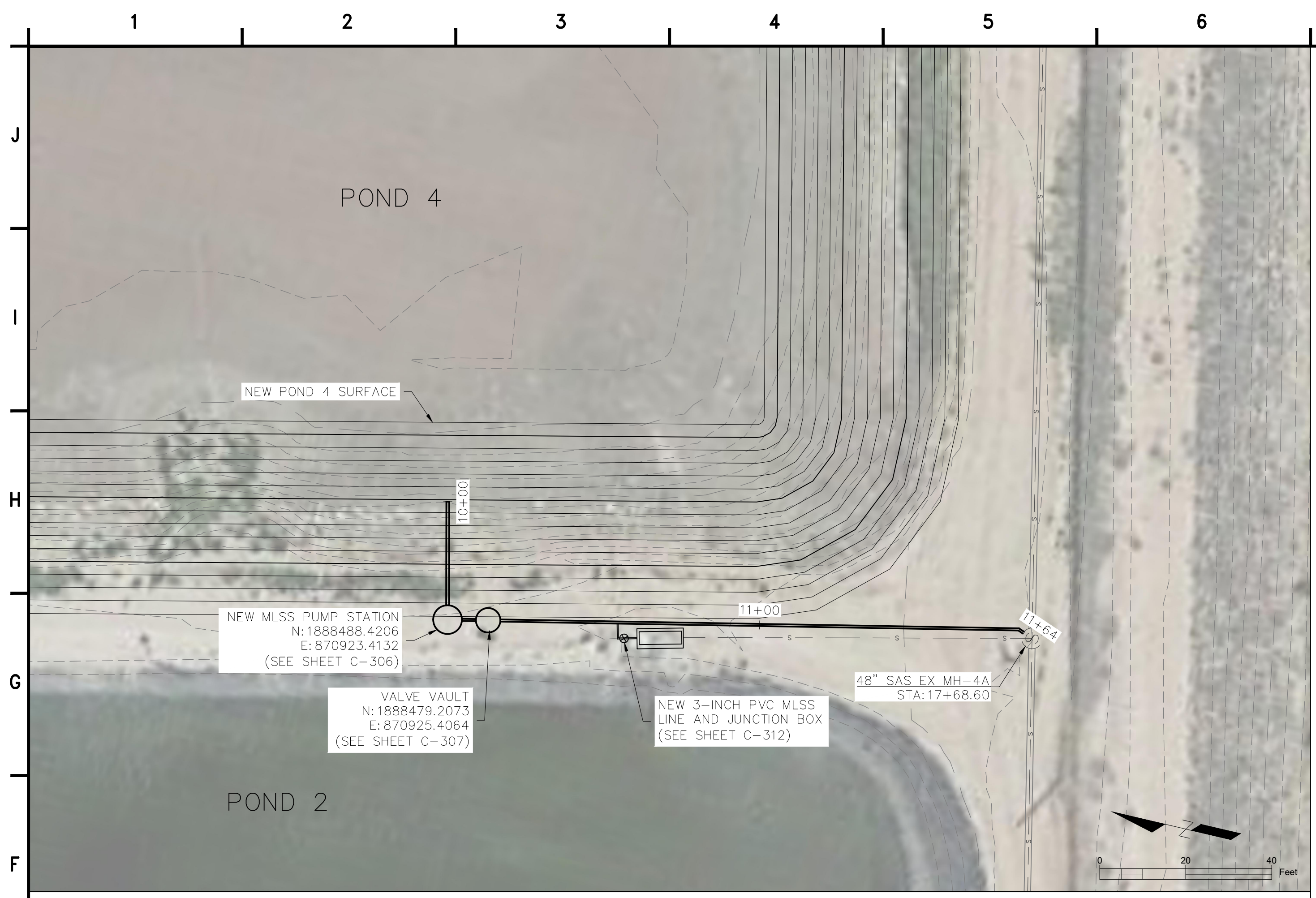
DESIGNED BY: WSP - BM
DRAWN BY: WSP - AO
CHECKED BY: WSP - DB
APPROVED BY: WSP - DB
DATE: 07/14/2023

SHEET TITLE:
**SEWER LINE
PLAN AND PROFILE
STA 10+00 TO STA 15+69**

SHEET NUMBER: **C-205A**
REV. #
SHEET 10A OF 52 SHEETS

VERTICAL SCALE: 1:5
HORIZONTAL SCALE: 1:25

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VERTICAL SCALE: 1:5
HORIZONTAL SCALE: 1:20



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PROJECT:
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CFID
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FINAL DESIGN**



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WSP PROJECT No:
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APPROVED BY:	WSP - DB
DATE:	07/14/2023

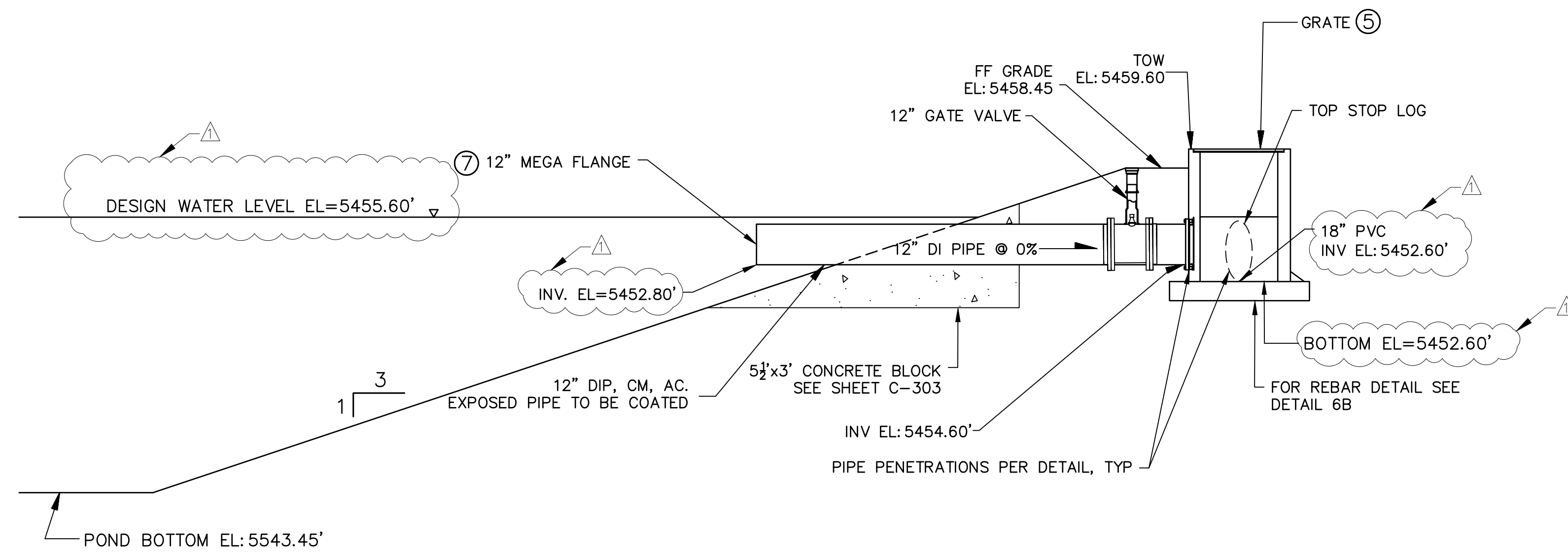
SHEET TITLE:
**MLSS RECYCLE LINE
PLAN AND PROFILE
STA 10+00 TO STA 12+00**

SHEET NUMBER:	REV. #
C-205B	
SHEET 10B OF 52 SHEETS	

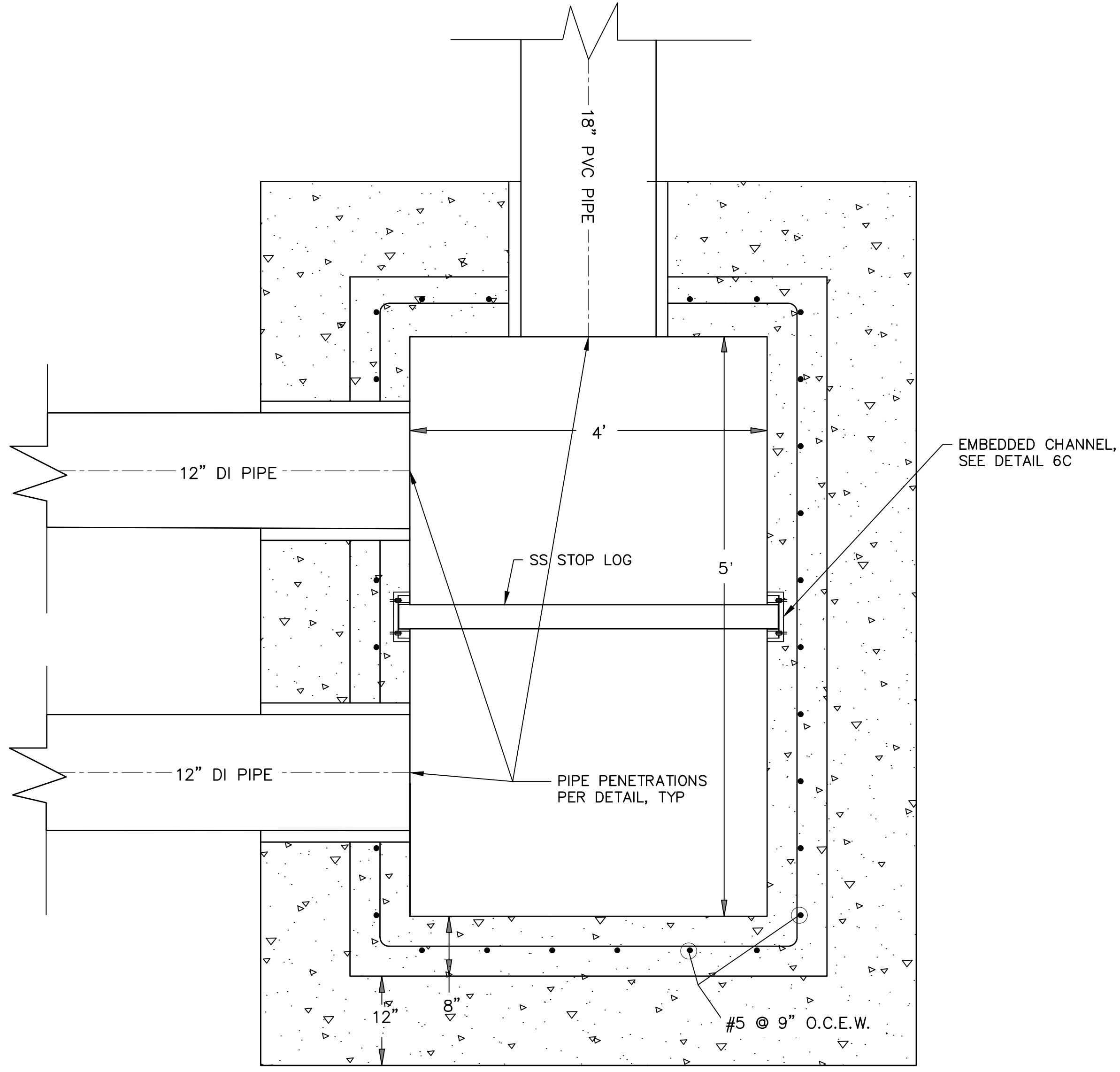
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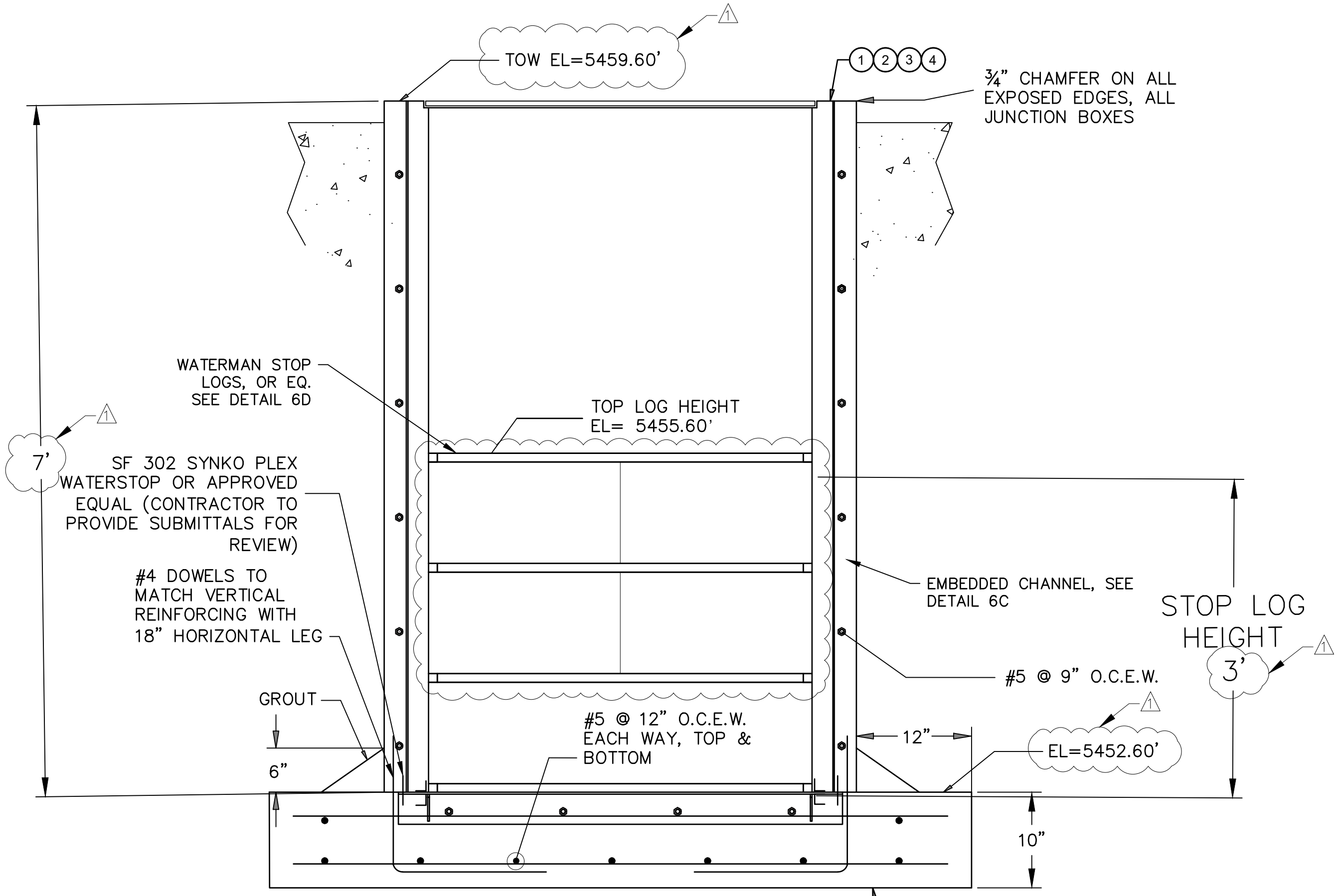
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6 DISCHARGE STRUCTURE PROFILE
NOT TO SCALE



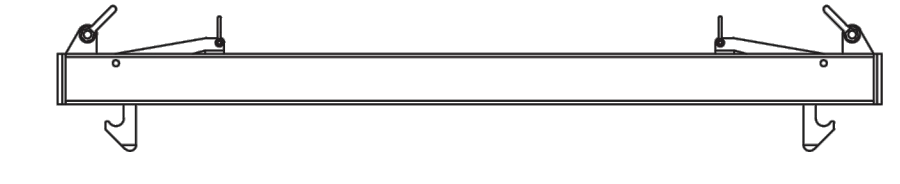
6A DISCHARGE STRUCTURE STRUCTURAL DETAILS (PLAN)
NOT TO SCALE



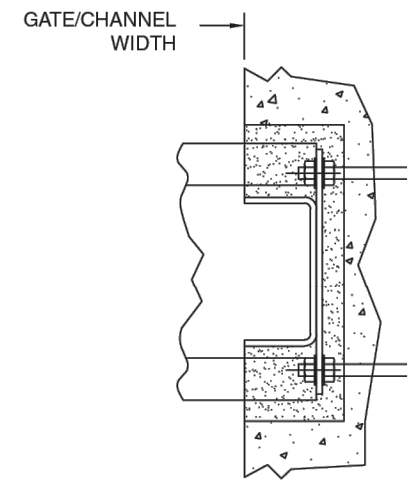
6B DISCHARGE STRUCTURE STRUCTURAL DETAILS (PROFILE)
NOT TO SCALE

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 INCLUDING 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 GRATING DETAIL.
- 6 FURNISH AND INSTALL 18-INCH SDR SAS PIPING INCLUDING FITTINGS, TRENCHING, COMPACTION, COMPLETE AND IN PLACE.
- 7 FLOATING DECANTER TO BE INSTALLED, SEE SHEET C-311.
- 8 24" COMPACTED FILL AT 95%.




6D STOP LOG
NOT TO SCALE



6C EMBEDDED CHANNEL
NOT TO SCALE




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PROJECT:
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POND SYSTEM
FINAL DESIGN**



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WSP PROJECT No:
2151700051**

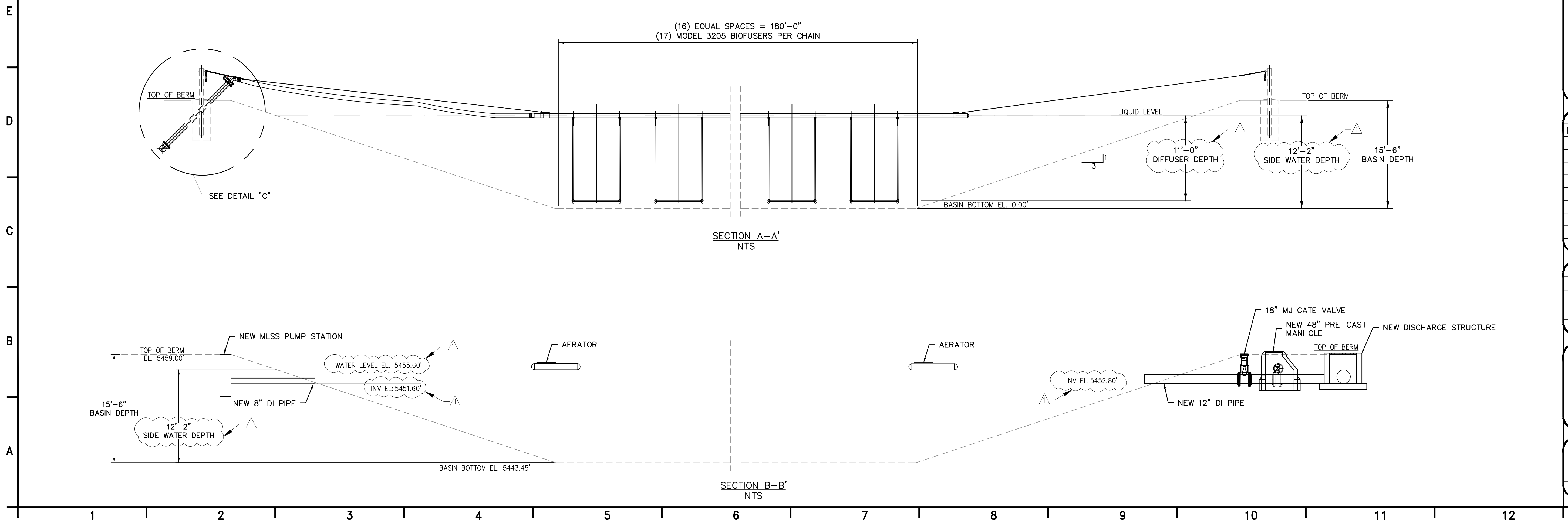
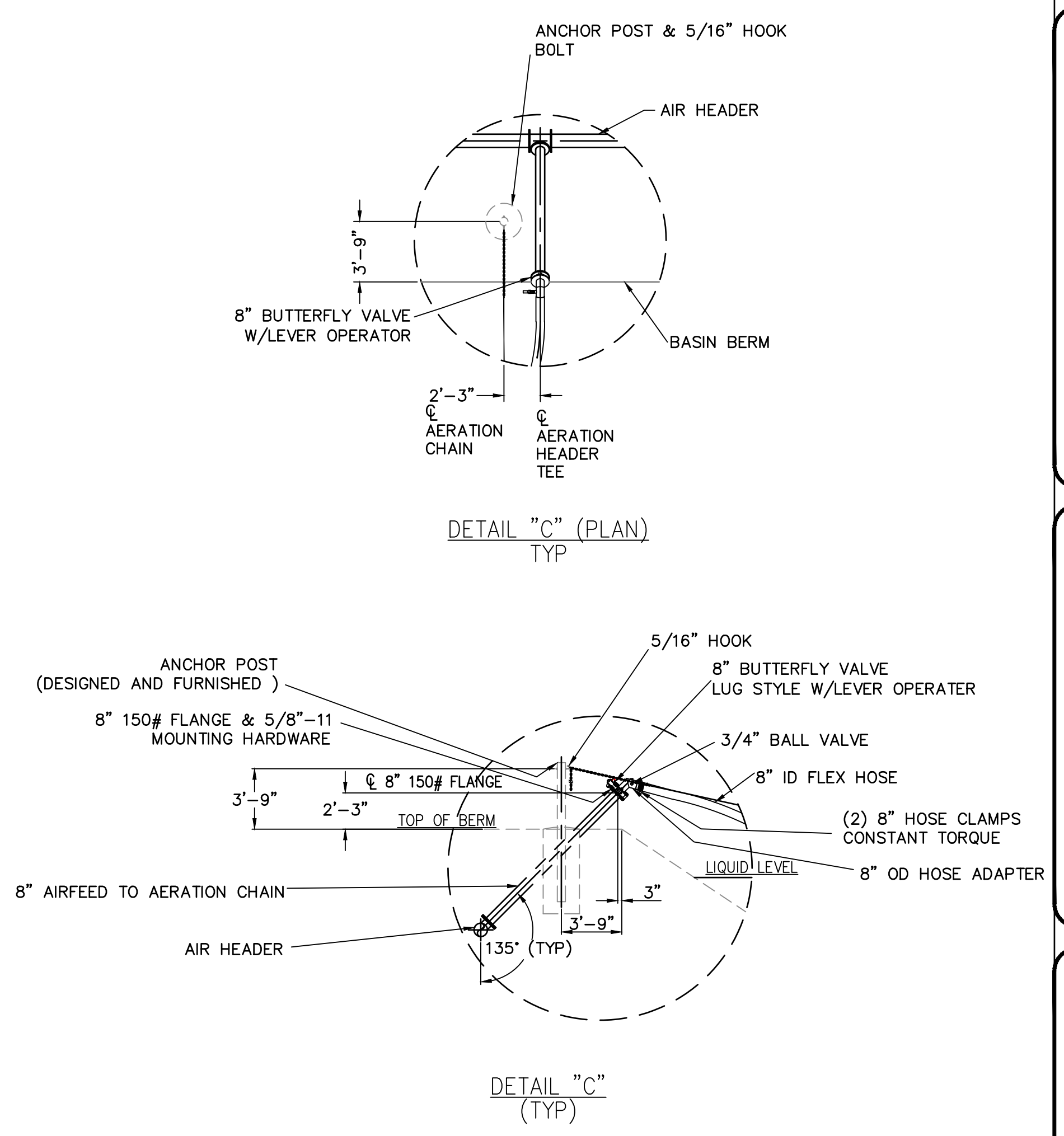
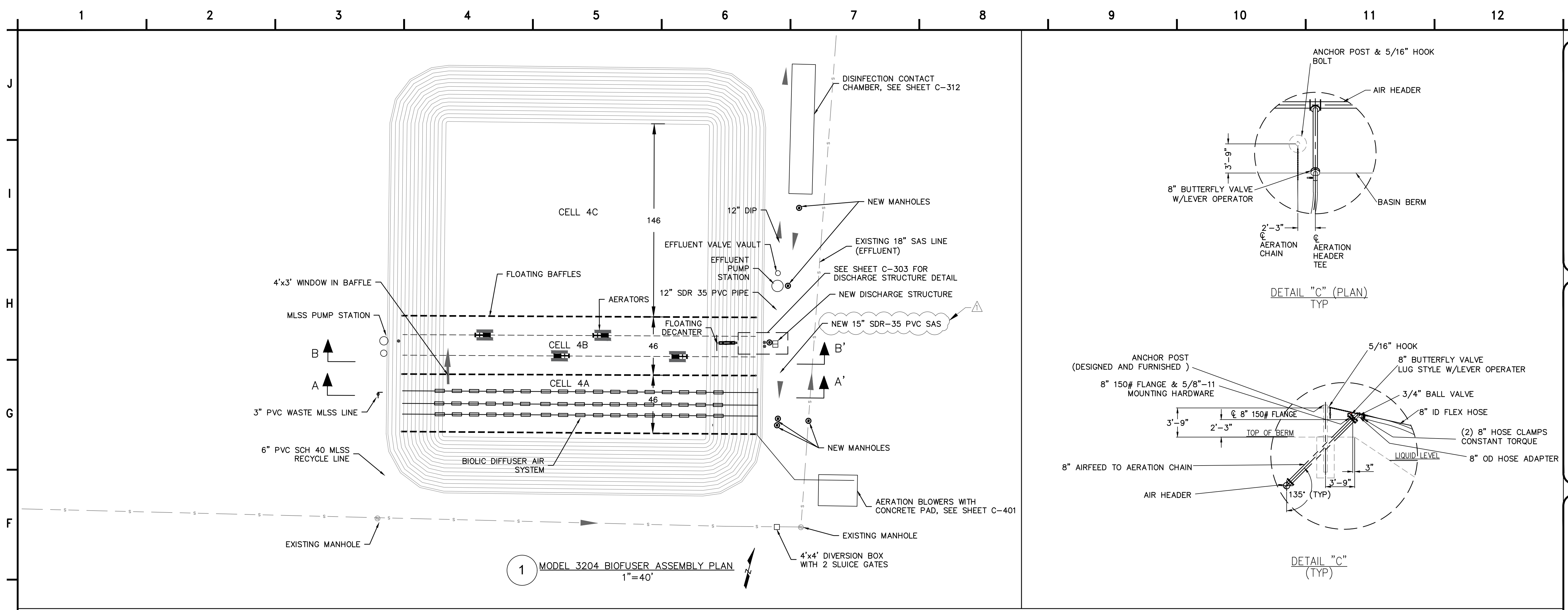
REVISIONS			
NO.	DATE	BY	APPROVED
7	01/22/24	A.ORRANTIA	S.STANDUKAR

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

SHEET TITLE:
**DISCHARGE
STRUCTURE PLAN,
PROFILE AND DETAILS**

SHEET NUMBER:	REV. #
C-301	
SHEET 11 OF 52 SHEETS	

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FINAL

PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**

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AUTHORITY
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WSP PROJECT No:
2151700051

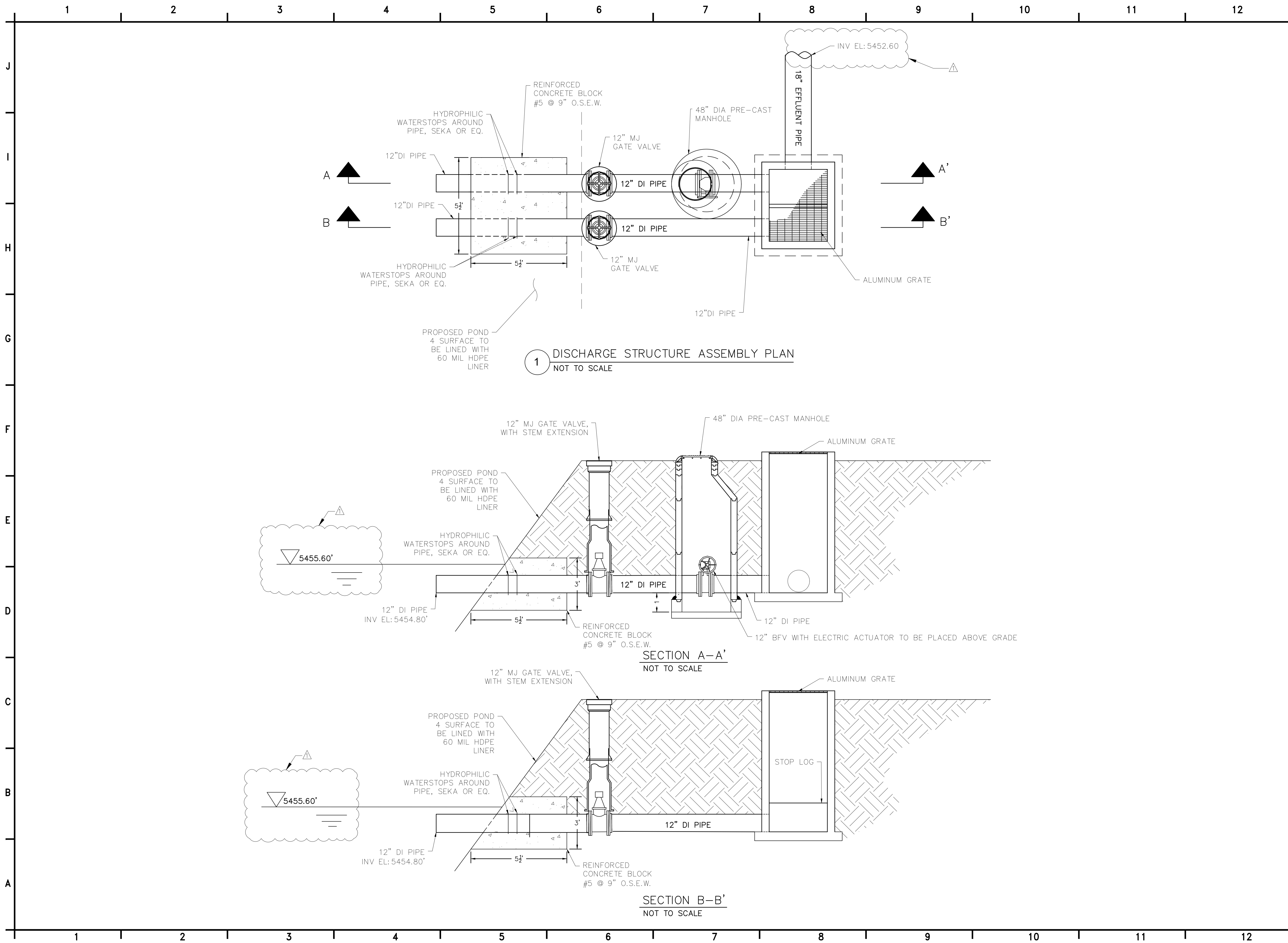
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A. ORRANTIA	S. STANDUKAR

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

SHEET TITLE:
**DIFUSER
DETAILS**

SHEET NUMBER:	REV. #
C-302	
SHEET 12 OF 52 SHEETS	

X:\US\AB0500-ABQ\Project\consulting\projects\21-517-00051\NTUA HPP Chinle WWF\CAD\13.C-303_DISCHARGE_STRUCTURE_DETAILS.dwg




1 DISCHARGE STRUCTURE ASSEMBLY PLAN
NOT TO SCALE

SECTION A-A'
NOT TO SCALE

SECTION B-B'
NOT TO SCALE




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PROJECT:
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POND SYSTEM
FINAL DESIGN**



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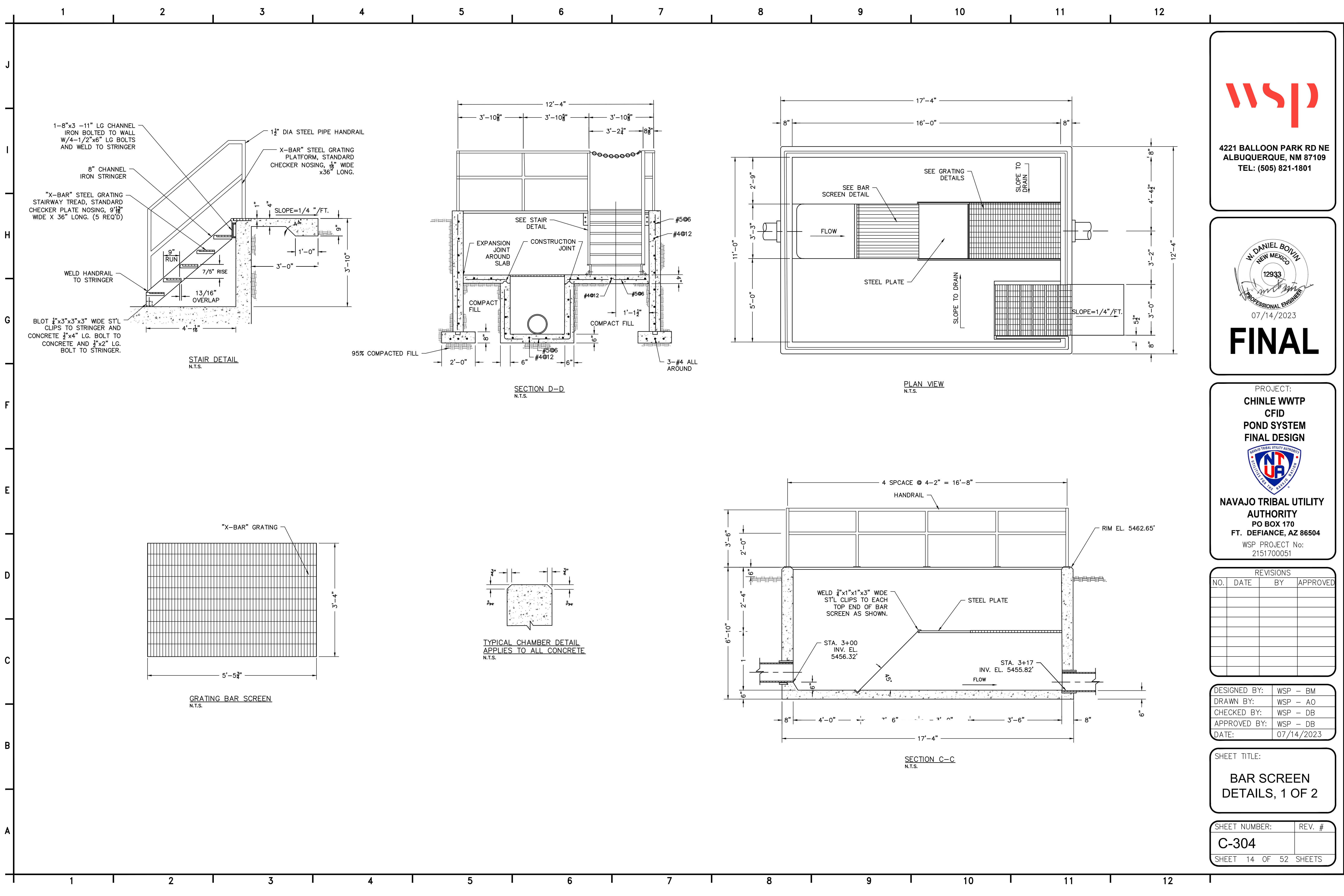
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A. ORRANTIA	S. STANDUKAR

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

SHEET TITLE:
**DISCHARGE
STRUCTURE DETAILS**

SHEET NUMBER:	REV. #
C-303	
SHEET 13 OF 52 SHEETS	

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PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



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2151700051**

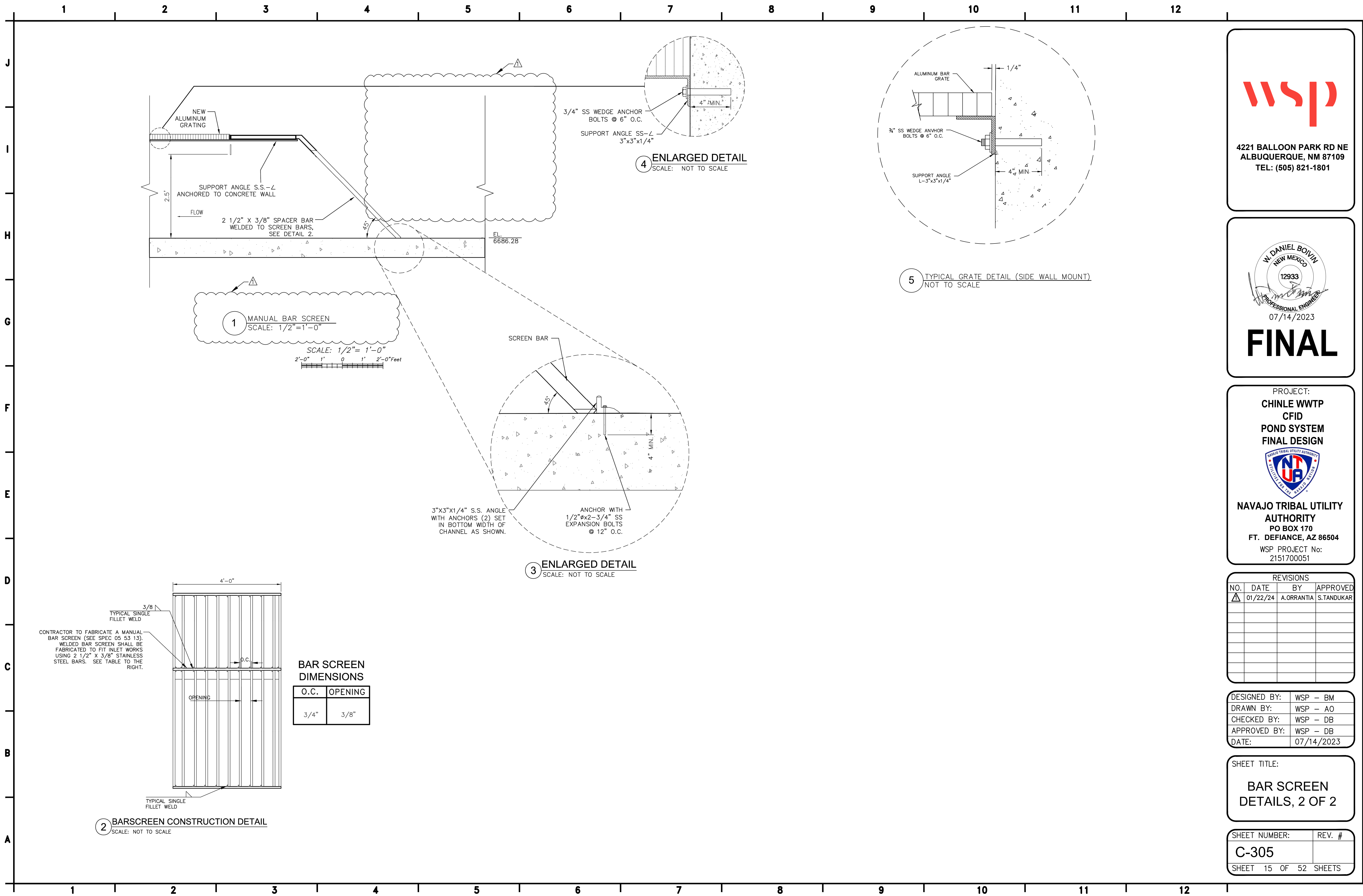
REVISIONS			
NO.	DATE	BY	APPROVED

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

SHEET TITLE:
**BAR SCREEN
DETAILS, 1 OF 2**

SHEET NUMBER: **C-304**
 SHEET 14 OF 52 SHEETS

X:\US\AB0500-ABQ\Project\consulting\projects\21-517-00051.NTUA HPP Chinle WWF\CAD\15.C-305_BAR SCREEN DETAILS_2 OF 2.dwg



1 MANUAL BAR SCREEN
SCALE: 1/2" = 1'-0"

SCALE: 1/2" = 1'-0"
2'-0" 1' 0 1' 2'-0" Feet

3 ENLARGED DETAIL
SCALE: NOT TO SCALE

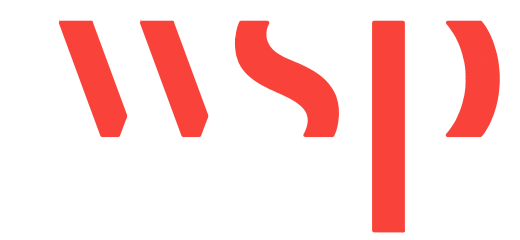
4 ENLARGED DETAIL
SCALE: NOT TO SCALE

5 TYPICAL GRATE DETAIL (SIDE WALL MOUNT)
NOT TO SCALE

2 BARSCREEN CONSTRUCTION DETAIL
SCALE: NOT TO SCALE

BAR SCREEN DIMENSIONS

O.C.	OPENING
3/4"	3/8"



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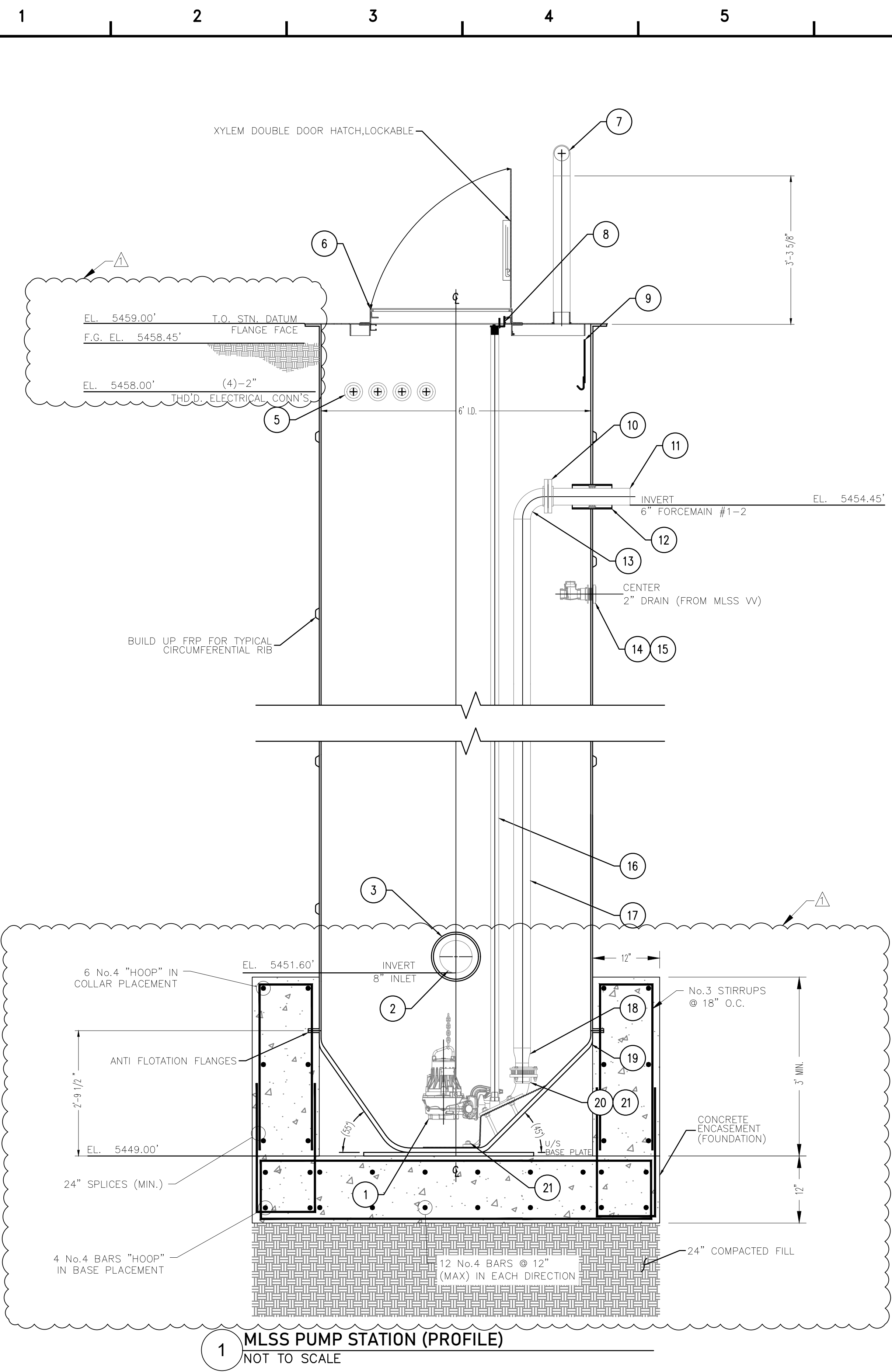
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A.ORRANTIA	S.STANDUKAR

