

*INDIAN HEALTH SERVICE (IHS)
COCOPAH INDIAN RESERVATION, YUMA COUNTY, ARIZONA
EAST COCOPAH LIFT STATION RENOVATION PROJECT
IHS PROJECT #PH-20-V61 WA-21-24*

CONTACTS

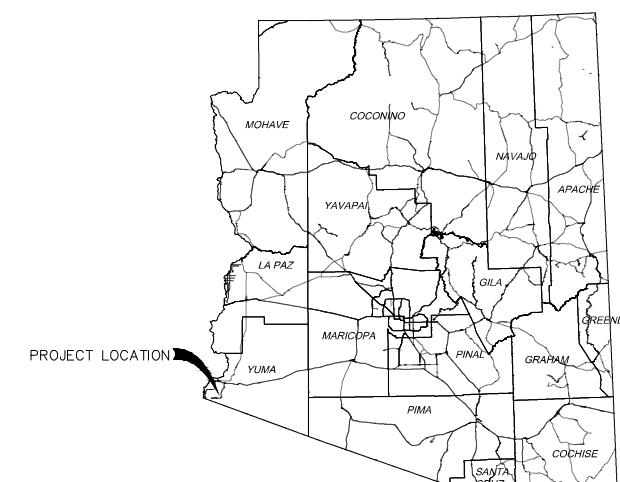
**ENGINEERING:
BAI ENGINEERS
5350 DTC PKWY, # 206
GREENWOOD VILLAGE, CO. 80111
ATTN. XUEHUA BAI
PHONE: 720-474-0941
EMAIL: XBAI@BAI-ENG.COM**

*COCOPEAH INDIAN TRIBE
RUDY ALCALA
PUBLIC WORKS DIRECTOR
14515 S. VETERANS DRIVE
SOMERTON, AZ 85350
PHONE: (928) 210-1807
EMAIL: ALCALAR@COCOPEAH.GOV*

*INDIAN HEALTH SERVICE
JOEL GARCIA
FIELD ENGINEER
PHOENIX AREA INDIAN HEALTH SERVICE
OFFICE OF ENVIRONMENTAL HEALTH & ENGINEERING
WESTERN ARIZONA DISTRICT OFFICE
1553 W. TODD DR., SUITE 104, TEMPE, AZ 85283
PHONE: (480) 466-7825
EMAIL: JOEL.GARCIA@IHS.GOV*



VICINITY MAP



LOCATION MAP

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ISSUE FOR 100% DESIGN SUBMITTAL

SUBMITTED BY:

CHIEF DESIGN

A circular professional engineer stamp. The outer ring contains the text "Arizona Professional Engineer (PE)" at the top and "MUELHU BAI" at the bottom. The center of the stamp contains "Certified DATE NO." above the date "03/31/2005", and "ARIZONA U.S.A." at the bottom.

63-31-1021

G1 - COVER SHEET	
EAST OCOPAH LIFT STATION RENOVATION	
OCOPAH INDIAN RESERVATION, ARIZONA	
DRAWN BY:	SL
CHECKED BY:	QH
APPROVED BY:	XB
FILE NAME: COCOAPH-G1-COVER SHEET	
LAYOUT NAME: G1	
PROJ ENG: ---	
SCALE: N.T.S.	

1 OF 31

GENERAL NOTES

- THE UTILITIES SHOWN IN PLAN AND PROFILE ARE INDICATED IN ACCORDANCE WITH AVAILABLE RECORDS. (ALL UTILITIES MAY NOT BE SHOWN.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING EXACT LOCATIONS AND ELEVATIONS OF ALL UTILITIES FROM THE OWNERS OF RESPECTIVE UTILITIES. ALL UTILITIES SHALL BE NOTIFIED AT LEAST 72 HOURS PRIOR TO EXCAVATION.
- ALL MINOR OBSTRUCTIONS MAY NOT BE SHOWN ON PLANS. THE CONTRACTOR SHALL VISIT THE SITE AND DETERMINE THE ACTUAL CONDITIONS WITH REGARD TO THE EXISTENCE OF FENCES, DRIVEWAYS, TREES, SIDEWALKS, CULVERTS, UTILITIES AND OTHER MISCELLANEOUS OBSTACLES THAT MAY INTERFERE WITH CONSTRUCTION PRIOR TO SUBMITTING BIDS.
- IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE UTILITY OR PIPELINE COMPANY, THE OWNER OR BY OTHERS, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF TO THE LOCATION OF ANY UTILITY LINE, PIPELINE OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE OF ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL COMPLY WITH IHS TECHNICAL PROVISIONS, STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES, AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES IN PLANNING AND CONDUCTING EXCAVATION, WHETHER BY CALLING OR NOTIFYING THE UTILITIES, COMPLYING WITH "ARIZONA 811" PROCEDURES, OR OTHERWISE.
- EXISTING PIPE MATERIAL CALLED OUT IN DRAWINGS SHOULD BE FIELD VERIFIED.
- SYMBOLS ON THE DRAWINGS (BECAUSE OF THEIR SIZE) MAY NOT REPRESENT THE EXACT LOCATION OF EITHER PROPOSED OR EXISTING UTILITIES. (EX. GATE VALVES & HYDRANTS)
- ALL WORK WITH THE RIGHT-OF-WAY OF A STREET, ROAD, HIGHWAY OR OTHER PUBLIC THOROUGHFARE SHALL MEET THE COMPACTION REQUIREMENTS OF THE GOVERNING AUTHORITY.
- CONTRACTOR SHALL COMPLY WITH THE RIGHT-OF-WAY PERMIT FOR THE INSTALLATION INCLUDING ALL OF THE REQUIREMENTS FOR TRAFFIC CONTROL AND COMPACTION. ALL WORK WITHIN THE RIGHT-OF-WAY OF ROADS SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORMED TRAFFIC CONTROL DEVICES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR IMPLEMENTING, PROTECTING AND MAINTAINING ANY NECESSARY TRAFFIC CONTROL.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY, AND FOR KNOWLEDGE AND COMPLIANCE WITH APPLICABLE OSHA STANDARDS. THE CONTRACTOR SHALL MAINTAIN ALL TRENCHES IN A SAFE CONDITION PROTECTING THE WORKERS AND THE GENERAL PUBLIC. TRENCH PROTECTION SHALL BE IN ACCORDANCE WITH APPLICABLE OSHA REGULATIONS. EXCAVATIONS SHALL BE SLOPED, BRACED, OR SHORED AS REQUIRED BY OSHA REGULATIONS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFE HANDLING OF CONSTRUCTION EQUIPMENT AND MATERIALS TO AND FROM THE STAGING/STORAGE AREA AND FOR SITE SECURITY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND NO ADDITIONAL COMPENSATION SHALL BE MADE THEREFORE.
- THE CONTRACTOR SHALL CONFINE HIS/HER WORK TO WITHIN THE CONSTRUCTION LIMITS AND/OR RIGHT-OF-WAY TO PRESERVE EXISTING VEGETATION AND PRIVATE PROPERTY. OVERNIGHT PARKING OF CONTRACTOR'S EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAY OPENINGS OF DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL SCHEDULE HIS TRENCHING INSTALLATION AND BACKFILL OPERATIONS SO THAT ACCESS TO ANY DRIVEWAY IS NOT DISRUPTED LONGER THAN ONE WORKING DAY.
- IF DEWATERING IS USED TO INSTALL UTILITIES, THEN A CONSTRUCTION DEWATERING WASTEWATER DISCHARGE PERMIT FROM THE TRIBE IS REQUIRED IF DISCHARGING INTO A STORM SEWER, CHANNEL, IRRIGATION DITCH, OR ANY WATERS OF THE UNITED STATES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING THE TRENCH BEDDING MATERIAL. IF SOIL BORROWING IS NEEDED FOR TRENCH BACKFILL, THE SOIL BORROWING SITE SHALL BE DETERMINED AND APPROVED BY THE OWNER.
- CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE OF 5 FEET AWAY FROM ANY PRE-EXISTING STRUCTURES FOR ALL EXCAVATIONS.

SEWER NOTES

- THE MINIMUM DEPTH OF COVER OVER SANITARY SEWER GRAVITY OR FORCE MAINS IS 36".
- ALL CONNECTIONS TO EXISTING MAINS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- GO-NO-GO MANDREL DEFLECTION TESTS SHALL BE PERFORMED ON GRAVITY SEWERS FROM MANHOLE TO MANHOLE UP TO AND INCLUDING THE POINT OF CONNECTION TO THE EXISTING SEWER SYSTEM. THESE TESTS SHALL BE REQUESTED AND PAID FOR BY THE CONTRACTOR.
- LEAKAGE TESTS SHALL BE PERFORMED ON ALL SEGMENTS OF A GRAVITY SEWER SYSTEM, INCLUDING SERVICE LATERALS, AND MANHOLES. LEAKAGE TESTS SHALL BE IN ACCORDANCE WITH IHS PHOENIX AREA SANITATION FACILITIES CONSTRUCTION TECHNICAL PROVISIONS TP-06.11. OWNER'S REPRESENTATIVE SHALL BE INVITED AND PRESENT FOR ALL TESTINGS. ANY WATER USED IN TESTING SHALL BE CONSERVED AND RE-USED AS MUCH AS POSSIBLE.
- ALL SEWER LINES CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO THE PIPE TRENCH AREAS AS SHOWN IN THE DRAWING. CONTRACTORS SHOULD ALWAYS BE AWARE OF THE POSSIBILITY OF UNDISCOVERED ARCHAEOLOGICAL SITES AND TRADITIONAL CULTURAL PROPERTIES (I.E. CRADLE BOARDS, FUNERAL DEPOSITS, ETC.). IF SUBTERRANEAN CULTURAL RESOURCES ARE ENCOUNTERED, SEWER LINE CONSTRUCTION ACTIVITIES MUST HALT AND THE TRIBAL HISTORIC PRESERVATION OFFICE (THPO) MUST BE NOTIFIED IMMEDIATELY.
- THE CONTRACTOR SHALL FLUSH ALL SEWER LINES BEFORE PRE-FINAL INSPECTION TO REMOVE SAND, SILT AND OTHER FOREIGN MATERIAL IN ACCORDANCE WITH IHS PHOENIX AREA SANITATION FACILITIES CONSTRUCTION TECHNICAL PROVISIONS TP-06.11.

LEGEND

PROPOSED	EXISTING	GENERAL
	SEWER MAIN	BENCHMARK
	SEWER SERVICE LINE	IRON PIN
	SEWER FORCE MAIN	CARBONITE MARKER
	SEWER FORCE SERVICE LINE	CONTOUR LINE
	SEWER MANHOLES	CULVERT
	ONE-WAY CLEANOUT	DIRECTIONAL DRILLING
	TWO-WAY CLEANOUT	FENCE
	SEPTIC TANK	FIBER OPTIC
	LIFT STATION	GAS
	DIRECTION OF FLOW	LIGHT POLE
	CAP	INSULATION
	UTILITY MARKER POST	POWER POLE
	SEWER LINE TO BE ABANDONED IN PLACE	ACCESS HATCH
	WATER	EQUIPMENT TO BE ABANDONED
	NEW WATER MAIN	FEATURE TO BE ABANDONED
	NEW WATER SERVICE LINE	PROpane TANK
	GATE VALVE	PROPERTY LINE
	FIRE HYDRANT W/VALVE	RIGHT-OF-WAY
	FLUSH HYDRANT W/VALVE	ROAD (DIRT/GRAVEL)
	AIR RELEASE/VACUUM VALVE	ROAD (PAVED)
	SADDLE W/CORPORATION STOP	ROAD BORING/CROSSING
	CURB STOP W/BOX	SIGN
	INDIVIDUAL PRESSURE RELEASE VALVE	SOIL BORING
	YARD HYDRANT	SWAMP
	METER PIT/BOX	TELEPHONE PED
	IN-GROUND PRESSURE TANK	TRACING WIRE BOX
	WELL	TREE LINE
	GEOTECHNICAL TEST PIT	TREE
	NEW WATER MAIN USING THE EXISTING WATER LINE ALIGNMENT	RIP RAP
	IRRIGATION DITCH	CONTROL POINT
	DITCH	ELECTRIC PED
		GUY / ANCHOR
		MONUMENT
		MONITORING WELL
		TEMPORARY BENCHMARK
		CATV PEDESTALS
		OVERHEAD POWER
		STORM WATER INLET
		MANHOLE
		CHAINLINK FENCE
		BURIED ELECTRICAL LINE
		TELEPHONE LINE

BAI ENGINEERS
5550 DTC PKWY SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-3041



G2 - GENERAL NOTES AND LEGEND		FILE NAME: COCOPAH G2-NOTES-AND-LEGEND
EAST COCOPAH LIFT STATION RENOVATION		LAYOUT NAME: G2
COCOPAH INDIAN RESERVATION, ARIZONA		PROJ ENG: --
DRAWN BY: SL	CHECKED BY: QH	SCALE: N.T.S.
APPROVED BY: XB		APPROVED: 03-31-2026
Expires: 03-31-2026		

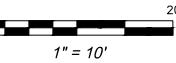
SHEET
2 OF 31

G2

INIT.	REVISIONS	REVISIONS	DATE	ISSUE FOR 100% SUBMITTAL



TOPOGRAPHIC DESIGN SURVEY OF
EAST COCOPAH LIFT STATION RENOVATION PROJECT
YUMA COUNTY, ARIZONA
EAST COCOPAH RESERVATION
OCTOBER 2024



SURVEY NOTES

- FIELD SURVEY WAS PERFORMED OCTOBER 2024.
- UNITS ARE U.S. SURVEY FEET.

SURVEY CONTROL REPORT

SURVEY CONTROL WAS ESTABLISHED USING A TRIMBLE-R2 GPS RECEIVER. MEASUREMENT TAKEN AT MANHOLE 18, LAST MANHOLE BEFORE THE LIFT STATION. THE REST OF THE SURVEY CONTROL POINTS ARE STATIC GPS MEASUREMENT.

THE REPORTED COORDINATES ARE IN NAD83 ARIZONA STATE PLANE GRID, WEST ZONE COORDINATE SYSTEM.

CONTROL POINTS					
POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION	AS-BUILT ELEVATION
CP-1	CENTER RIM OF MANHOLE 8	572120.19	415718.73	112.03	108.50
CP-2	CENTER RIM OF MANHOLE 2	572150.60	415841.71	116.17	114.00
CP-3	CENTER RIM OF MANHOLE 4	571848.55	415416.43	105.46	102.00
CP-4	CENTER RIM OF WETWELL	572109.74	415682.81	111.00	108.50

CONTROL POINT ELEVATIONS ARE IN NAVD1988.



FIGURE 1: CP-1 (CENTER RIM OF MANHOLE 8)



FIGURE 2: CP-2 (CENTER RIM OF MANHOLE 2)



FIGURE 3: CP-3 (CENTER RIM OF MANHOLE 4)



FIGURE 4: CP-4 (CENTER RIM OF WETWELL)

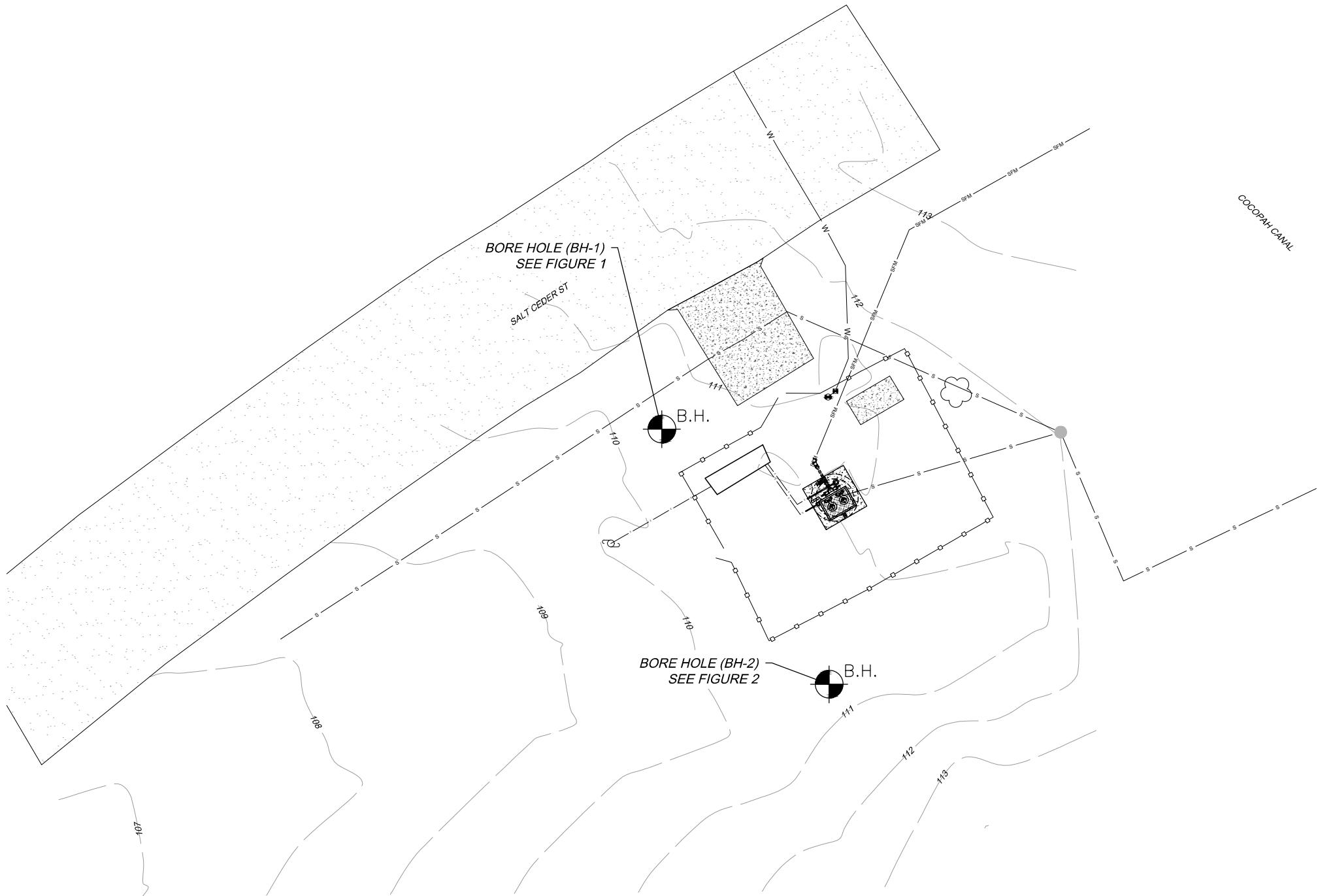
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CHECKED BY: QH	LAYOUT NAME: G3
APPROVED BY: XB	PROJ ENG: --
SCALE: 1" = 10'	