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APPROVED BY:	WSP - DB
DATE:	07/14/2023

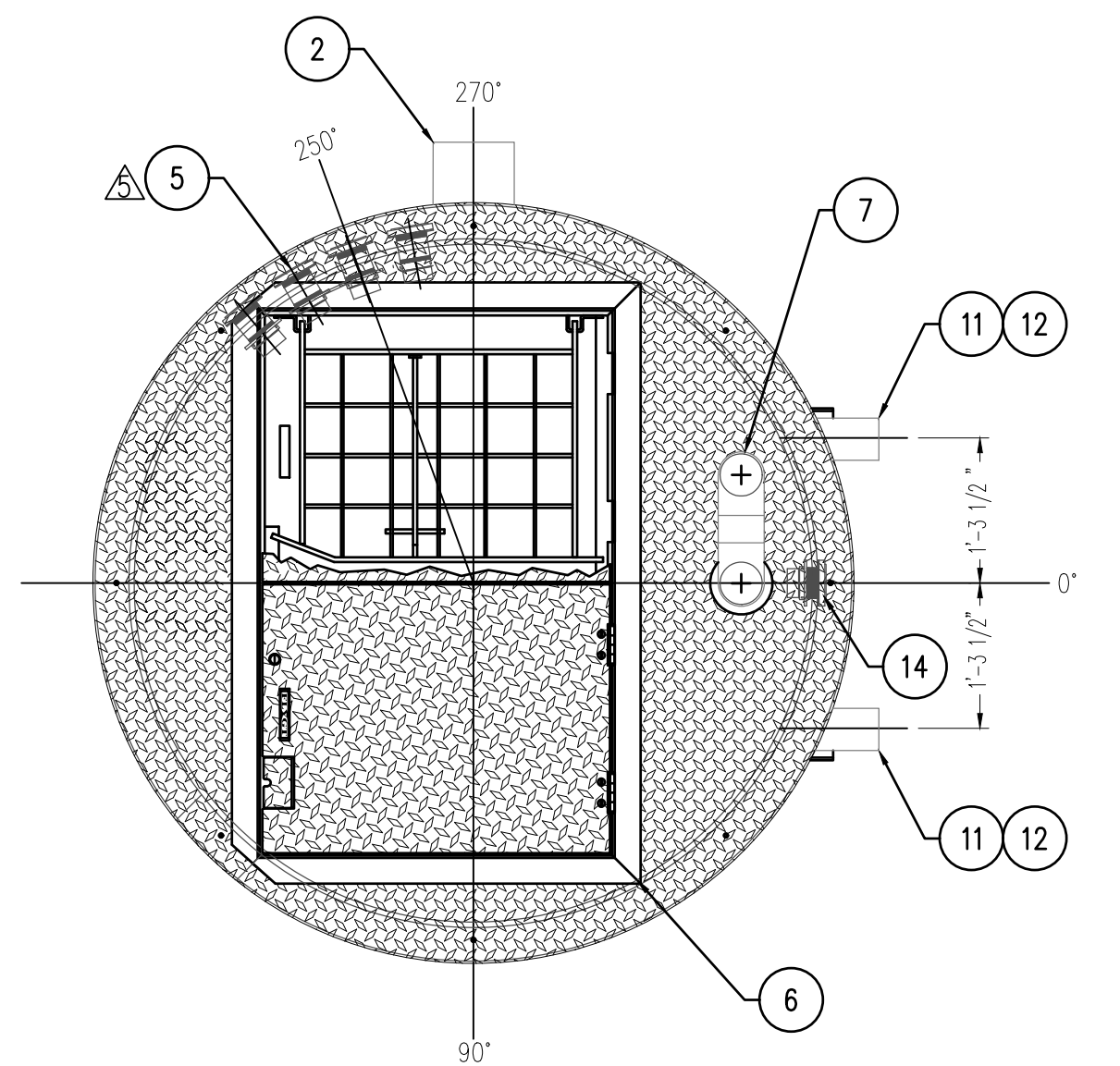
SHEET TITLE:
**BAR SCREEN
DETAILS, 2 OF 2**

SHEET NUMBER:	REV. #
C-305	
SHEET 15 OF 52 SHEETS	

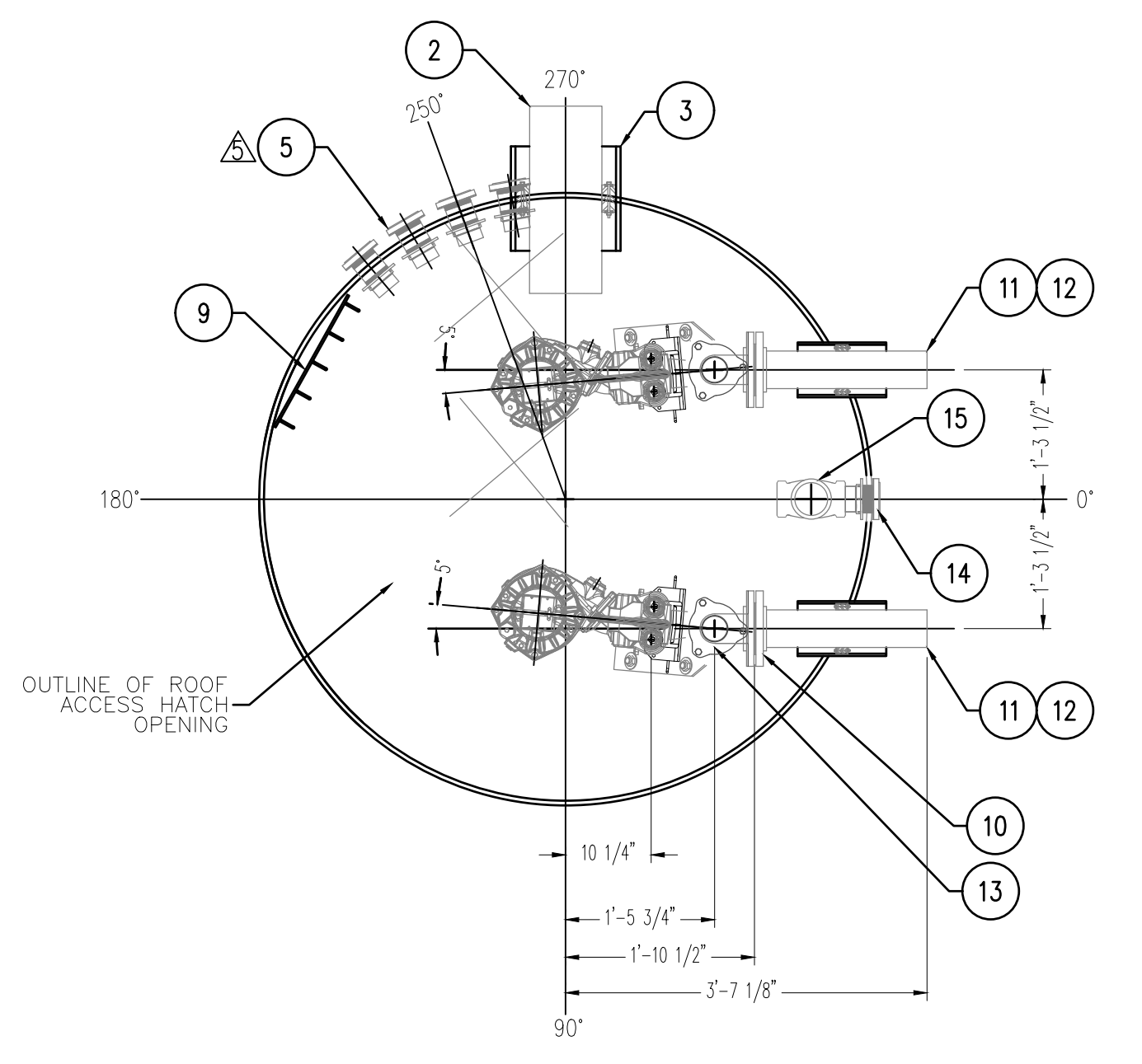
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1 MLSS PUMP STATION (PROFILE)
NOT TO SCALE



1A MLSS PUMP STATION (PLAN)
NOT TO SCALE



1B PUMPS LAYOUT
NOT TO SCALE

BILL OF MATERIALS		
ITEM	DESCRIPTION	QTY.
1	FLYGT PUMPS NP-3102 060 464 DN80 [3"]	2
2	8" INLET (SOR 35 D.I. PIPE)	1
3	10' L.O. TOP RIB (C/G WRAP-IT LINK WL-475, 12 LINK)	2
4	*ITEM REMOVED*	-
5	2" THREADED PVC ELECTRICAL CONNECTION	4
6	FBC-AOSH 33.75x61" ALUMINUM E.J. SAFE HATCH, PEDESTAL RATED, DOUBLE DOOR, COVER STAY, SS HARDWARE, SLAM LOCK, HANDLE, c/w (1)-4" VENT CONN. (MODEL FBC-33.75x61AOSH-72)	1
7	4" GOOSENECK VENT, SCH.10, 316 SS c/w 180° RETURN BEND & SST BROSCREEN	1
8	2" UPPER GUIDE BAR SUPPORT BRACKET, 316 SS	2
9	CABLE HANGER, 316 SS	1
10	6"-150# RF FLANGE, 316 SS	4
11	6" FORCEMAIN #1 & #2, SCH.10 316 SS	2
12	8" I.D. FRP SLEEVE c/w WRAP-IT LINK WL-300, 10 LINK	2
13	6" SR 90 ELBOW, SCH.10 316 SS	2
14	2" BULKHEAD FITTING, FRP (DRAIN FROM VALVE VAULT)	1
15	2" CHECK VALVE (DRAIN FROM VALVE VAULT), SST	1
16	2" GUIDE BARS, SCH.40, 316 SS	4
17	6 RISERS, SCH.10, 316 SS	2
18	6x3" CONCENTRIC REDUCER, SCH.10, 316 SS	2
19	FLYGT T.O.P. STYLE BASE c/w FRP REINFORCED BOTTOM & INTEGRAL ANTI-FLOTATION FLANGE	1
20	TOP DISCHARGE ELBOW - 619 99 10-R DN80 [3"]	1
21	TOP DISCHARGE ELBOW - 620 00 10-L DN80 [3"]	1
22	3/4" PUMP BASE BOLTS, 316 SS	8

- FABRICATION DESIGN STANDARDS**
- XYLEM SPECIFICATION GE-1008-04, REVISION MAY 2002
 - AMEC 45-10.01 MANUFACTURE AND INSTALLATION FOR FRP STRUCTURES
 - AMEC 45-10.02 FRP PRESSURE PIPE, FITTINGS AND FLANGES
- GENERAL NOTES**
- WINDING ANGLE - 75°
 - TANK WALL - VARIES WITH ELEVATION
 - LINER - C-GLASS VEIL AND (2)-1 1/2 oz. MATT
 - RESIN - ISOPHTHALIC
 - INTERIOR FINISH - WHITE ISOPHTHALIC NPG GELCOAT
 - EXTERIOR (ABOVE GRADE) TO HAVE DARK GREEN GELCOAT
 - DIMENSIONS ARE IN MILLIMETERS U.N.O.
 - APPROX. SHIPPING WEIGHT: 3,200 lbs
- INSTALLATION PROCEDURES**
- USE THE LIFTING LUGS PROVIDED FOR VERTICAL HANDLING.
 - USE SLINGS AROUND THE MAIN TANK FOR HORIZONTAL HANDLING.
 - ENSURE UNIT IS STANDING VERTICAL ON CONCRETE PAD.
 - BOLT UNIT FIRMLY AND SQUARELY IN PLACE SHIM WHERE NECESSARY.
 - ENCASE BOTTOM RIB IN CONCRETE TO A MIN. HEIGHT OF 150mm ABOVE RIB TO PROVIDE ANCHORAGE. REBAR TO CONNECT SECOND POUR TO THE CONCRETE BASE PAD.
 - WHEN EXTERNAL VALVES ARE MOUNTED, SUPPORT PIPING CONNECTIONS DIRECT TO CONCRETE PAD.
 - MAINTAIN A DRY SITE UNTIL BACKFILLING OPERATIONS COMMENCE.
 - USE A GOOD QUALITY SCREEDING OR SAND AS BACKFILL MATERIAL TO REACH 90% COMPACTION.
 - PLACE THE BACKFILL IN EQUAL INCREMENTS NOT EXCEEDING 300mm THICK AROUND THE STATION TO PREVENT UNBALANCED LOADS BEING IMPOSED DURING BACKFILLING OPERATIONS. PROGRESSIVELY TAMP BACKFILL AROUND STATION TO FULL HEIGHT TO REDUCE SETTLEMENT TO AN ABSOLUTE MINIMUM.
- FOUNDATION NOTES:**
- ALL REBAR SHALL HAVE A MINIMUM CLEAR COVER OF 3".
 - MINIMUM REBAR SPLICE LENGTH SHALL BE 18".
 - REBAR LAPS SHALL BE CONTINUOUSLY OFFSET.



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



FINAL

PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051**

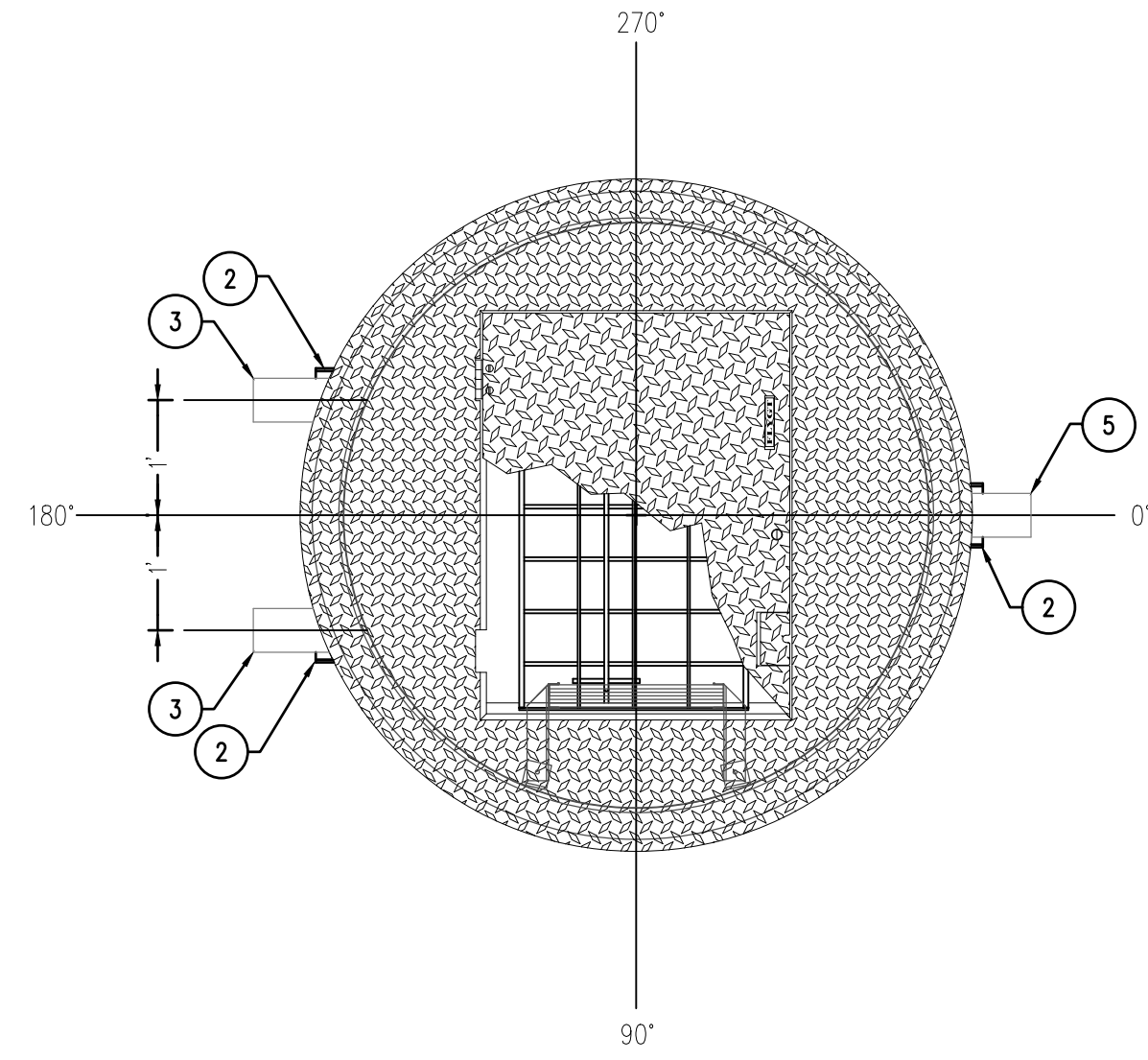
REVISIONS			
NO.	DATE	BY	APPROVED
Δ 1	01/22/24	A.ORRANTIA	S.STANDUKAR

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

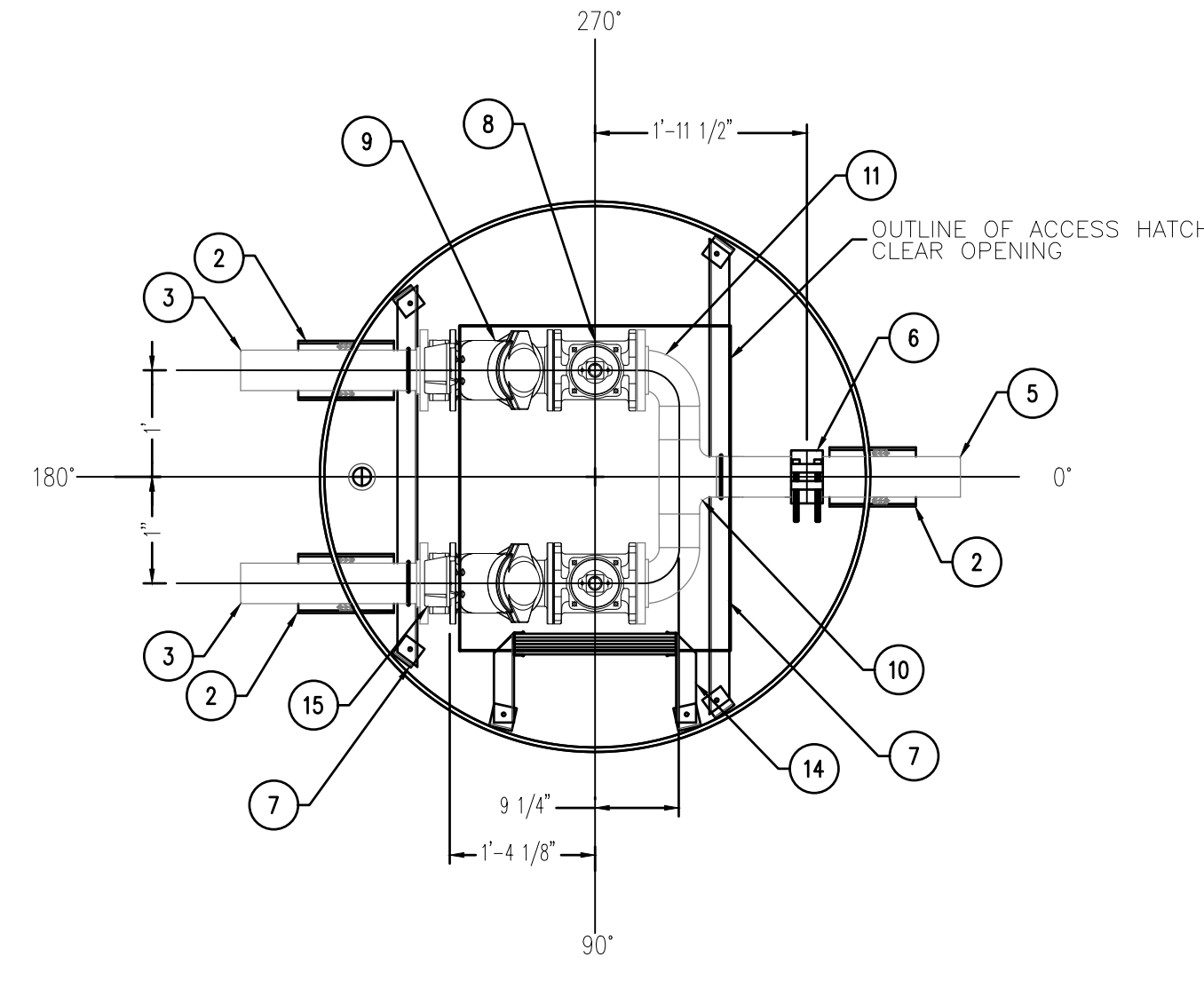
SHEET TITLE:
**MLSS PUMP
STATION DETAILS**

SHEET NUMBER:	REV. #
C-306	
SHEET 16 OF 52 SHEETS	

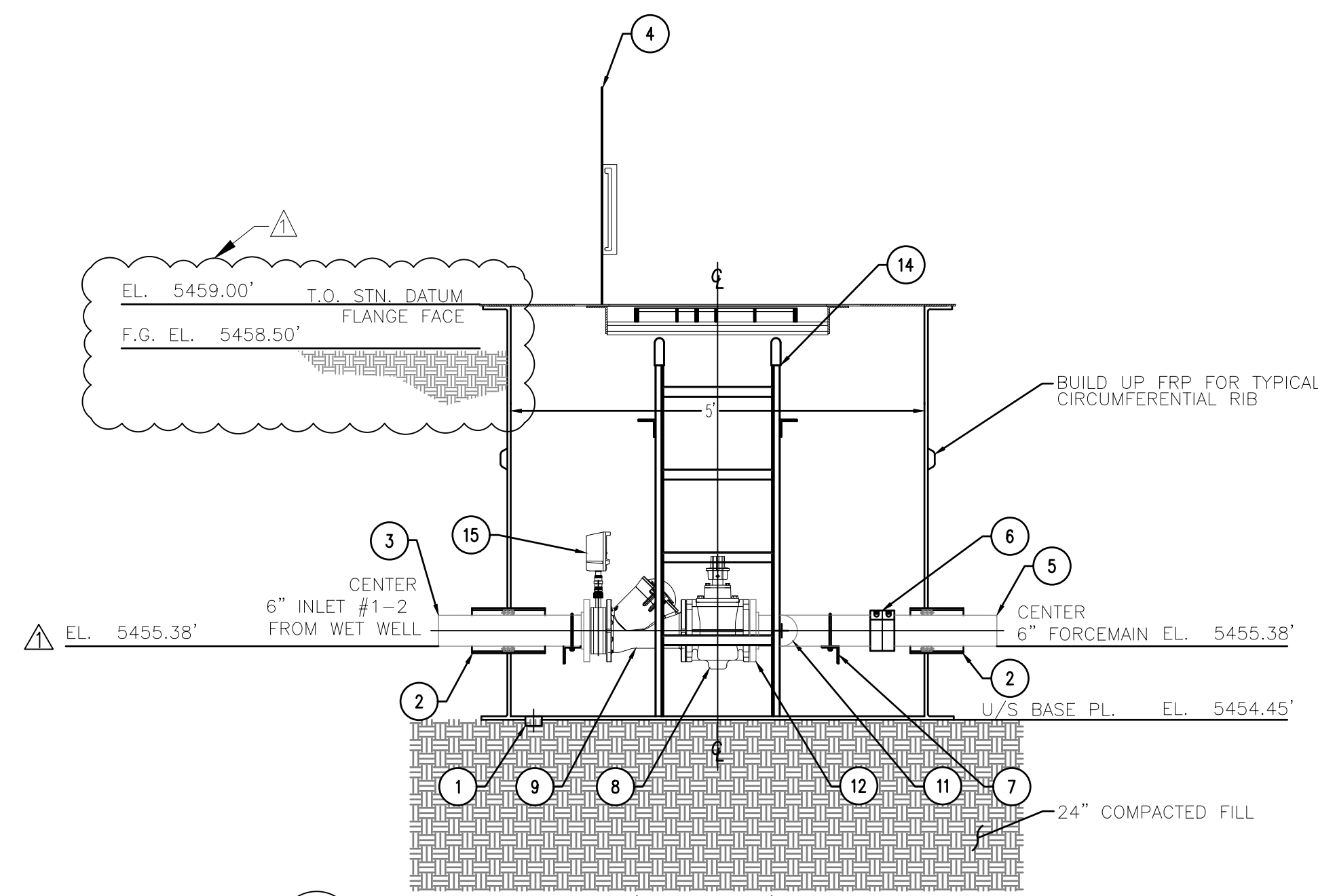
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1B MLSS VALVE VAULT LAYOUT (PLAN)
NOT TO SCALE



1A MLSS VALVE VAULT PIPING LAYOUT
NOT TO SCALE



1 MLSS VALVE BOX (PROFILE)
NOT TO SCALE

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY.
1	2" NPT DRAIN, FRP (PIPING TO WET WELL)	1
2	8" FRP SLEEVE c/w WRAP-IT LINK, MODEL ML-300/10 LINK (FIELD INSTALL)	3
3	6" INLET #1-2, SCH.10, 316 SS	2
4	60" O.D. ALUMINUM COVER c/w EJ SAFE HATCH, PEDESTRAIN RATED, SINGLE DOOR, COVER STAY, SS HARDWARE, SLAM LOCK, HANDLE (MODEL FRP-30036ADSH-60R)	1
5	6" FORCEMAIN, SCH.10, 316 SS, TRANSITION TO 6" SCH.40 PVC	1
6	6" ANILOK COUPLER, SS	1
7	HEADER SUPPORT (2.5x2.5x1/4"), ALUMINUM c/w PIPE CLAMPS	2
8	6" PLUG VALVE (AS COMPLIANT), DEZURK	2
9	6" CHECK VALVE, HDL 5067	2
10	6" STRAIGHT TEE, SCH.10, 316 SS	1
11	6" SR 90° ELBOW, SCH.10, 316 SS	2
12	6" -150# FLANGE, 316 SS	6
13	6" HMAX COUPLERS, NOT SHOWN ON DRAWING (SHIPPED LOOSE)	2
14	ALUMINUM LADDER, FULL LENGTH	1
15	6" ONYX PRESSURE ISOLATOR VALVE WITH GAUGE	2

FABRICATION DESIGN STANDARDS

- XYLEM SPECIFICATION GE-1008-04, REVISION MAY 2002
- AMEC 45-10.01 MANUFACTURE AND INSTALLATION FOR FRP STRUCTURES
- AMEC 45-10.02 FRP PRESSURE PIPE, FITTINGS AND FLANGES

GENERAL NOTES

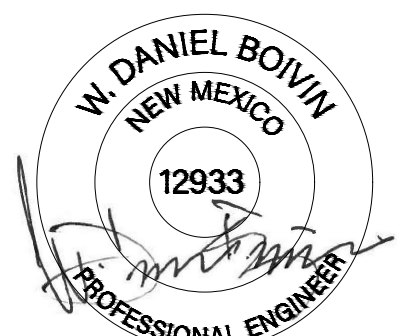
- WINDING ANGLE - 75°
- TANK WALL - VARIES WITH ELEVATION
- LINER - C-GLASS VEIL AND (2)-1 1/2 oz. MATT
- RESIN - ISOPHTHALIC
- INTERIOR FINISH - WHITE ISOPHTHALIC NPG GELCOAT
- EXTERIOR (ABOVE GRADE) TO HAVE DARK GREEN GELCOAT
- DIMENSIONS ARE IN MILLIMETERS U.N.O.
- APPROX. SHIPPING WEIGHT: 1,250 lbs

INSTALLATION PROCEDURES

- USE THE LIFTING LUGS PROVIDED FOR VERTICAL HANDLING.
- USE SLINGS AROUND THE MAIN TANK FOR HORIZONTAL HANDLING.
- ENSURE UNIT IS STANDING VERTICAL ON CONCRETE PAD.
- BOLT UNIT FIRMLY AND SQUARELY IN PLACE, SHIM WHERE NECESSARY.
- ENCASE BOTTOM RIB IN CONCRETE TO A MIN. HEIGHT OF 150mm ABOVE RIB TO PROVIDE ANCHORAGE. REBAR TO CONNECT SECOND POUR TO THE CONCRETE BASE PAD.
- WHEN EXTERNAL VALVES ARE MOUNTED, SUPPORT PIPING CONNECTIONS DIRECT TO CONCRETE PAD.
- MAINTAIN A DRY SITE UNTIL BACKFILLING OPERATIONS COMMENCE.
- USE A GOOD QUALITY SCREENING OR SAND AS BACKFILL MATERIAL TO REACH 90% COMPACTION.
- PLACE THE BACKFILL IN EQUAL INCREMENTS NOT EXCEEDING 8" THICK AROUND THE STATION TO PREVENT UNBALANCED LOADS BEING IMPOSED DURING BACKFILLING OPERATIONS. PROGRESSIVELY TAMP BACKFILL AROUND STATION TO FULL HEIGHT TO REDUCE SETTLEMENT TO AN ABSOLUTE MINIMUM.



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



07/14/2023

FINAL

PROJECT:

**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANCE, AZ 86504**

WSP PROJECT No:
2151700051

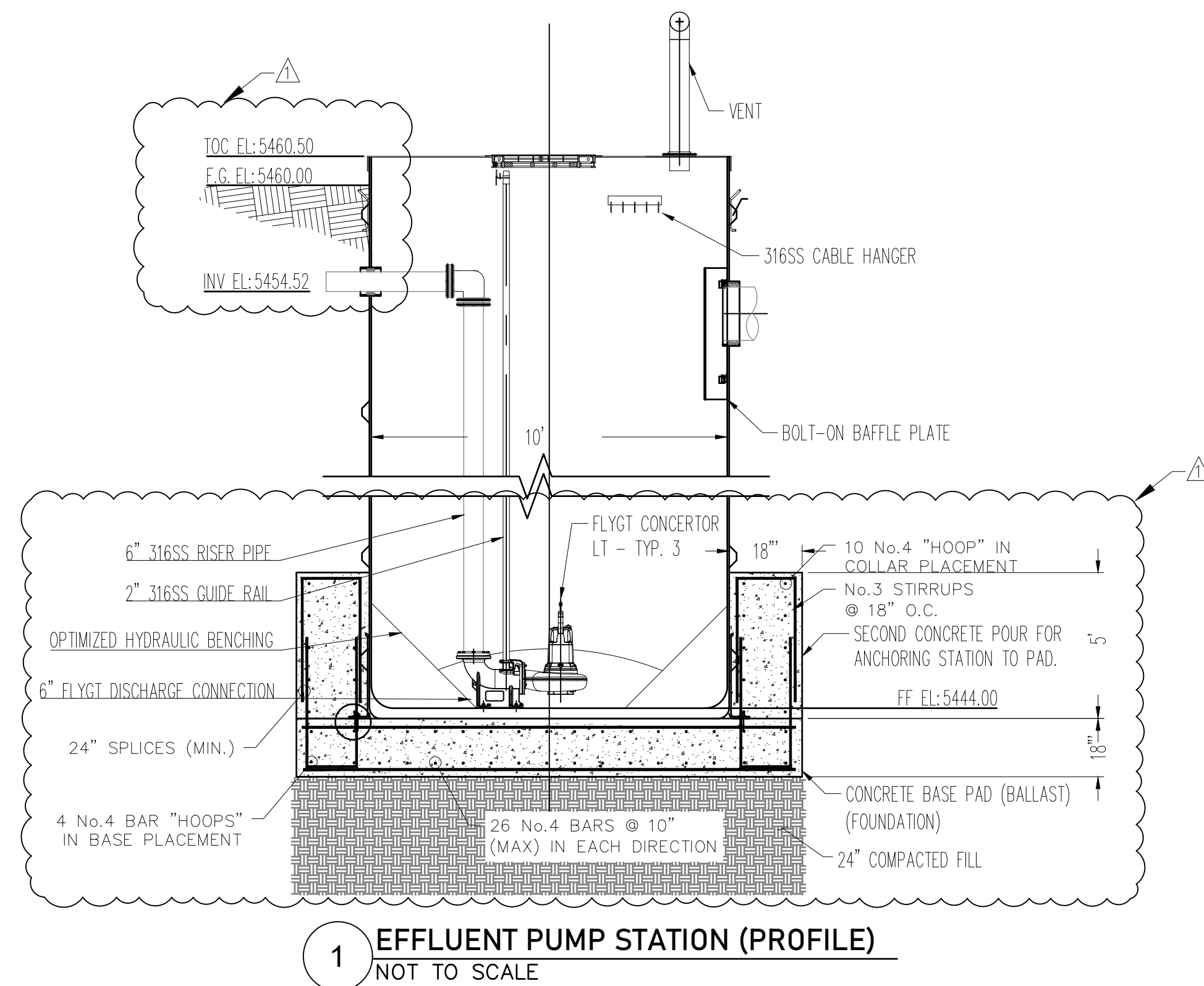
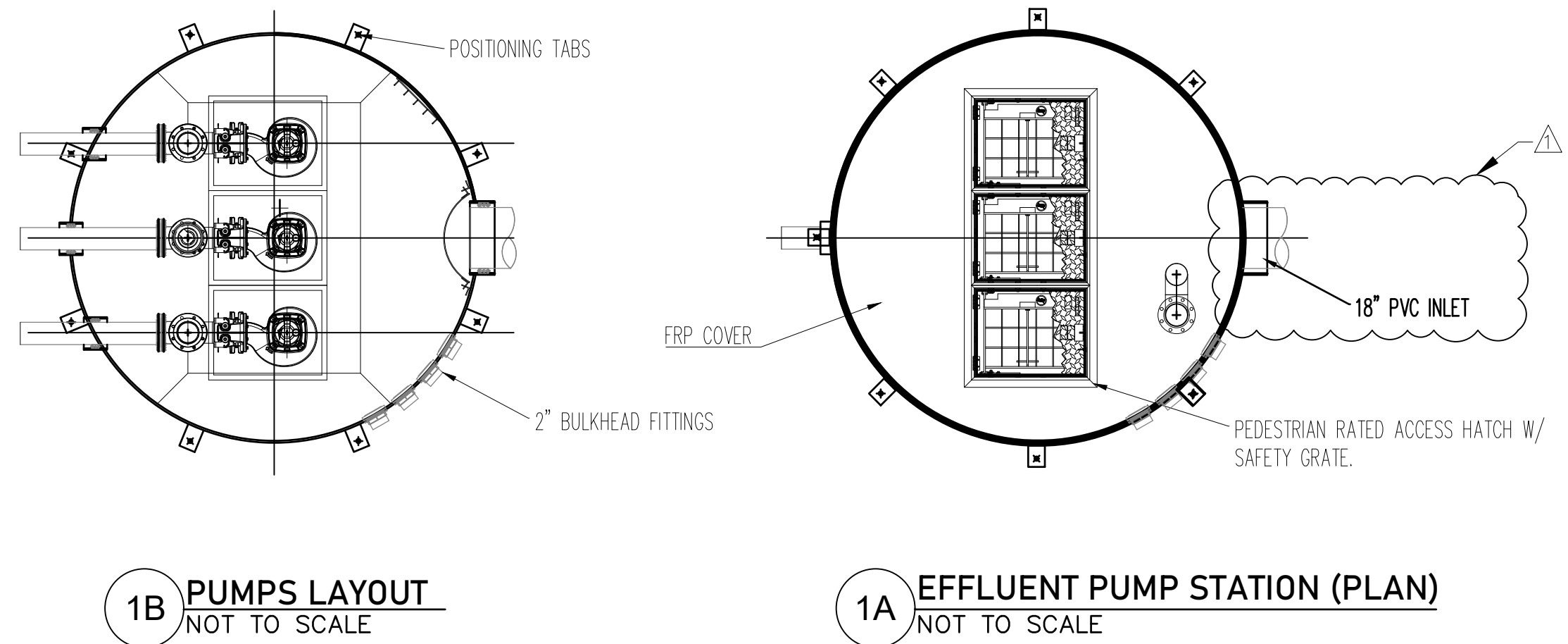
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A.ORRANTIA	S.STANDUKAR

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

SHEET TITLE:
**MLSS VALVE
VAULT DETAILS**

SHEET NUMBER:	REV. #
C-307	
SHEET 17 OF 52 SHEETS	

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- NOTES:
- 1) STATION TO SHIP COMPLETE WITH PIPING PRE-INSTALLED.
 - 2) STATION TO FEATURE 4:1 SAFETY FACTOR AGAINST WORST CASE LOADING CONDITIONS WITH WATER TABLE TO GRADE.
 - 3) BASE PAD TO BE DESIGNED TO PROVIDE ADEQUATE BALLAST TO RESIST UPLIFT WITH WATER TABLE TO GRADE.
 - 4) STATION TO SHIP COMPLETE WITH OPTIMIZED HYDRAULIC BENCHING.
 - 5) STATION TO BE OFFERED WITH 25 YEAR WARRANTY ON THE STRUCTURE.
 - 6) EFFLUENT PUMP STATION AND VALVE VAULT:
THREE (3) SUBMERSIBLE PUMPS
FLYGT MODEL NP6020.181 N150
6" DISCHARGE, HARD IRON IMPELLER
7.5 HP, 460VAC/3PH/60HZ, 65' SUBMERSIBLE CABLE

- ONE (1) FLYGT FIBERGLASS PREFABRICATED LIFT STATION
10' DIAMETER X 16'-6" DEEP (TO BE DETERMINED DURING CONSTRUCTION)
6" 316SS INTERNAL PIPING
2" 316SS GUIDE RAIL SYSTEM
CUSTOM BENCHED SELF-CLEANING BOTTOM
VENT PIPING THREADS
WALL PENETRATION SEALS PROVIDED (ELECTRICAL CONNECTIONS, GRAVITY INLET, DISCHARGE STUBOUT)
FRP COVER
ALUMINUM ACCESS HATCH WITH SAFETY GRATE, 300 PSF RATED
INCLUDES REQUIRED LIFT STATION ACCESSORIES:
• SS LIFTING CHAIN
• SS GUIDE BRACKET
• SS CABLE HANGER
• FLYGT GRIP EYE LIFTING DEVICE

- ONE (1) TRIPLEX PUMP CONTROL PANEL
NEMA 3R PAINTED GALVANIZED ENCLOSURE WITH GASKETED DOOR
FVNR STARTERS
TIME-BASED OPERATION (1 HOUR RUN, 3 HOUR STANDBY)
HIGH LEVEL ALARM BEACON AND HORN, SEAL FAIL/LEAK DETECTION MONITORING
POWER MONITOR AND SURGE PROTECTION ON SUPPLY
ANTI-CONDENSATION HEATER
ENABLE AND HIGH LEVEL FLOAT

FOUNDATION NOTES:

1. ALL REBAR SHALL HAVE A MINIMUM CLEAR COVER OF 3".
2. MINIMUM REBAR SPLICE LENGTH SHALL BE 18".
3. REBAR LAPS SHALL BE CONTINUOUSLY OFFSET.