G3 - EXISTING SITE SURVEY	
EAST COCOPAH LIFT STATION RENOVATION	
COCOPAH INDIAN RESERVATION, ARIZONA	

G3

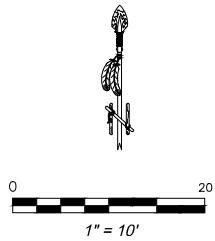
BAI ENGINEERS
5550 DTC PKW, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

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NOTES:

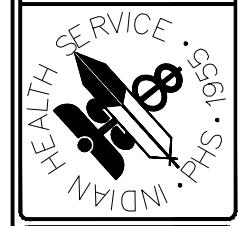
1. GEOTECHNICAL BOREHOLES PERFORMED IN OCTOBER 2024 BY GEOTEK, INC.
2. TWO BOREHOLES WERE ESTABLISHED (BH-1 AND BH-2)



INIT.	DATE 03/31/2025	ISSUE FOR 100% SUBMITTAL	REVISIONS
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G4

BAI ENGINEERS
5550 DTC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941



G4 - GEBORE HOLES LOCATION		FILE NAME: COCOPAH-G3-EXIST SITE SURVEY
EAST COCOPAH LIFT STATION RENOVATION		LAYOUT NAME: G4
COCOPAH INDIAN RESERVATION, ARIZONA		PROJ ENG: --
DRAWN BY: SL	CHECKED BY: QH	SCALE: 1" = 10'
APPROVED BY: XB		
CERTIFICATE NO. 03/31/2025		
BY: KARENIA BAI		
EXPIRES: 03-31-2026		

BORING LOG GENERAL NOTES

CONSISTENCY OF FINE-GRAINED SOILS			RELATIVE DENSITY OF COARSE-GRAINED SOILS	
Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value (SS) Blows/Ft	Consistency	Standard Penetration (SPT) or N-Value (SS) Blows/Ft	Relative Density
< 500	< 2	Very Soft	0 - 3	Very Loose
500 - 1,000	2 - 3	Soft	4 - 9	Loose
1,001 - 2,000	4 - 7	Firm	10 - 29	Medium Dense
2,001 - 4,000	8 - 16	Stiff	30 - 49	Dense
4,001 - 8,000	17 - 32	Very Stiff	50+	Very Dense
> 8,001	32+	Hard		

SPT penetration test using 140 pound hammer, with 30 inch free fall on 2 inch outside diameter(1-3/8 ID) sample
For ring sampler using 140 lb hammer, with a 30 inch free fall on 3 inch outside diameter (2-1/2 ID) sample,
use N-value x 0.636 to get Standard N-value
For fine grained soil consistency, thumb penetration used per ASTM D-2488

RELATIVE PROPORTIONS OF SAND AND GRAVEL		GRAIN SIZE TERMINOLOGY	
Descriptive Term of other constituents	Percent of Dry Weight	Major Component of Sample	Particle Size
Trace	< 15	Boulders	Over 12 inches
With	15 - 29	Cobbles	3 inches to 12 inches
Modifier	> 30	Gravel	#4 Sieve to 3 inches
		Sand	#200 Sieve to #4 Sieve
		Silt or Clay	Passing #200 Sieve

RELATIVE HARDNESS OF CEMENTED SOILS (CALICHE)	
Description	General Characteristics
Very Dense to Moderately Hard	Partially Cemented Granular Soil - Can be carved with a knife and broken with force by hand.
Very Stiff to Moderately Hard	Partially Cemented Fine-Grained Soil - Can be carved with a knife and broken with force by hand.
Moderately Hard	Moderate hammer blow required to break a sample
Hard	Heavy hammer blow required to break a sample
Very Hard	Repeated heavy hammer blow required to break a sample

MOISTURE CLASSIFICATION	
Description*	Degree of Saturation
Dry	0%
Slightly Moist	1% - 50%
Moist	51% - 75%
Wet	76% - 99%
Saturated	100%

*Defined as Condition of Sand

NOTES		BORING LOG		LOGGED BY: AA	
PROJECT #: 2666-AB		PROJECT: East Cocopah Lift Station		METHOD: H.S.A	
CLIENT: Bai Engineers		OPERATOR: Integrity		DATE: 10/16/24	
LOCATION: Somerton, AZ					
Depth (ft)	SAMPLES	ISCS Symbol		Consistency	LABORATORY TESTS
	Sample Type	Blows/foot	Soil Pattern		Water Content (%) Dry Density (pcf) Swell (%)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
BORING NUMBER: B-1					
MATERIAL DESCRIPTION AND COMMENTS					
<p>18' - 22' FILL (SM) Artificial Fill, Brown Silty SAND with Gravel, Sl. Moist, Lt. Cementation</p> <p>16' - 19' Increase in Sand</p> <p>16' - 21' SP-SM Light Brown Poorly Graded SAND with Silt, Sl. Moist, Med. Dense, Lt. Cementation</p>					
Boring Continued on Next Page					

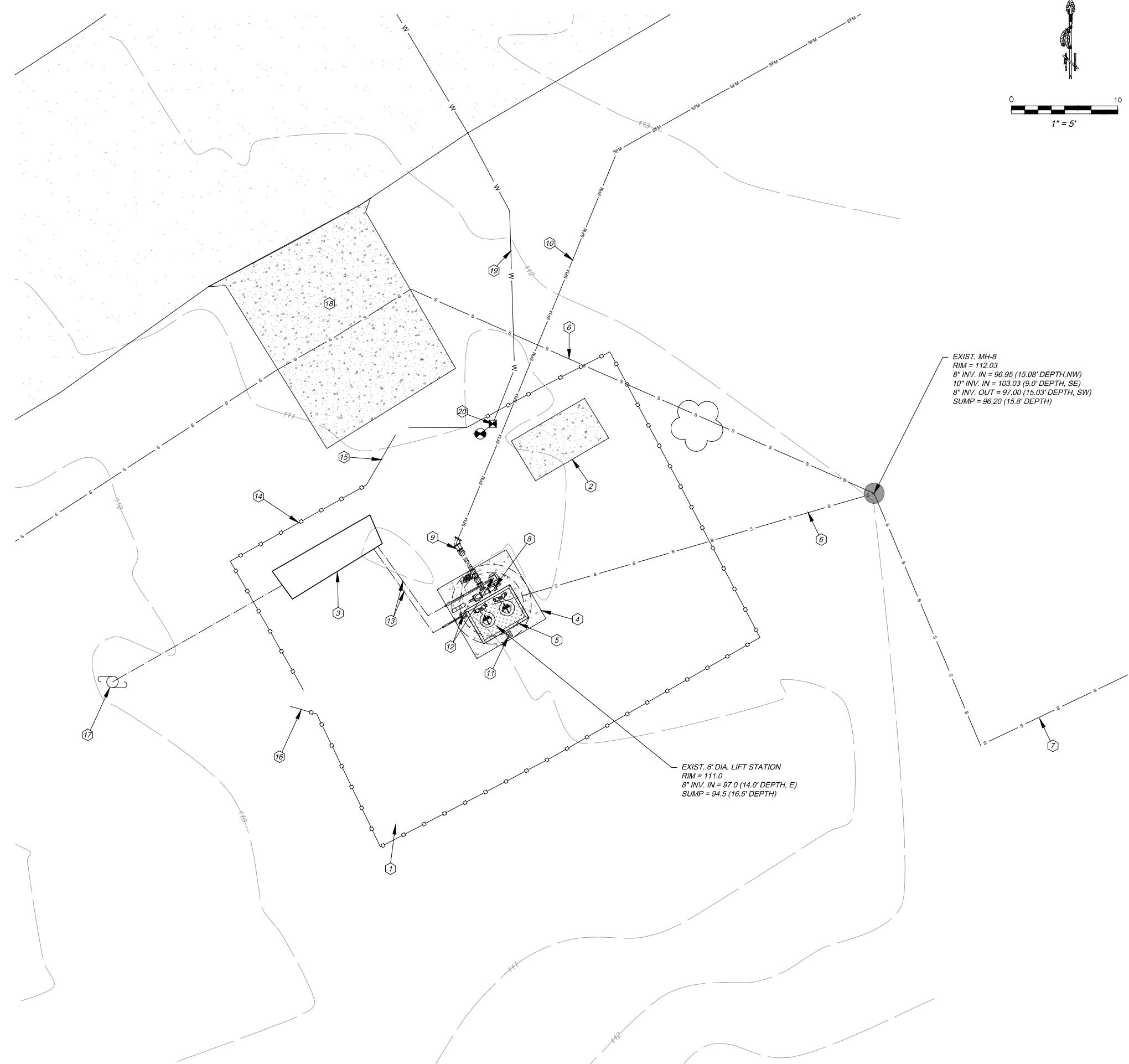
NOTES		BORING LOG		LOGGED BY: AA	
PROJECT #: 2666-AB		PROJECT: East Cocomah Lift Station		METHOD: H.S.A	
CLIENT: Bai Engineers		LOCATION: Somerton, AZ		OPERATOR: Integrity	
DATE: 10/16/24					
Depth (ft)	SAMPLES	ISCS Symbol	BORING NUMBER: B-2	Consistency	LABORATORY TESTS
	Sample Type Blow/Foot	Soil Pattern	MATERIAL DESCRIPTION AND COMMENTS		Water Content (%)
1			FILL (SM) Artificial Fill, Brown Silty SAND, Si. Moist, Lt. Cementation, Organics to 6"	D	
2	53				1 105
3					
4			SM Brown Silty SAND, Si. Moist, Med. Dense, Lt. Cementation	MD	
5	16				1 98
6					
7					
8					
9					
10	18				
11			Increase in Sand		1 99
12		SP-SM	Light Brown Poorly Graded SAND with Silt, Si. Moist, Med. Dense, Lt. Cementation	MD	
13					
14					
15	29				
16					1 104
17					
18					
19					
20	16				
21					3 98

G5 - GEOFORCE LOGS	
EAST COCOPAH LIFT STATION RENOVATION	
COCOPAH INDIAN RESERVATION, ARIZONA	
DRAWN BY:	SL
CHECKED BY:	QH
APPROVED BY:	XB
FILE NAME:	COCOPAH-G3-EXIST SITE SURVEY
LAYOUT NAME:	G5
PROJ. ENG.:	--
SCALE:	N.T.S.