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**NAVAJO TRIBAL UTILITY
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PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
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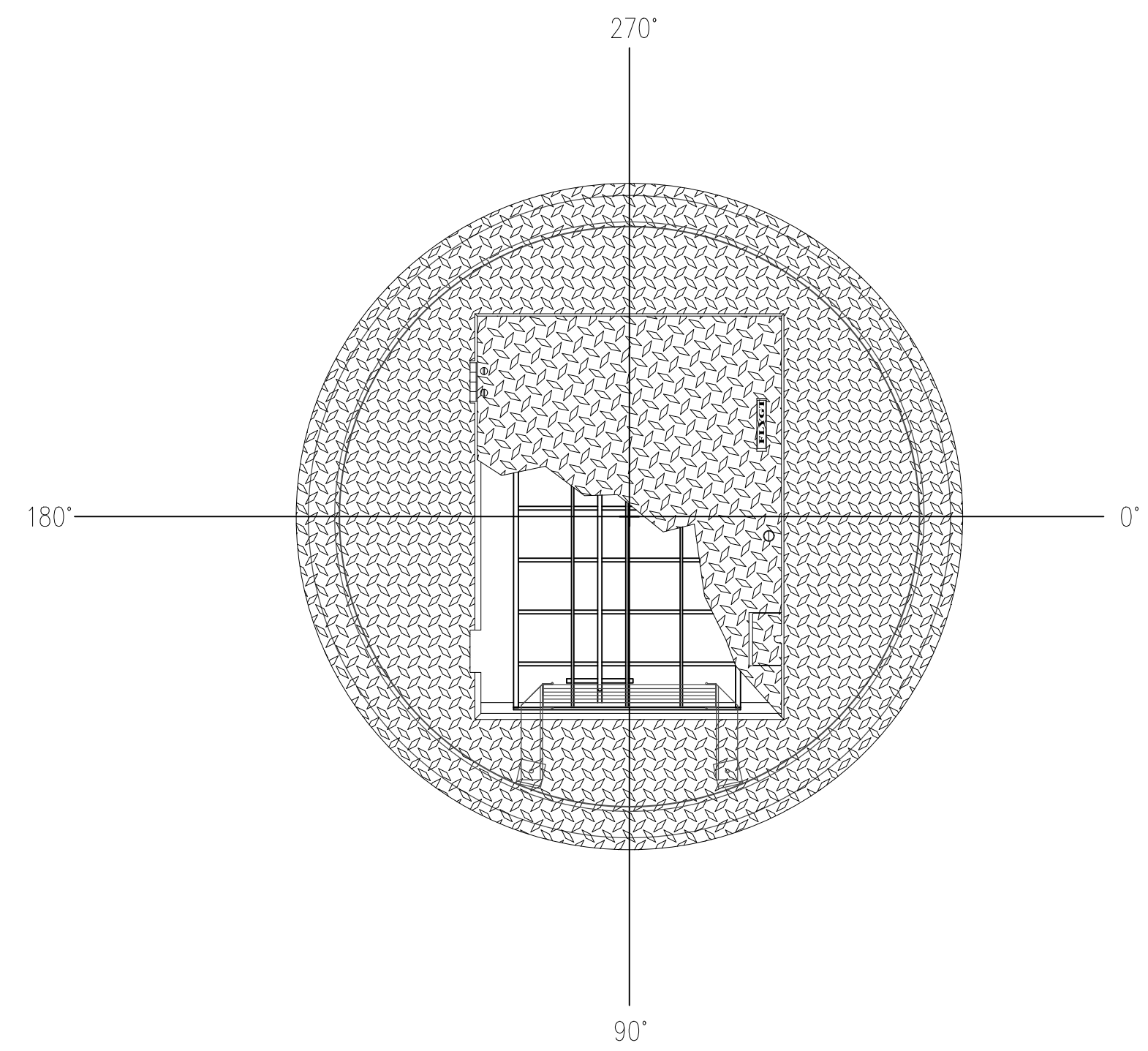
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A. ORRANTIA	S. STANDUKAR

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

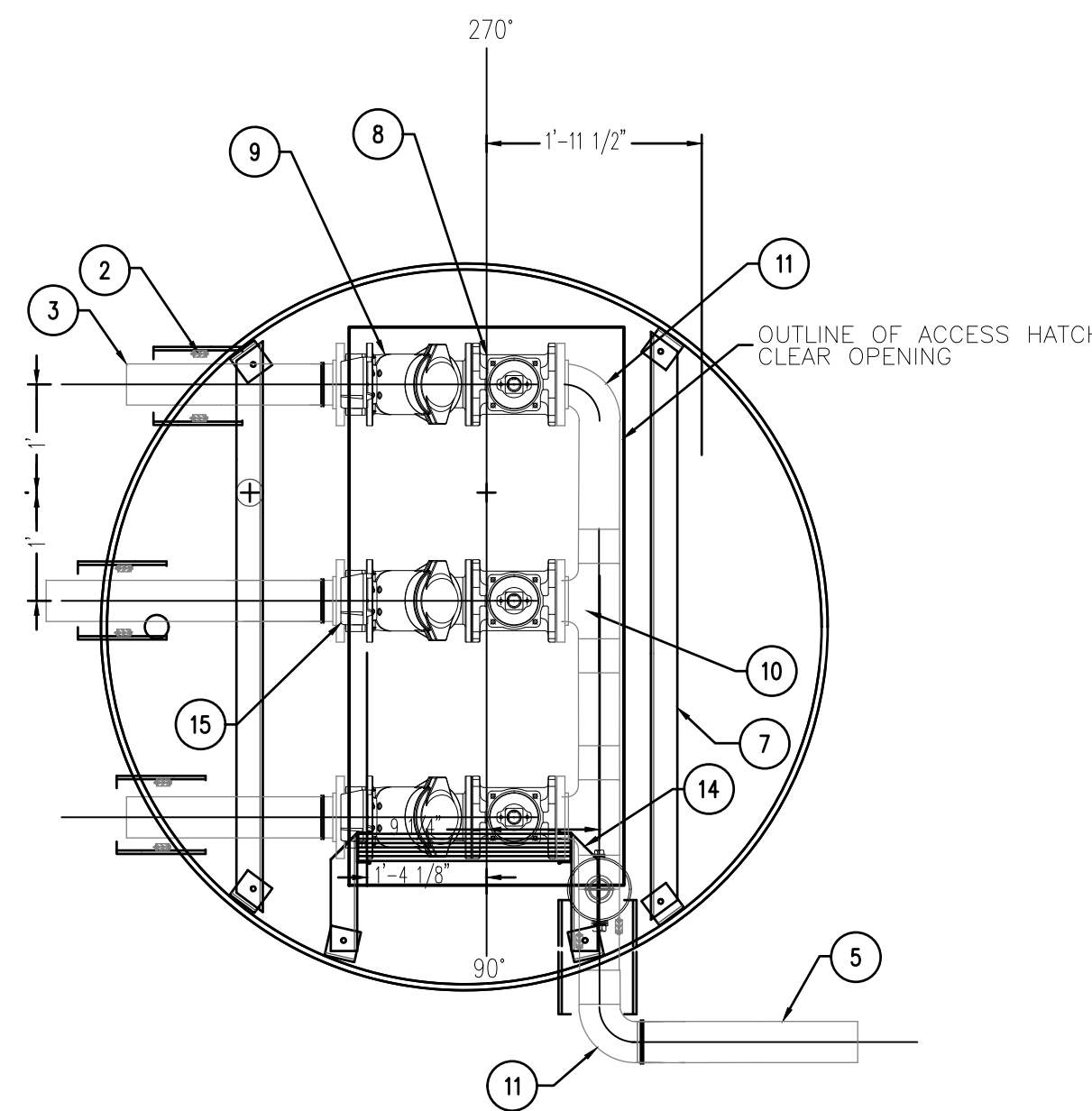
SHEET TITLE:
**EFFLUENT PUMP
STATION DETAILS**

SHEET NUMBER:	REV. #
C-308	
SHEET 18 OF 52 SHEETS	

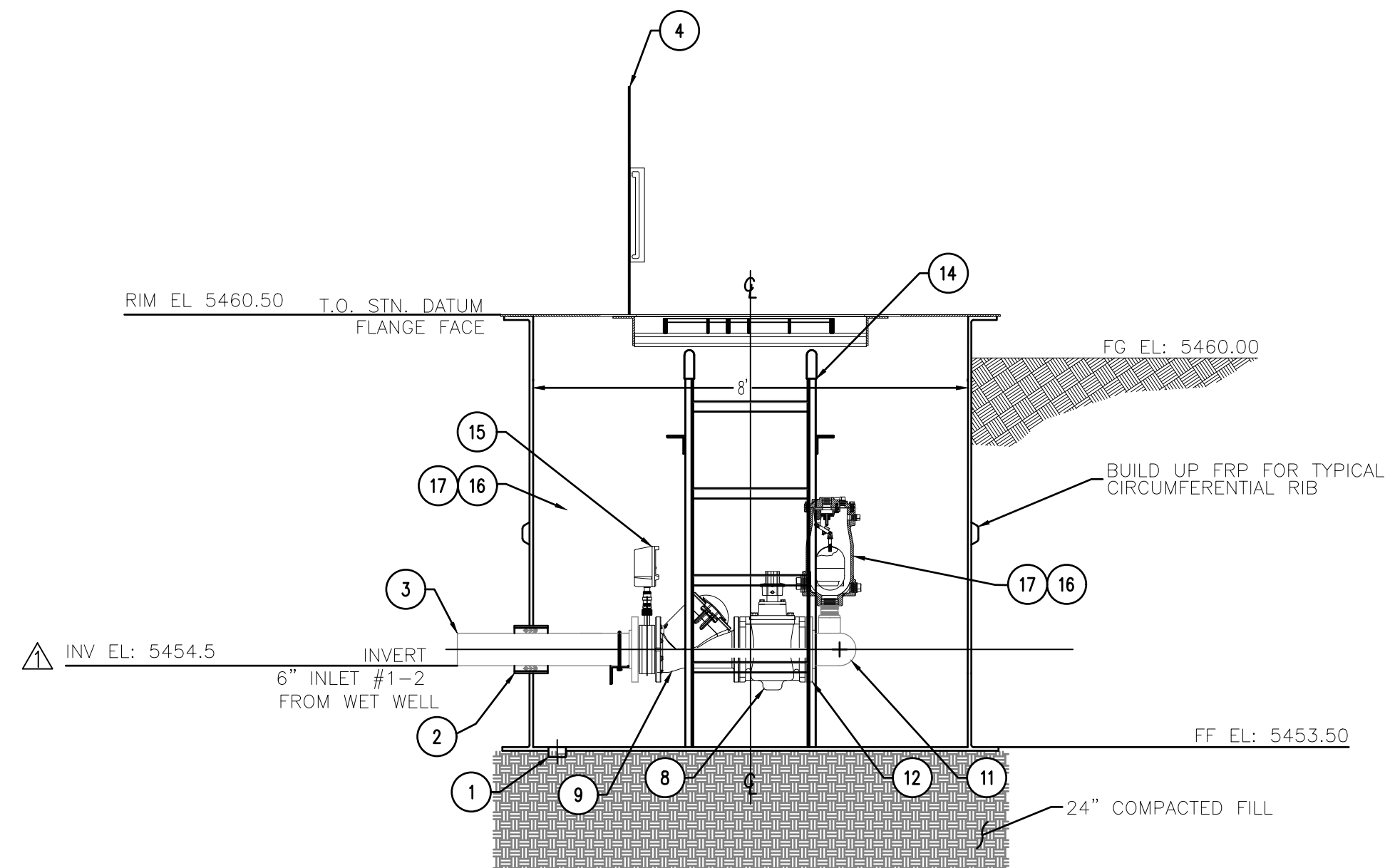
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1B EFFLUENT VALVE VAULT LAYOUT (PLAN)
NOT TO SCALE



1A EFFLUENT VALVE VAULT PIPING LAYOUT
NOT TO SCALE



1 EFFLUENT VALVE BOX (PROFILE)
NOT TO SCALE

BILL OF MATERIALS

ITEM	DESCRIPTION	QTY.
1	2" NPT DRAIN, FRP	1
2	6" FRP SLEEVE c/w WRAP-IT LINK, MODEL WL-300/10 LINK (FIELD INSTALLS)	3
3	6" INLET #1-2, SCH10, 316 SS	2
4	ALUMINUM COVER c/w EJ SAFE HATCH, PEDESTAL RATED, SINGLE DOOR, COVER STAY, SS HARDWARE, SLAM LOCK, HANDLE	1
5	CONNECT TO 12" DIP FORCEMAIN (RESTRAINED)	1
6	ITEM REMOVED	1
7	HEADER SUPPORT (164x46.4mm [2.5x2.5x1/4"]); ALUMINUM c/w PIPE CLAMPS	2
8	6" PLUG VALVE (AISI COMPLIANT), DEZURIK	2
9	6" CHECK VALVE, HDL 5087	2
10	8" TEE	1
11	8" REDUCING ELBOW	2
12	6" FLANGE, 316 SS	6
13	6" HMMX COUPLERS, NOT SHOWN ON DRAWING (SHIPPED LOOSE, INSTALLED)	2
14	ALUMINUM LADDER, FULL LENGTH	1
15	6" ONYX PRESSURE ISOLATOR VALVE WITH GAUGE	2
16	2" NPT COUPLER, CLASS 150, 316 SS	2
17	2" NPT AIR RELEASE VALVE, VALMATIC 801 (AISI COMPLIANT)	2

- FABRICATION DESIGN STANDARDS**
1. FLYGT SPECIFICATION GE-1008-04, REVISION MAY 2002
 2. AMEC 45-10.01 MANUFACTURE AND INSTALLATION FOR FRP STRUCTURES
 3. AMEC 45-10.02 FRP PRESSURE PIPE, FITTINGS AND FLANGES

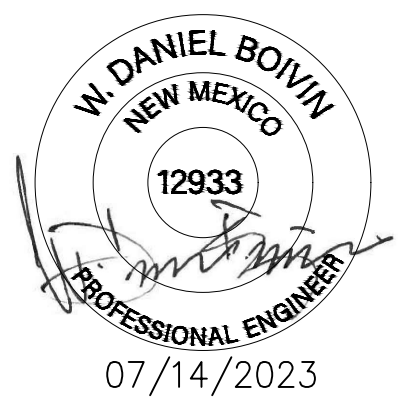
ONE (1) PREFABRICATED FIBERGLASS VALVE VAULT
8" DIAMETER X 7" DEEP
6" 316SS INTERNAL PIPING
3EA 6" FLYGT CHECK VALVES
3EA 6" CAST IRON PLUG ISOLATION VALVES
1EA 2" FRP VALVE ARV
WALL PENETRATION SEALS
ALUMINUM LADDER
FRP COVER
ACCESS HATCH, 300 PSF RATED

- GENERAL NOTES**
1. WINDING ANGLE - 75°
 2. TANK WALL - VARIES WITH ELEVATION
 3. LINER - C-GLASS VEIL AND (2)-1 1/2 oz. MATT
 4. RESIN - ISOPHTHALIC
 5. INTERIOR FINISH - WHITE ISOPHTHALIC NPG GELCOAT
 6. EXTERIOR (ABOVE GRADE) TO HAVE DARK GREEN URETHANE PAINTED FINISH
 7. DIMENSIONS ARE IN MILLIMETERS U.N.O.
 8. APPROX. SHIPPING WEIGHT: 1,250 lbs

- INSTALLATION PROCEDURES**
1. USE SLINGS FOR VERTICAL AND HORIZONTAL HANDLING.
 2. ENSURE UNIT IS STANDING VERTICAL ON CONCRETE PAD OR HARD PACKED GROUND.
 3. LEVEL THE STATION.
 4. MAINTAIN A DRY SITE UNTIL BACKFILLING OPERATIONS COMMENCE.
 5. USE A GOOD QUALITY SCREENING OR SAND AS BACKFILL MATERIAL TO 90% COMPACTION.
 6. PLACE THE BACKFILL IN EQUAL INCREMENTS NOT EXCEEDING 300mm THICK AROUND THE STATION TO PREVENT UNBALANCED LOADS BEING IMPOSED DURING BACKFILLING OPERATIONS. PROGRESSIVELY TAMP BACKFILL AROUND STATION TO FULL HEIGHT TO REDUCE SETTLEMENT TO AN ABSOLUTE MINIMUM.



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



FINAL

PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANCE, AZ 86504**
WSP PROJECT No:
2151700051

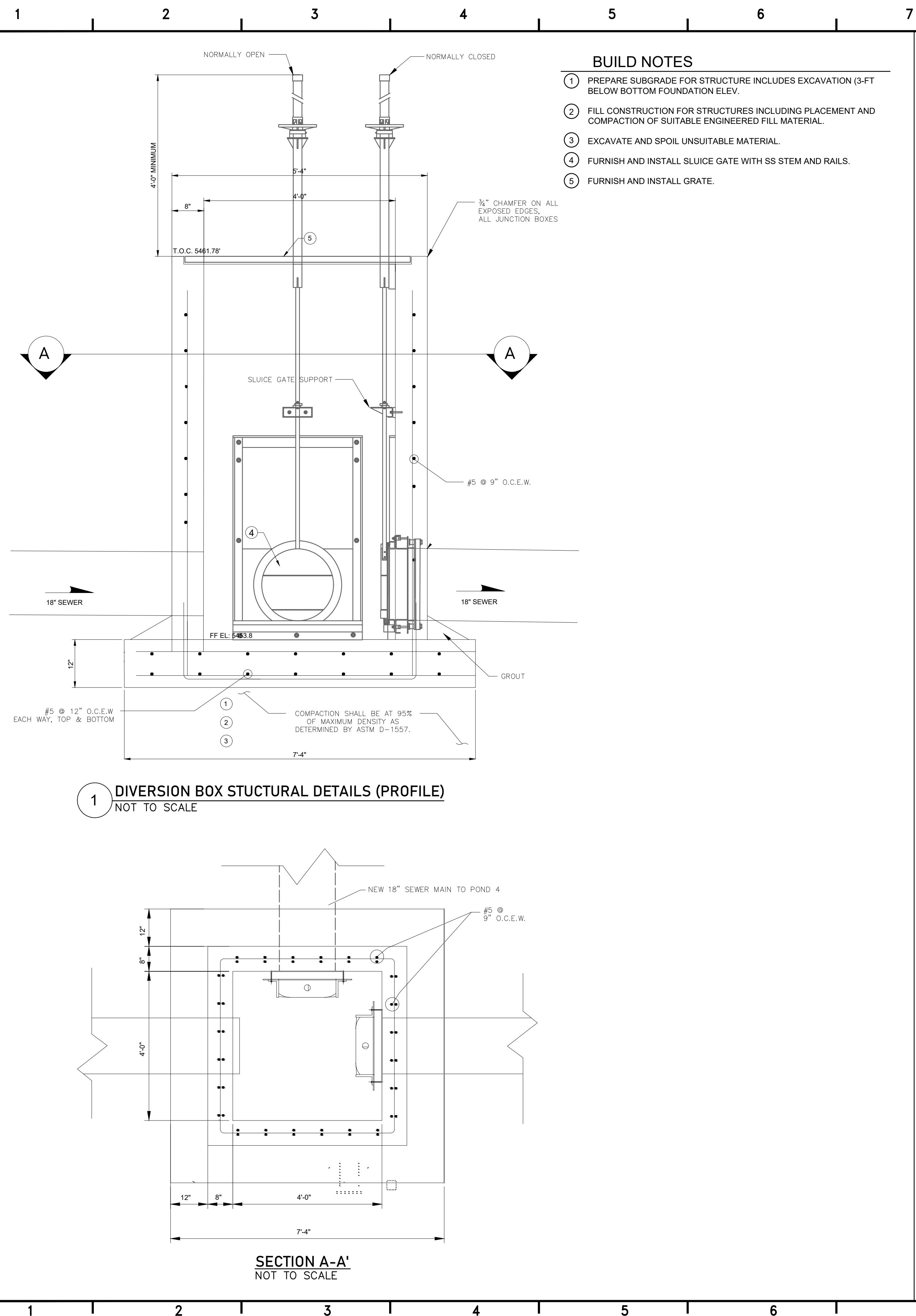
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A.ORRANTIA	S.STANDUKAR

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

SHEET TITLE:
**EFFLUENT VALVE
VAULT DETAILS**

SHEET NUMBER:	REV. #
C-309	
SHEET 19 OF 52 SHEETS	

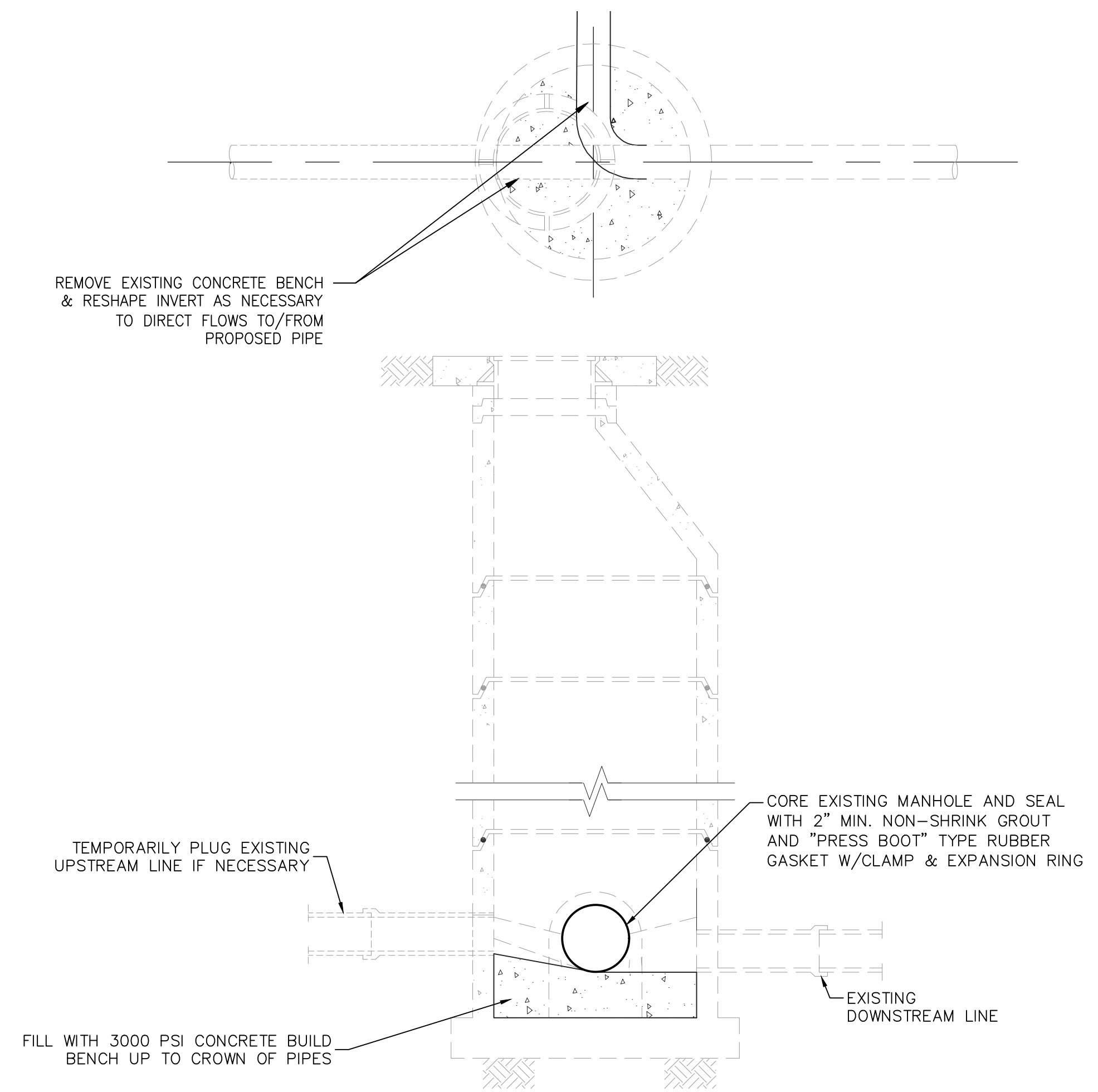
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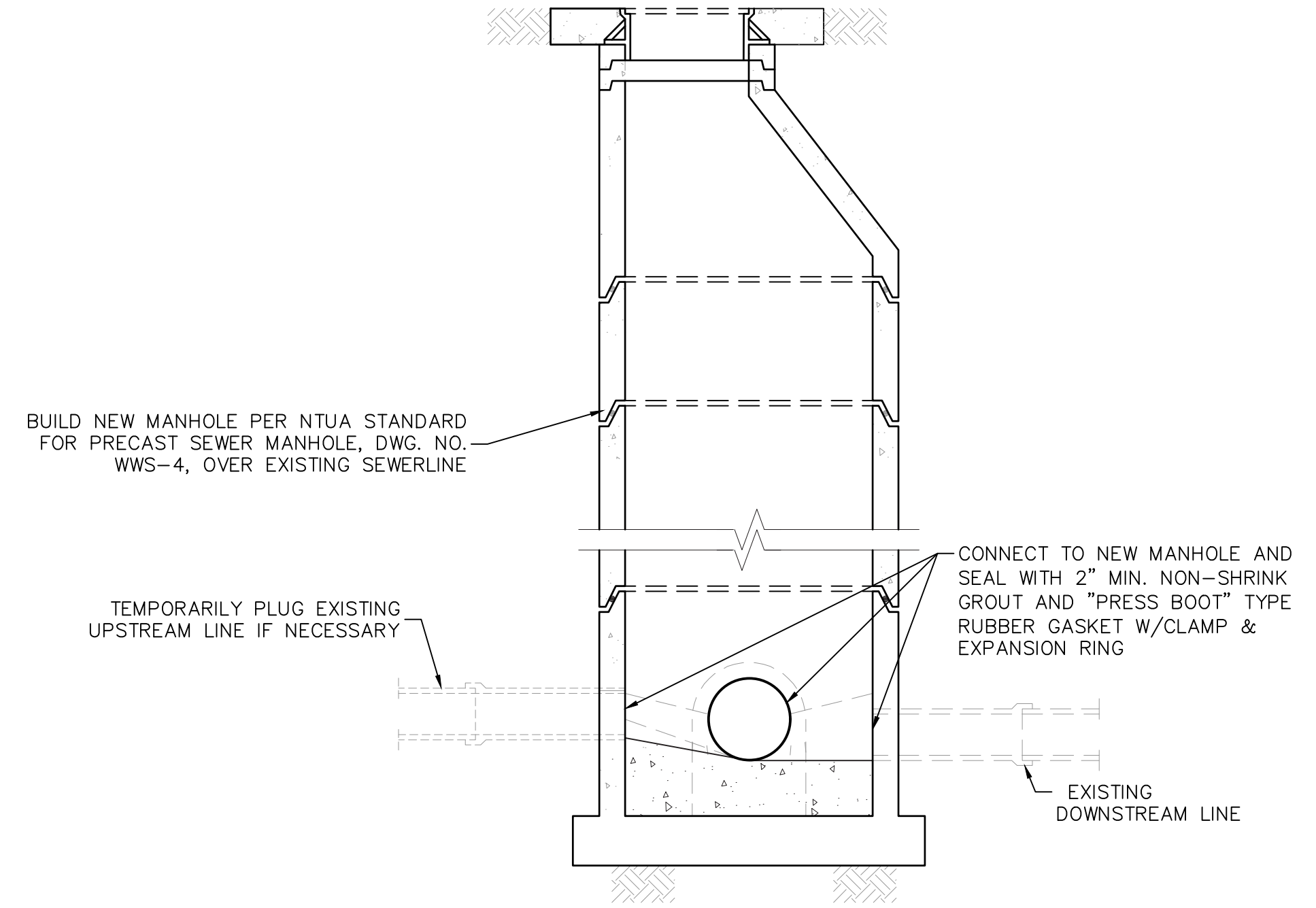
- BUILD NOTES**
- 1 PREPARE SUBGRADE FOR STRUCTURE INCLUDES EXCAVATION (3-FT BELOW BOTTOM FOUNDATION ELEV.)
 - 2 FILL CONSTRUCTION FOR STRUCTURES INCLUDING PLACEMENT AND COMPACTION OF SUITABLE ENGINEERED FILL MATERIAL.
 - 3 EXCAVATE AND SPOIL UNSUITABLE MATERIAL.
 - 4 FURNISH AND INSTALL SLUICE GATE WITH SS STEM AND RAILS.
 - 5 FURNISH AND INSTALL GRATE.

1 DIVERSION BOX STUCTURAL DETAILS (PROFILE)
NOT TO SCALE

SECTION A-A'
NOT TO SCALE



2 SEWER CONNECTION TO EXISTING MANHOLE
NOT TO SCALE



3 CONNECTION TO EXISTING SEWERLINE WITH NEW MH
NOT TO SCALE



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WSP PROJECT No:
2151700051

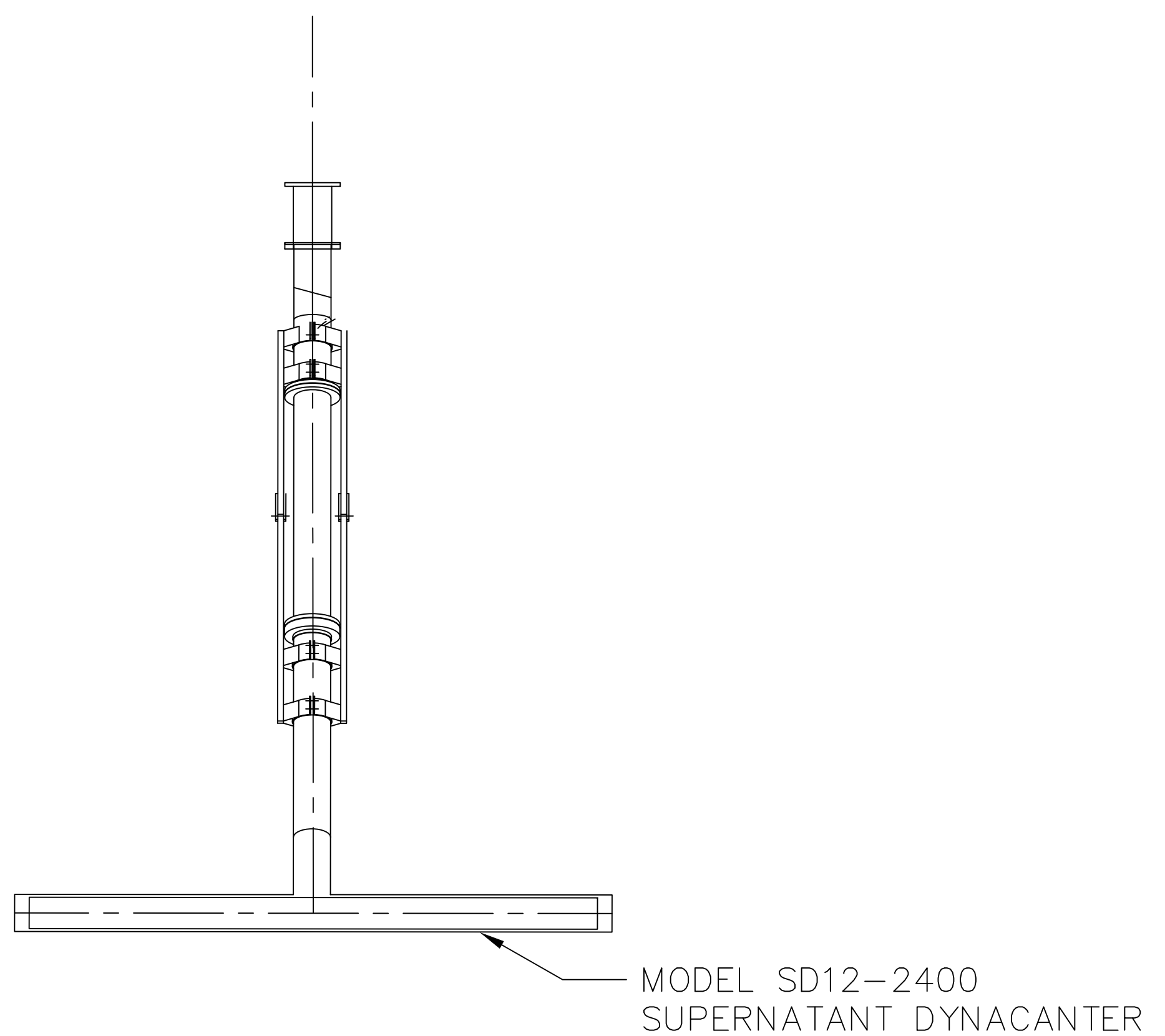
REVISIONS			
NO.	DATE	BY	APPROVED

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DRAWN BY: WSP - AO
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APPROVED BY: WSP - DB
DATE: 07/14/2023

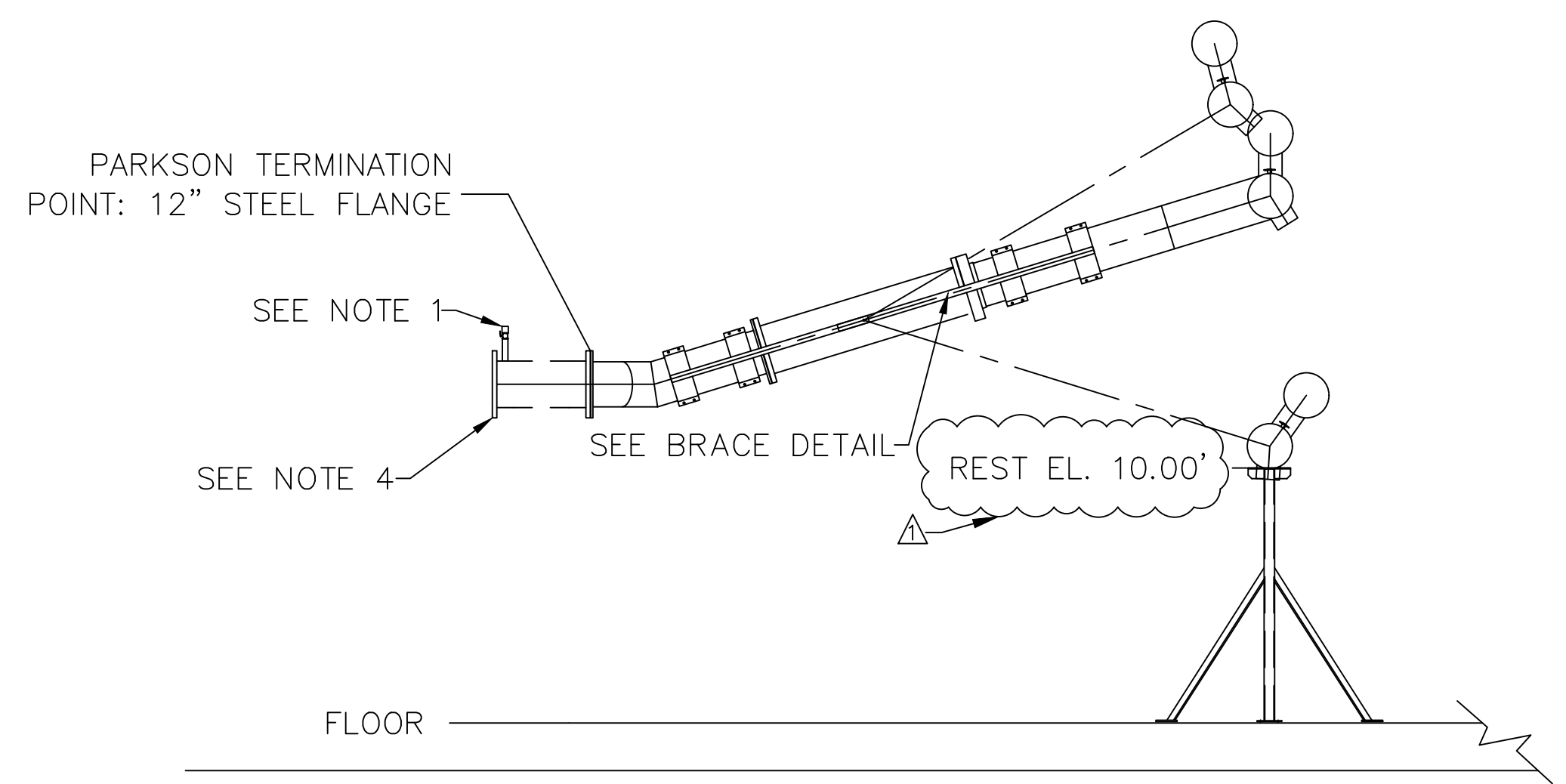
SHEET TITLE:
**DIVERSION BOX AND
MH CONNECTION
DETAILS**

SHEET NUMBER: C-310
REV. #
SHEET 20 OF 52 SHEETS

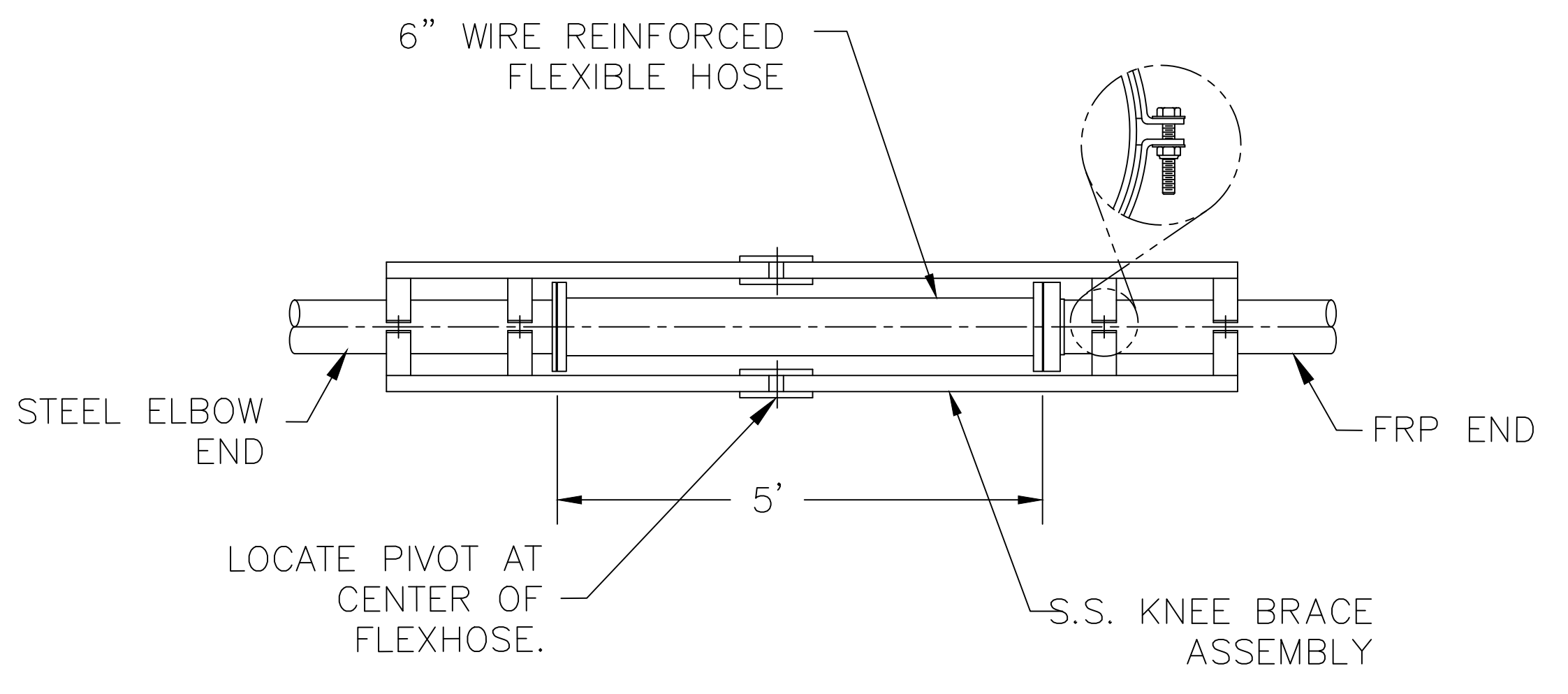
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1 FLOATING DECANTER (PLAN)
NOT TO SCALE



2 FLOATING DECANTER (PROFILE)
NOT TO SCALE



3 BRACE DETAIL
NOT TO SCALE

NOTES:

- 1) ALL FLANGES SHALL MEET OUTSIDE DIAMETER, BOLT CIRCLE DIAMETER, NUMBER AND SIZE OF HOLES PER ANSI B.16.1 125 LB. CAST IRON, AND ANSI B16.5 150 LB. STEEL FLANGE SPECIFICATIONS.
- 2) CONTRACTOR NEEDS TO PROVIDE A 3/4 " NIPPLE AND GLOBE VALVE BETWEEN OUTSIDE OF DECANTER SPOOL PENETRATION AND EFFLUENT CONTROL VALVE TO SERVE AS A FILL PORT TO SINK DECANTER AT START-UP.
- 3) DECANTER OUTLET PIPING MUST BE DESIGNED WITH A SUBMERGED OUTLET OR TRAPS TO PREVENT AIR FROM ENTERING THE DECANTER.
- 4) CONTRACTOR TO SUPPLY ALL INTERCONNECTING HARDWARE AND GASKETS.
- 5) DECANTER REST ASSEMBLY SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS.



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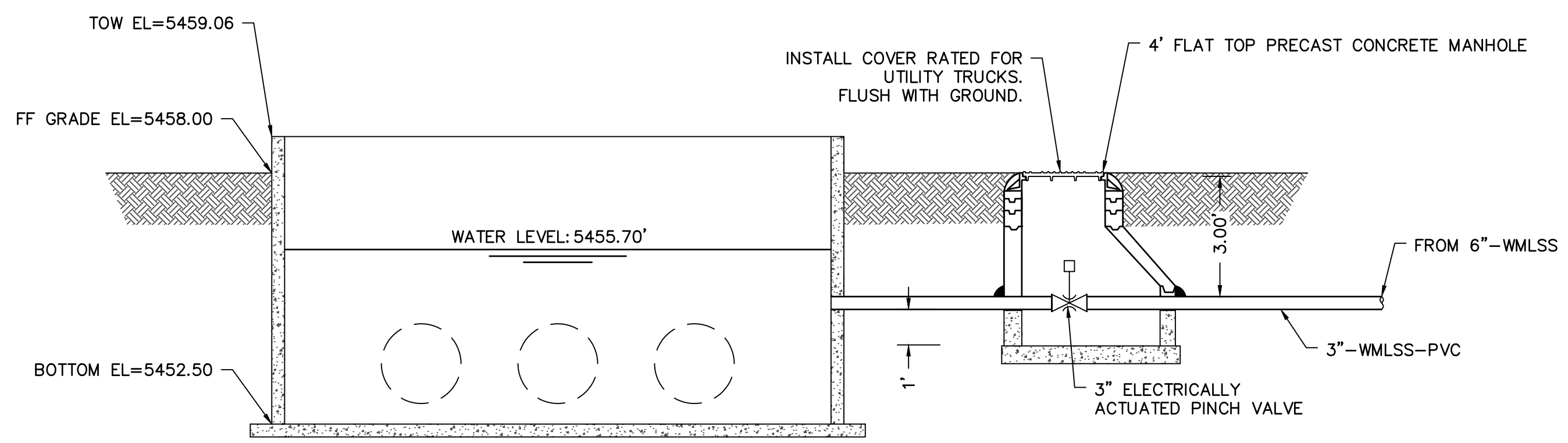
SHEET TITLE:
**FLOATING DECANTER
DETAILS**

SHEET NUMBER:	REV. #
C-311	
SHEET 21 OF 52 SHEETS	

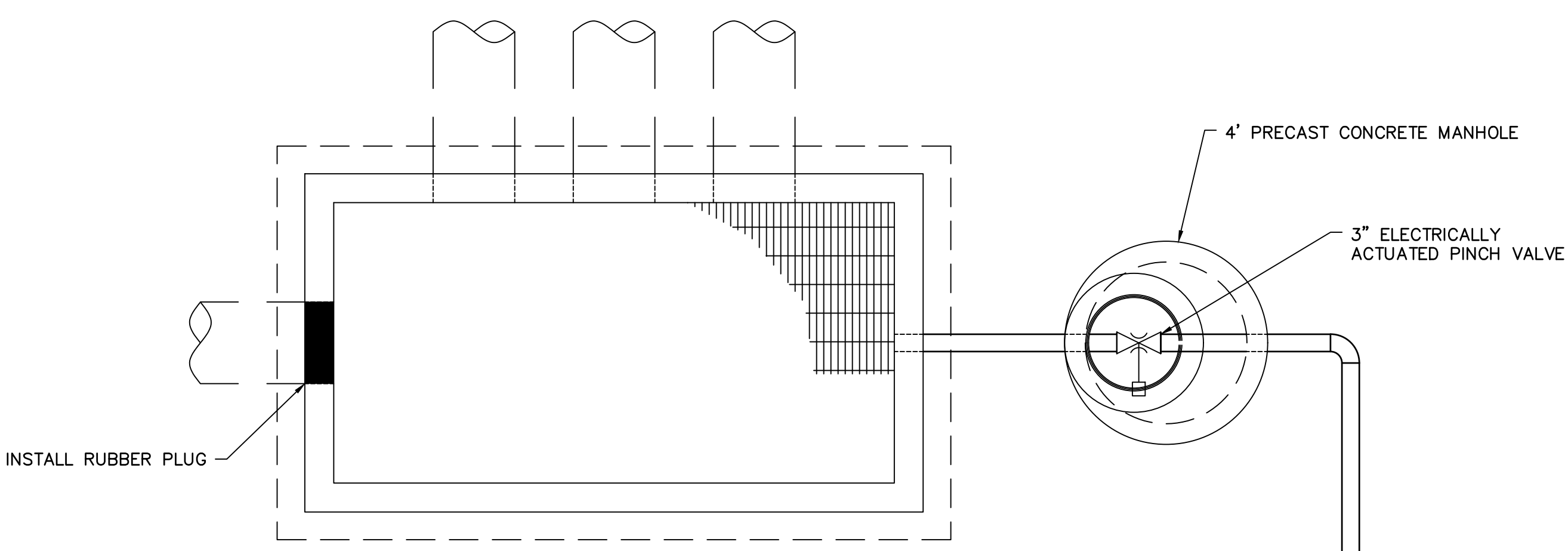
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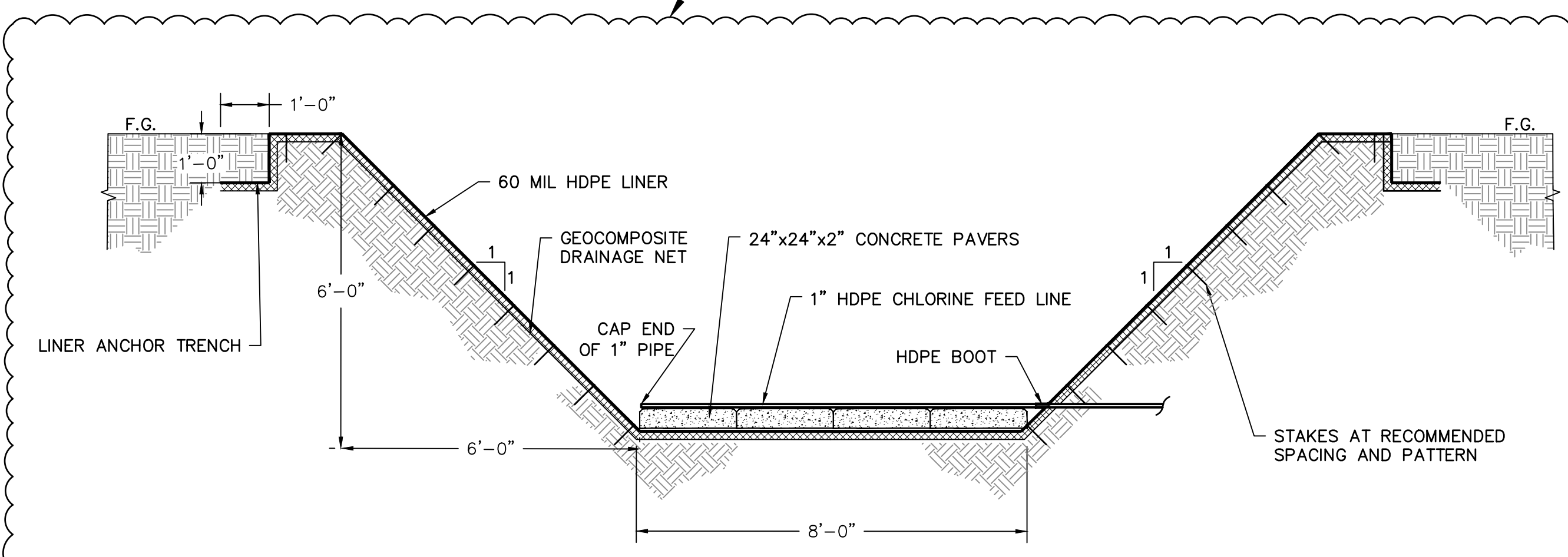
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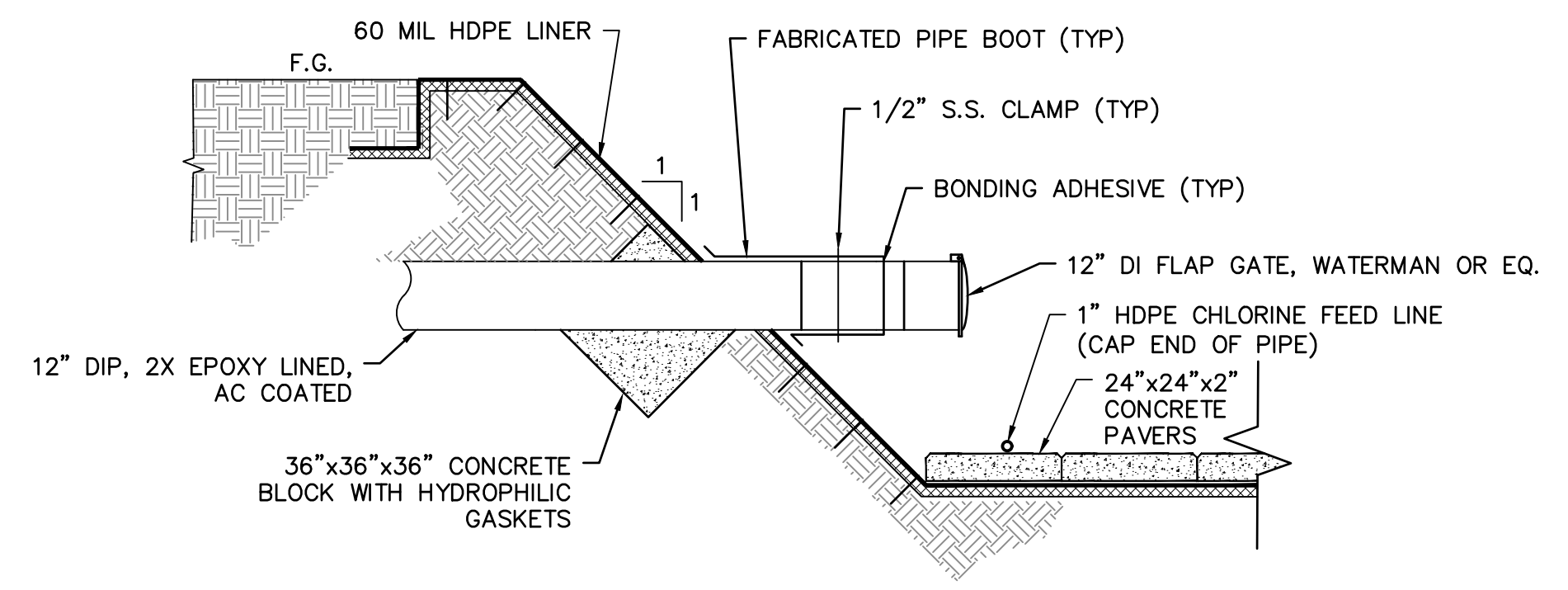
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NOT TO SCALE



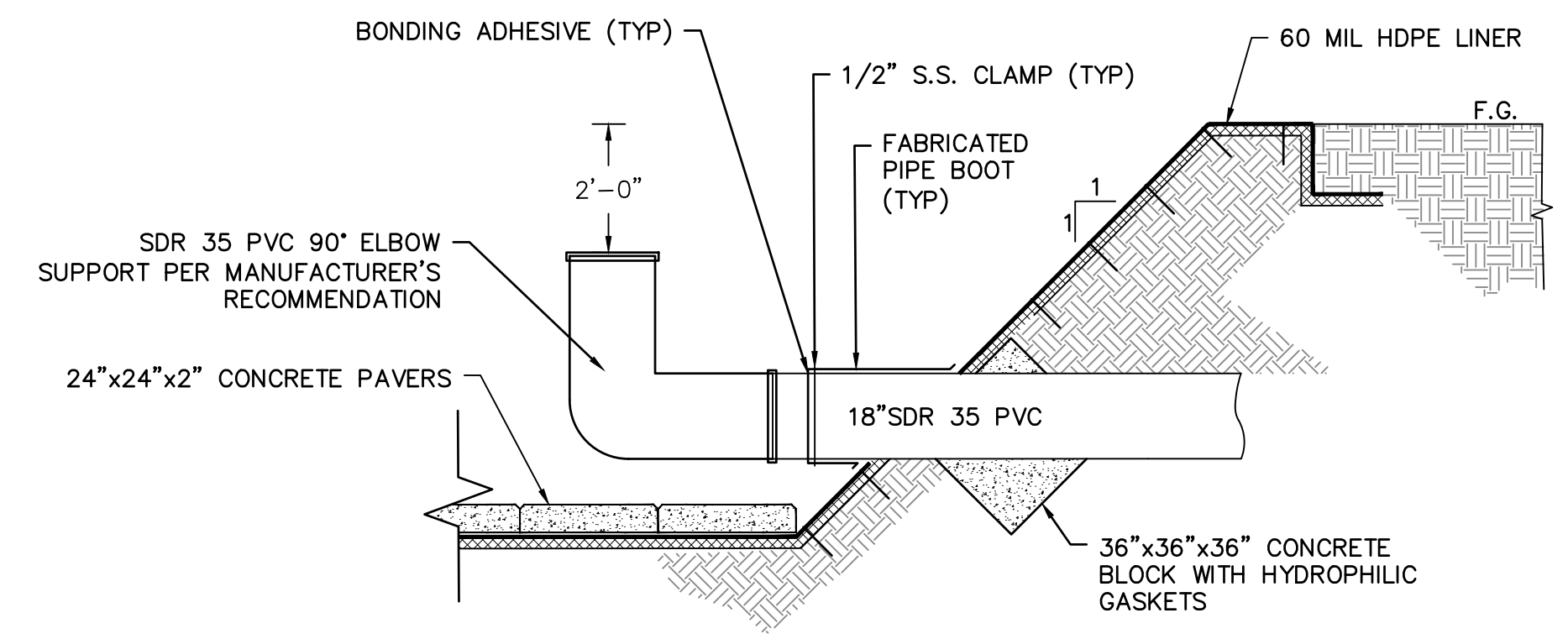
1B WMLSS CONNECTION TO JUNCTION BOX (PLAN)
NOT TO SCALE



2 DISINFECTION EXTENSION CHAMBER DETAIL
NOT TO SCALE



2A INLET PIPE DETAIL
NOT TO SCALE



2B OUTLET PIPE DETAIL
NOT TO SCALE



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1	01/22/24	A. ORRANTIA	S. STANDUKAR

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

SHEET TITLE:
**WASTE MLSS
CONNECTION AND
DISINFECTION
CHAMBER**

SHEET NUMBER: **C-312** REV. #
SHEET 22 OF 52 SHEETS

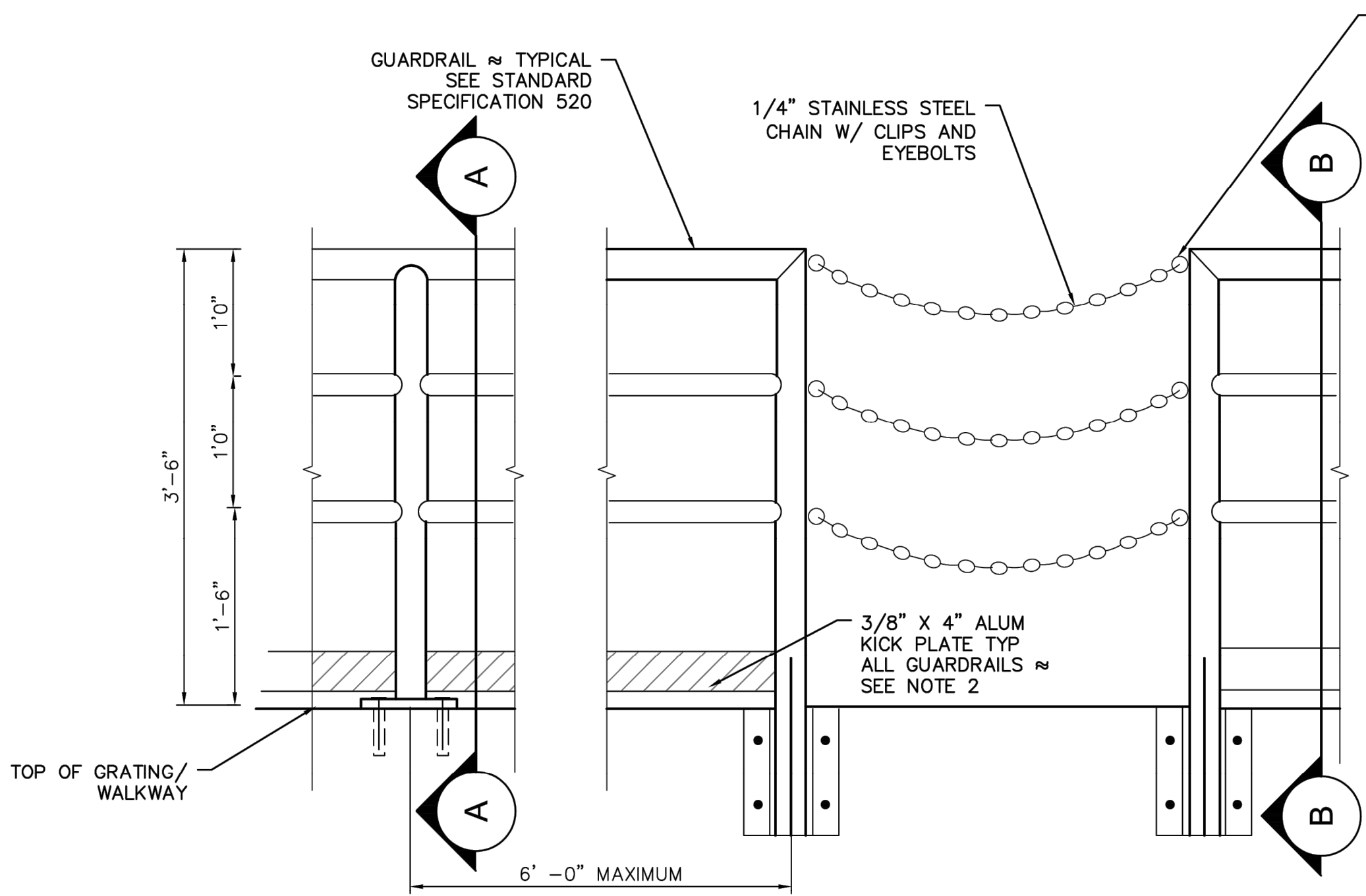
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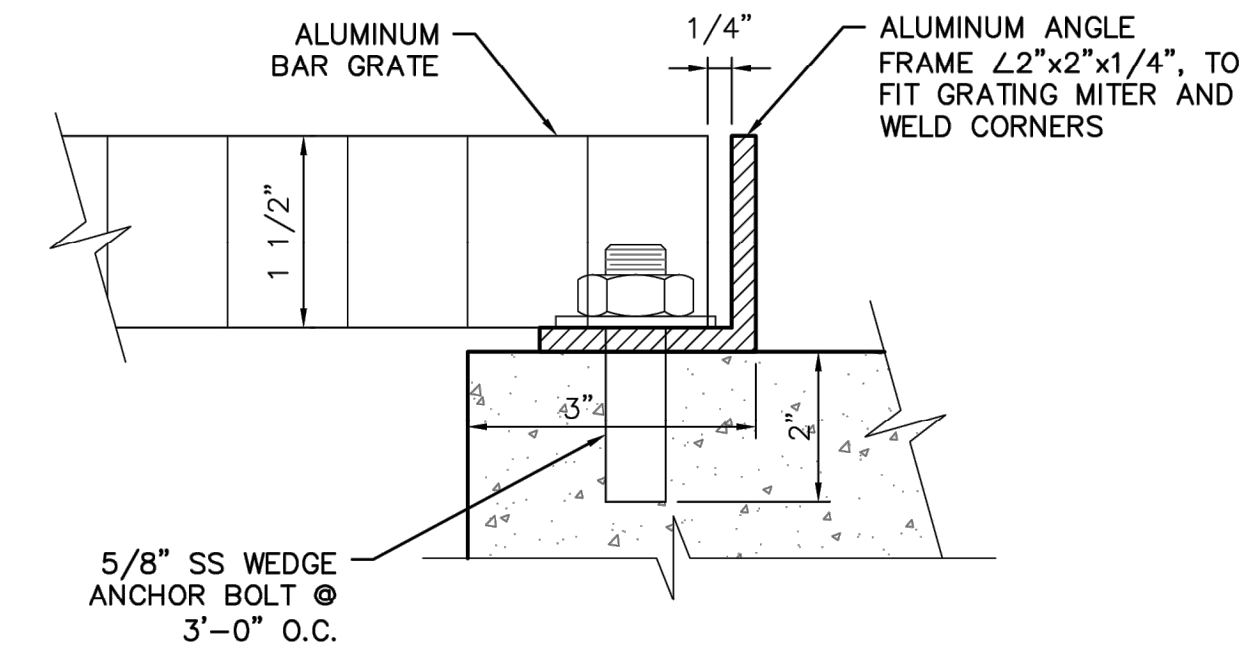
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- NOTE:
- EXCEPT AS SPECIFICALLY SHOWN OTHERWISE, GUARDRAILS SHALL BE ATTACHED TO THE SIDE OF CONCRETE MEMBERS AS SHOWN IN DETAIL B THIS SHEET. GUARDRAILS EMBEDDED IN CONCRETE MEMBERS ARE NOT ALLOWED EXCEPT WHERE SHOWN ON THE STRUCTURAL DRAWINGS.
 - KICK PLATE IS NOT REQUIRED WHERE TOP OF FRAMING FOR GRATING IS 4 INCHES ABOVE TOP OF GRATING.
 - MATERIAL - ALUMINUM ALLOY 6063-T6, CLEAR SATIN ANODIZED FINISH ALL EXPOSED SURFACES (0.4 MIL THICKNESS FOR ALL CAST COMPONENTS, 0.7 MIL THICKNESS FOR EXTRUDED COMPONENTS).
 - CONNECTIONS - COPE MEMBERS AND CONTINUOUSLY WELD OR CONNECT MECHANICALLY AT ALL JUNCTIONS TO PROVIDE FINISHED APPEARANCE SIMILAR TO WELDED SYSTEM. GRIND ALL WELDS SMOOTH TO MATCH FINISH OF ADJACENT MEMEBERS.

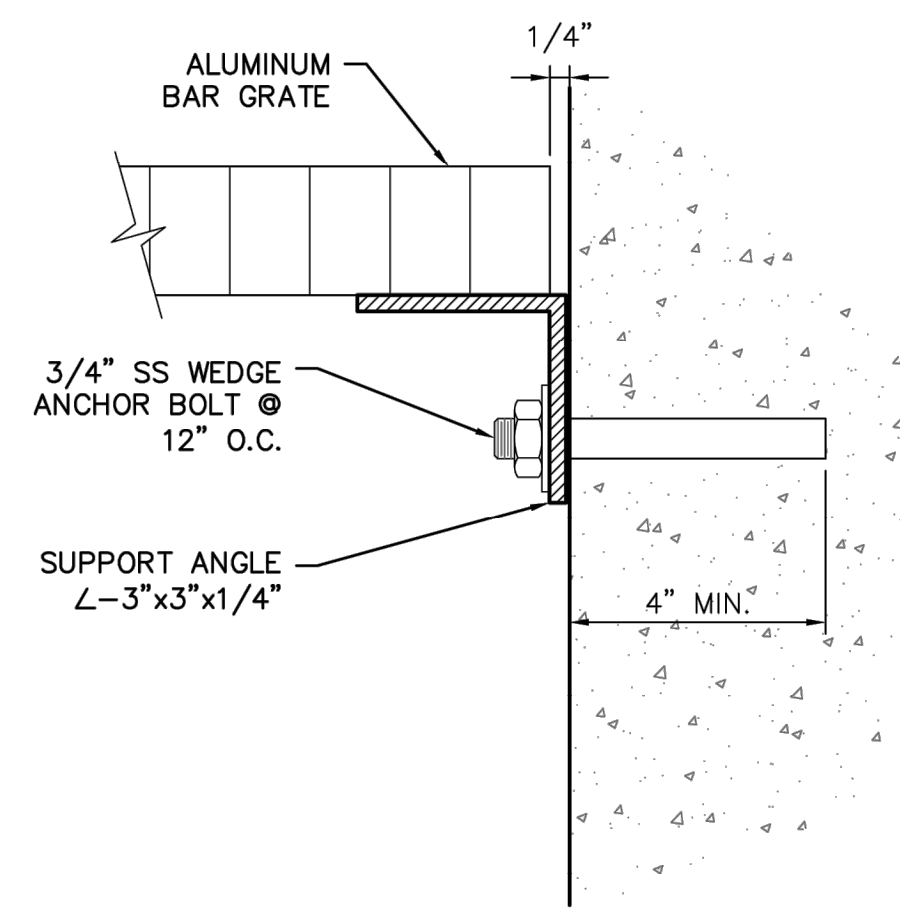


2 TYPICAL GUARDRAIL ELEVATION
NOT TO SCALE

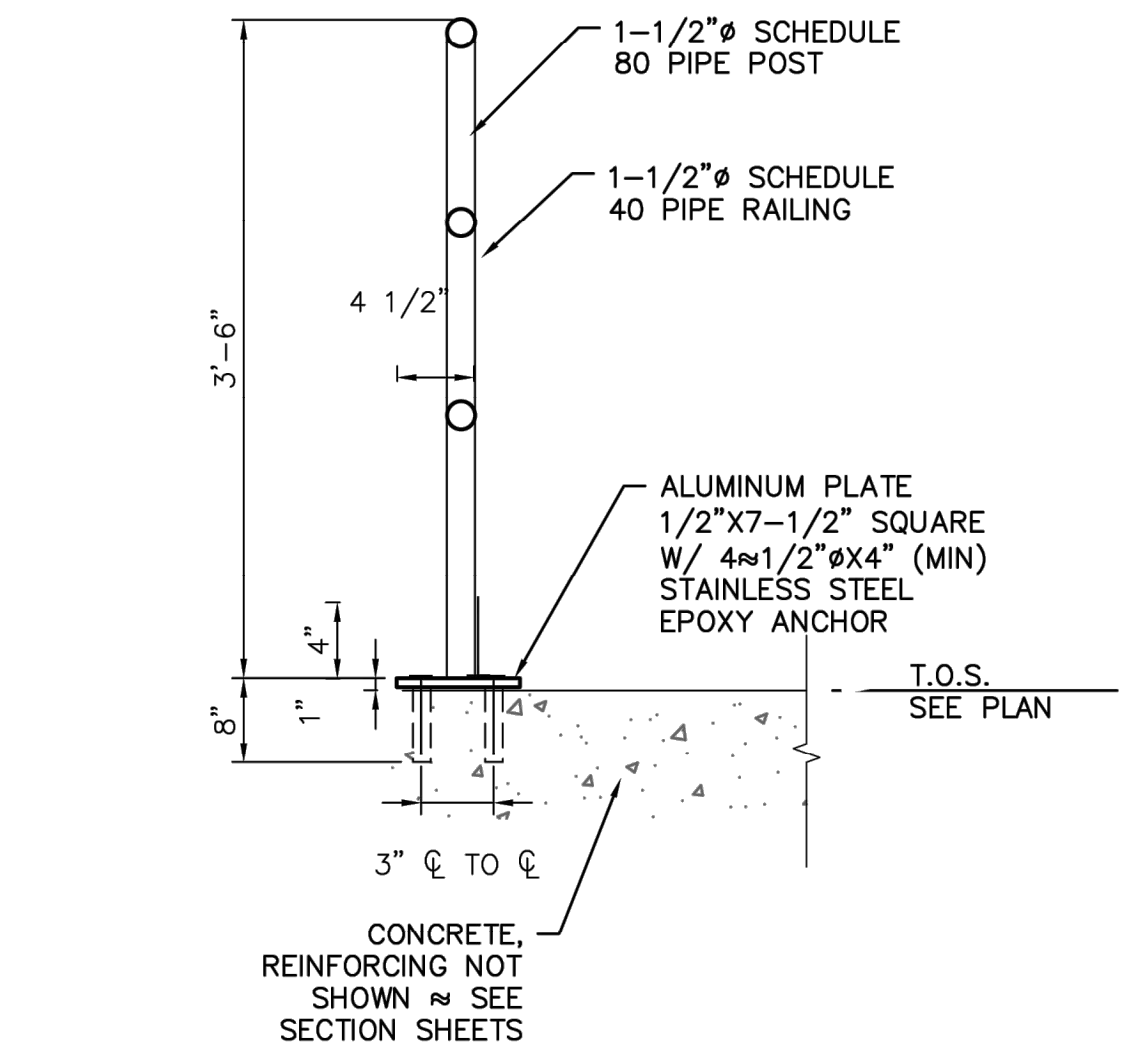
FASTEN TO ONE POST. WITH STAINLESS STEEL EYE BOLT. THE OTHER END OF THE CHAIN SHALL BE FASTENED TO ANOTHER POST BY A 2-1/2\"/>



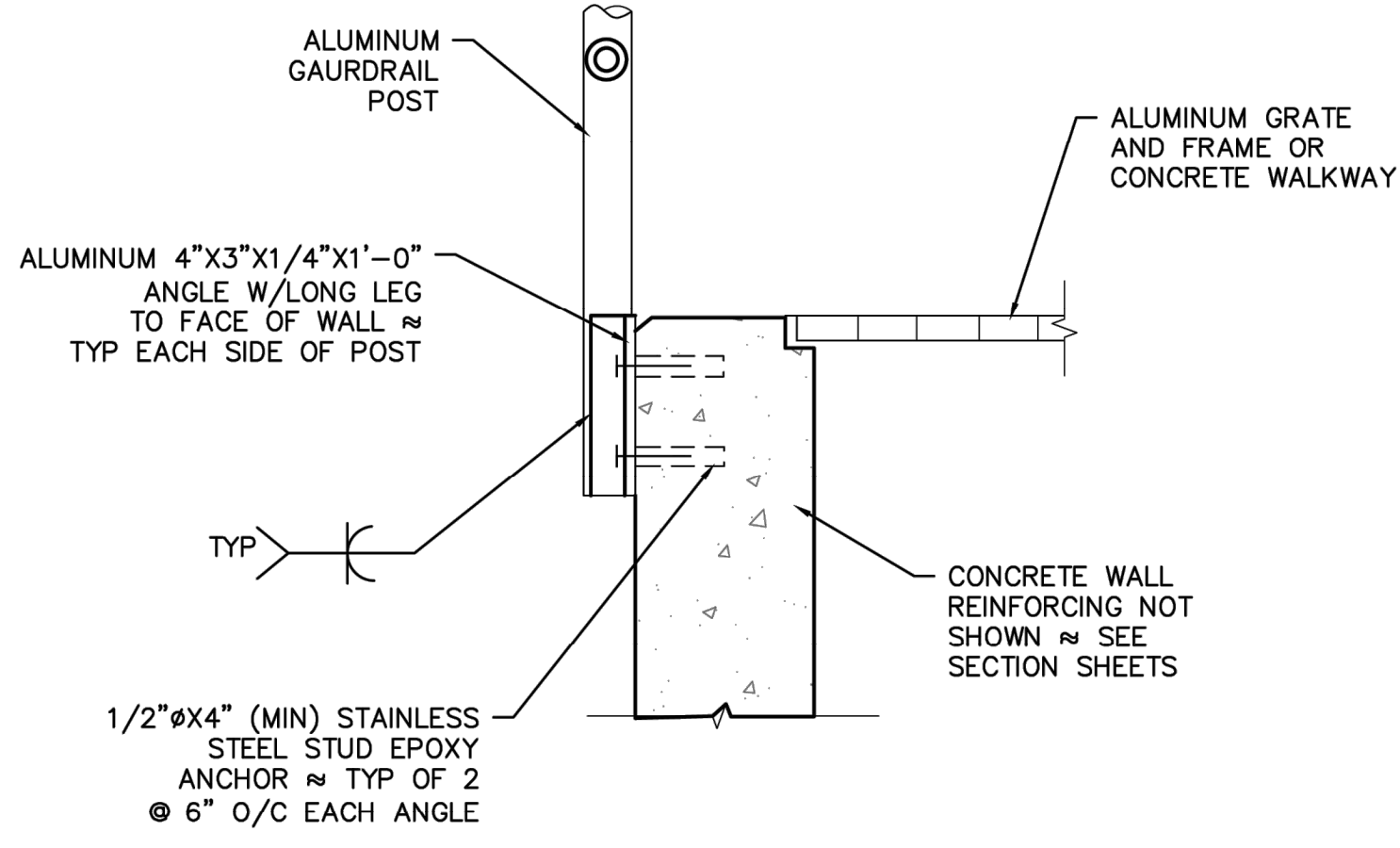
4 TYPICAL GRATE DETAIL (EXISTING STRUCTURES) TOP MOUNT
NOT TO SCALE



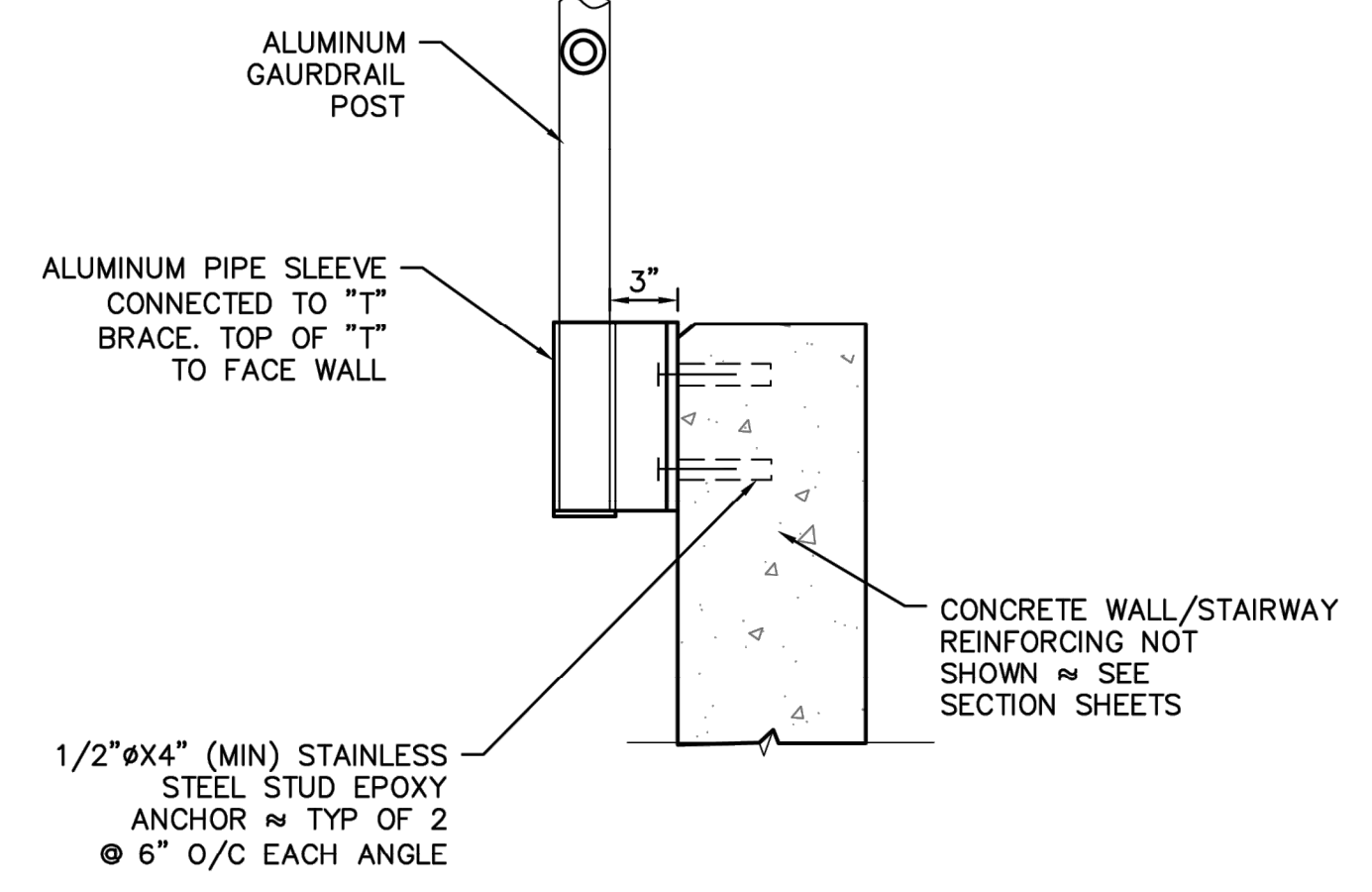
5 TYPICAL GRATE DETAIL (SIDE WALL MOUNT)
NOT TO SCALE



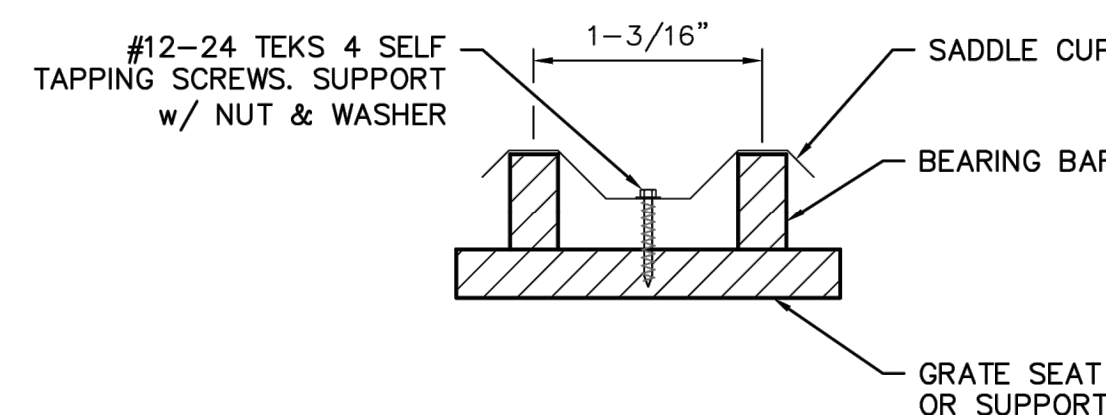
A TYPICAL ALUMINUM GUARDRAIL SECTIONS
NOT TO SCALE



B GUARDRAIL CONNECTION SECTION
NOT TO SCALE



7 OFFSET GUARDRAIL CONNECTION SECTION
NOT TO SCALE



NOTE: PROVIDE 4 CUPS PER GRATING PANEL APPROX. 4\"/>

6 GRATE FASTENING
NOT TO SCALE



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**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

REVISIONS			
NO.	DATE	BY	APPROVED

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

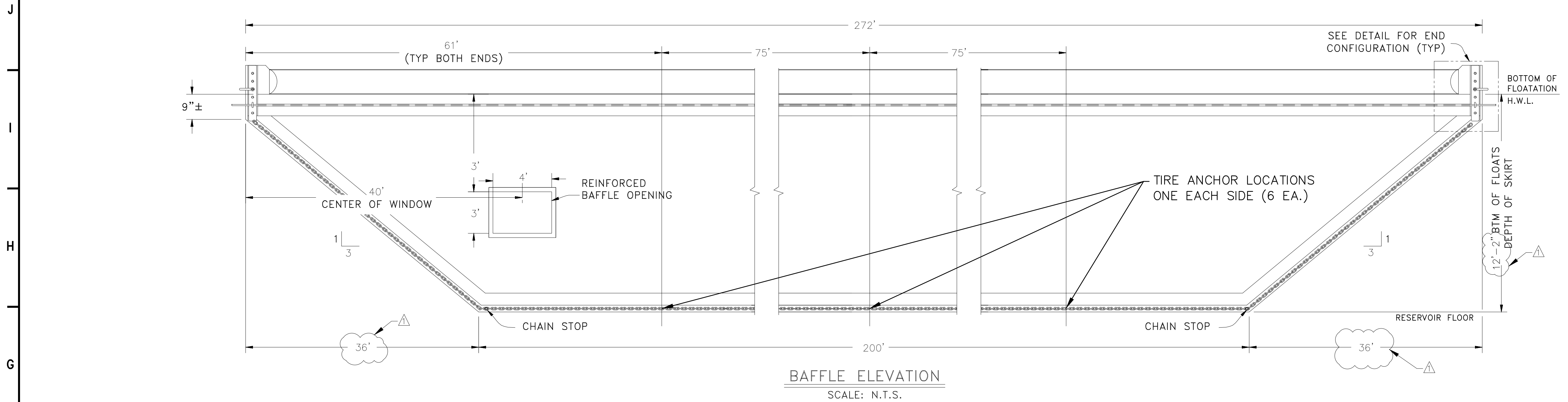
SHEET TITLE:
**GUARDRAIL AND
GRATE DETAILS**

SHEET NUMBER: **C-313**
REV. #
SHEET 23 OF 52 SHEETS

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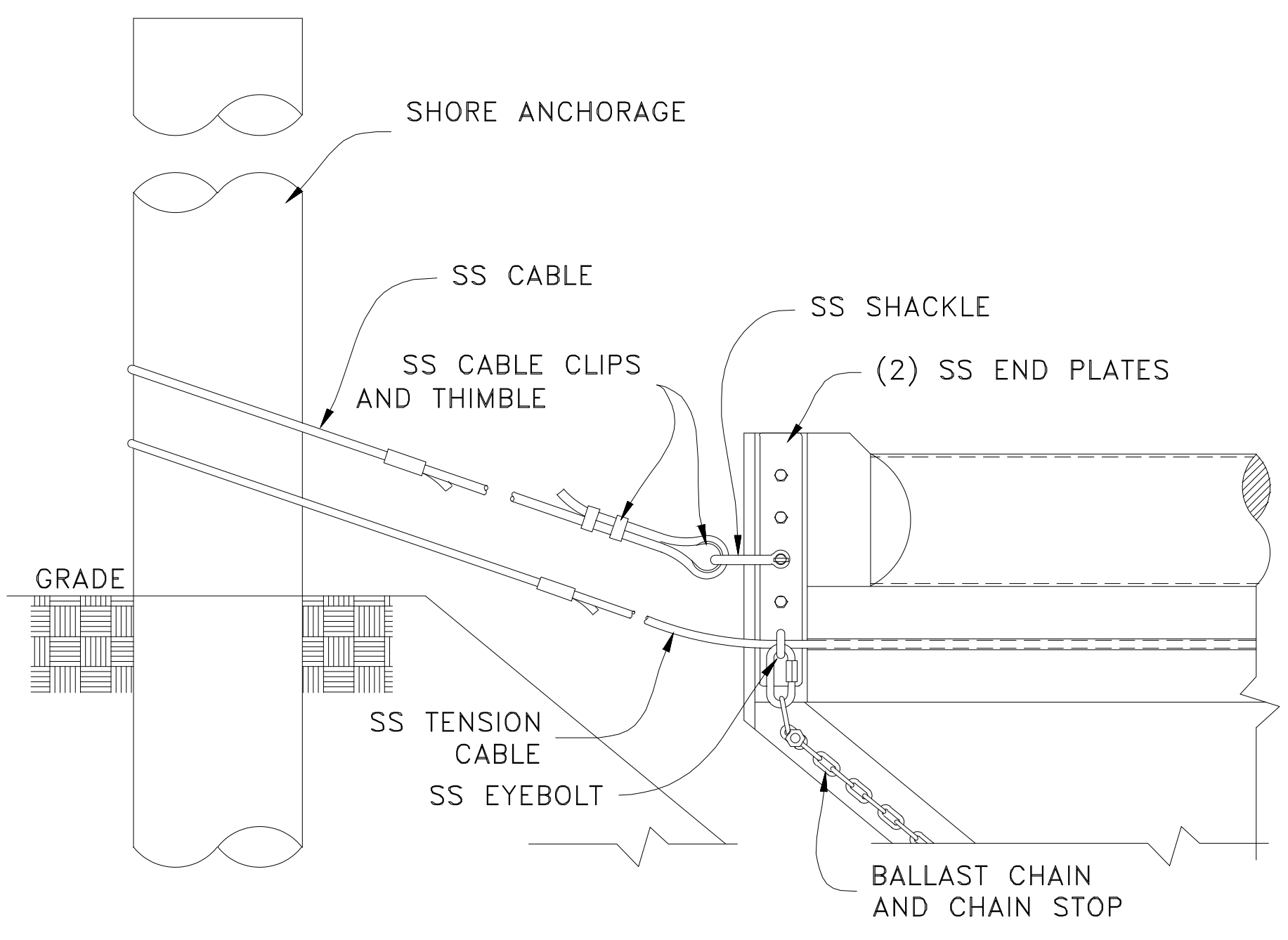
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1 2 3 4 5 6 7 8 9 10 11 12

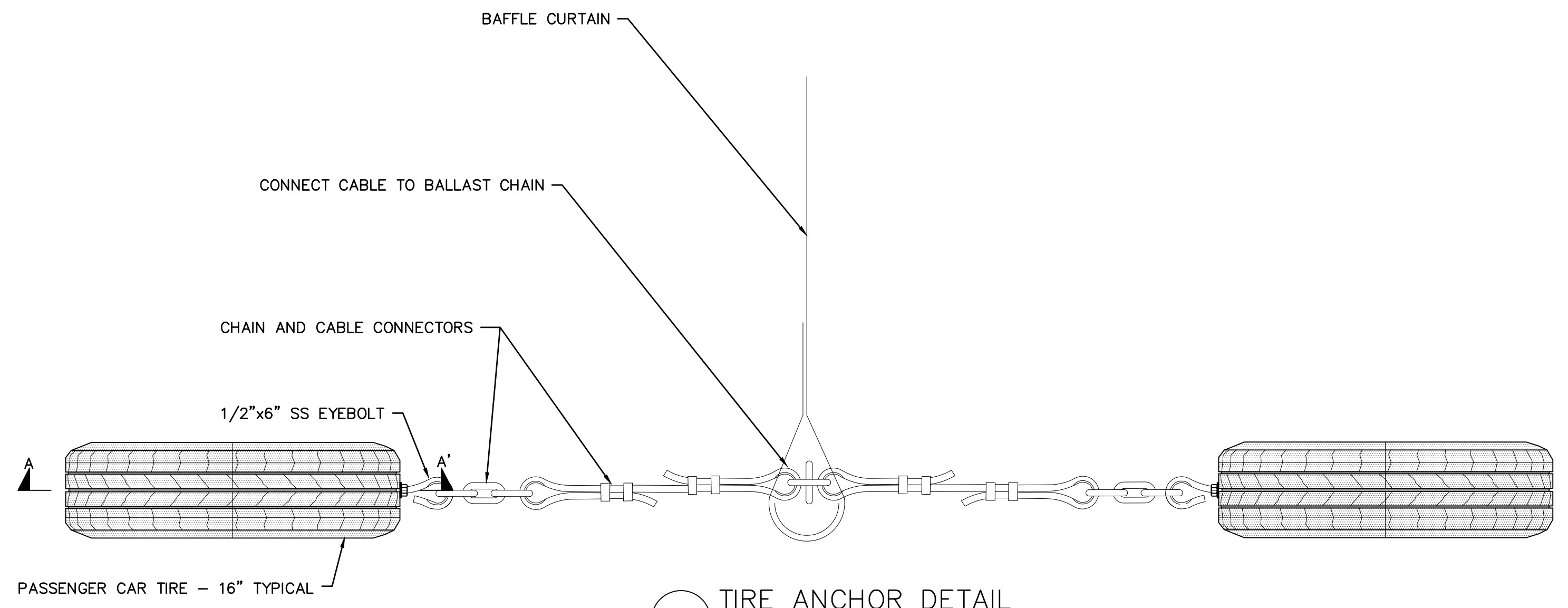


BAFFLE ELEVATION
SCALE: N.T.S.