NOTES				BORING LOG		LOGGED BY: AA					
PROJECT #: 2666-AB PROJECT: East Cocopah Lift Station CLIENT: Bai Engineers LOCATION: Somerton, AZ						METHOD: H.S.A OPERATOR: Integrity DATE: 10/16/24					
Depth (ft)	SAMPLES			BORING NUMBER: B-2 Continued		LABORATORY TESTS					
	Sample Type	Blows/Foot	Soil Pattern			USCS Symbol	Consistency	Water Content (%)	Dry Density (pcf)	Swell (%)	
23				SP-SM	Lt. Brown Poorly Graded SAND with Silt, Sl. Moist, Med. Dense, Lt. Cementation						
24											
25	29				No Recovery, Groundwater Encountered, Wet						
26											
27											
28											
29											
30	5				No Recovery, Saturated						
31	15										
	4										
				Boring Ends at Approximately 31.5 Feet Depth Groundwater Encountered at Approximately 25 Feet Depth							



Entered: 03-31-2026



KEY NOTES

- ① EXISTING 30' X 40' LIFT STATION SITE
- ② BACKUP GENERATOR, SEE FIGURE 1
- ③ ELECTRICAL PANEL, SEE FIGURE 2
- ④ 7.5' X 7.5' X 8" CONCRETE SLAB
- ⑤ 6' DIAMETER LIFT STATION WITH TWO PUMPS, SEE FIGURE 3
- ⑥ 8" GRAVITY SEWER
- ⑦ 10" GRAVITY SEWER
- ⑧ TWO 4" GATE VALVES AND CHECK VALVES, SEE FIGURE 4
- ⑨ 4" TO 6" REDUCER
- ⑩ 6" FORCE MAIN
- ⑪ EXISTING LIFT CRANE
- ⑫ JUNCTION BOX
- ⑬ ELECTRICAL CONDUITS
- ⑭ CHAIN LINK FENCE
- ⑮ 12' DOUBLE GATE
- ⑯ 3' ENTRANCE GATE
- ⑰ POWER POLE
- ⑱ CONCRETE PAD
- ⑲ WATER SERVICE LINE
- ⑳ WATER CURB STOP AND HOSE, SEE FIGURE 5



FIGURE 1 - BACKUP GENERATOR



FIGURE 2 - ELECTRICAL PANEL



FIGURE 3 - 6' DIA. LIFT STATION



FIGURE 4 - 4" GATE VALVES AND CHECK VALVES



FIGURE 5 - WATER CURB BOX AND HOSE

DRAWN BY: SL	FILE NAME: COCOPAH-C1-EXISTING-SITE-PLAN
CHECKED BY: QH	LAYOUT NAME: C1
APPROVED BY: XB	PROJ. ENG: --
SCALE: 1" = 5'	
INIT. DATE 03/31/2025 REVISIONS 100% SUBMITTAL	

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Expires: 03-31-2026

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BAI ENGINEERS

5550 DTC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

C1





DEMOLITION KEYNOTES

- ① REMOVE SECTIONS OF FENCE PRIOR TO CONSTRUCTION OF PROPOSED LIFT STATION. REUSE FENCE AND PEDESTRIAN GATE IF POSSIBLE
- ② DECOMMISSION EXISTING LIFT STATION AFTER COMPLETION OF PROPOSED LIFT STATION. EXISTING WETWELL AND PUMP TO BE ABANDONED IN PLACE. (SEE FIGURES A & B FOR REFERENCE)
- ③ DECOMMISSION EXISTING ELECTRICAL PANELS AND DISCONNECT FROM POWER POLE (SEE FIGURE C FOR REFERENCE)
- ④ DECOMMISSION BACKUP GENERATOR (SEE FIGURE D FOR REFERENCE)
- ⑤ EXISTING MH-8 TO BE ABANDONED IN PLACE
- ⑥ CAP EXISTING SEWER MAIN WITH CONCRETE. SEE SHEET C3 FOR LOCATIONS



FIGURE A - 6' DIA. LIFT STATION



FIGURE B - 4" GATE VALVES AND CHECK VALVES



FIGURE C - ELECTRICAL PANEL



FIGURE D - BACKUP GENERATOR

DRAWN BY: SL	FILE NAME: COCOOPAH-C1-EXISTING-SITE-PLAN
CHECKED BY: QH	LAYOUT NAME: C2
APPROVED BY: XB	PROJ ENG: --
SCALE: 1" = 5'	
Expires: 03-31-2026	

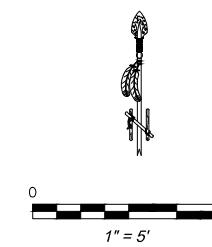
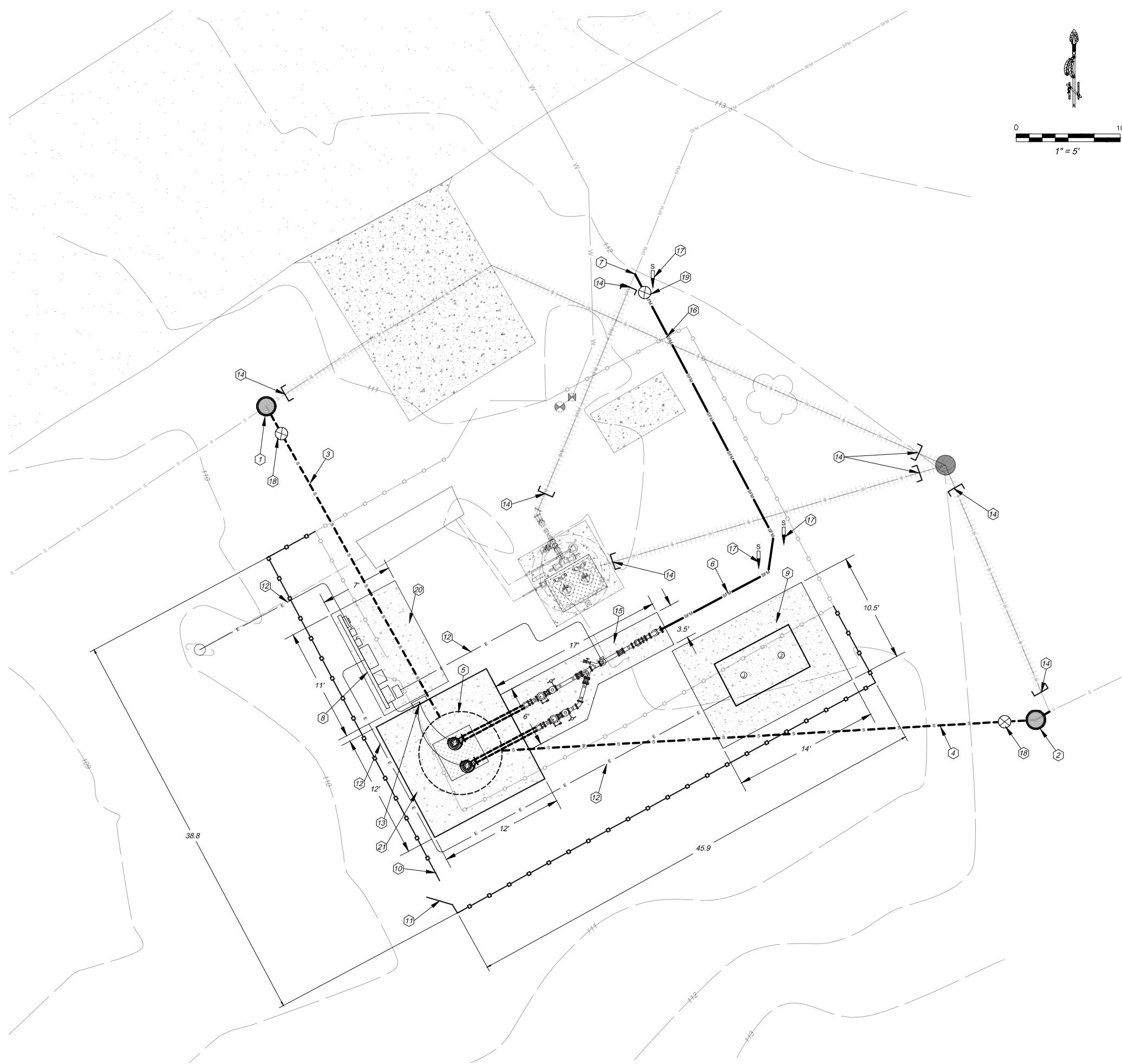
7 OF 31