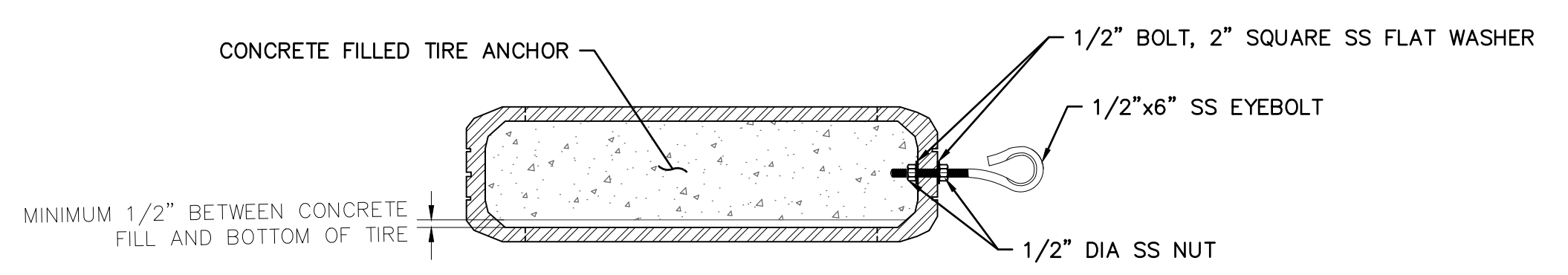
7 BAFFLE CURTAIN DETAIL PROFILE
NOT TO SCALE



9 END CONNECTION DETAIL
NOT TO SCALE



10 TIRE ANCHOR DETAIL
NOT TO SCALE



SECTION A-A'
NOT TO SCALE



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1	01/22/24	A. ORRANTIA	S. STANDUKAR

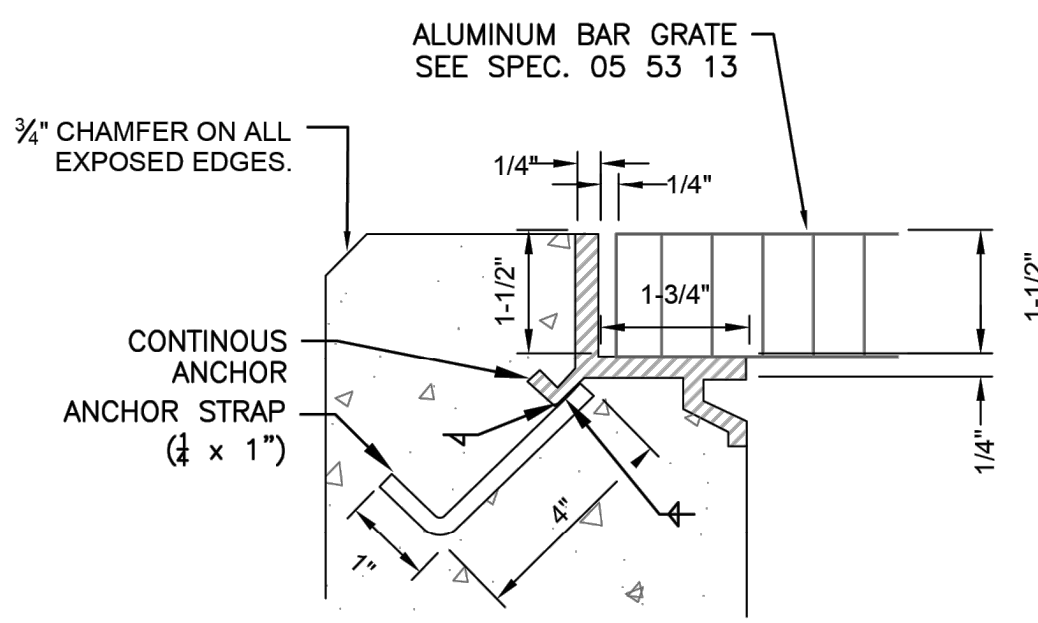
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CHECKED BY: WSP - DB
APPROVED BY: WSP - DB
DATE: 07/14/2023

SHEET TITLE:
**BAFFLE CURTAIN
DETAILS**

SHEET NUMBER: **C-314**
REV. #
SHEET 24 OF 52 SHEETS

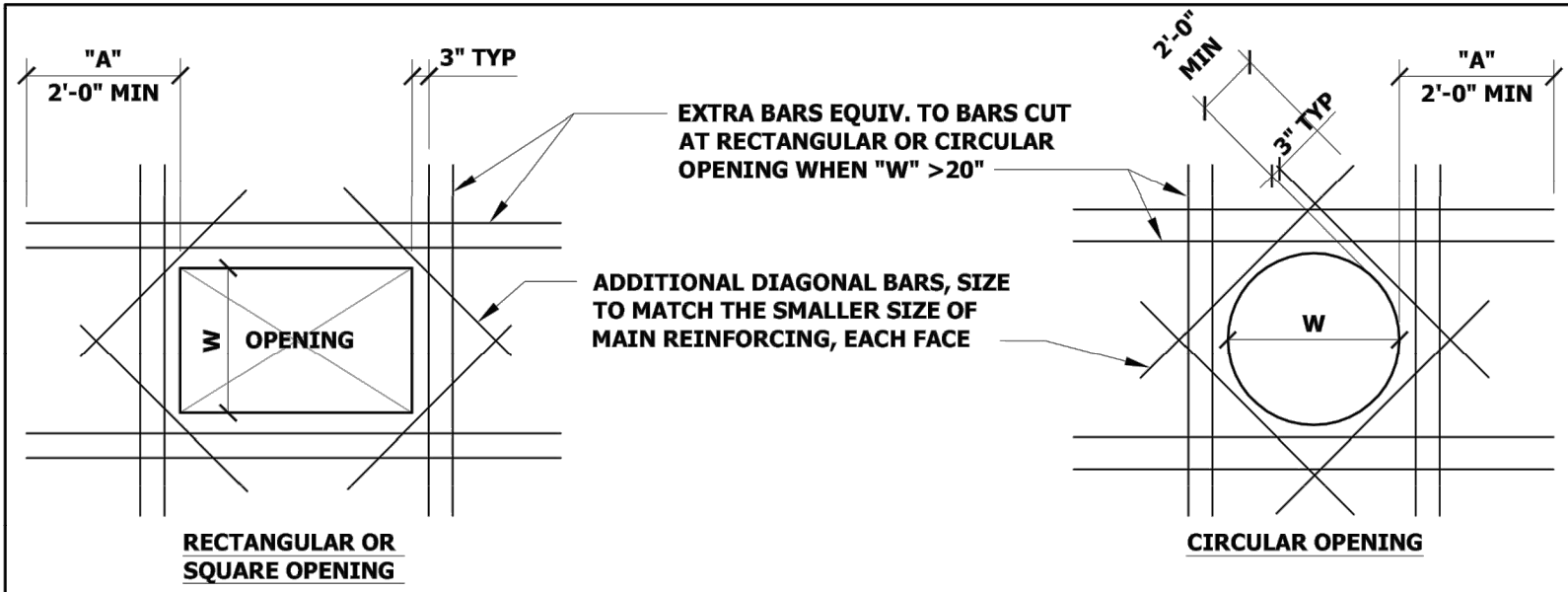
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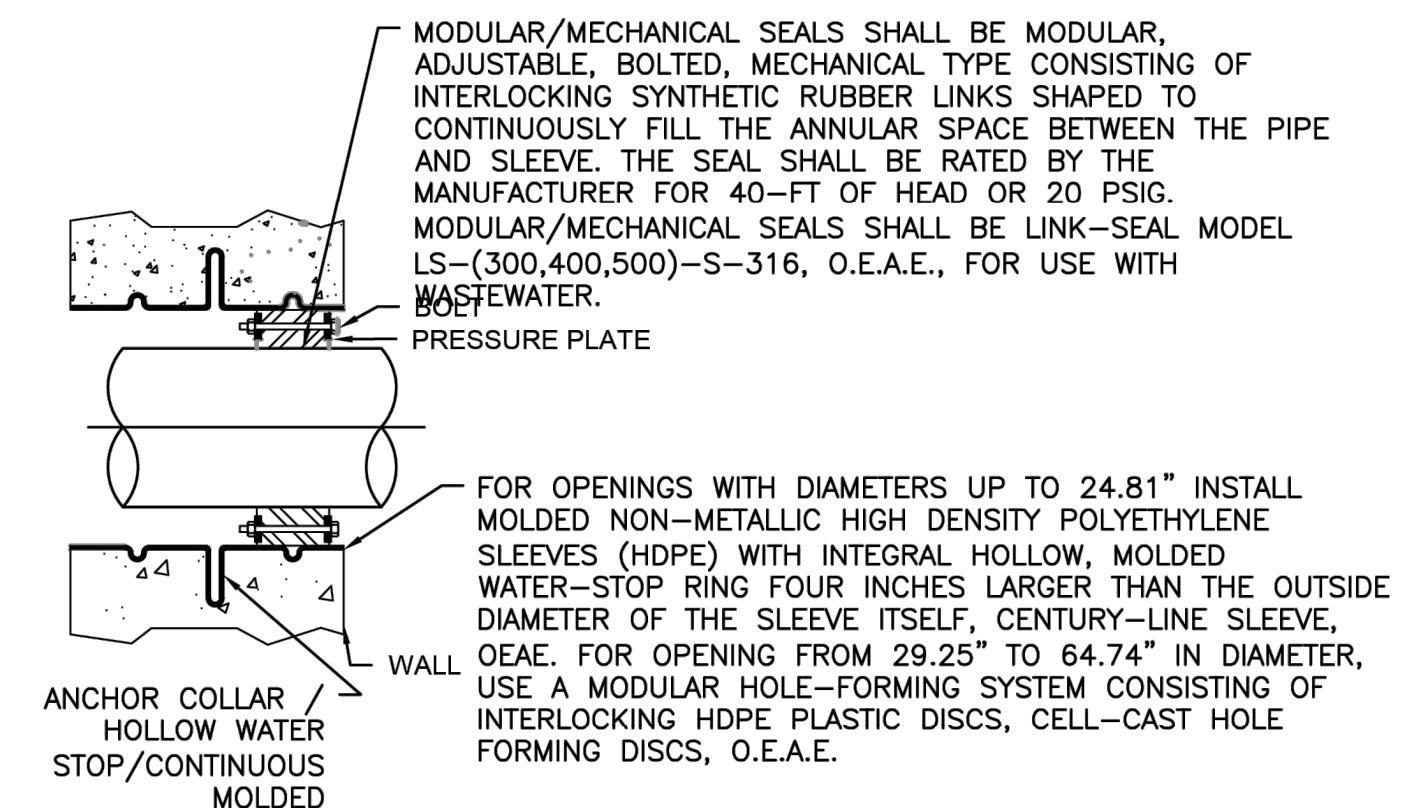
- NOTES:**
1. ALL NEW STRUCTURES WITH GRATING SHALL USE EMBEDDED GRATING FRAMES.
 2. FRAMES SHALL HAVE MITRED CORNERS AND WELDED JOINTS AND SHALL BE SIZED TO MATCH GRATING DEPTHS.
 3. VERTICAL AND HORIZONTAL LEGS OF THE FRAME SHAPE SHALL HAVE 1/4-INCH WALL THICKNESS. FRAME SHALL BE DESIGNED TO PROVIDE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

1 TYPICAL GRATE INSET (NEW STRUCTURES)
NOT TO SCALE



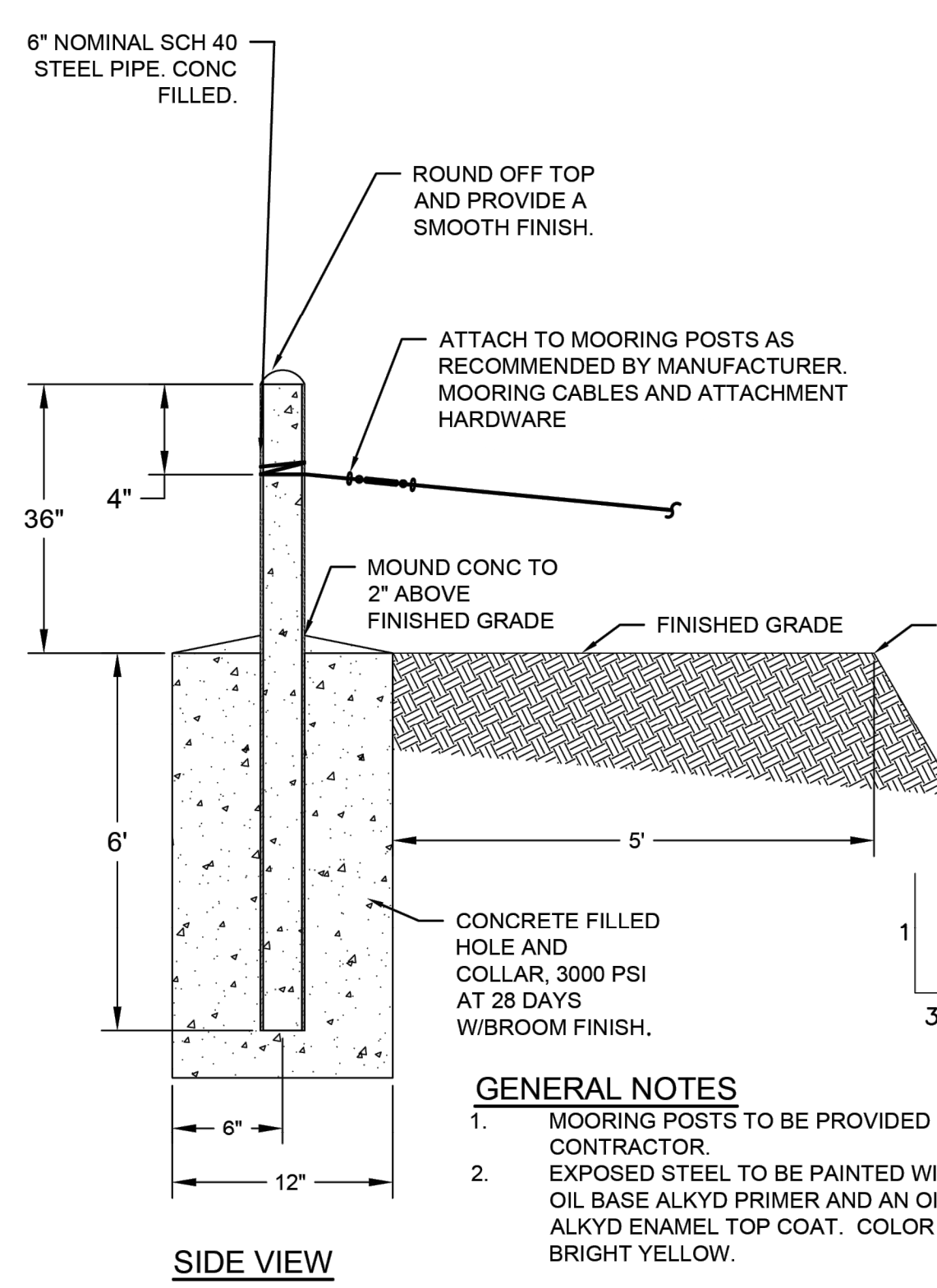
- NOTES:**
1. DISCONTINUE TYPICAL REINFORCING AT OPENING.
 2. PLACE ADDITIONAL BARS IN SAME ORIENTATION AND POSITION AS BARS CUT BY OPENING. PROVIDE ONE SET OF BARS FOR EACH LAYER OF REINFORCING CUT.
 3. "A" = TOP BAR EMBEDMENT LENGTH (24" MINIMUM). PROVIDE STANDARD HOOK IF FULL EMBEDMENT LENGTH IS NOT 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.
 8. ALL REINFORCING SPACING SHALL BE GREATER THAN 3" CENTER TO CENTER.

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

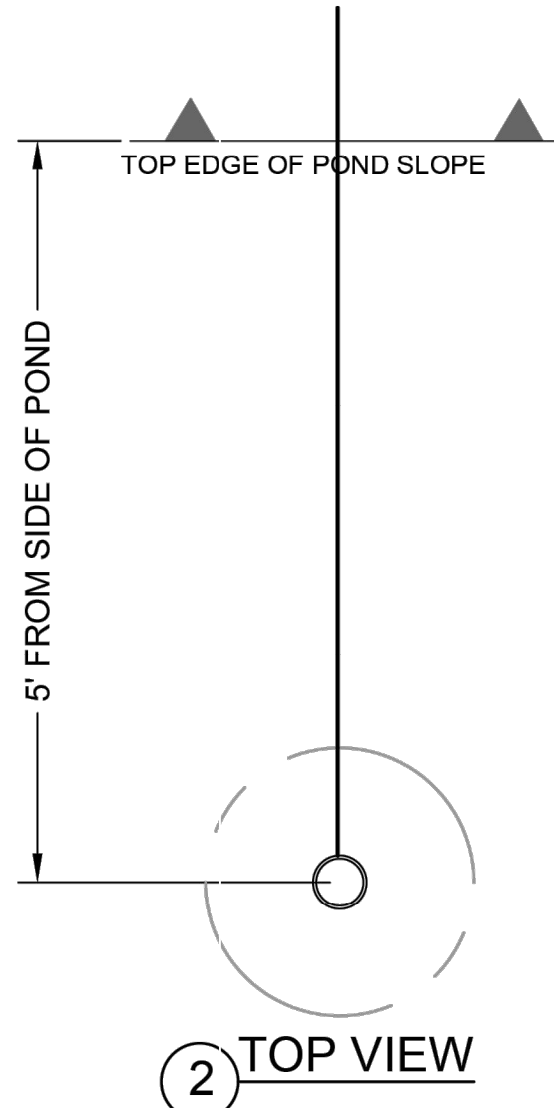


3 PIPE PENETRATION NEW WALLS OR FLOORS
NOT TO SCALE

NOTE:
THE ABOVE DETAIL APPLIES TO ALL NEW WALL AND FLOOR PIPE PENETRATIONS OTHER THAN THOSE IDENTIFIED IN THE "PVC INSERT LOCATION CHART" ON SHEET 177-BNR-718.



- GENERAL NOTES**
1. MOORING POSTS TO BE PROVIDED BY CONTRACTOR.
 2. EXPOSED STEEL TO BE PAINTED WITH AN OIL BASE ALKYD PRIMER AND AN OIL BASE ALKYD ENAMEL TOP COAT. COLOR TO BE BRIGHT YELLOW.



2 TOP VIEW

ROW	DISTANCE (FT)
1	300
2	300
3	300

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

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



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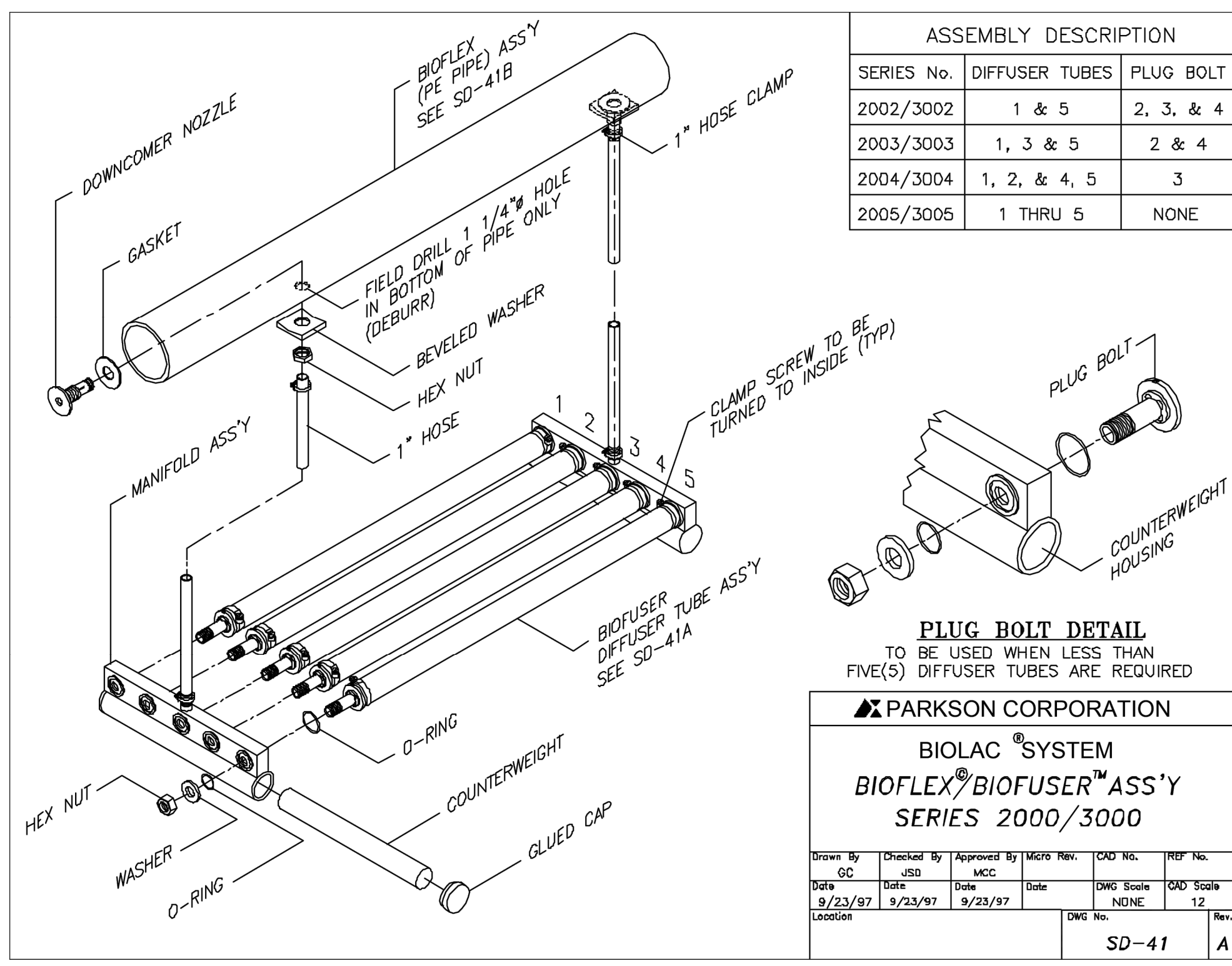
REVISIONS			
NO.	DATE	BY	APPROVED
1	01/22/24	A. ORRANTIA	S. STANDUKAR

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

SHEET TITLE:
DETAILS

SHEET NUMBER: **C-315**
REV. #
SHEET 25 OF 52 SHEETS

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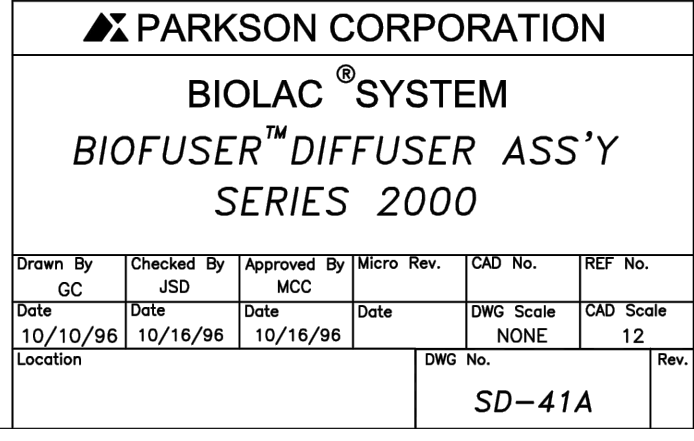


BIOFUSER™ ASSEMBLY

THE BIOFUSER™ ASSEMBLY IS SHIPPED LOOSE AND ASSEMBLED IN THE FIELD BY CONTRACTOR. THE BIOFUSER ASSEMBLY SHOULD BE ASSEMBLED BEFORE THE PE PIPE IS WELDED TOGETHER. THE COUNTERWEIGHT CAN BE INSTALLED AT THIS TIME, OR FOR HANDLING PURPOSES, INSTALLED JUST BEFORE THE DOWNCOMER HOSES ARE CONNECTED.

TO ASSEMBLE USE THIS WITH S.D. DRAWING SD-41

- A. TO ASSEMBLE THE DIFFUSER TUBES INTO THE MANIFOLD, SELECT A FLAT SURFACE (TABLE). MAKE SURE THE TABLE IS SMOOTH AND NO SHARP EDGES THAT COULD CUT THE DIFFUSER SHEATHS. MAKE SURE THAT THE LOCATING GROOVES ON THE TUBES LINE UP WITH THE LOCATING PINS ON THE MANIFOLD. THEN SCREW THE NUT UNTIL HAND TIGHT.
 - B. PLACE TWO MANIFOLDS ON THE TABLE ONE AT EACH END AND AS MANY DIFFUSER TUBES AS REQUIRED PER APPROPRIATE DRAWING. PLACE TWO WOODEN 2x4'S UNDER AND PERPENDICULAR TO THE TUBES TO RAISE THE TUBES OFF THE TABLE. INSTALL ALL THE DIFFUSER TUBES, AND PLUG BOLTS IF REQUIRED, INTO ONE MANIFOLD THEN INSTALL THE MANIFOLD ONTO THE OTHER END USING THE SAME PROCEDURE. AFTER THE TUBES ARE ASSEMBLED TO THE MANIFOLDS HAND TIGHT, TORQUE ALL NUTS TO 135 IN-LBS.
 - C. SLIDE THE LARGE O-RING OVER THE BOSS ON THE END OF THE DIFFUSER TUBE. THEN INSERT ONE END OF THE DIFFUSER TUBE INTO THE MANIFOLD. MAKE SURE THE O-RING IS PROPERLY SEATED AND THE SCREW ON THE CLAMP IS FACING TO THE INSIDE. NEXT, INSTALL THE OUTSIDE(SMALL) O-RING AND PROPERLY SEAT INTO THE O-RING GROOVE IN THE MANIFOLD. THEN SLIDE THE WASHER OVER THE BOLT AND AGAINST THE O-RING. START THE NUT ONTO THE BOLT, APPLY MAX. TWO(2) DROPS LOCTITE #425 ON THE BOLT THREADS, OUTSIDE THE WASHER.
- CAUTION:** AFTER THE BIOFUSERS ARE ASSEMBLED, DO NOT STACK THE ASSEMBLIES ON TOP OF ONE ANOTHER, AS THIS CAN DAMAGE THE SHEATHS. LAY THE ASSEMBLIES ON THEIR SIDE, MAKING SURE THAT NOTHING MAKES CONTACT AGAINST THE DIFFUSER SHEATHS.

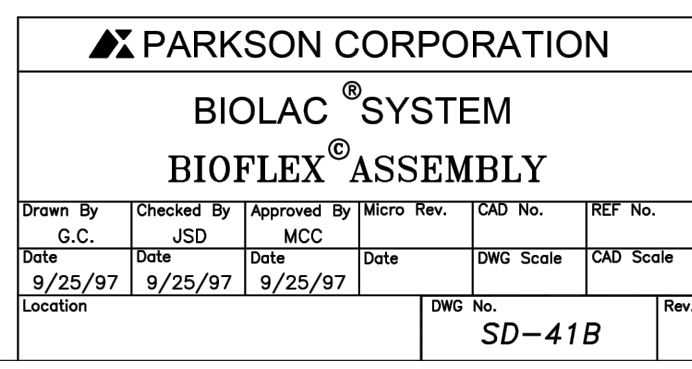
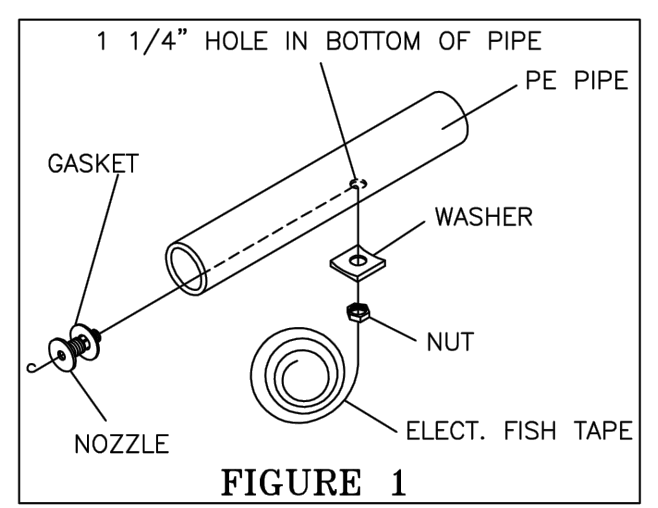


BIOFLEX® (PE PIPE) ASSEMBLY

The floating lateral consists of HDPE pipe, end fittings and downcomer fittings. The pipe will be shipped in 20 ft or 40 ft length (normally 40 ft), and must be field welded (fusion welded) together by installation contractor.

In order to inspect the integrity of the fusion welds, the following procedure should be followed: Each welder will be required to make one test sample weld at the start and end of each days welding. An additional test sample should be made for every twenty(20) welds. The samples should be at least 6' long overall. Each weld sample should have three straps, 1" wide, cut lengthwise. Each strap is bent 90°. If there are any voids or gaps, the weld is unacceptable. These samples should then be sent back to Parkson for inspection.

- A. Field drill and match mark the PE pipe as per the pipe hole layout drawings furnished. Most of the pipe will have lettering in line full length of the pipe. This can be used as a hole centerline, as it is important that all the drilled holes be in line. Layout and drill the holes (1 1/4") using a hole saw. After drilling, deburr the hole inside and outside the pipe to provide a good seal. The downcomer fittings can be installed as they are drilled or as the pipe is being welded.
- B. To install the downcomer fittings use an electrician's steel fish tape or heavy wire of sufficient length to extend the full length of the pipe (max. 40 ft). Slide the nut and beveled washer onto the fish tape, then insert the fish tape into the hole in the pipe until it is accessible from the end of the pipe. Slide the downcomer fitting with rubber washer over the end of the fish tape and secure with a wire hook so the fitting will not slide off the fish tape. Pull the fish tape back through the hole until the downcomer fitting is pulled through the hole. Position the fitting so the two(2) raised bosses on the trough of the fitting are parallel to the length of the pipe. Then slide the washer over the fitting, apply Loctite Assure #425 to the threads on the fitting under the nut then screw the nut onto the fitting and torque to 135 in-lbs.
- C. The pipe should be welded together at the edge of the basin, starting with the closed end so it can be floated into the basin as it is welded together. Note a special hose adapter is to be welded to the open of the pipe. When the PE pipe has been completely welded together cut the Hi-temp hose to length as shown on drawings. Attach one end of hose to the PE pipe adapter and other end to hose adapter at the air header on shore. Assemble and attach the restraining cable/chain to both ends of the PE pipe as shown on the assembly drawing.
- D. The downcomer hose can be attached to the pipe downcomer fitting as the pipe is being welded together and before it enters the basin. Plug the end of the hose to prevent waste from entering the hose. Coil the hose and tie the hose to the PE pipe with twine. The diffuser assemblies can be attached to the downcomer hoses from a boat or could be attached to the downcomer hose then tied to the PE pipe on shore before it enters the basin. It is absolutely critical that the downcomer hoses are straight and free of twists and kinks. If it is attached on shore, special care must be taken so that the diffuser sheath does not drag on the ground and get damaged.



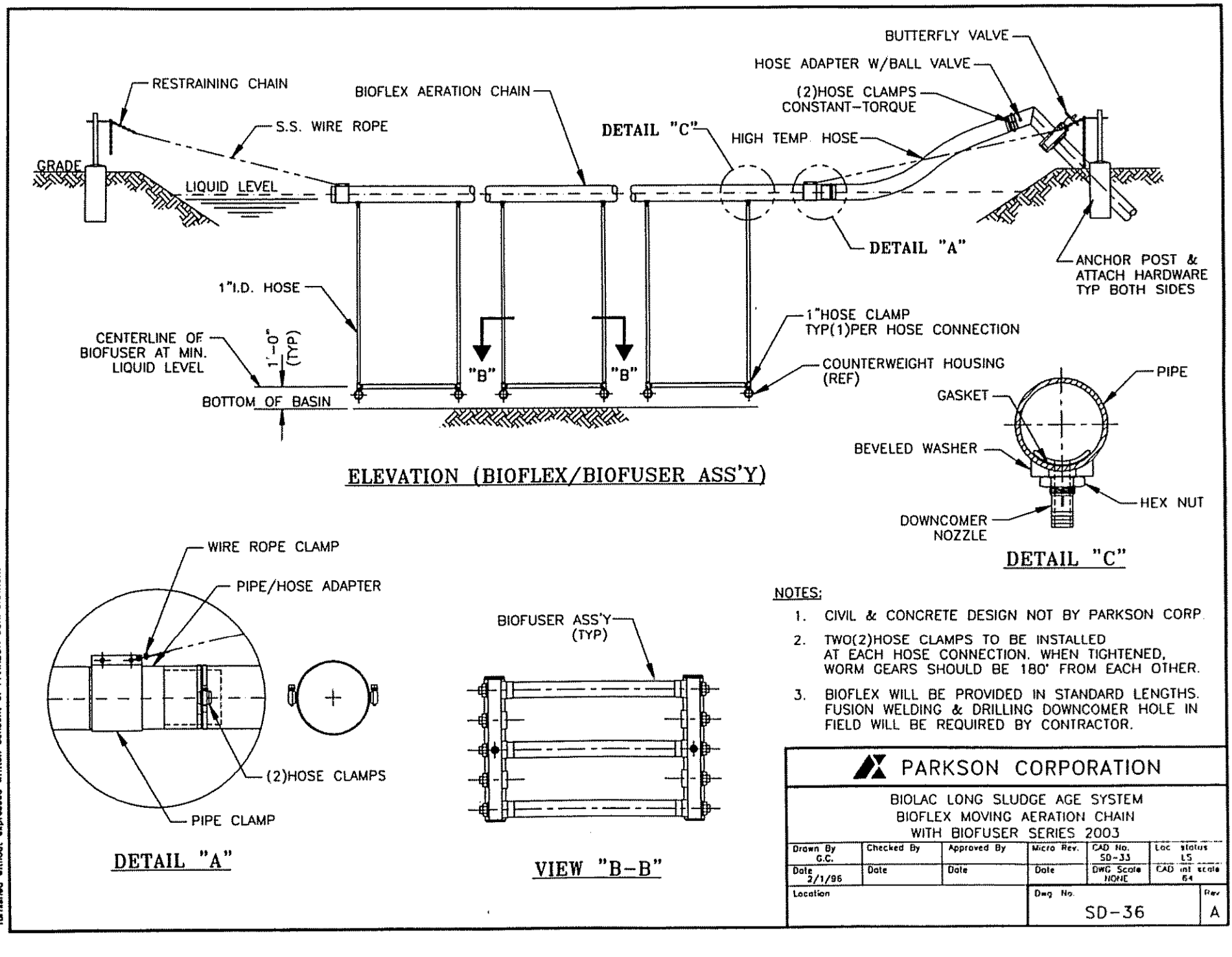
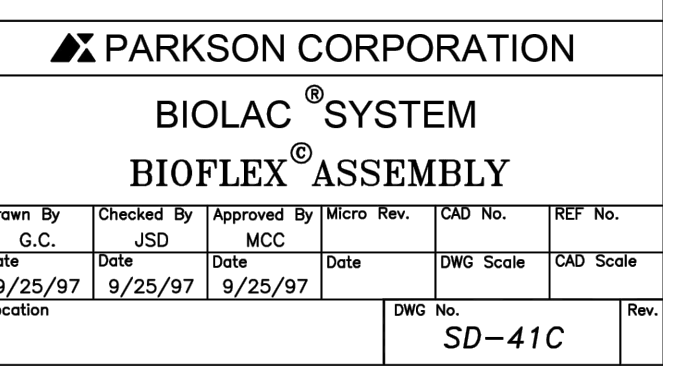
- E. Pull the entire aeration chain into position in the basin by pulling the restraining chain. Make sure that you also pull and position the aeration chain hose. Attach the restraining chain to the hooks located on the sides of the basin. Repeat the above until all the aeration chains are in position.
- F. Once the aeration chains are secured into position and the hose attached to the air header, they are ready to be tested for air leaks. Fully open all butterfly valves at each aeration chain connection. Turn on blowers, (refer to Part II Section 2 prior to starting blowers) and start checking for air bubbles and/or hissing sounds. The leak will be fairly easy to detect as bubbling at the leaks. Also check that all the diffuser assemblies have identical bubble patterns.
- G. If the basin has been dewatered, or if new construction, the chains can be assembled in the bottom of the basin. If the basin has a liner, special care must be taken so as not to damage or cut the liner. The PE pipe can be drilled and welded together in the bottom of the basin, but not recommended if basin is lined.

Connect the downcomer hoses to the PE pipe then stretch the hose and connect to the diffuser assembly, making sure there are no twists or kinks in the hose. The diffuser assemblies should then be placed near the PE pipe.

Connect one end of the air feed hose to the PE pipe. Plug the other end of the hose so it cannot fill with water. Attach a rope to the end of the hose and secure to shore.

Attach the restraining chains to the PE pipe. Tie a rope to the end of the chain and secure to the anchor post on shore. As the basin is being filled with water occasionally retie the ropes to shore.

When the water has reached the required side water (S.W.D.) per drawing, adjust and secure the restraining chains to the anchor post. Attach the air feed hose to the air adapter at shore. Adjust and cut hose if necessary at startup per Parkson Representative instruction.