BAI ENGINEERS

5550 DTC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

C2

INIT.	DATE 03/31/2026	REVISIONS
ISSUE FOR 100% SUBMITTAL		



KEY NOTES

- ① NEW INTERIOR-LINED 4' DIA. DIVERSION MANHOLE MH-A1 WITH MARKER POST (SHORING REQUIRED)
DEPTH = 14.70'
SEE SHEET P1 FOR DETAILS
SEE DETAIL 6B, SHEET D1 FOR MANHOLE DETAIL
SEE DETAIL 1B, SHEET D1 FOR MARKER POST DETAIL
- ② NEW INTERIOR-LINED 4' DIA. DIVERSION MANHOLE MH-A2 WITH MARKER POST (SHORING REQUIRED)
DEPTH = 10.20'
SEE SHEET P1 FOR DETAILS
SEE DETAIL 6B, SHEET D1 FOR MANHOLE DETAIL
SEE DETAIL 1B, SHEET D1 FOR MARKER POST DETAIL
- ③ NEW 8" GRAVITY SEWER MAIN FROM MH-A1 TO NEW LIFT STATION
SEE SHEET P1 FOR DETAILS
- ④ NEW 8" GRAVITY SEWER MAIN FROM MH-A2 TO NEW LIFT STATION
SEE SHEET P1 FOR DETAILS
- ⑤ NEW 8' DIA. LIFT STATION WETWELL WITH TWO PUMPS
NORTHING = 572075.59
EASTING = 415693.73
SEE SHEETS P1 & P2 FOR DETAILS
- ⑥ NEW 6" FORCE MAIN
- ⑦ CONNECT TO EXISTING 6" FORCE MAIN WITH 6" 45 DEG. BEND AND 6" GATE VALVE WITH BOX
- ⑧ PUMP CONTROL PANEL MOUNT ON ELECTRICAL EQUIPMENT RACK (SEE ELECTRICAL SHEET E4 FOR DETAIL)
- ⑨ 14' X 10.5' CONCRETE PAD FOR BACKUP GENERATOR POWERED BY DIESEL (SEE ELECTRICAL SHEET E4 FOR DETAIL)
- ⑩ REUSE AND/OR NEW CHAIN-LINK FENCE AS NEEDED.
- ⑪ NEW OR REUSE EXISTING PEDESTRIAN GATE IF POSSIBLE.
- ⑫ ELECTRICAL CONDUITS
- ⑬ JUNCTION BOX
- ⑭ CAP EXISTING SEWER MAIN WITH CONCRETE
- ⑮ CONCRETE PAD ~ 80 SQ. FT X 6" THICK
- ⑯ CONTRACTOR TO REMOVE AND REPLACE EXISTING CHAIN-LINK FENCE
- ⑰ UTILITY MARKER POST (SEE DETAIL 1B, SHEET D1)
- ⑱ 8" GATE VALVE WITH BOX
- ⑲ 6" GATE VALVE WITH BOX
- ⑳ 11' X 7' CONCRETE PAD FOR ELECTRICAL EQUIPMENT RACK (SEE DETAIL 12, SHEET D5)
- ㉑ 12' X 12' CONCRETE PAD FOR LIFT STATION WETWELL (SEE SHEET P2)

GENERAL NOTES

- 1) COORDINATE WITH IRRIGATION CANAL USERS DURING CONSTRUCTION



Expires: 03-31-2026

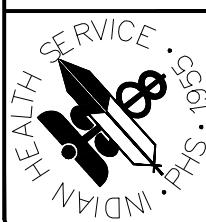
C3 - PROPOSED SITE PLAN
EAST COCOPAH LIFT STATION RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA

DRAWN BY: SL	FILE NAME: COCOPAH-C3-PROPOSED-SITE-PLAN
CHECKED BY: QH	LAYOUT NAME: C3
APPROVED BY: XB	PROJ ENG: -- SCALE: 1" = 5'

BAI ENGINEERS
5550 DTC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

C3

BAI ENGINEERS



SHEET	31
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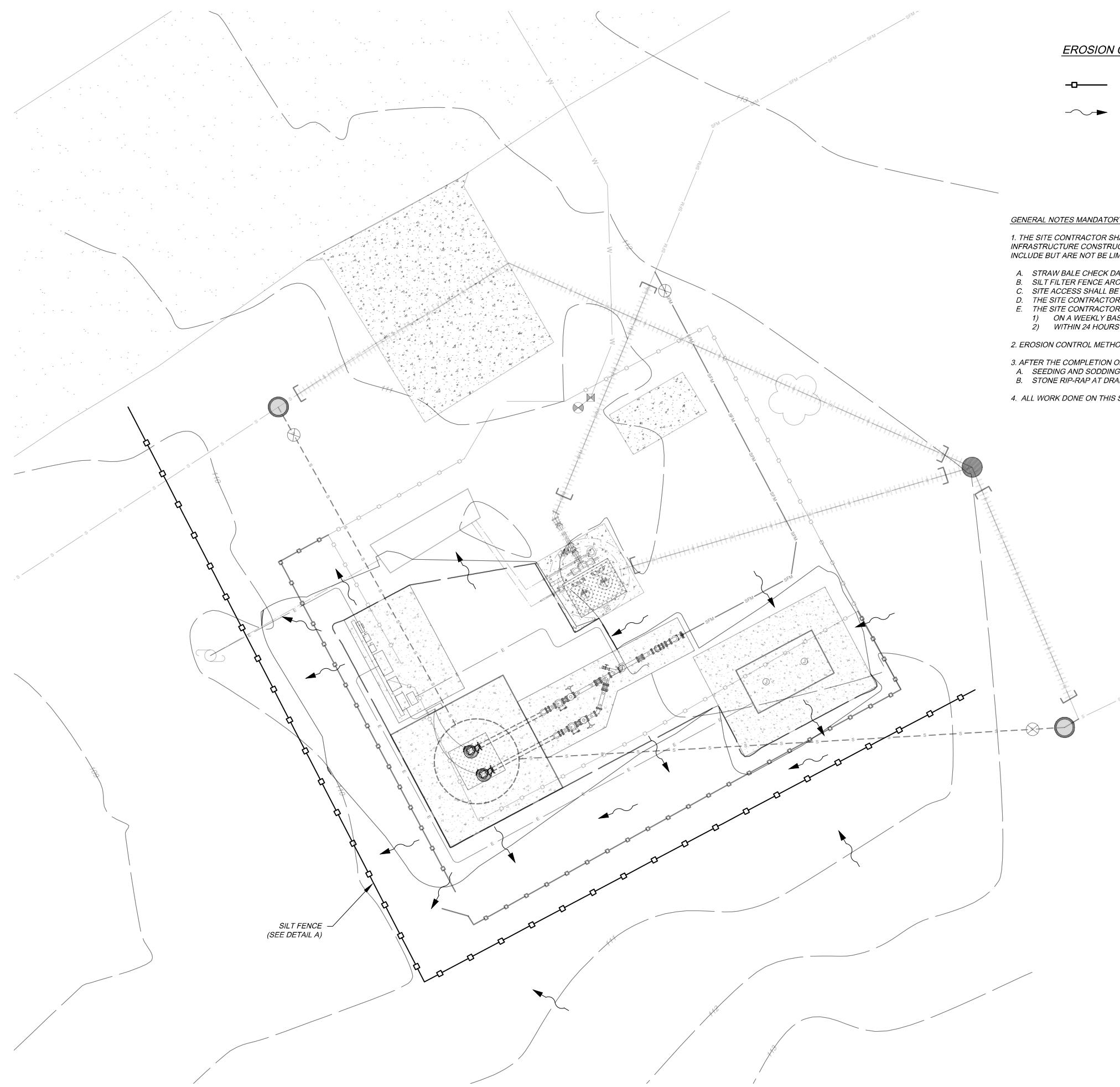


GRADING SUMMARY (SITE ONLY)

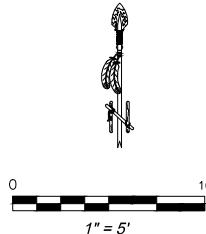
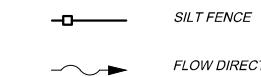
NET CUT VOLUME: 1 CUBIC YARD
NET FILL VOLUME: 7 CUBIC YARD

C4 - PROPOSED GRADING PLAN
 EAST COCOPAH LIFT STATION RENOVATION
 COCOPAH INDIAN RESERVATION, ARIZONA

The logo for BAI Engineers is centered on a white background. It features a circular emblem with a stylized profile of an Indian head facing left. The word "INDIAN" is written vertically along the left side of the profile, and "PHS" is written vertically along the right side. Above the profile, the word "SERVICE" is written in a circular arc. Below the profile, the year "1950" is written in a circular arc. The entire emblem is enclosed in a thin black border. Above the emblem, the word "BAI" is written in a large, bold, sans-serif font. Below the emblem, the word "ENGINEERS" is written in a smaller, bold, sans-serif font. The entire logo is set against a white background with a thin black border.



EROSION CONTROL PLAN LEGEND



A scale bar marked from 0 to 1. Below the bar, the text "1" = 5'" is written.

GENERAL NOTES MANDATORY EROSION CONTROL STABILIZATION

1. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL, FROM THE BEGINNING OF INFRASTRUCTURE CONSTRUCTION THROUGH THE COMPLETION OF CONSTRUCTION. TEMPORARY EROSION CONTROL PROCEDURES SHALL INCLUDE BUT ARE NOT BE LIMITED TO:

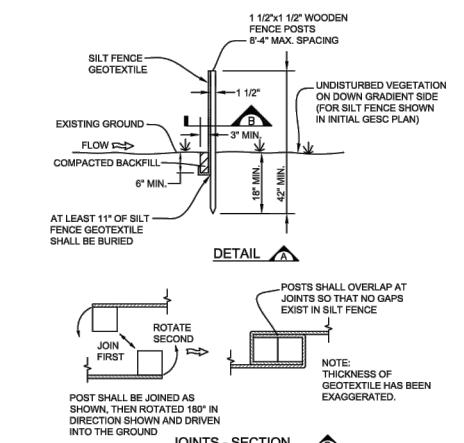
- A. STRAW BALE CHECK DAMS AROUND INLETS AND MANHOLES.
- B. SILT FILTER FENCE AROUND DISTURBED PORTIONS OF SITE.
- C. SITE ACCESS SHALL BE LIMITED TO STABILIZED ENTRANCE TO DIMINISH TRACKING SEDIMENT OFFSITE.
- D. THE SITE CONTRACTOR SHALL EMPLOY A STREET SWEEPER AS OFTEN AS REQUIRED TO KEEP SURROUNDING STREETS CLEAN.
- E. THE SITE CONTRACTOR SHALL PROVIDE A QUALIFIED PERSON TO INSPECT THIS SITE FOR COMPLIANCE WITH THIS PLAN:
 - 1) ON A WEEKLY BASIS AND
 - 2) WITHIN 24 HOURS OF ANY RAINFALL EXCEEDING 0.5 INCHES IN A 24 HOUR PERIOD.

2. EROSION CONTROL METHODS SHALL BE PROVIDED AND APPROVED BY OWNER OR ENGINEER.

3. AFTER THE COMPLETION OF CONSTRUCTION, PERMANENT EROSION CONTROL PROCEDURES SHALL INCLUDE:

- A. SEEDING AND SODDING OF DISTURBED AREAS**
- B. STONE, SIR, SAB, OR DRAINS OF DISCHARGE**

1. ALL WORK DONE ON THIS SHEET IS COMPENSATED IN THE BID SCHEDULE. EROSION CONTROL



8' x 10' GUT FENCE INSTALLATION NOTES

SILT FENCE INSTALLATION NOTES

1. SIGHT LINE VIEW FOR
- LOCATION AND LENGTH OF FENCE.
2. ANCHOR TRENCH SHALL BE EXCAVATED WITH TRENCHER, OR WITH SILT FENCE INSTALLATION MACHINE, OR ROAD GRADERS, BACK-HOES, ETC. SHALL BE USED. TRENCH SHALL BE
COMPACTED BY HAND, WITH "JUMPING JACK", OR BY WHEEL ROLLING. COMPACTION SHALL BE
SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
3. SILT FENCE GEOTEXTILE SHALL MEET THE FOLLOWING REQUIREMENTS:
 - 6 TO 12-GALLONS PER MINUTE PER SQUARE FOOT FLOW CAPACITY.
 - 90 LB. TENSILE STRENGTH PER ASTM D4622.
 - UV DESIGN AT 500 HRS MIN. 70% STRENGTH RETAINED PER ASTM D 4355.
4. SILT FENCE INDICATED ON INITIAL ESC PLAN SHALL BE INSTALLED PRIOR TO ANY

SILT FENCE MAINTENANCE NOTES

1. THE ESC MANAGER SHALL INSPECT SILT FENCE WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
2. SEDIMENT ACCUMULATED UPSTREAM OF SILT FENCE SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT REACHES A DEPTH OF 6-INCHES.
3. SILT FENCE SHALL BE REMOVED WHEN THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS APPROVED BY THE CITY. IF ANY DISTURBED AREA EXISTS AFTER REMOVAL, IT SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY.

—*—*—*— SF SILT FENCE 18

DETAIL A - SILT FENCE DETAIL



63-31-1021

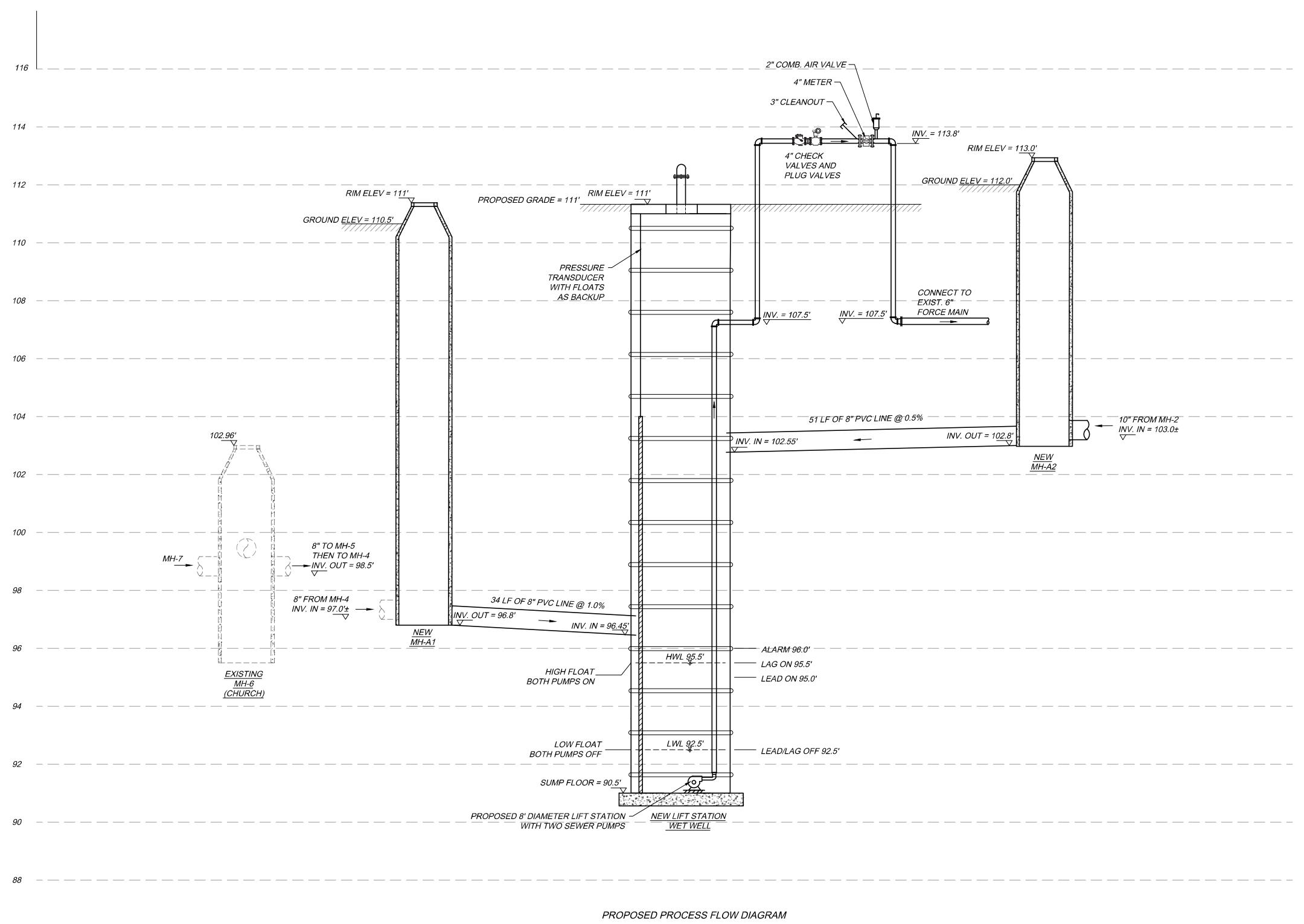
C5 – EROSION CONTROL PLAN EAST COCOPAH LIFT STATION RENOVATION COCOPAH INDIAN RESERVATION, ARIZONA

C5 - EROSION CONTROL PLAN	
EAST COCOPAH LIFT STATION RENOVATION	
COCOPAH INDIAN RESERVATION, ARIZONA	
DRAWN BY: <u>SL</u>	FILE NAME: COCOPAH-PROPOSED-GRADING-PLAN
CHECKED BY: <u>QH</u>	AYOUT NAME: C5

BAI ENGINEERS

AI ENGINEERS
3350 DTC PKWY SUITE 206
ENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

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NOTES:

1. LIFT STATION INFLOW FLOW DATA

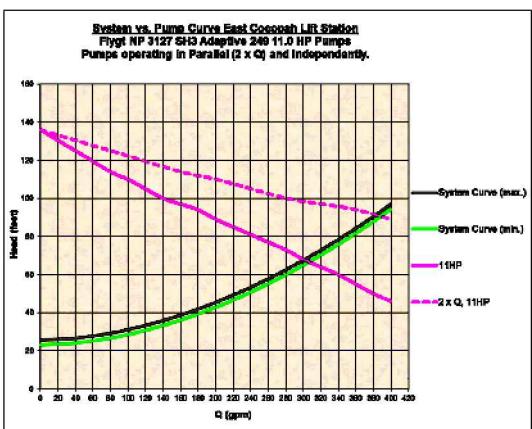
	LIFT STATION FLOW RANGES (GPM)			
	DAILY FLOW (GPD)	20 HOUR AVERAGE	MINIMUM (AVG. / 2)	PEAK FLOW (AVG.X 4)
EXISTING	33,600	28	14	112
DESIGN	40,320	34	17	134

2. PROPOSED WETWELL DIMENSIONS

Wet Well Diameter	8 ft
Rim Elevation	111.00 ft
Ground Elevation	111.00 ft
Gravity Invert In Elevation	96.45 ft
High Water Level (Pump On)	95.00 ft
Low Water Level (Pump Off)	92.50 ft
Invert Elevation	90.50 ft
Wet Well Depth	20.50 ft

3. PUMP SELECTION

TWO (2) FLYGT CONCERTOR NP 3127 SH-3 ADAPTIVE 249 PUMPS
460V, 3 PHASE, 60 HZ, 800 TO 3495 RPM
SIZE: 11 HP
DESIGN POINT: 300 GPM @ 68' TDH

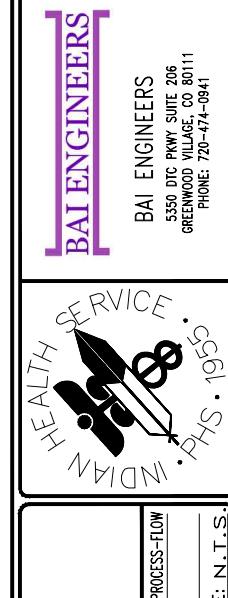


P1 - PROCESS FLOW DIAGRAM
EAST COCOPAH LIFT STATION RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA

DRAWN BY: SL	FILE NAME: COCOPAH-P1-PROPOSED-PROCESS-FLOW
CHECKED BY: QH	LAYOUT NAME: P1
APPROVED BY: XB	PROJ ENG: --
SCALE: N.T.S.	