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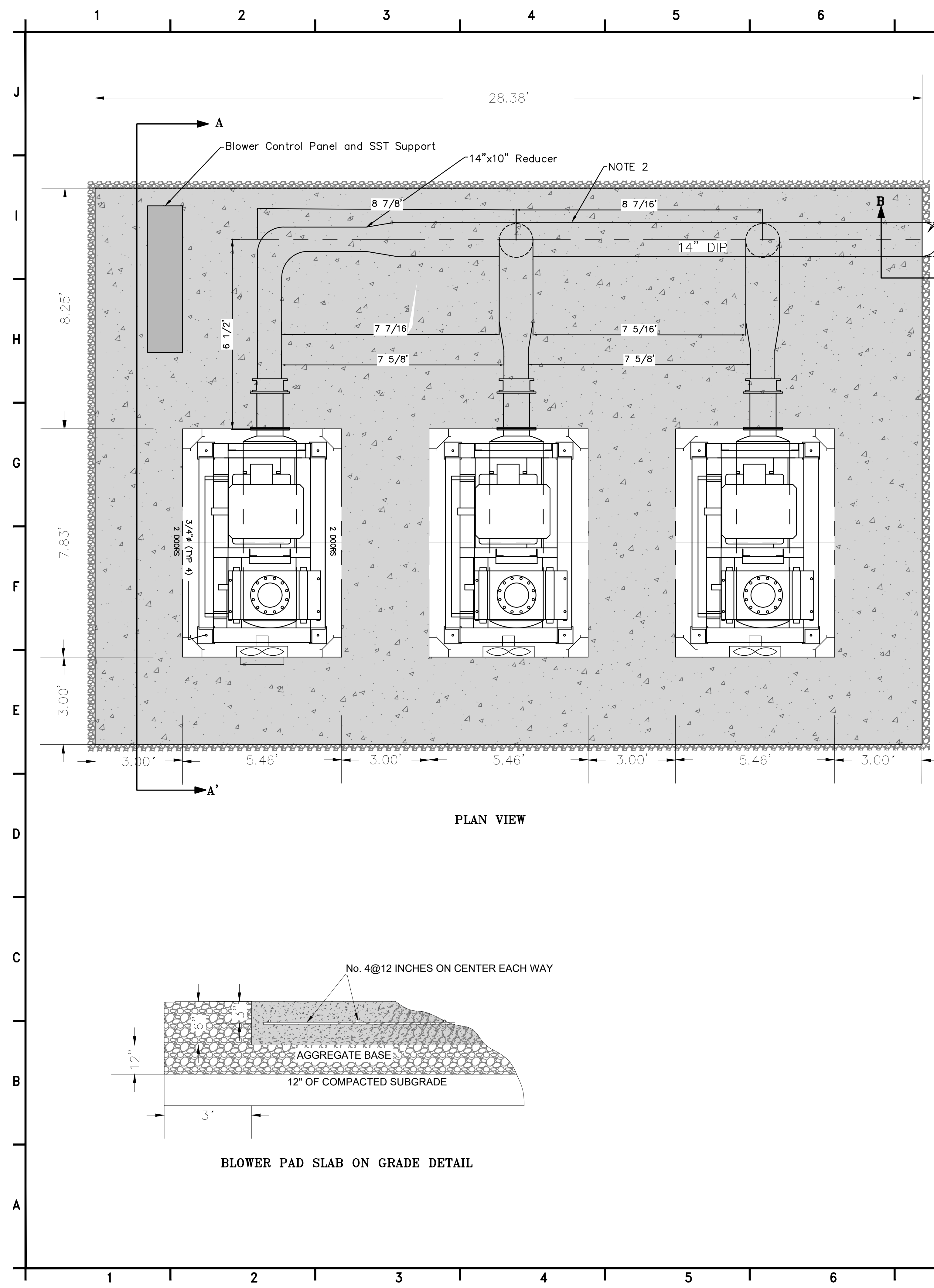
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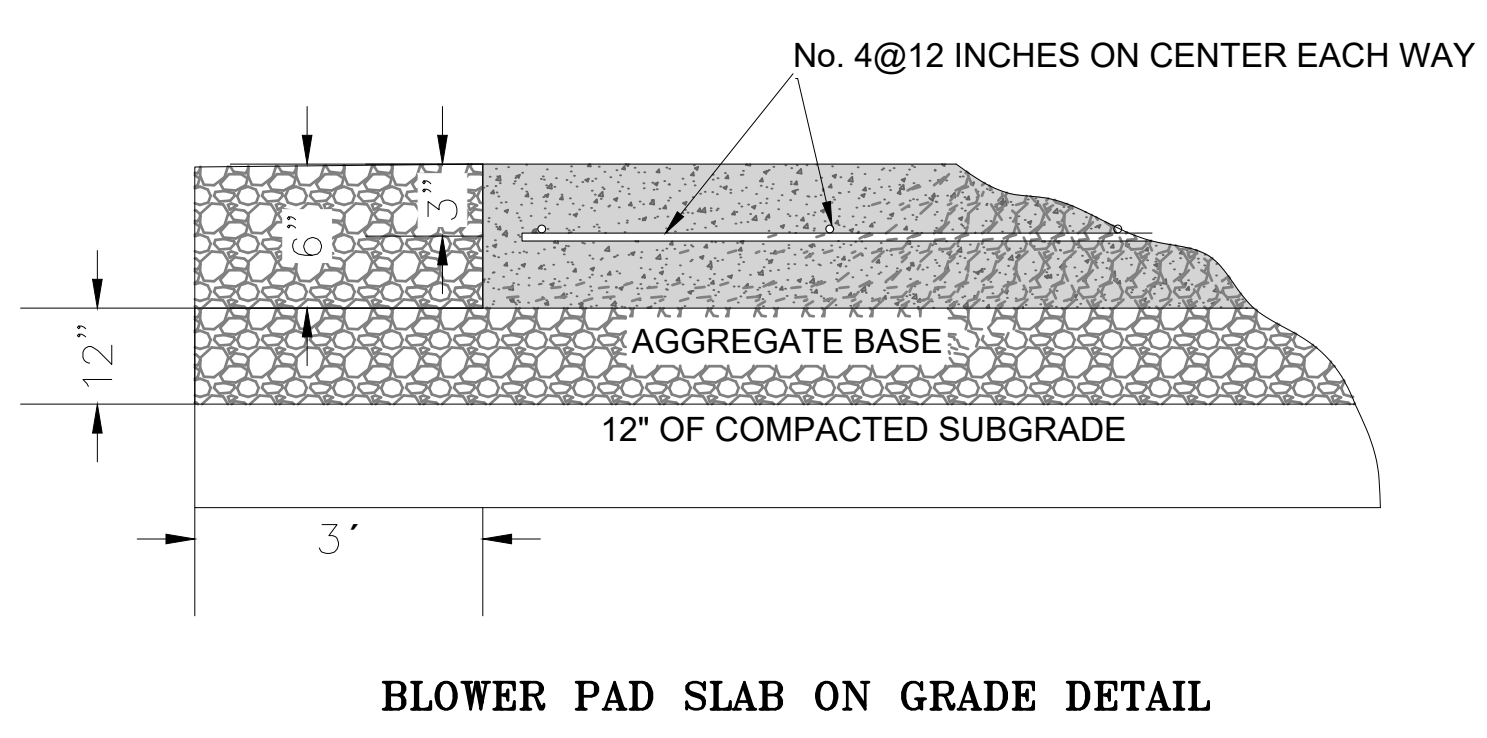
SHEET TITLE:
**BIOFUSER
DETAILS**

SHEET NUMBER: C-400
REV. #
SHEET 26 OF 52 SHEETS

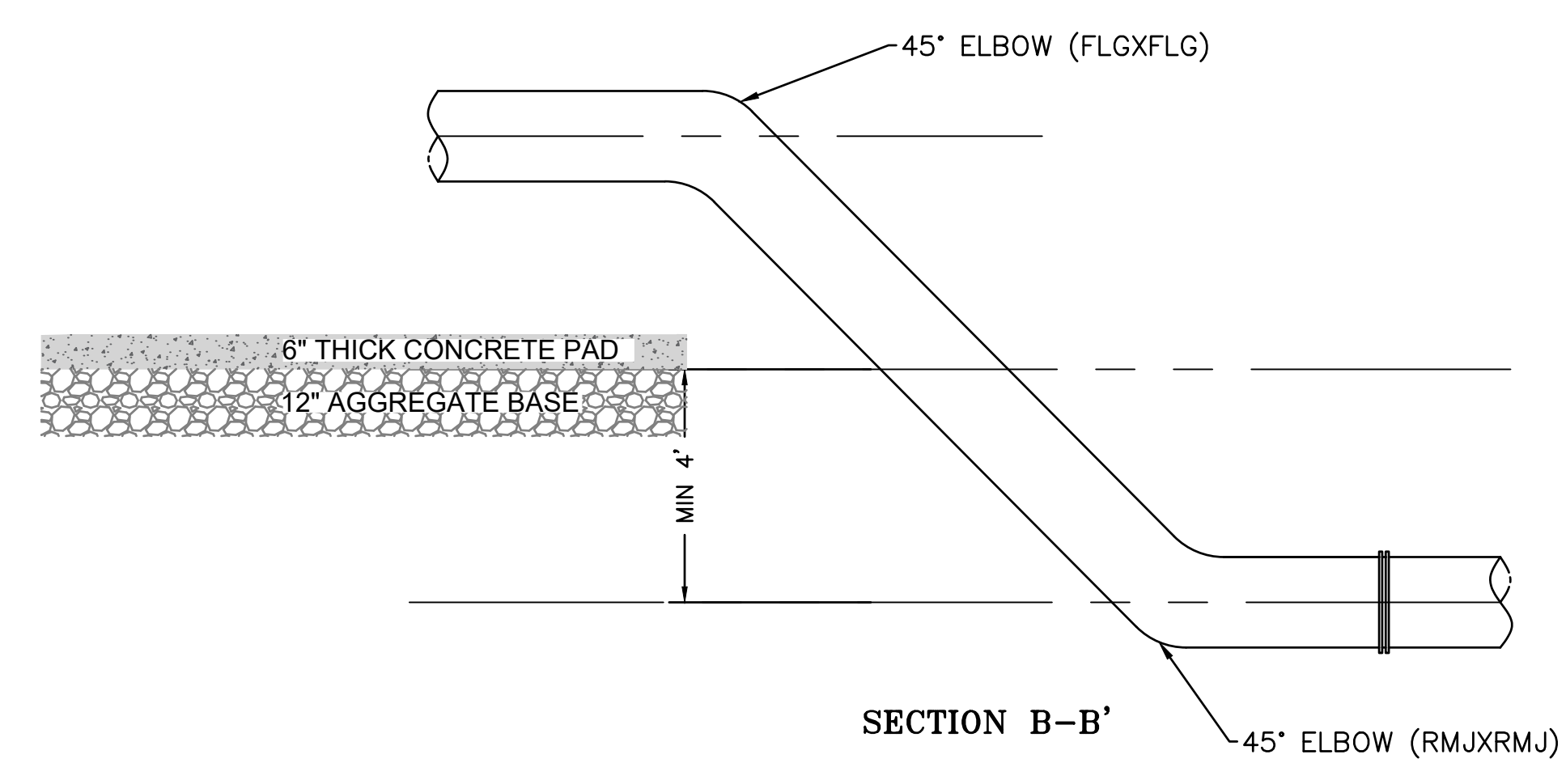
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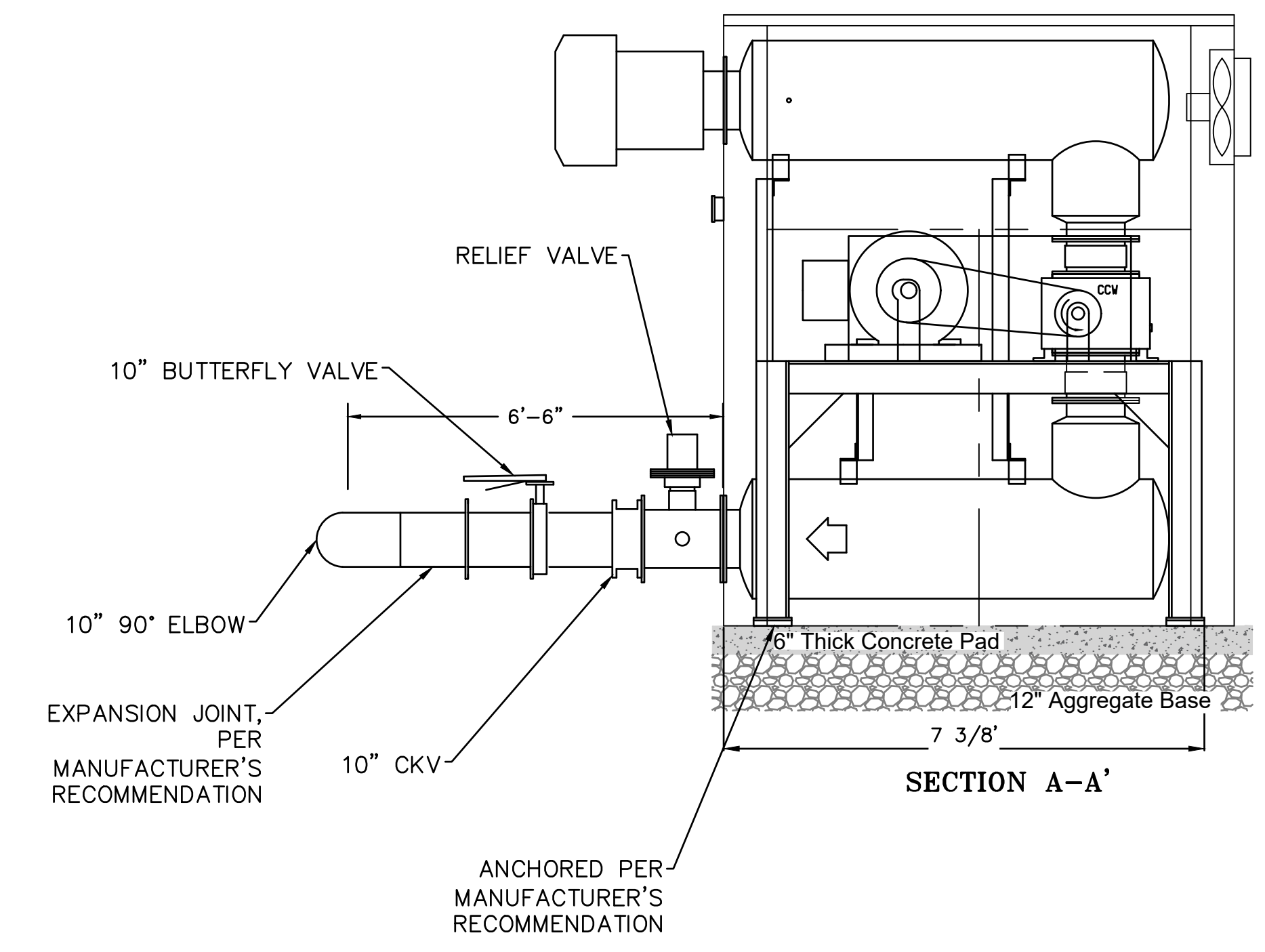
PLAN VIEW



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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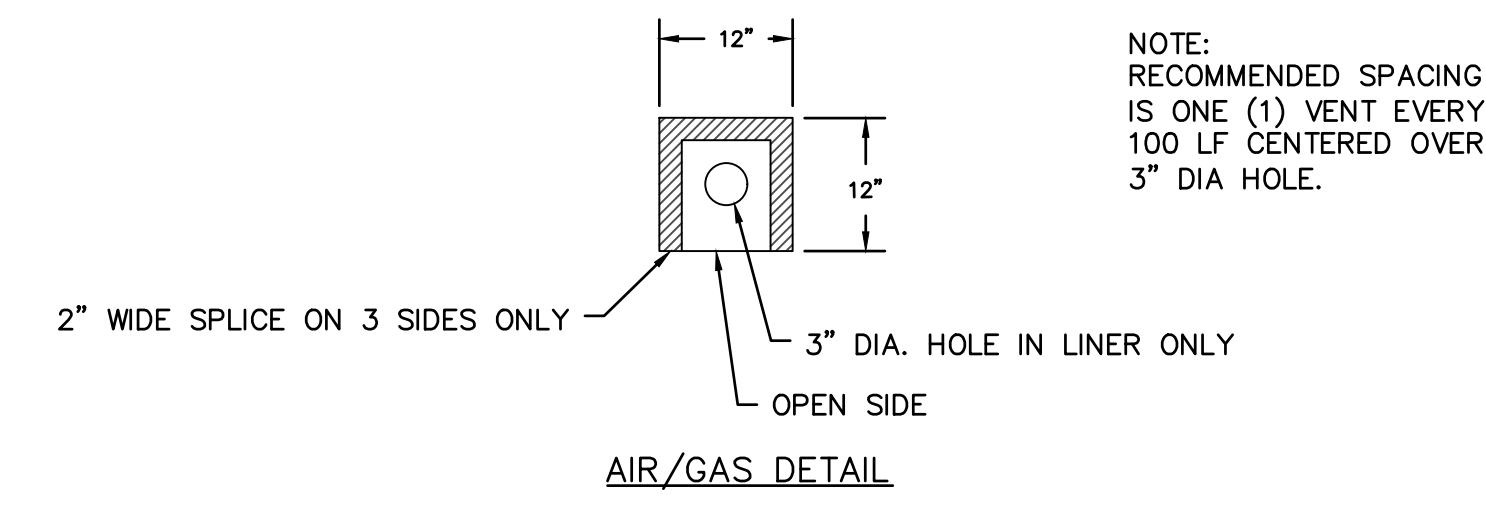
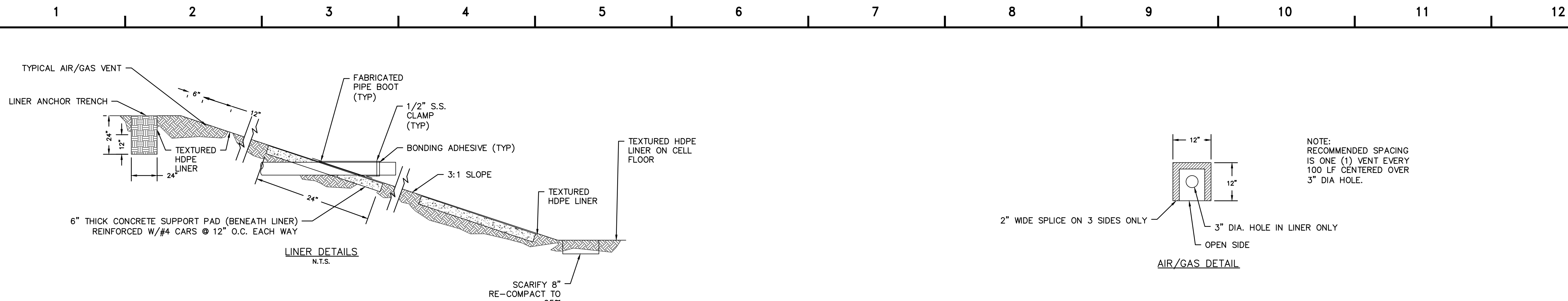
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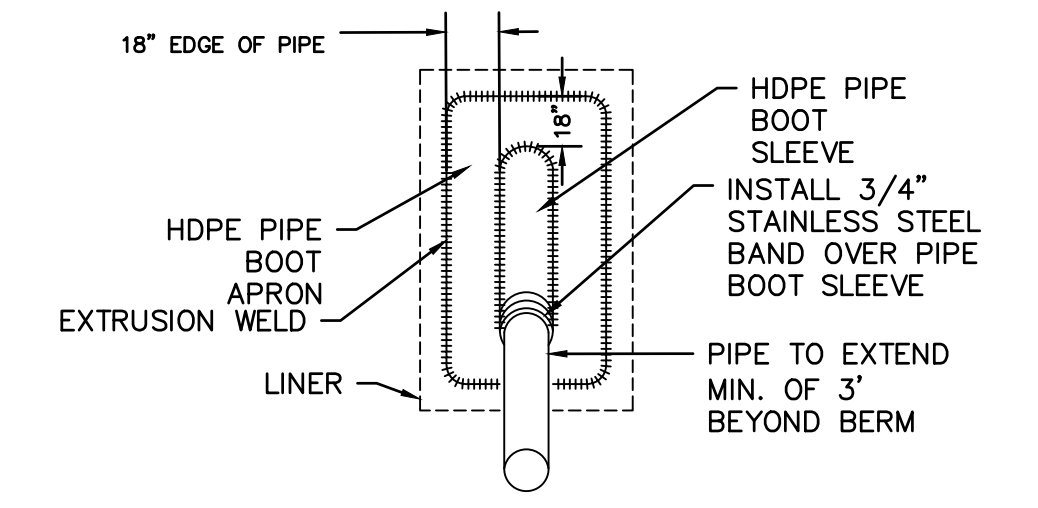
SHEET TITLE:
BLOWER SYSTEM

SHEET NUMBER:	REV. #
C-401	
SHEET 27 OF 52 SHEETS	

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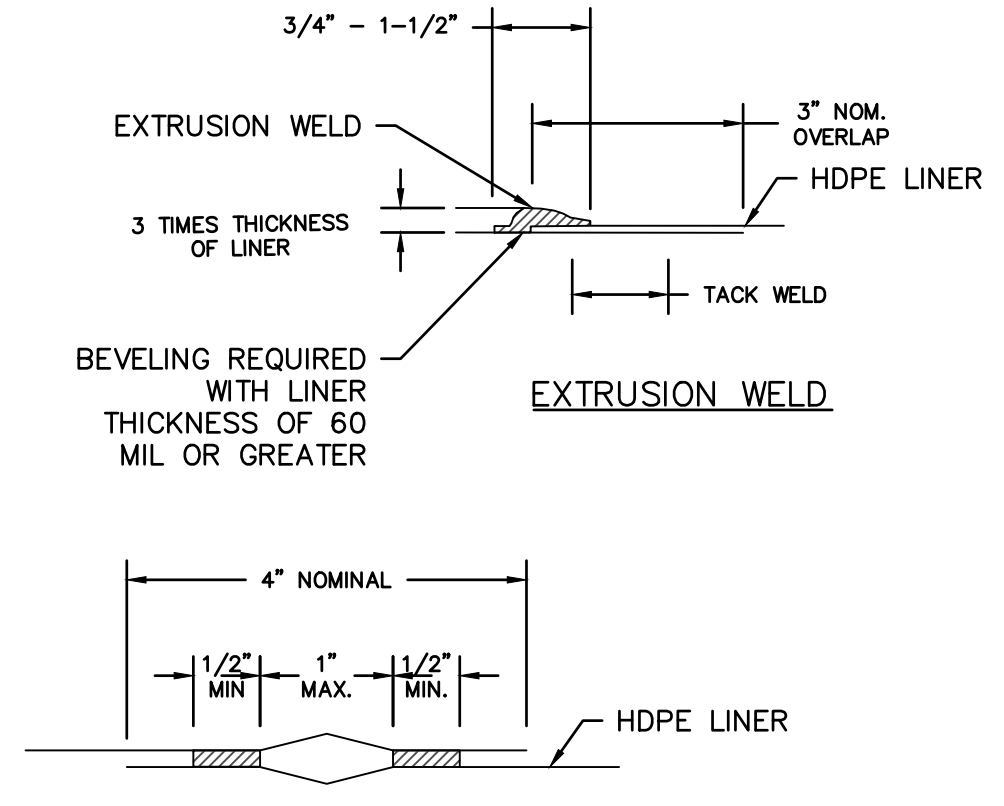


3 AIR/GAS DETAIL
NOT TO SCALE

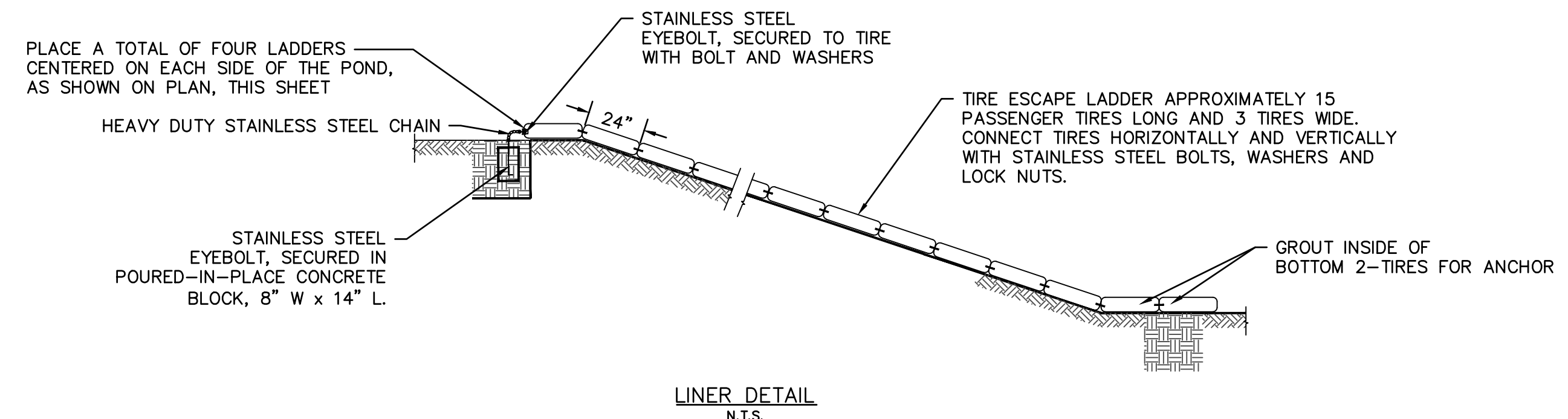


- PIPE PENETRATION BOOT NOTES:**
1. CONCRETE SURFACES TO BE STEEL TROWEL FINISHED WITH ROUNDED AND SMOOTHED EDGES
 2. MINIMUM CONCRETE STRENGTH 4000 PSI - ALL CONCRETE WORK SHALL CONFORM TO TP-02
 3. COAT EXPOSED PVC PIPE WITH WHITE PAINT
 4. CONCRETE PAD FOR DRAIN PIPE SHALL BE TERMINATED AT THE BOTTOM OF THE LAGOON

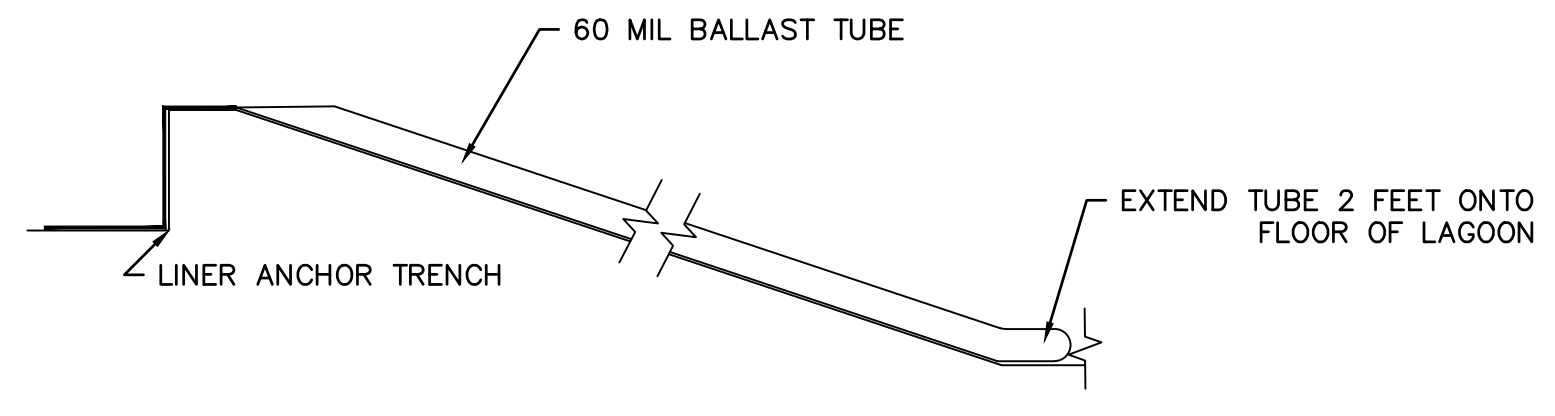
1 PIPE PENETRATION BOOT DETAIL
NOT TO SCALE



4 HDPE FIELD SPLICE
NOT TO SCALE



2 BALLAST TUBE DETAIL
NOT TO SCALE



- NOTES:**
1. BALLAST TUBES ARE 8" IN DIAMETER AND FILLED WITH EITHER SAND OR PEA GRAVEL. TUBES ARE ANCHORED IN THE LINER ANCHOR TRENCH AND SHALL EXTEND TWO FEET ONTO THE LAGOON FLOOR.
 2. PLACE TUBES IN THE CORNERS OF THE POND.

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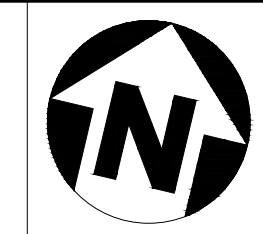
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APPROVED BY:	WSP - DB
DATE:	07/14/2023

SHEET TITLE:
**HDPE LINER
DETAILS**

SHEET NUMBER:	REV. #
C-402	
SHEET 28 OF 52 SHEETS	

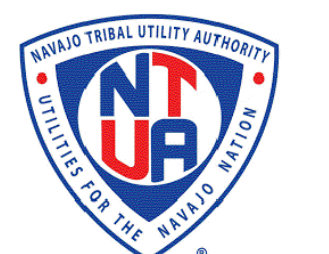


wsp

4221 BALLOON PARK RD NE
ALBUQUERQUE, NM 87109



PROJECT:
**CHINLE WWTP
CFID
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL
UTILITY AUTHORITY**

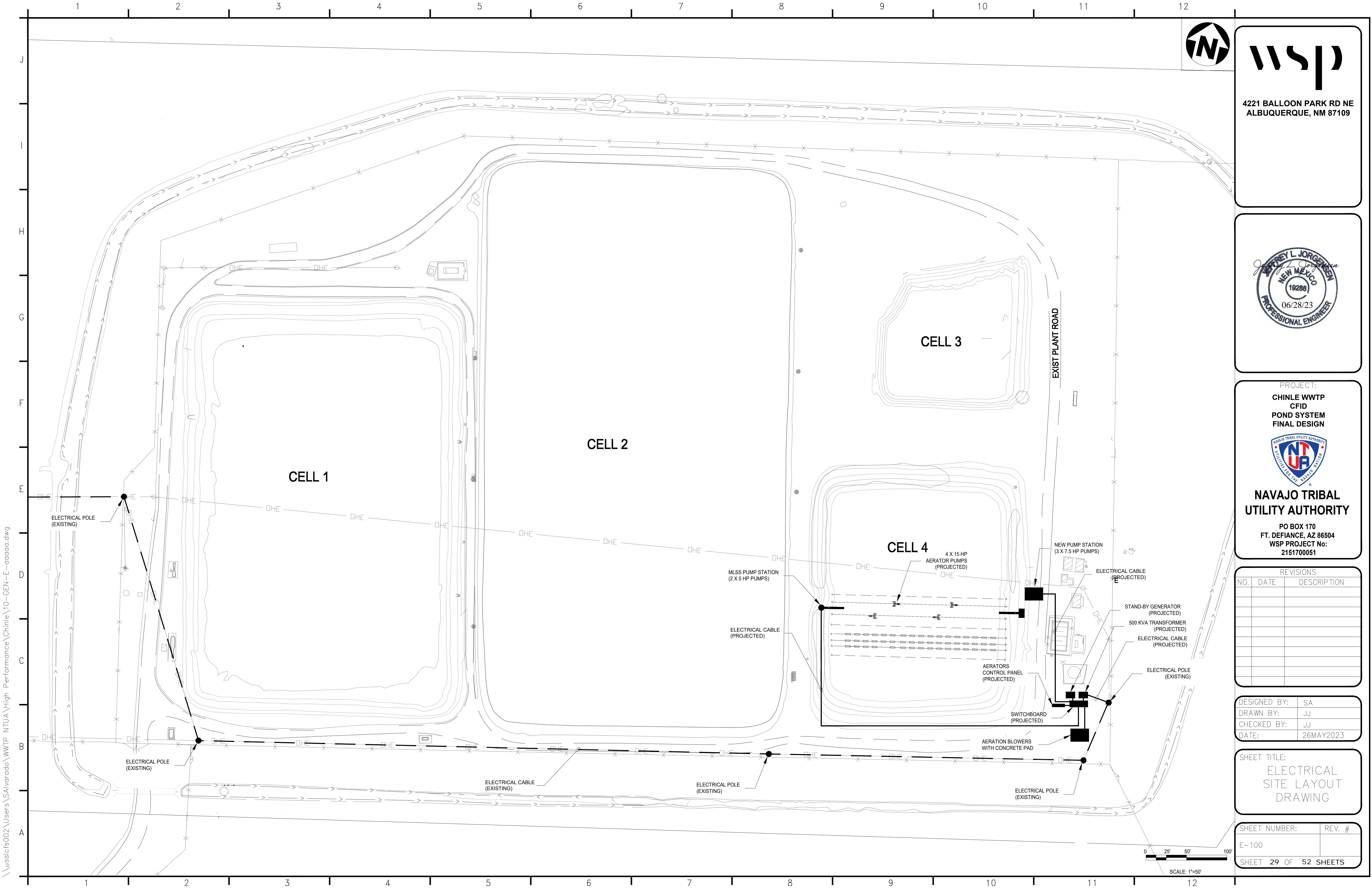
PO BOX 170
FT. DEFIANCIE, AZ 86504
WSP PROJECT No:
2151700051

REVISIONS		
NO.	DATE	DESCRIPTION

DESIGNED BY:	SA
DRAWN BY:	JJ
CHECKED BY:	JJ
DATE:	26MAY2023

SHEET TITLE:
**ELECTRICAL
SITE LAYOUT
DRAWING**

SHEET NUMBER:	REV. #
E-100	
SHEET 29 OF 52 SHEETS	



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

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
New Pump #1			7.5	11.00	1.00	11.00	11.00	SB-001
New Pump #2			7.5	11.00	1.00	11.00	11.00	SB-001
New Pump #3			7.5	11.00	1.00	11.00	11.00	SB-001
XFMR	1.5	1.80			1.00	1.80	1.80	SB-001
Aerators Control Panel	108	129.90			1.00	129.90	129.90	SB-001
SERVICE ENTRANCE						552	552	
25% OF LARGEST MOTOR AMPS						31	31	
NEC SERVICE ENTRANCE AMPS						583	583	
UTILITY SERVICE ENTRANCE AMPS REQUESTED						600	600	



4221 BALLOON PARK RD NE
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PROJECT:
**CHINLE WWTP
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**NAVAJO TRIBAL
UTILITY AUTHORITY**

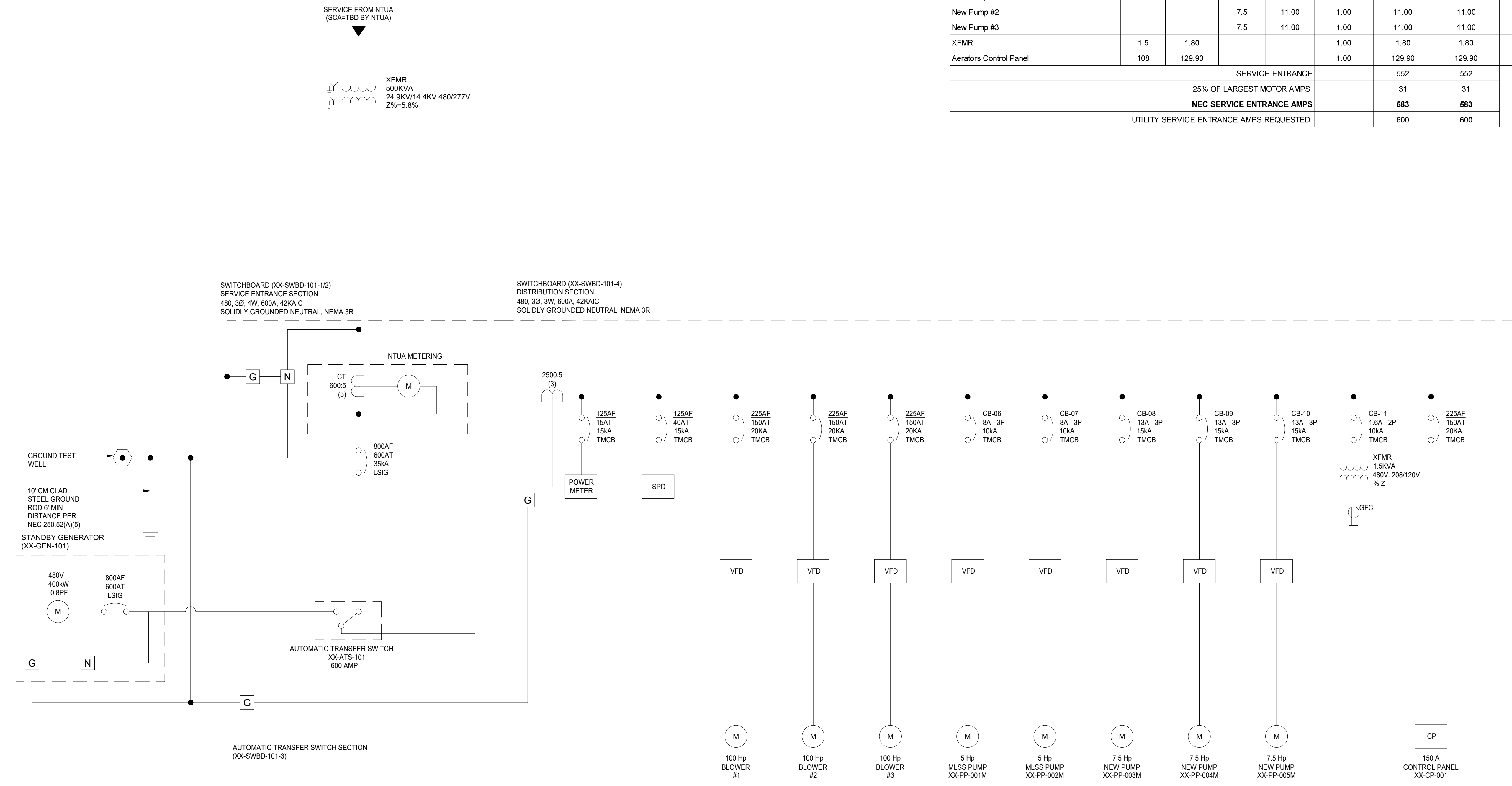
PO BOX 170
FT. DEFIANCIE, AZ 86504
WSP PROJECT No:
2151700051

REVISIONS		
NO.	DATE	DESCRIPTION

DESIGNED BY:	SA
DRAWN BY:	JJ
CHECKED BY:	JJ
DATE:	26MAY2023

SHEET TITLE:
**SWITCHBOARD
SINGLE LINE
DIAGRAM**

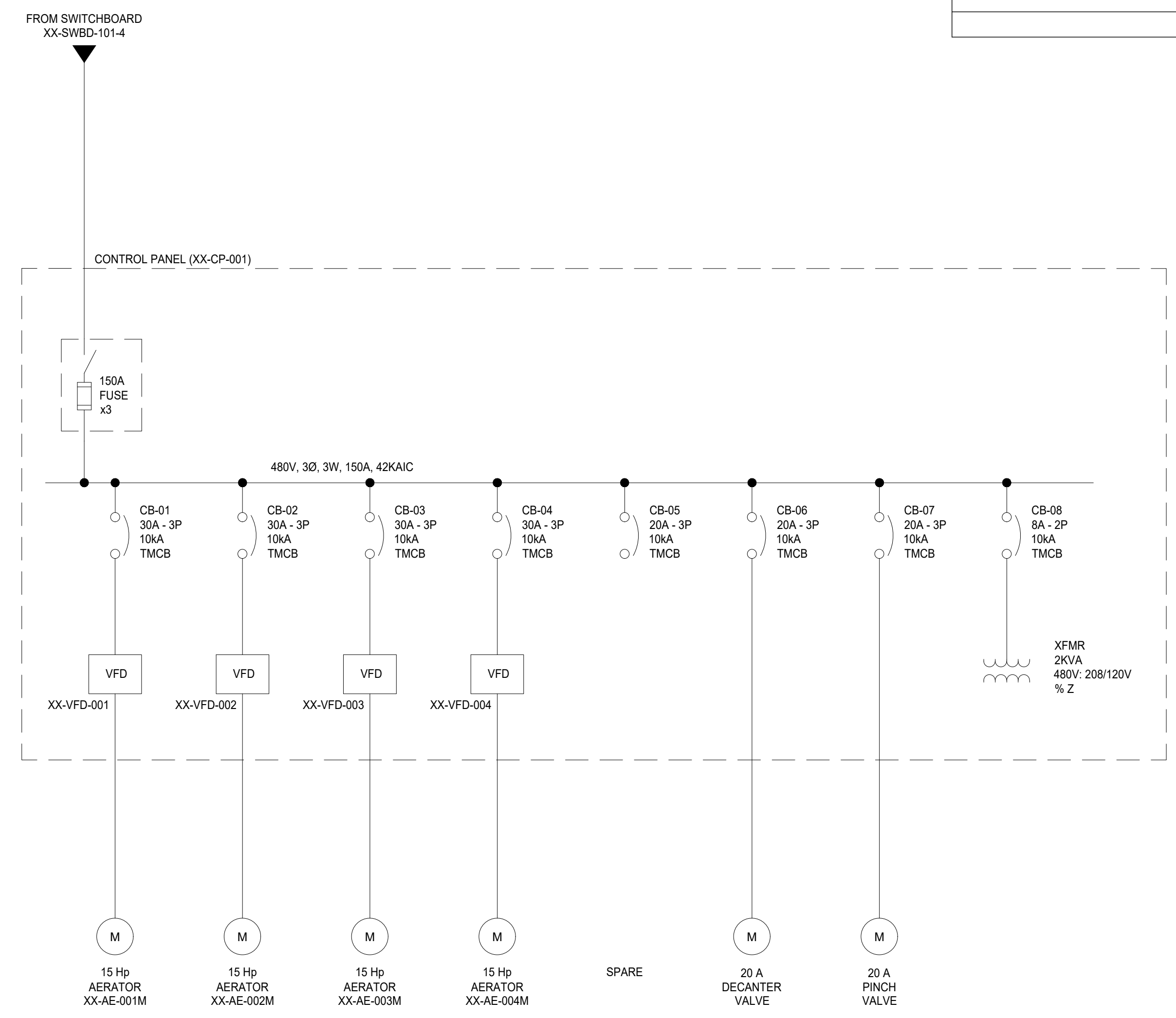
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E-101	
SHEET 30 OF 52 SHEETS	



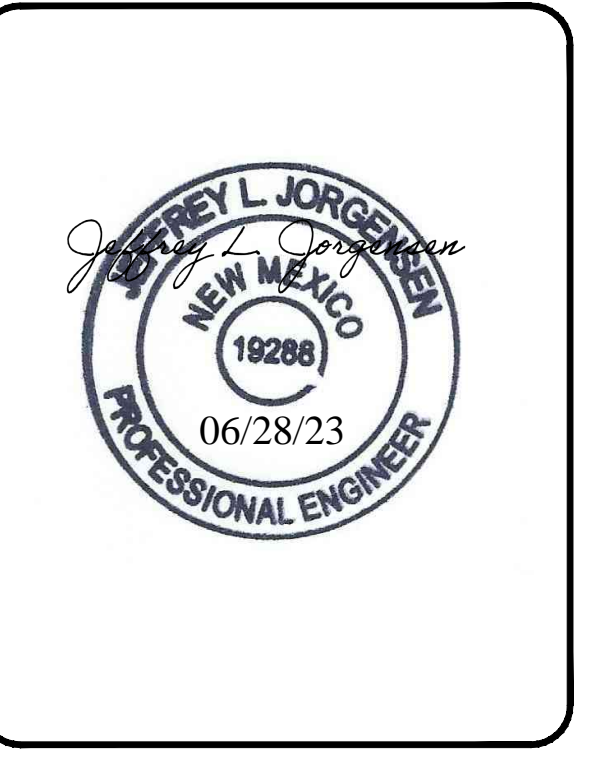
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1 2 3 4 5 6 7 8 9 10 11 12

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
Pinch Valve	16	19.25			1.00	19.25	19.25	PP-001
XFMR	2	2.41			1.00	2.41	2.41	PP-001
SERVICE ENTRANCE						125	125	
25% OF LARGEST MOTOR AMPS						5	5	
NEC SERVICE ENTRANCE AMPS						130	130	
UTILITY SERVICE ENTRANCE AMPS REQUESTED						150	150	



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PROJECT:
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 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: 26MAY2023

SHEET TITLE:
**CONTROL PANEL
 SINGLE LINE
 DIAGRAM**

SHEET NUMBER: E-102
 REV. #
 SHEET 31 OF 52 SHEETS

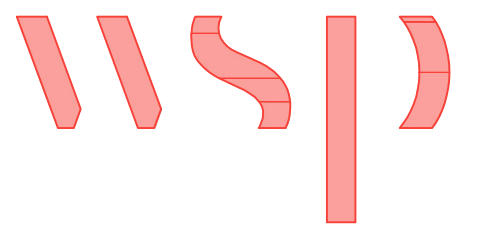
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NAVAJO TRIVAL UTILITY AUTHORITY HIGH-PERFORMANCE POND SYSTEM - CHINLE

FOR: N.T.U.A.
 LOCATION: CHINLE, AZ
 PROJECT No.: 2151700051
 DRAWING PKG No.: 23-045_CHINLE

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N-A05	A	PROCESS FLOW SYMBOLS & NOTES PG. 4 - P & ID
N-C01	C	AREA MAP AND CONSTRUCTION NOTES
N-C02	C	AERATOR PUMP PLACEMENT DIAGRAM
N-D01	D	NETWORK AND CONDUIT DIAGRAM: PANEL AND FIELD
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N-H00	H	PLC POWER AND COMMUNICATION - RACK 1 MODULE 00
N-H01	H	I/O SCHEMATIC PLC RACK 1 MODULES 01 & 02
N-H02	H	I/O SCHEMATIC PLC RACK 1 MODULE 03
N-H03	H	I/O SCHEMATIC PLC RACK 1 MODULE 04
N-H04	H	I/O SCHEMATIC PLC RACK 1 MODULE 05
N-M01	M	ASSEMBLY DRAWING ENCLOSURE
N-M02	M	ASSEMBLY DRAWING BACKPLATE
N-M03	M	BILL OF MATERIALS



8519 JEFFERSON NE
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 TEL: (505) 821-1801



PROJECT:
**CHINLE WWTP
 HIGH-PERFORMANCE
 POND SYSTEM
 FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
 AUTHORITY**
 PO BOX 170
 FT. DEFIANCE, AZ 86504
 WSP PROJECT No:
 2151700051

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:
 TITLE PAGE

 N-A01

SHEET NUMBER:	REV. #
N-A01	RCA
SHEET 32 OF 52 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		DRAWOUT CIRCUIT BREAKER (TRIP FRAME)
	PHASE		TRANSFORMER		CIRCUIT BREAKER (TRIP FRAME) WITH GROUND FAULT INTERRUPTER
	SWITCHED		NON-FUSIBLE SAFETY SWITCH (NUMBER INDICATES SWITCH SIZE)		MOTOR CIRCUIT PROTECTOR
	NEUTRAL		FUSED SAFETY SWITCH (NUMBERS INDICATE FUSE/SWITCH SIZES)		MOTOR CONTROL CENTER STARTER UNIT
	ISOLATED GROUND		COMBINATION MAGNETIC STARTER AND CIRCUIT BREAKER 2 - INDICATES NEMA STARTER SIZE 20 - INDICATES CIRCUIT BREAKER TRIP		FUSE
	FLEXIBLE CONDUIT		MAGNETIC STARTER		GROUND
	CONDUIT TURNING DOWN		MOTOR (NUMBER INDICATES HP)		GENERATOR
	CONDUIT TURNING UP		BELL		CURRENT TRANSFORMER (NUMBERS INDICATE RATIO AND QUANTITY)
	CONDUIT UP AND DOWN		HORN "H" OR SIREN "S"		POTENTIAL TRANSFORMER (NUMBER INDICATES QUANTITY)
	CONDUIT SEAL		MANUAL PULL STATION		AMMETER SWITCH
	CONDUIT CAP		VOLT METER SWITCH		VOLTMETER
	BUSWAY WITH DESCRIPTION		VOLTMETER		AMMETER
	GROUNDING CONDUCTOR		IONIZATION SMOKE DETECTOR		KILOWATT METER
	CABLE TRAY WITH DESCRIPTION		THERMAL DETECTOR		TRANSFER SWITCH
	CEILING JUNCTION BOX		PHOTOELECTRIC SMOKE DETECTOR		BATTERY
	WALL JUNCTION BOX		IONIZATION SMOKE DETECTOR		NORMALLY CLOSED CONTACT
	DUPLEX RECEPTACLE OUTLET		THERMAL DETECTOR		NORMALLY OPEN CONTACT
	SINGLE RECEPTACLE OUTLET		PHOTOELECTRIC SMOKE DETECTOR		PROTECTIVE RELAY, SOLENOID COIL
	DOUBLE DUPLEX RECEPTACLE OUTLET		THERMAL DETECTOR		THERMAL OVERLOAD
	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX OUTLET WITH WEATHERPROOF COVER		MAGNETIC DOOR HOLDER		CONNECTION
	SPLIT WIRED DUPLEX RECEPTACLE		PRESSURE SWITCH		CROSS, NO CONNECTION
	DUPLEX ISOLATED GROUND		FLOW SWITCH		SURGE ARRESTOR
	SPECIAL PURPOSE OUTLET - USE SUBSCRIPT TO IDENTIFY TYPE IN SPECS		VALVE SUPERVISORY SWITCH		TRANSIENT VOLTAGE SURGE SUPPRESSOR
	FLOOR RECEPTACLE OUTLET - USE SUBSCRIPT TO IDENTIFY TYPE IN SPECS		FIRE ALARM CONTROL PANEL		CAPACITOR
	RECEPTACLE RACEWAY		FIRE ALARM RACEWAY		CONTROL RELAY #1
	SINGLE POLE SWITCH - USE SUBSCRIPT TO DESIGNATE CONTROL OF PARTICULAR OUTLETS		CEILING SPEAKER		BUS PLUG CIRCUIT BREAKER
	DOUBLE POLE SWITCH		WALL SPEAKER		THERMOSTAT
	THREE-WAY SWITCH		TELECOMMUNICATIONS OUTLET		KEYED NOTE DESIGNATION
	FOUR-WAY SWITCH		FLOOR MOUNTED TELECOMMUNICATIONS OUTLET		MECHANICAL EQUIPMENT DESIGNATION (SEE SCHEDULE)
	WEATHERPROOF SWITCH		INTERCOM OUTLET		NAMEPLATE DESIGNATION (SEE SCHEDULE)
	KEY OPERATED SWITCH		TELECOMMUNICATIONS RACEWAY		WEATHERPROOF
	DIMMER SWITCH - NUMBER INDICATES WATTAGE		PROTECTED TRANSMISSION SYSTEM (PTS) DATA TERMINAL CONNECTION		ABOVE FINISH FLOOR
	OCCUPANCY SENSING SWITCH		TELEVISION OUTLET		
	PHOTOCELL				
	REMOTE CONTROL SWITCH 6 POLE, 30 AMPS				
	FLUORESCENT LUMINAIRE A=FIXTURE TYPE 1=CIRCUIT NUMBER b=SWITCH CONTROLLING FIXTURE				
	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