APPROVED: 03-31-2026
EXPIRES: 03-31-2026

INIT.



P1

4/03/2025 - 9:13am

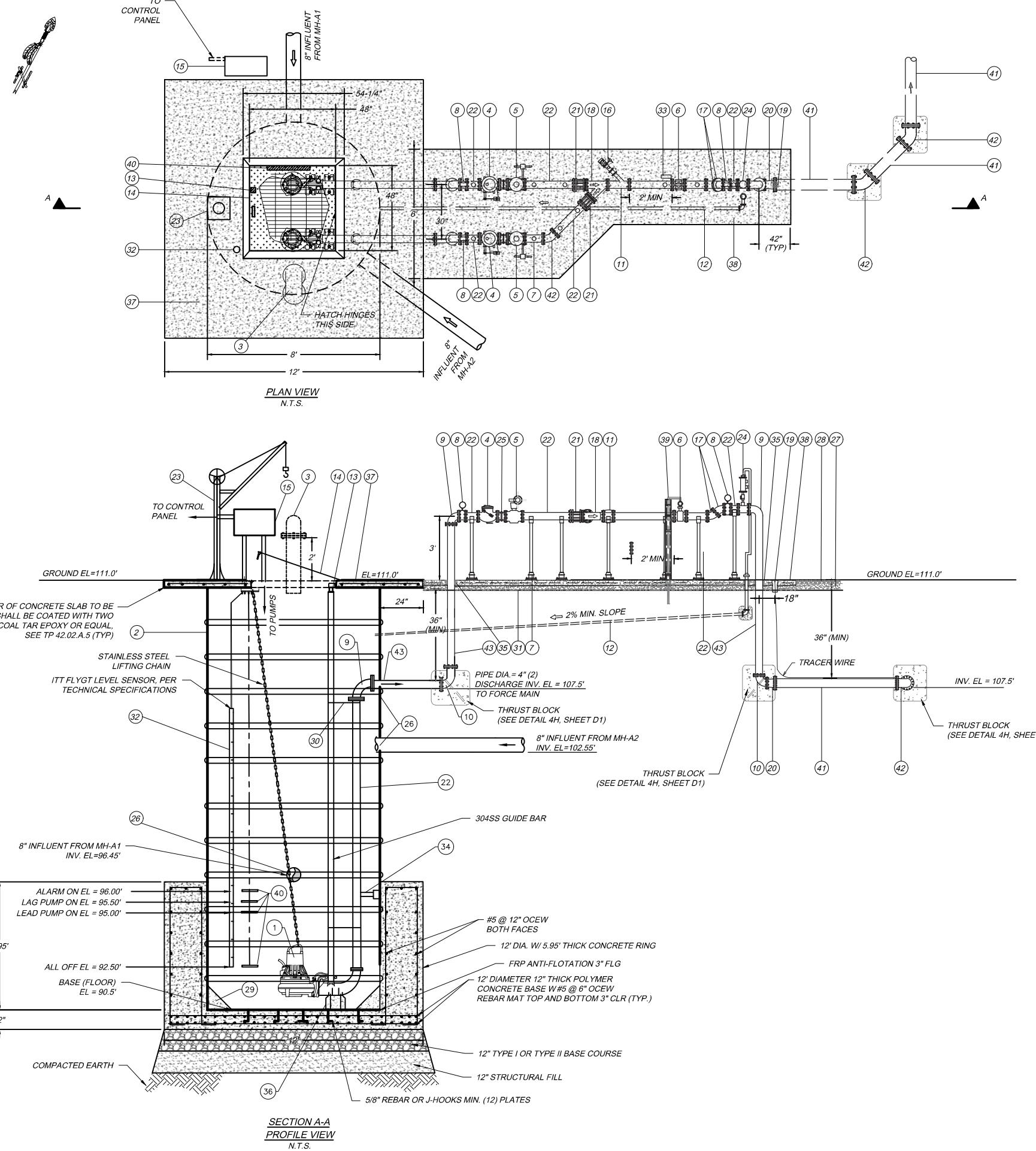
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19_Cocopah-Sewer\6_

IDE: E:\2024_Projects\

USER: User F1



EQUIPMENT SCHEDULE	
1	11 HP FLYGT SUBMERSIBLE PUMPS (2)
2	REINFORCED FIBERGLASS WET WELL, 8' ID
3	6" SS VENT PIPE W/ SCREEN ASSEMBLY (SEE DETAIL 4, SHEET D3)
4	4" CHECK VALVE (SEE NOTE 1)
5	4" PLUG VALVE (SEE NOTE 1)
6	4" MAGNETIC FLOW METER SPOOL, FLANGED (BADGER METER OR APPROVED EQUAL), A MINIMUM 5 X PIPE DIAMETER PIPE CLEARANCE UPSTREAM OF THE METER IS REQUIRED
7	ADJUSTABLE SUPPORT (SEE NOTE 2 & DETAIL 2, SHEET D3)
8	ISO-RING WITH PRESSURE GAUGE ASSEMBLY, ASHCROFT TYPE 1279 GRADE 2A, 0-60 PSI, GLYCERIN LIQUID FILLED (SEE NOTE 1)
9	4" 90 DEG SS 316 OR EPOXY-COATED DUCTILE IRON ELBOW, FLG X FLG
10	4" 90 DEG DUCTILE IRON ELBOW, MJ x MJ
11	4" X 4" X 3" WYE, FLANGED
12	2" DUCTILE IRON PIPE, MJ x MJ
13	HANGER - LOCATE TO BE ACCESSIBLE BY HAND WITH HATCH OPEN PER MANUFACTURER
14	4' X 4' 300 PSF RATED ACCESS DOOR W/ SAFETY GRATE
15	NEMA 4X LIFT STATION JUNCTION BOX
16	3" CLEANOUT WITH 3" GATE VALVE AND 3" STAINLESS STEEL CAMLOCK
17	4" 45 DEG DUCTILE IRON ELBOW, FLG X FLG
18	4" X 4" X 4" WYE, FLANGED
19	TRACER WIRE ACCESS BOX
20	4" X 6" REDUCER, DUCTILE IRON, FLG X MJ
21	4" DI RESTRAINED FLANGE COUPLING ADAPTER WITH STAINLESS STEEL FASTENERS (ROMAC OR EQUAL)
22	4" SS 316 OR EPOXY-COATED DUCTILE IRON PIPE, FLG X FLG
23	PORTABLE DAVIT CRANE (2000 LB LIFT MIN.)
24	2" SEWAGE AIR/VACUUM VALVE (APCO SERIES 401 OR EQUAL, SEE DETAIL 1, SHEET D3)
25	4" DISMANTLING JOINT
26	PIPE SLEEVE FOR FIBERGLASS (SEE DETAIL 3, SHEET D3)
27	6" AGGREGATE BASE COURSE (ABC)
28	4" THICK CRUSHED ROCK
29	PRE-CAST 12" BOTTOM FILLET, ANGLED (INSIDE PERIMETER OF WETWELL)
30	INTERMEDIATE BRACE REQUIRED FOR DISCHARGE DEPTHS EXCEEDING 12"
31	MOISTURE BARRIER UNDER CONCRETE SLABS
32	LEVEL TRANSDUCER (PRIMARY CONTROL), FLOATS AS BACKUP
33	CONDUIT SUPPORT BRACKET
34	PIPE SWAY BRACE (SEE DETAIL 5, SHEET D3)
35	PIPE SLEEVE FOR CONCRETE (SEE DETAIL 6, SHEET D3)
36	EPOXY GROUT BASE ELBOW PEDESTAL (SEE DETAIL 7, SHEET D4)
37	6" CONCRETE SLAB, WITH REINFORCEMENT (CONTRACTOR SHALL PROVIDE DESIGN SUBMITTAL BY PROFESSIONAL ENGINEER WITH P.E. STAMP SHOWING REINFORCEMENT DESIGN AND EXTRA REINFORCEMENT AROUND ACCESS LID)
38	6" CONCRETE SLAB, REINFORCEMENT WITH NO. 5 REBAR AT 12" O.C. EACH WAY
39	FLOW METER CONDUITS (SIZED BY CONTRACTOR'S ELECTRICIAN)
40	LEVEL FLOAT SWITCHES W/ SST HANGER MOUNTING BRACKET W/SST STUDS SHALL BE GLASSED FUSED TO FIBERGLASS LID. AFFIX FLOAT SWITCH HANGER TO MOUNTING BRACKET WITH SST NUTS. (SECONDARY CONTROL)
41	6" DUCTILE IRON PIPE, MJ x MJ (RESTRAIN PIPE JOINTS AS NECESSARY)
42	6" 45 DEG. DUCTILE IRON ELBOW, MJ X MJ
43	4" SS 316 OR EPOXY-COATED DUCTILE IRON PIPE, FLG X MJ

NOTES:
1) STANDARD COMPONENTS LISTED
FROM: PAO/SFC SANITATION FACILITIES
TECHNICAL PROVISIONS, PUBLISHED
MARCH 2019.
REFER TO SECTION 42 WHEN
EVALUATING APPROVED EQUAL.