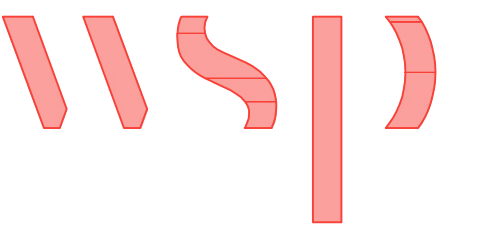
ISOLATED GROUND SHALL BE GREEN WITH YELLOW TRACER.
- ARRANGE CONNECTIONS FOR SINGLE PHASE CIRCUITS TO ACHIEVE THREE PHASE LOAD BALANCE WITHIN 20% OF THE AVERAGE PHASE LOAD CURRENT. UNGROUNDED CONDUCTORS USING A COMMON NEUTRAL MUST ORIGINATE FROM DIFFERENT PHASES.
- INSTALL OUTDOOR EQUIPMENT TO BE WEATHERPROOF 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
ALBUQUERQUE, NM 87113
TEL: (505) 821-1801



PROJECT:
**CHINLE WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

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

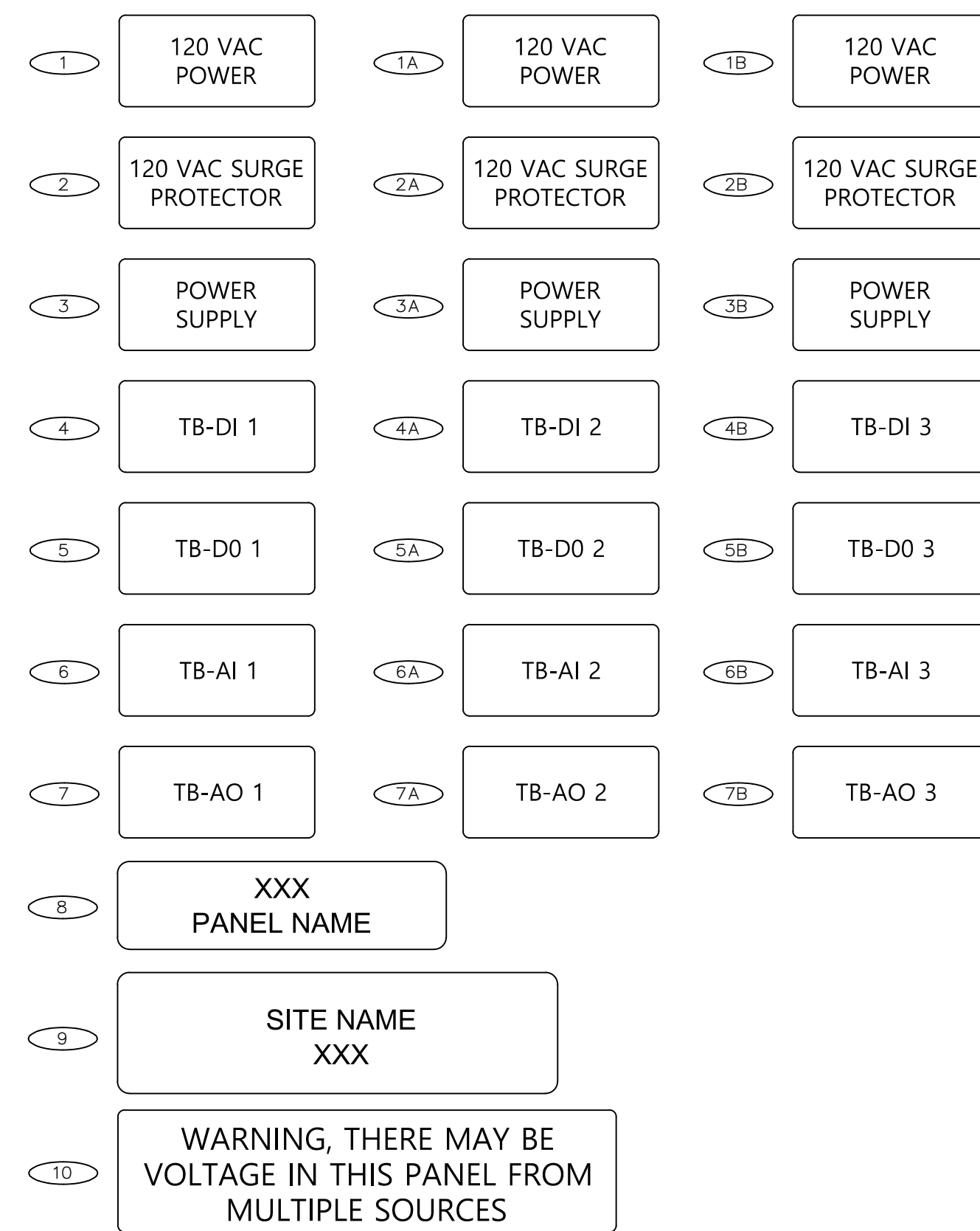
N-A02

SHEET NUMBER:	REV. #
N-A02	RCA
SHEET 33 OF 52 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 *
- - - - -	HIDDENX2	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	SYMBOL	DESCRIPTION	INSTRUMENT/FUNCTION SYMBOLS																									
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		P = PURGE OR FLUSHING DEVICE R = RESET FOR LATCH-TYPE ACTUATOR I = UNDEFINED INTERLOCK LOGIC S = SOLENOID D = DIGITAL P = PILOT T = TRAP M = MAGNETIC FLOWMETER SP = SET POINT	<table border="1"> <thead> <tr> <th></th> <th>PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR</th> <th>FIELD MOUNTED</th> <th>AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR</th> <th>AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR</th> </tr> </thead> <tbody> <tr> <td>DISCRETE INSTRUMENTS</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SHARED DISPLAY, SHARED CONTROL</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>COMPUTER FUNCTION</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>PROGRAMMABLE LOGIC CONTROL</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	AUXILIARY LOCATION NORMALLY INACCESSIBLE TO OPERATOR	DISCRETE INSTRUMENTS					SHARED DISPLAY, SHARED CONTROL					COMPUTER FUNCTION					PROGRAMMABLE LOGIC CONTROL				
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COMPUTER FUNCTION																												
PROGRAMMABLE LOGIC CONTROL																												
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		PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y-#); FLOW IS TO THAT DRAWING.																										
MISCELLANEOUS ACRONYMS WP - WALL PENETRATION FP - FLOOR PENETRATION RP - ROOF PENETRATION AO - ANALOG OUTPUT AI - ANALOG INPUT DI - DIGITAL INPUT RO - RELAY OUTPUT		PIPE OR WIRE IS CONTINUED ON DRAWING X (INCLUDING SHEET NUMBER), GRID COORDINATE (Y-#); FLOW IS IN BOTH DIRECTIONS																										

GENERAL NOTES

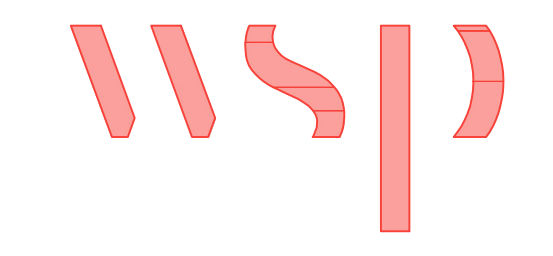
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INSTRUMENTATION IDENTIFICATION

TABLE

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

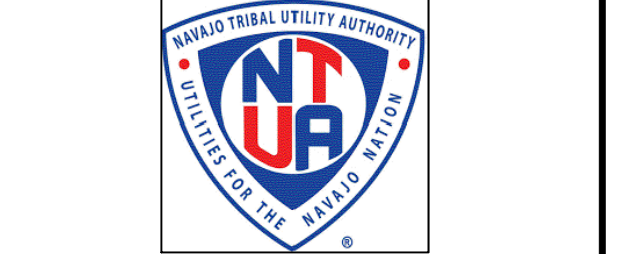
NOTE:
 INSTRUMENTATION FUNCTION IDENTIFIERS (J-1) AND FUNCTION SYMBOLS PER ANSI/ISA 55.1.



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



**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

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

N-A03

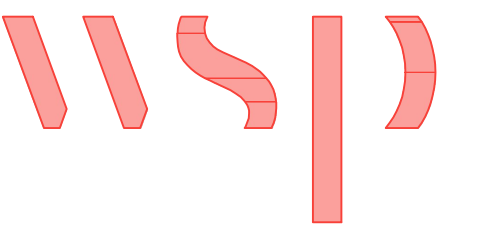
SHEET NUMBER:	REV. #
N-A03	RCA
SHEET 34 OF 52 SHEETS	

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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)

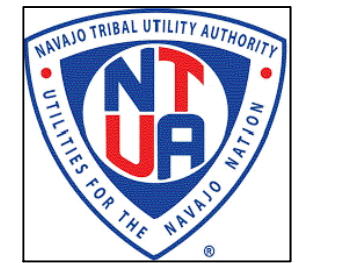
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	GENERAL NOTES
	ANGLE VALVE		RUPTURE DISK OR SAFETY HEAD FOR PRESSURE RELIEF		IN-LINE FILTER		AXIAL FAN		SINGLE DUCT VARIABLE VOLUME BOX	XX
	BUTTERFLY VALVE		PILOT LIGHT X=COLOR R=RED G=GREEN		ATMOSPHERIC FILTER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



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**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

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**

N-A04

SHEET NUMBER:	REV. #
N-A04	RCA
SHEET 35 OF 52 SHEETS	

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VALVE & INSTRUMENTATION FUNCTION IDENTIFIERS (SELECTED)

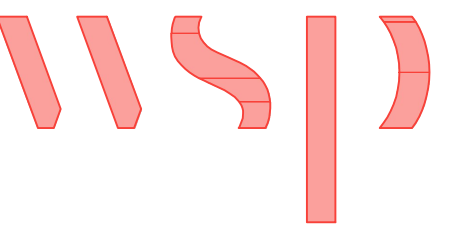
FIRST-LETTERS	INDICATING MEASURED OR CONTROLLED VARIABLE	CONTROLLERS			VALVES	READOUT DEVICE		SWITCHES AND * ALARM DEVICES			TRANSMITTERS			SOLENOIDS RELAYS COMPUTING DEVICES	PRIMARY ELEMENT	TEST POINT	WELL OR PROBE	VIEWING DEVICE GLASS	SAFETY DEVICE	FINAL ELEMENT
		RECORDING	INDICATING	BLIND		RECORDING	INDICATING	HIGH**	LOW	COMB	RECORDING	INDICATING	BLIND							
A	ANALYSIS	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP			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		TSE TV	
X	TEMPERATURE DIFFERENTIAL	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	TDT	TDY	TDE	TDP TP	TDW TW		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

xx
 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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 POND SYSTEM
 FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
 AUTHORITY**
 PO BOX 170
 FT. DEFIANCE, AZ 86504
 WSP PROJECT No:
 2151700051

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. 4 - P & ID

N-A05

SHEET NUMBER:	REV. #
N-A05	RCA
SHEET 36 OF 52 SHEETS	

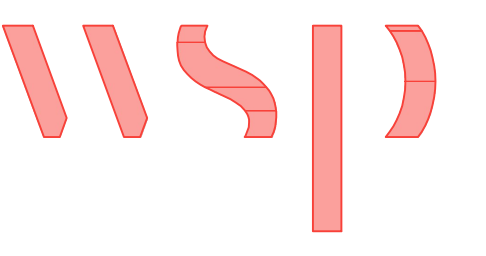


CONSTRUCTION NOTES:

- 1 NEW HEADWORKS (MANUAL BAR SCREEN)
- 2 INSTALL PORTABLE FLOW METER
- 3 TRANSFORMER AND EMERGENCY POWER GENERATOR
- 4 POWER EXTENSION
- 5 ANCHOR POSTS FOR BAFFLES, AERATORS, AND BIOFUSERS
- 6 4' X 3' WINDOW IN BAFFLE
- 7 INSTALL 5-15 HP AIRE-O2 ASPIRATING AERATOR BY AERATION INDUSTRIES INTERNATIONAL, LLC. INCLUDES AERATORS, ELECTRICAL CABLES, AND MOORING CABLES, ETC.
- 8 MOORING CABLES FOR AERATORS
- 9 BAFFLES (FLOATING SYNTHETIC)
- 10 20' SECTION - 12" DI SANITARY SEWER SECTION WITH MJ GATE VALVE
- 11 NEW OUTLET BOX. SEE DISCHARGE STRUCTURE DETAILS SHEET C-XXX
- 12 NEW 12-INCH SDR 35PVC SEWER
- 13 TAP EXISTING SEWER MAIN
- 14 NEW MANHOLE
- 15 AERATION BLOWERS WITH CONCRETE PAD
- 16 4' X 4' DIVERSION BOX WITH 2 SLUICE GATES
- 17 TAP EXISTING MANHOLE
- 18 BIOLAC DIFFUSER AIR SYSTEM
- 19 8" PVC MLSS RECYCLE LINE
- 20 3" PVC WASTE MLSS LINE
- 21 20' SECTION - 8" DI PIPE WITH MJ GATE VALVE
- 22 MLSS PUMP STATION

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 CHINLE, AZ, AND ARIZONA ONE-CALL UTILITY LOCATE.



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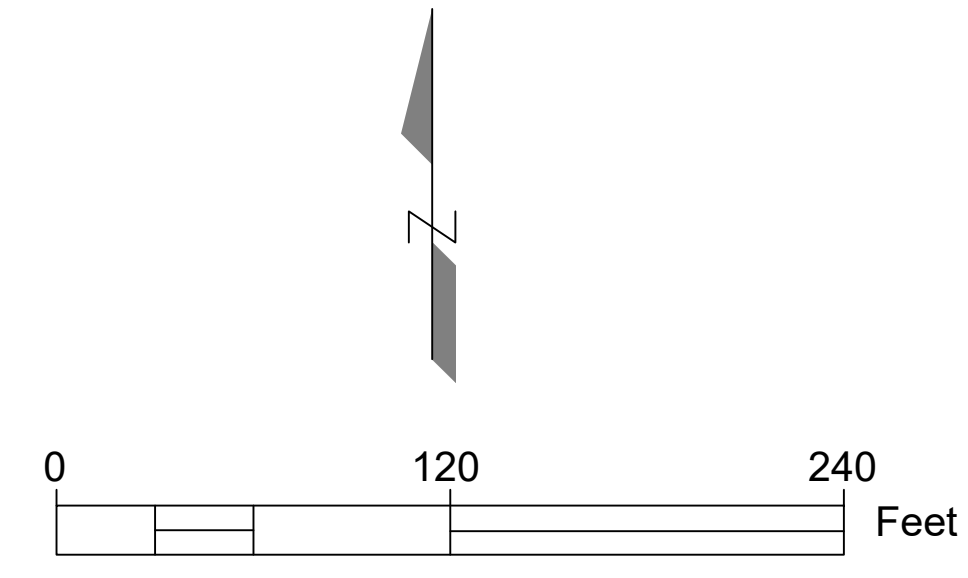
REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

DESIGNED BY:	RSB
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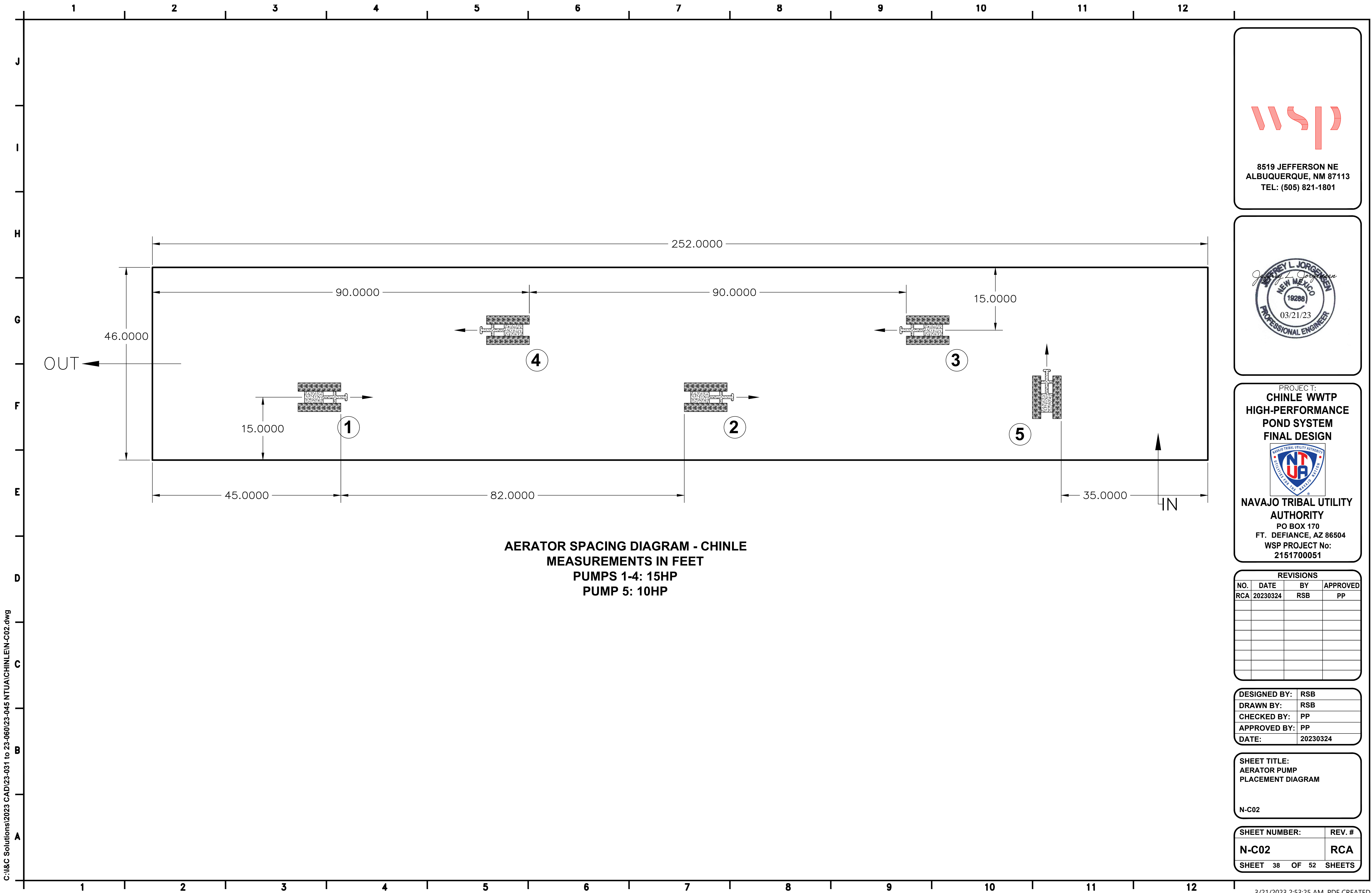
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AREA MAP AND
CONSTRUCTION
NOTES**

N-C01

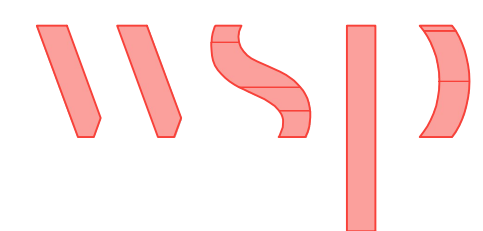
SHEET NUMBER:	REV. #
N-C01	RCA
SHEET 37 OF 52 SHEETS	



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AERATOR SPACING DIAGRAM - CHINLE
MEASUREMENTS IN FEET
PUMPS 1-4: 15HP
PUMP 5: 10HP



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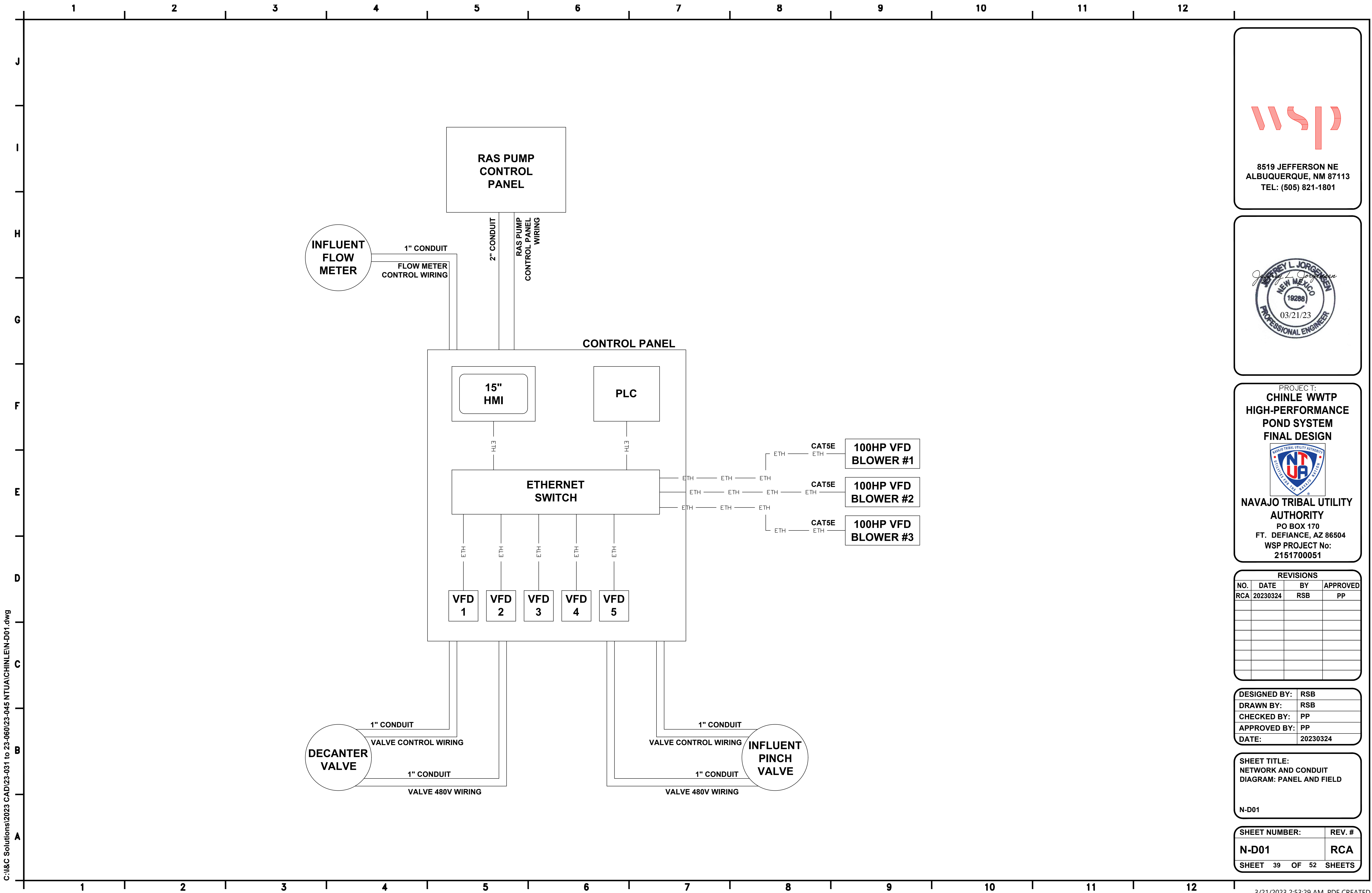
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NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

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


SHEET TITLE:
 AERATOR PUMP
 PLACEMENT DIAGRAM
 N-C02

SHEET NUMBER:	REV. #
N-C02	RCA
SHEET 38 OF 52 SHEETS	

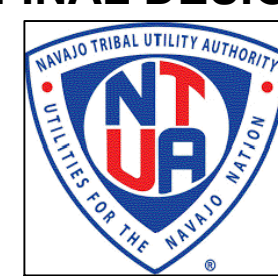
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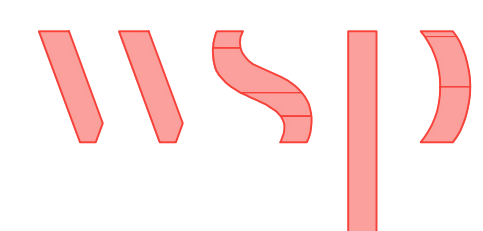
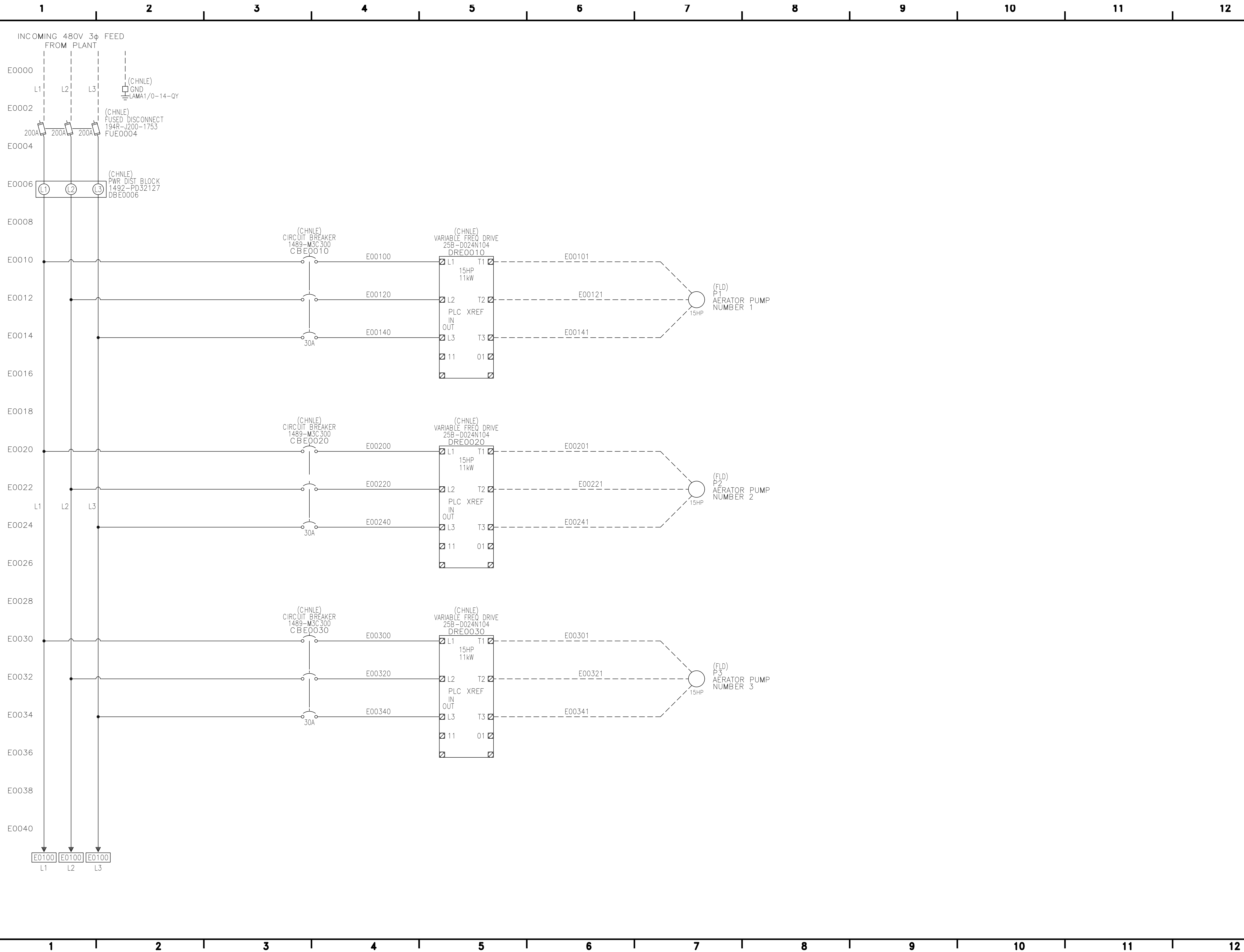
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NETWORK AND CONDUIT
DIAGRAM: PANEL AND FIELD

N-D01

SHEET NUMBER:	REV. #
N-D01	RCA
SHEET 39 OF 52 SHEETS	

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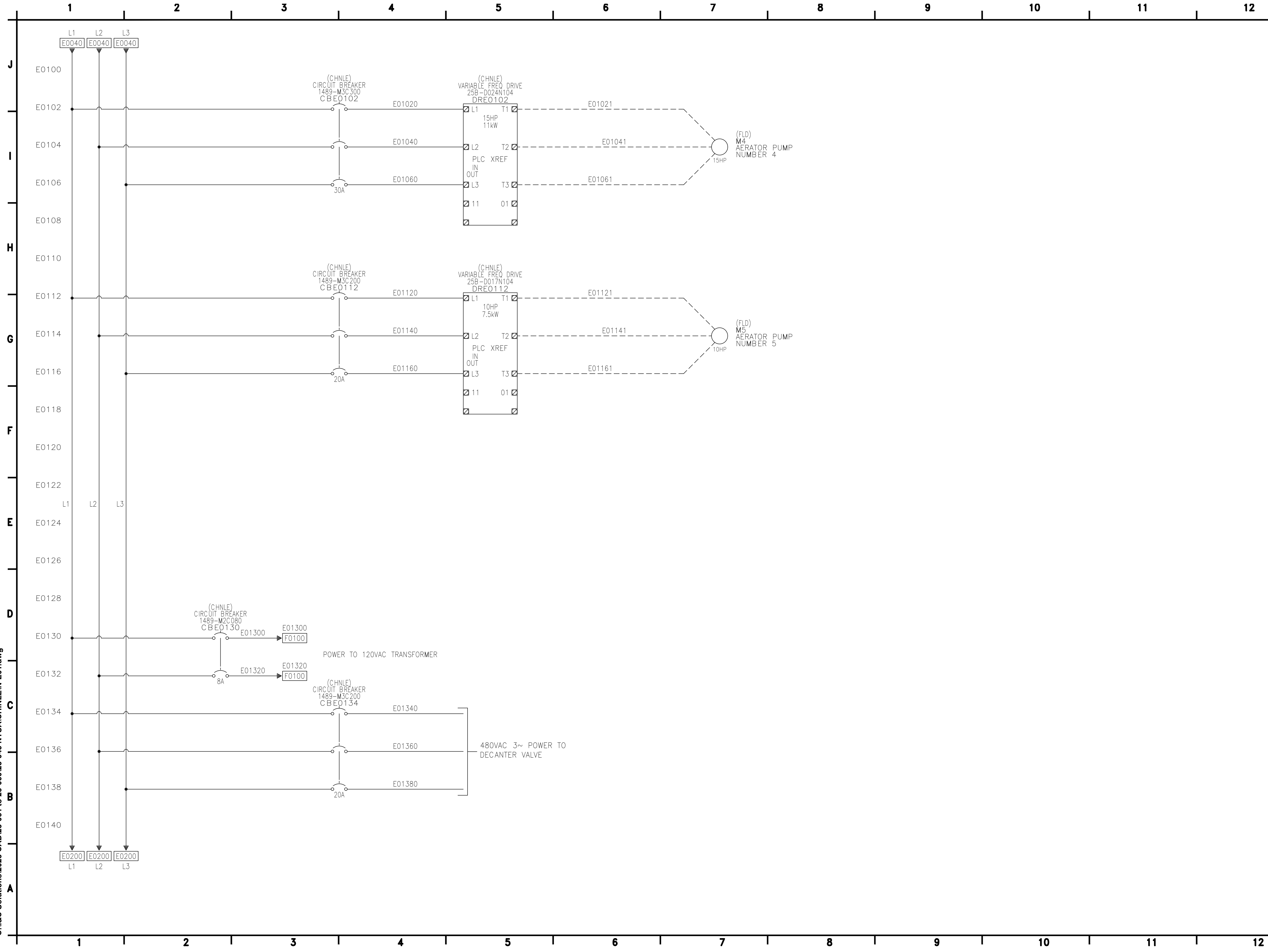
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
480VAC
THREE-LINE
SCHEMATIC


N-E00

SHEET NUMBER:	REV. #
N-E00	RCA
SHEET 40 OF 52 SHEETS	


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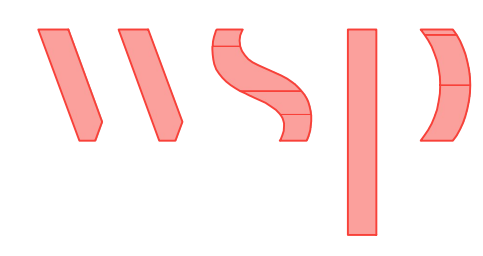
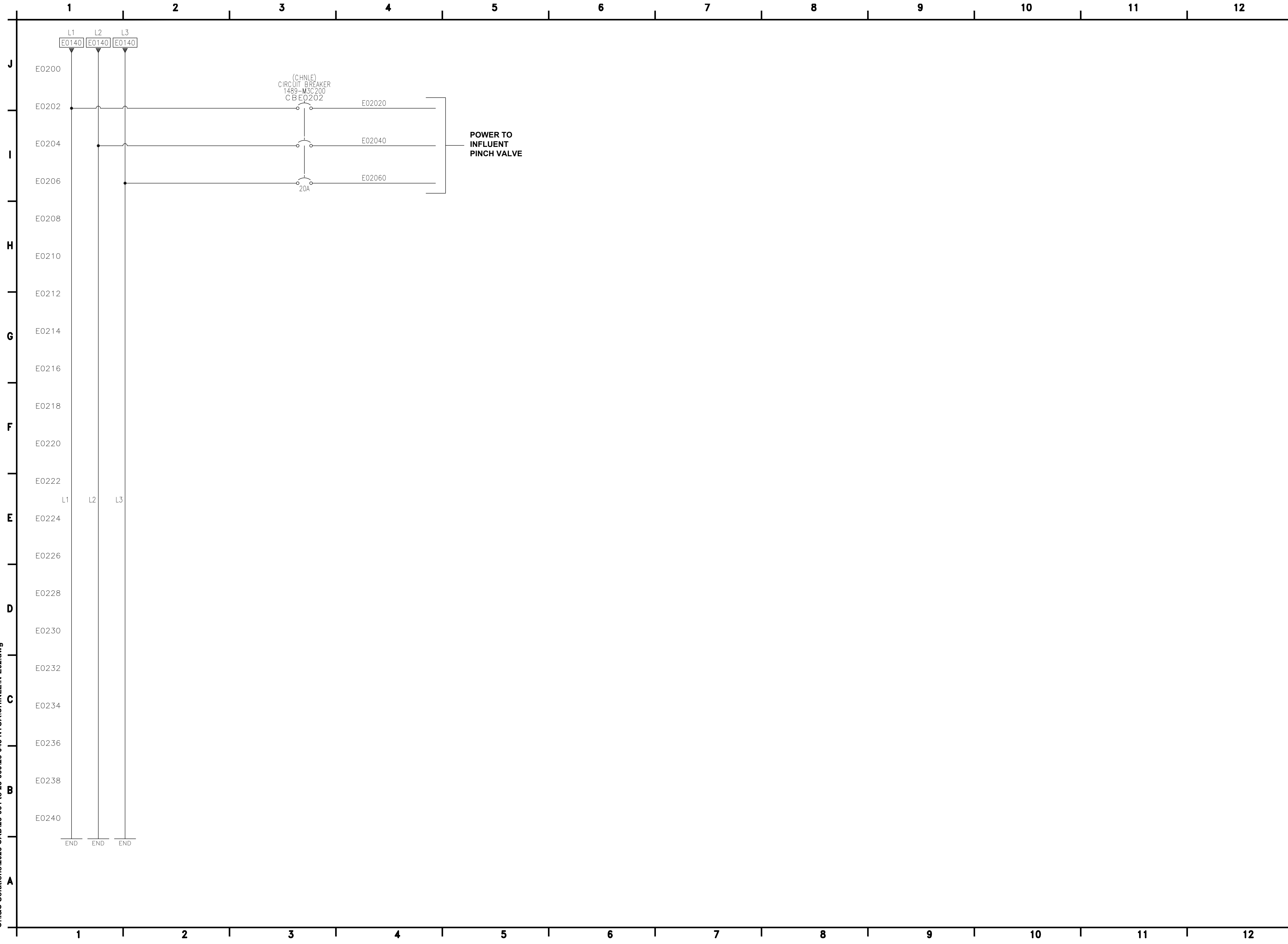
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SHEET TITLE:
480VAC
THREE-LINE
SCHEMATIC

N-E01

SHEET NUMBER:	REV. #
N-E01	RCA
SHEET 41 OF 52 SHEETS	

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POND SYSTEM
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**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
2151700051

REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

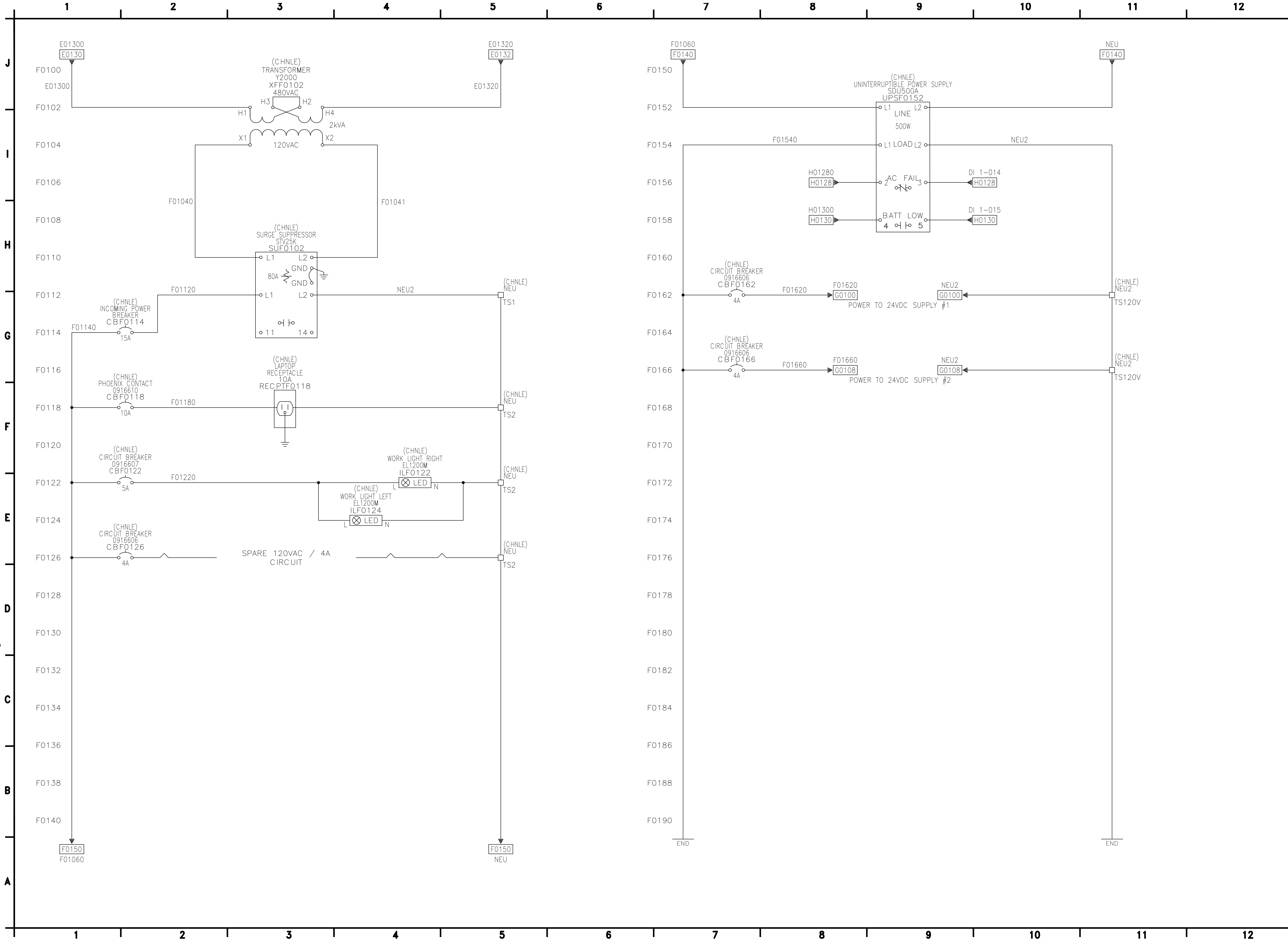
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
480VAC
THREE-LINE
SCHEMATIC


N-E02

SHEET NUMBER:	REV. #
N-E02	RCA
SHEET 42 OF 52 SHEETS	

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



**JEFFREY L. JORGENSEN
NEW MEXICO
19286
03/21/23
PROFESSIONAL ENGINEER**

PROJECT:
**CHINLE WWTP
HIGH-PERFORMANCE
POND SYSTEM
FINAL DESIGN**



**NAVAJO TRIBAL UTILITY
AUTHORITY
PO BOX 170
FT. DEFIANCE, AZ 86504
WSP PROJECT No:
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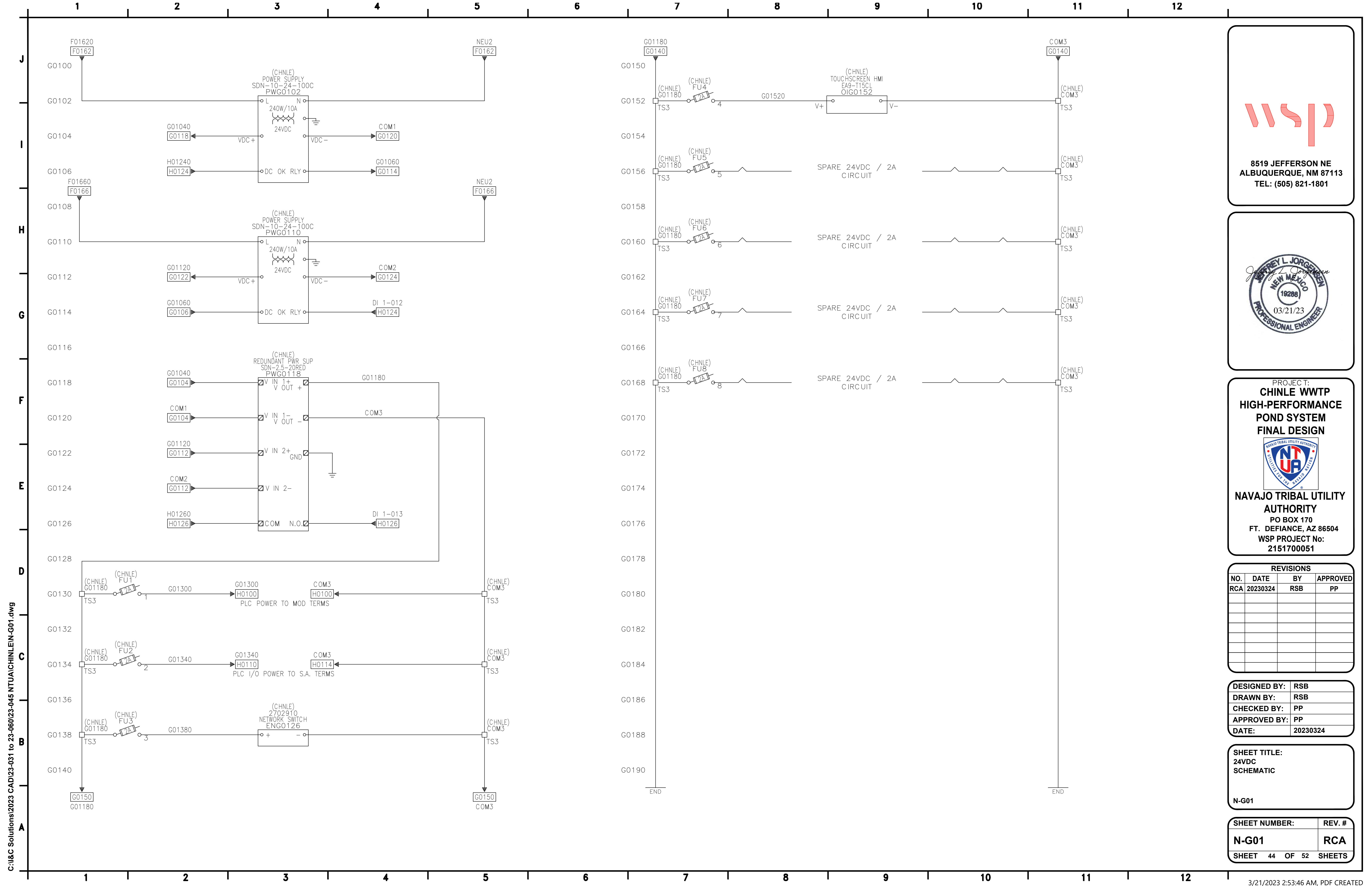
REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

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

SHEET TITLE:
120VAC
SCHEMATIC

N-F01

SHEET NUMBER:	REV. #
N-F01	RCA
SHEET 43 OF 52 SHEETS	



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PROJECT:
**CHINLE WWTP
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PO BOX 170
FT. DEFIANCE, AZ 86504
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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

N-G01

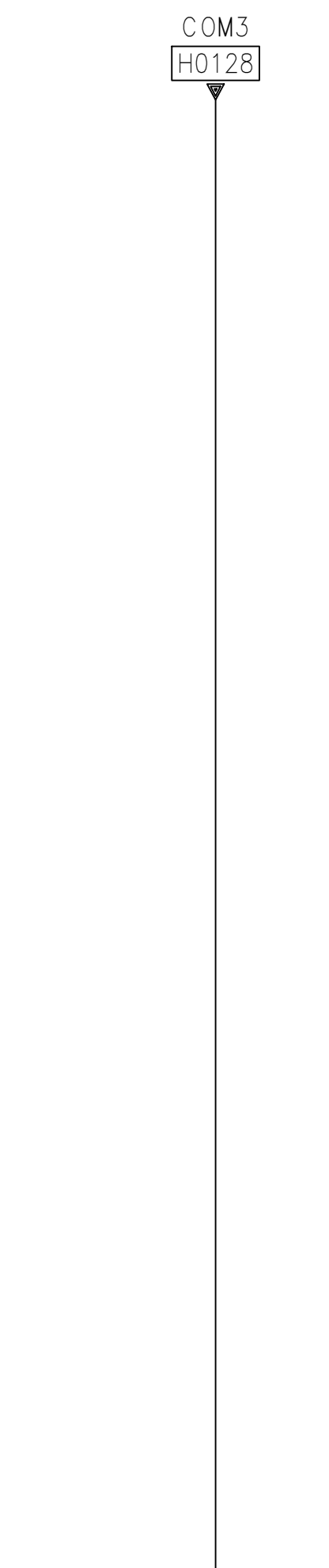
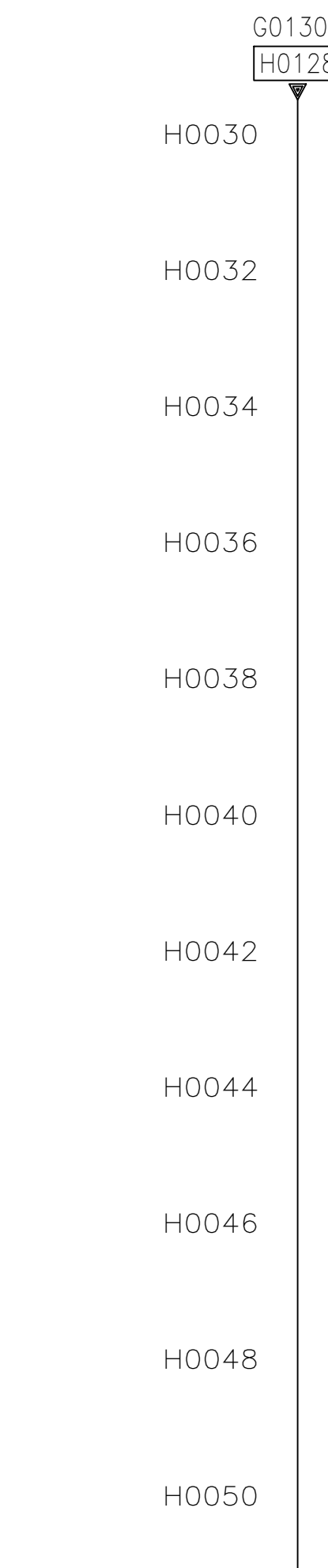
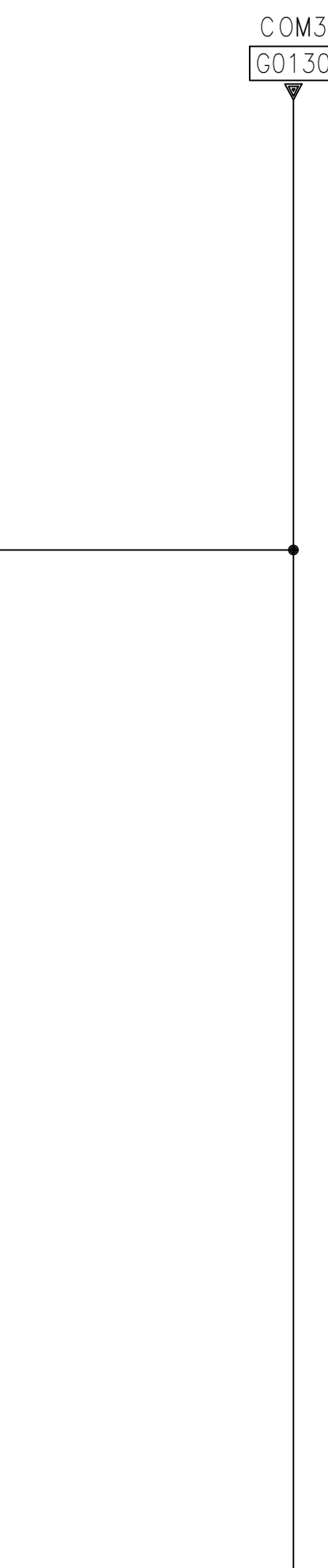
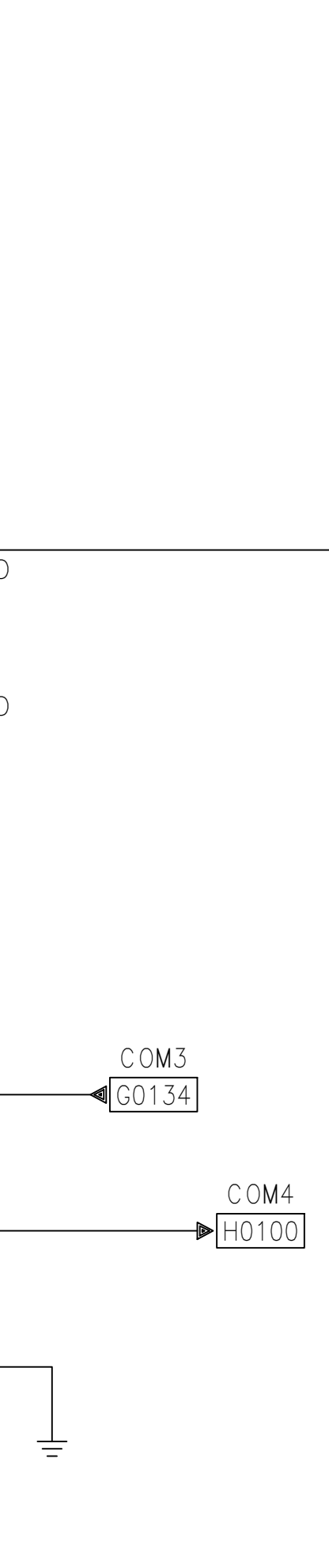
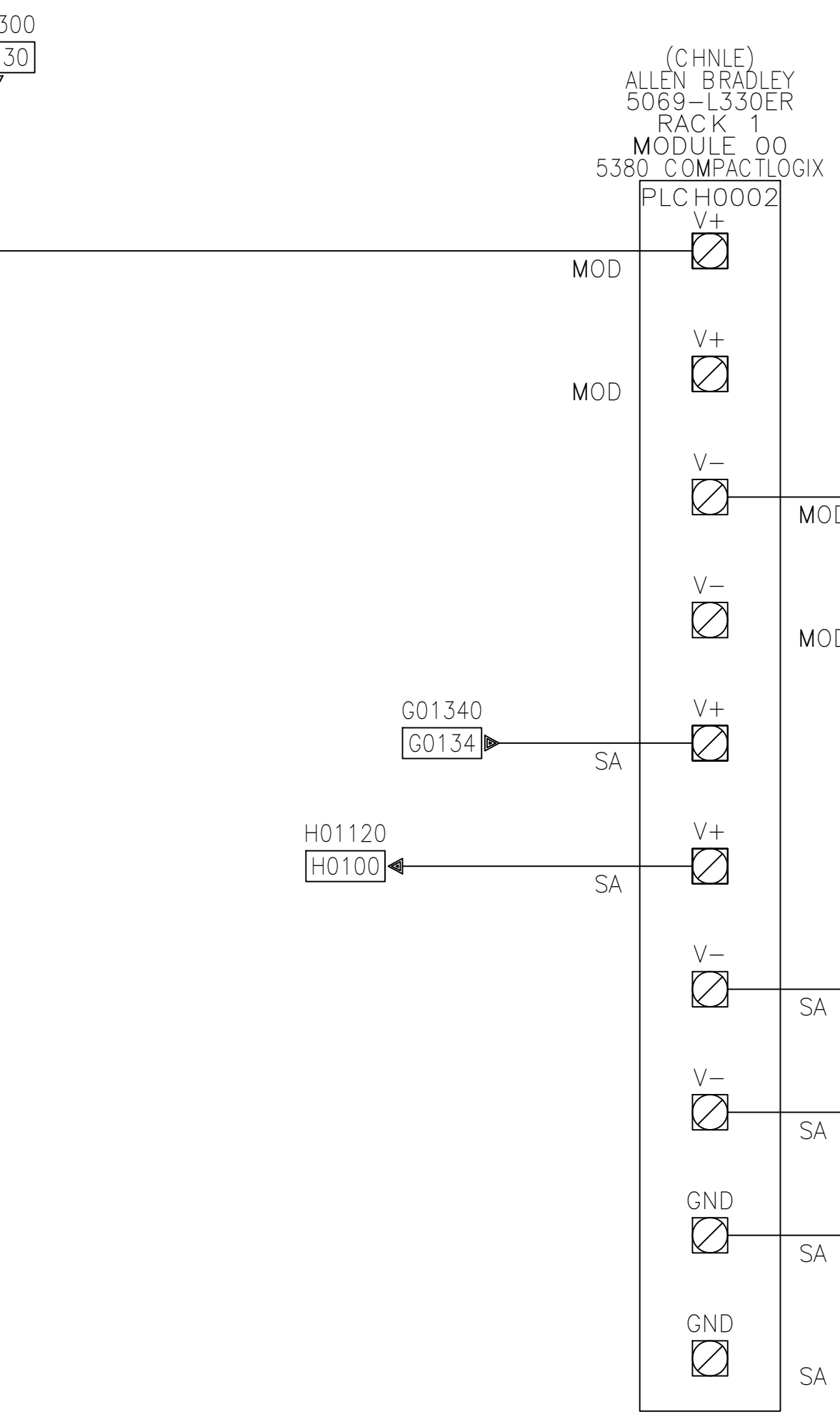
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N-G01	RCA
SHEET 44 OF 52 SHEETS	

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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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PROJECT:
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HIGH-PERFORMANCE
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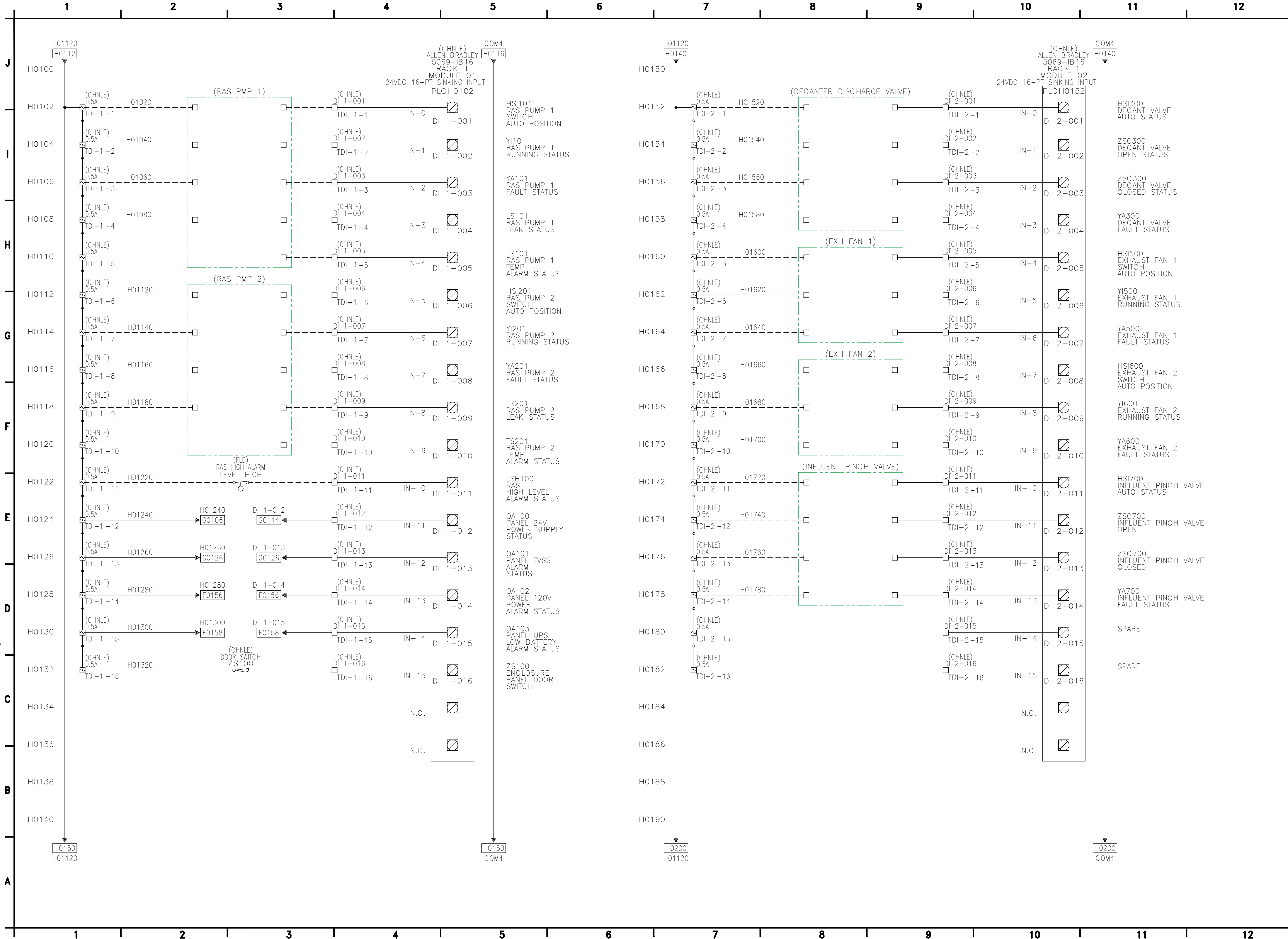
**NAVAJO TRIBAL UTILITY
AUTHORITY**
PO BOX 170
FT. DEFIANC, AZ 86504
WSP PROJECT No:
2151700051

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:
PLC POWER AND
COMMUNICATION - RACK 1
MODULE 00
N-H00

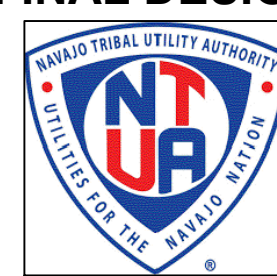
SHEET NUMBER:	REV. #
N-H00	RCA
SHEET 45 OF 52 SHEETS	




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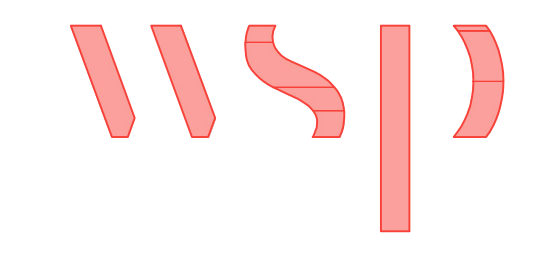
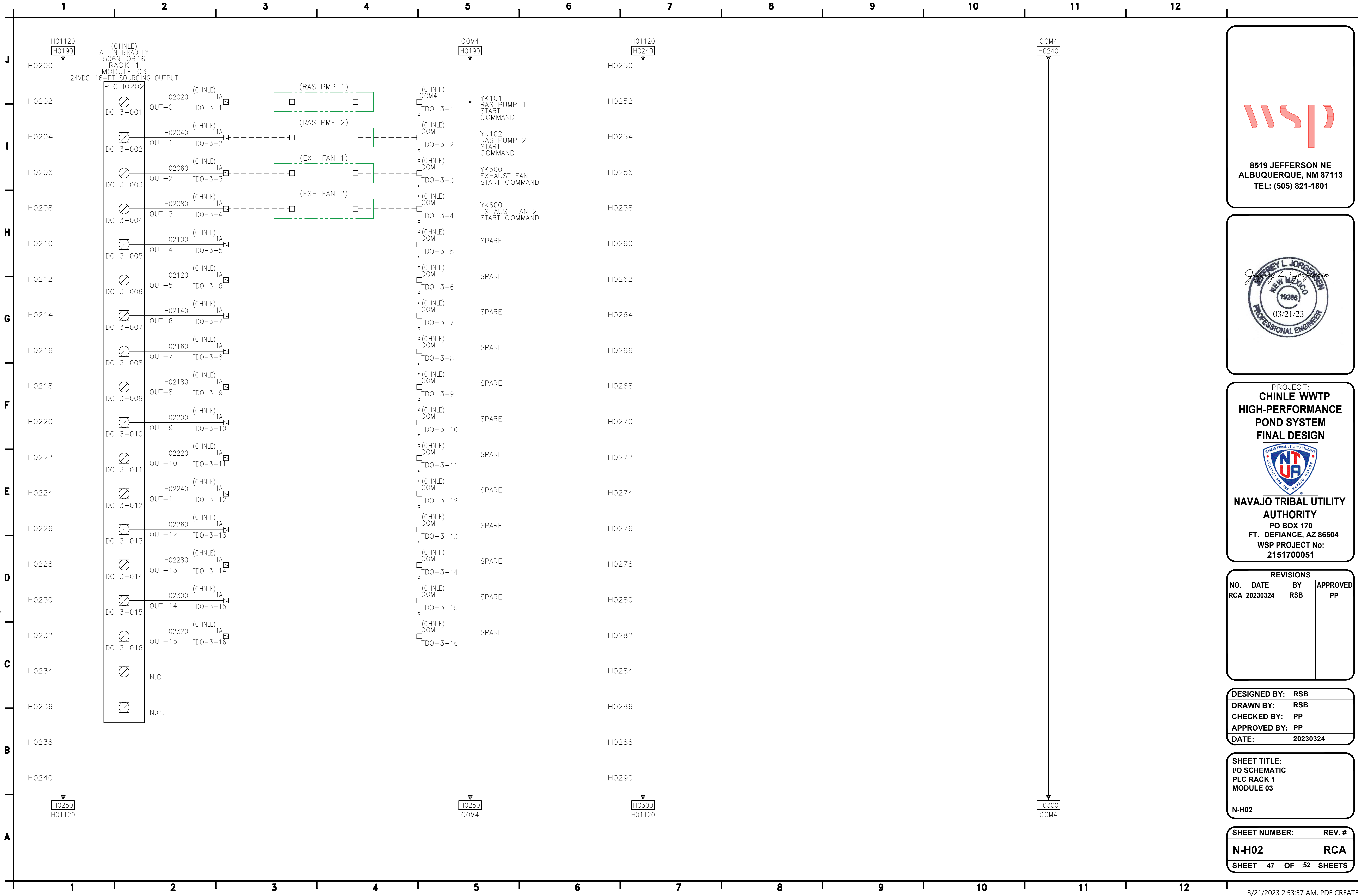
REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

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

N-H01

SHEET NUMBER:	REV. #
N-H01	RCA
SHEET 46 OF 52 SHEETS	



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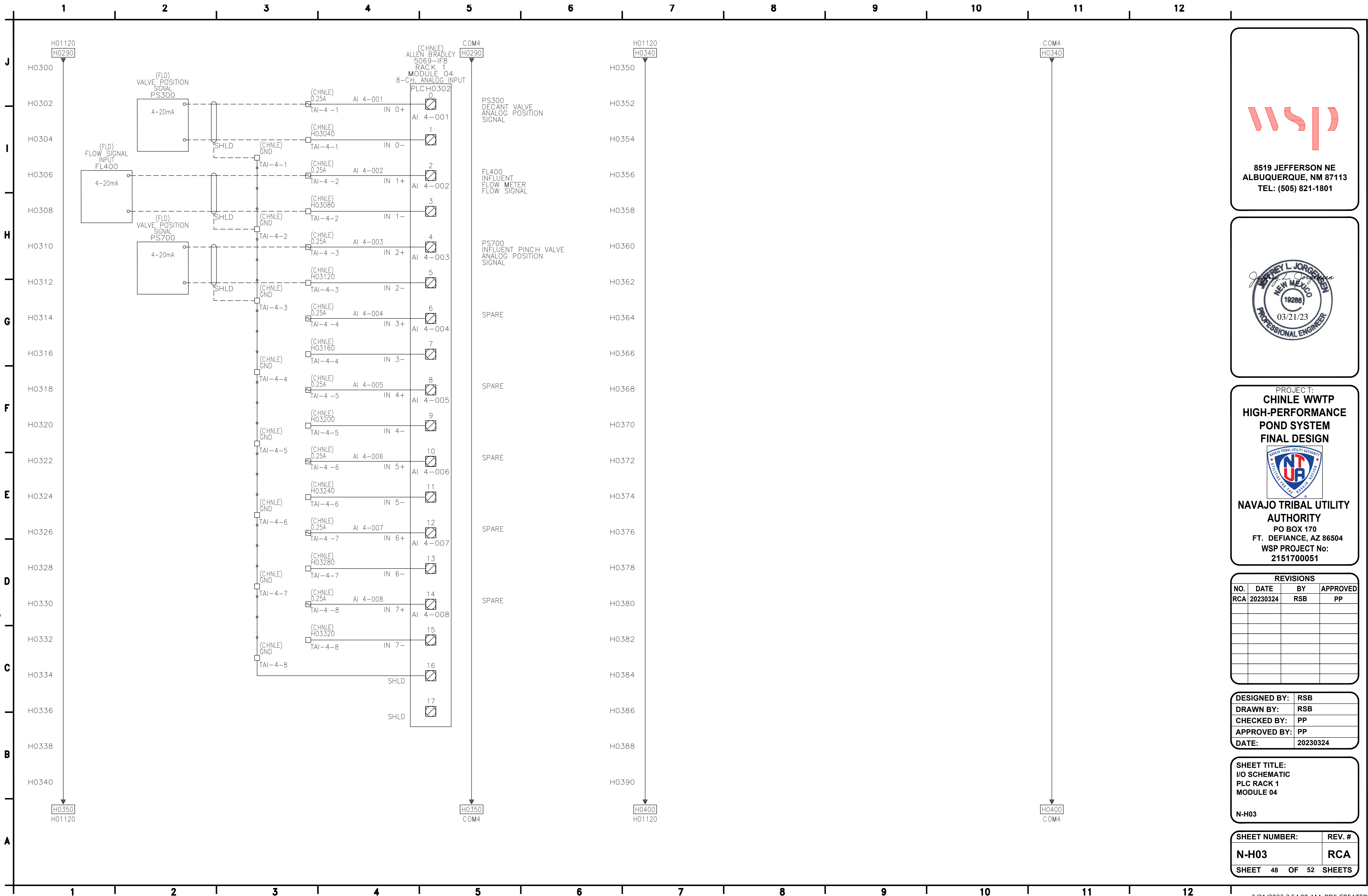
REVISIONS			
NO.	DATE	BY	APPROVED
RCA	20230324	RSB	PP

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


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

N-H02

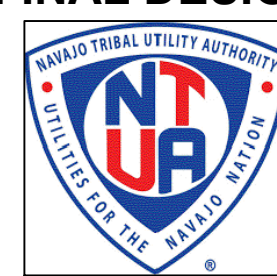
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N-H02	RCA
SHEET 47 OF 52 SHEETS	




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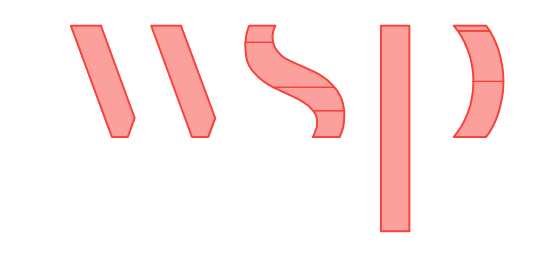
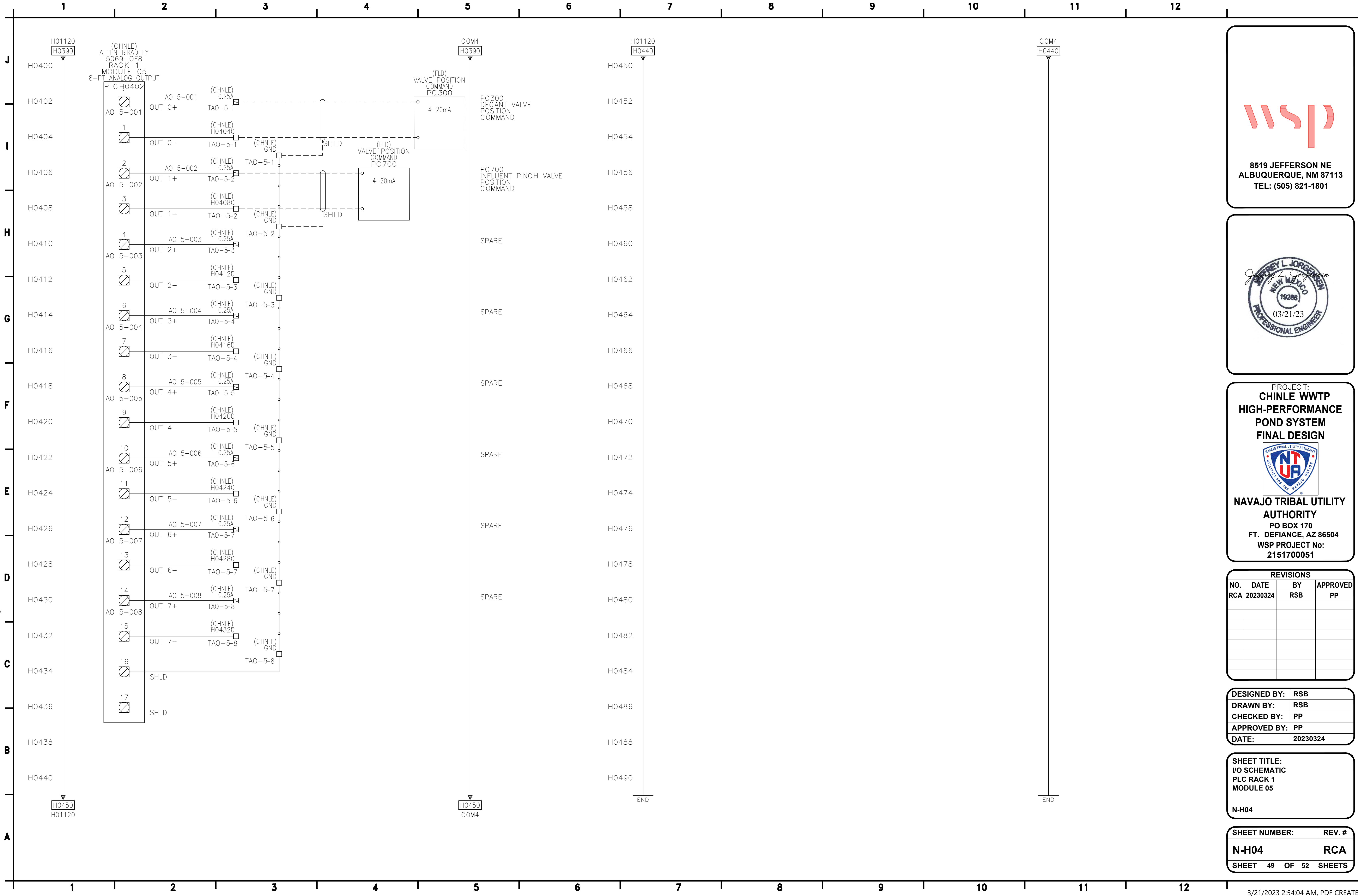
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

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

N-H03

SHEET NUMBER:	REV. #
N-H03	RCA
SHEET 48 OF 52 SHEETS	

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RCA	20230324	RSB	PP

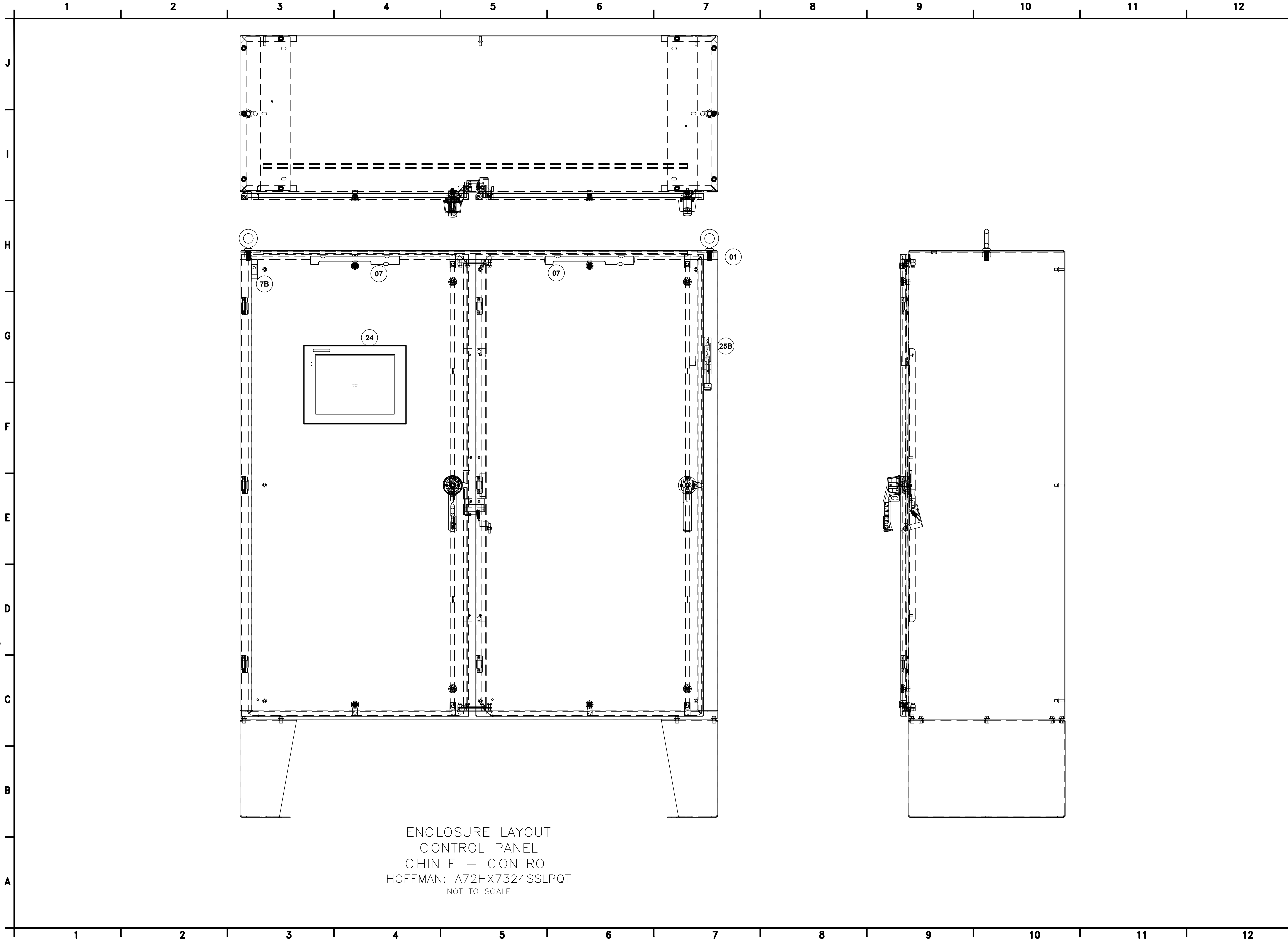
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

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

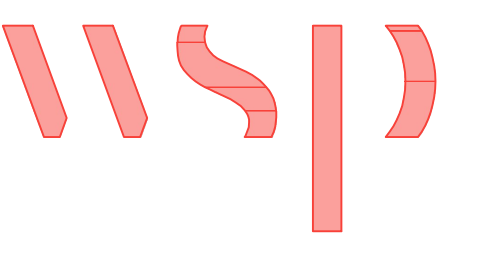
N-H04

SHEET NUMBER:	REV. #
N-H04	RCA
SHEET 49 OF 52 SHEETS	

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ENCLOSURE LAYOUT
 CONTROL PANEL
 CHINLE - CONTROL
 HOFFMAN: A72HX7324SSLPQT
 NOT TO SCALE



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 2151700051

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RCA	20230324	RSB	PP

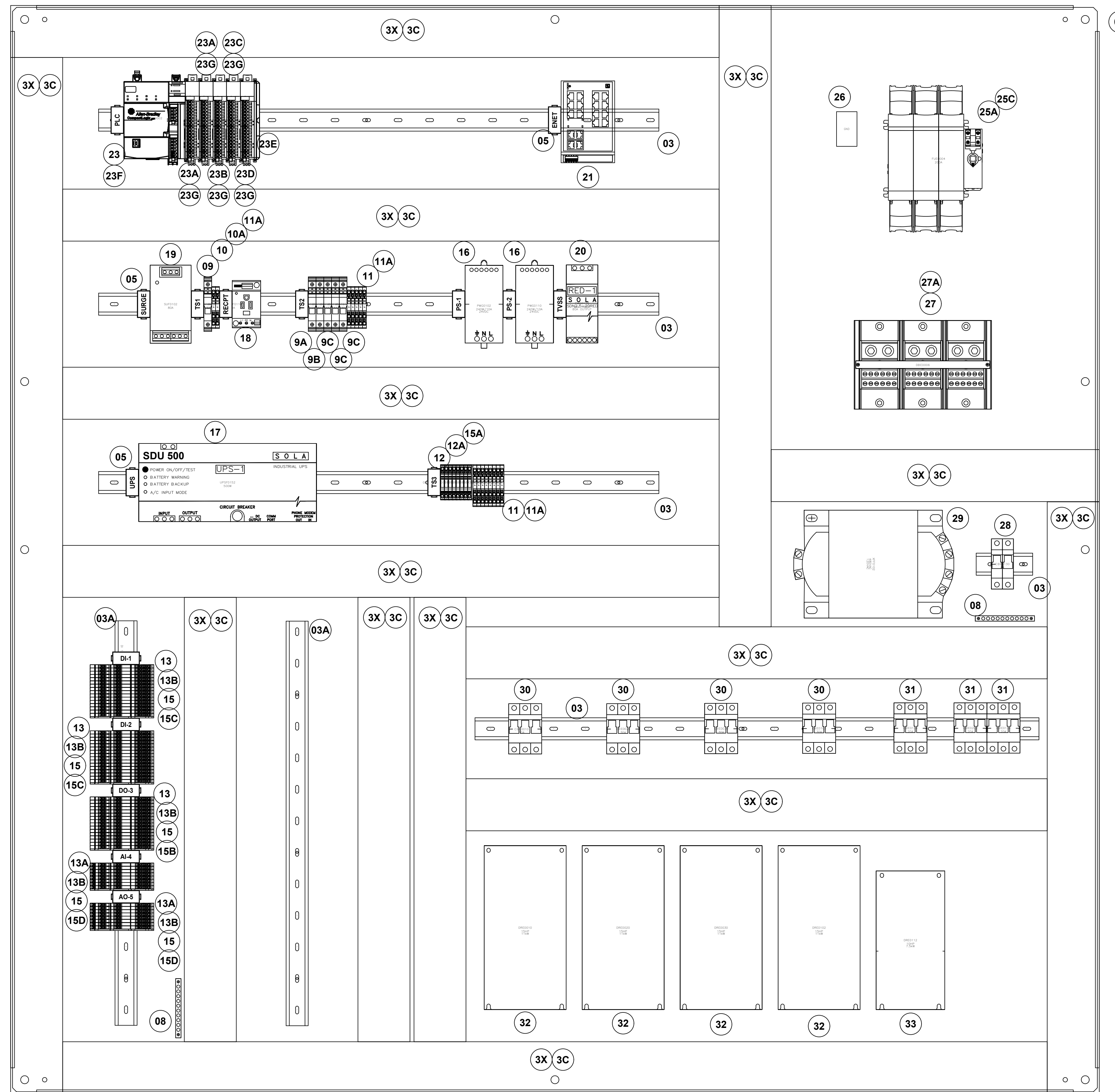
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
 ASSEMBLY DRAWING
 ENCLOSURE

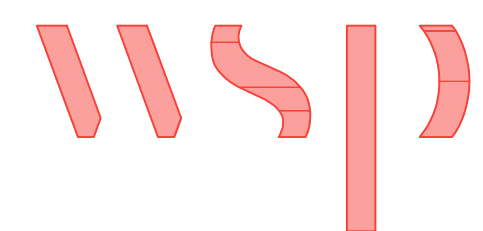
 N-M01

SHEET NUMBER:	REV. #
N-M01	RCA
SHEET 50 OF 52 SHEETS	

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BACKPLATE LAYOUT
 CONTROL PANEL
 CHINLE – CONTROL
 HOFFMAN: A72P72
 NOT TO SCALE



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RCA	20230324	RSB	PP

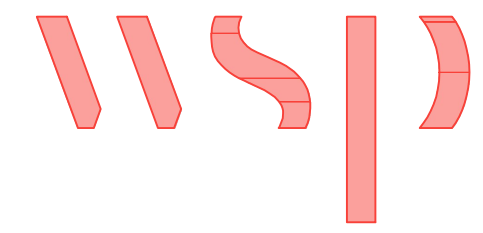
DESIGNED BY:	RSB
DRAWN BY:	RSB
CHECKED BY:	PP
APPROVED BY:	PP
DATE:	20230324

SHEET TITLE:
 ASSEMBLY DRAWING
 BACKPLATE
 N-M02

SHEET NUMBER:	REV. #
N-M02	RCA
SHEET 51 OF 52 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	UPSFO152
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	4	1489-M3C300	ALLEN BRADLEY	CIRCUIT BREAKER, MINIATURE, 3-POLE, 30A, 480/277VAC, C-TRIP, NO NEUTRAL	CBE0010,CBE0020,CBE0030,CBE0102
31	3	1489-M3C200	ALLEN BRADLEY	CIRCUIT BREAKER, MINIATURE, 3-POLE, 20A, 480/277VAC, C-TRIP, NO NEUTRAL	CBE0112,CBE0134,CBE0202
32	4	25B-D024N104	ALLEN BRADLEY	POWERFLEX 525, 480VAC, 3PH, EMBEDDED ETHERNET/IP, FRAME D, 11KW, 15HP	DRE0010,DRE0020,DRE0030,DRE0102
33	1	25B-D017N104	ALLEN BRADLEY	POWERFLEX 525, 480VAC, 3PH, EMBEDDED ETHERNET/IP, FRAME C, 7.5KW, 10HP	DRE0112



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WSP PROJECT No:
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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:
BILL OF
MATERIALS

N-M03

SHEET NUMBER:	REV. #
N-M03	RCA
SHEET 52 OF 52 SHEETS	