2) PER SECTION 42.02.E.07, THE
ADJUSTABLE SUPPORTS SHALL BE
EQUAL TO:

EQUAL TO:
A) CLOW F-1608
B) ITT GRINNELL FIGURE 264
C) FABRICATED FROM COLD
GALVANIZED STEEL

A circular stamp with the text "Professional Engineers Ontario" around the top edge and "CERTIFICATE NO." in the center. A blue ink signature is written across the center of the stamp, and the date "03/31/2025" is written in blue ink at the bottom of the stamp.

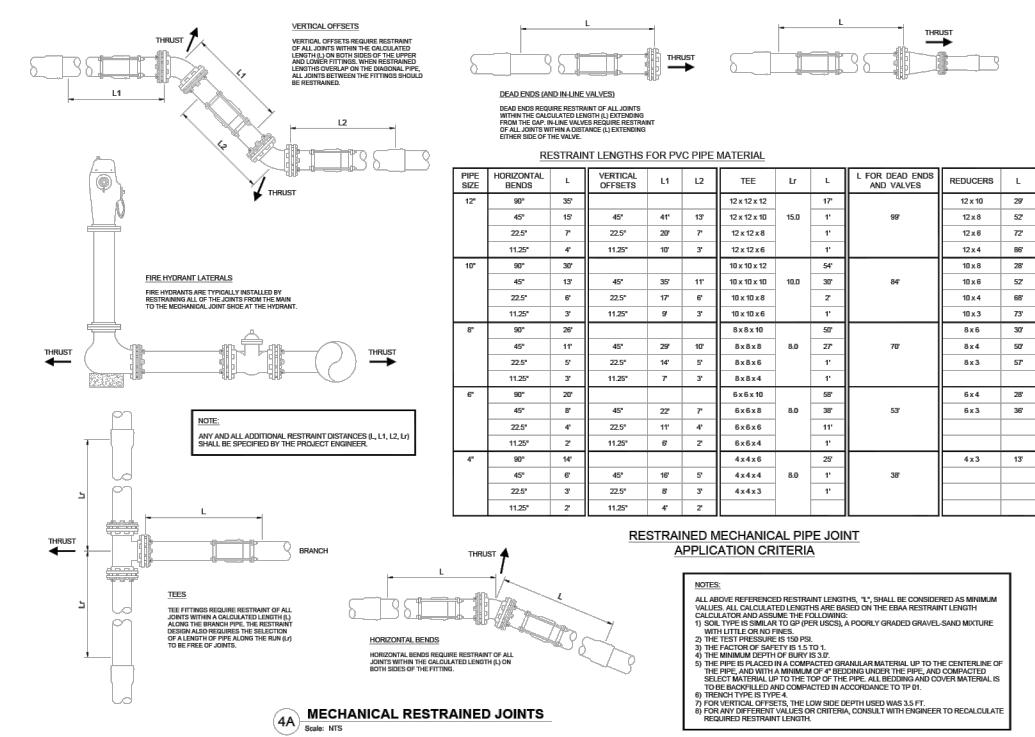
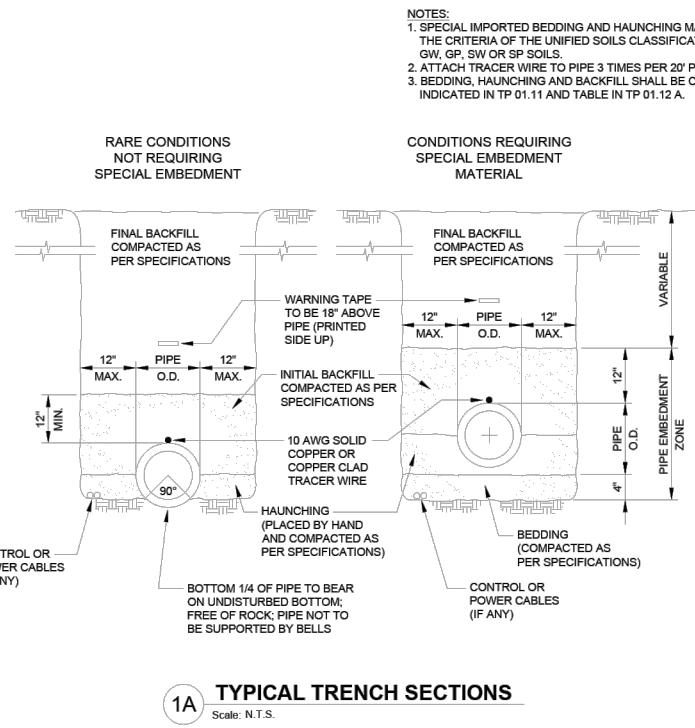
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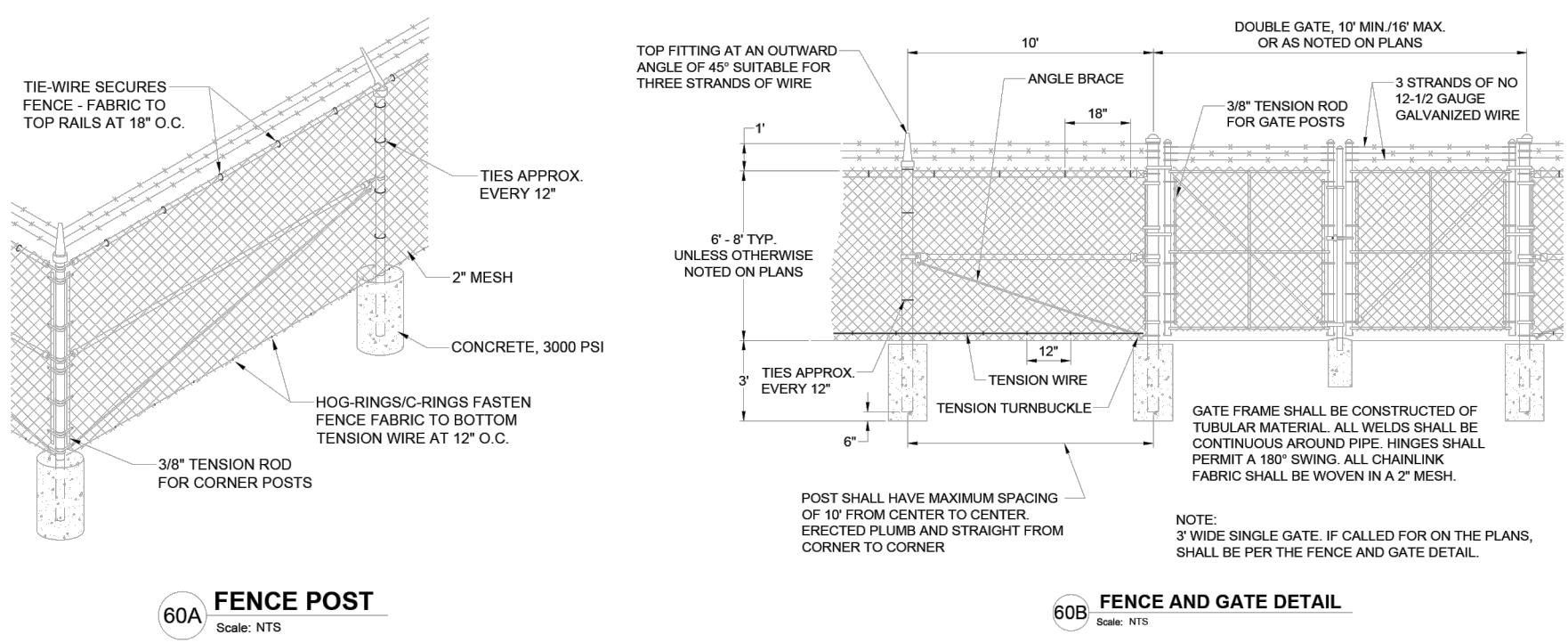
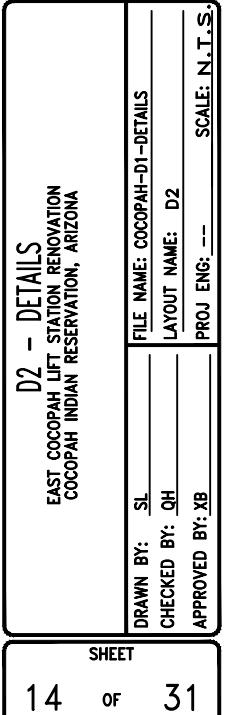
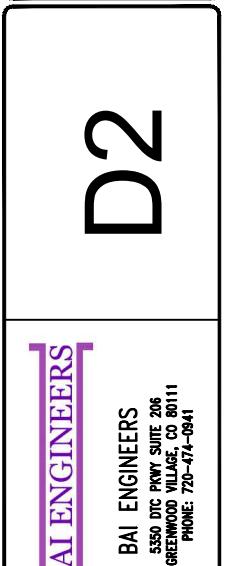
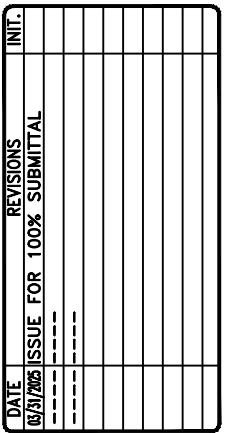
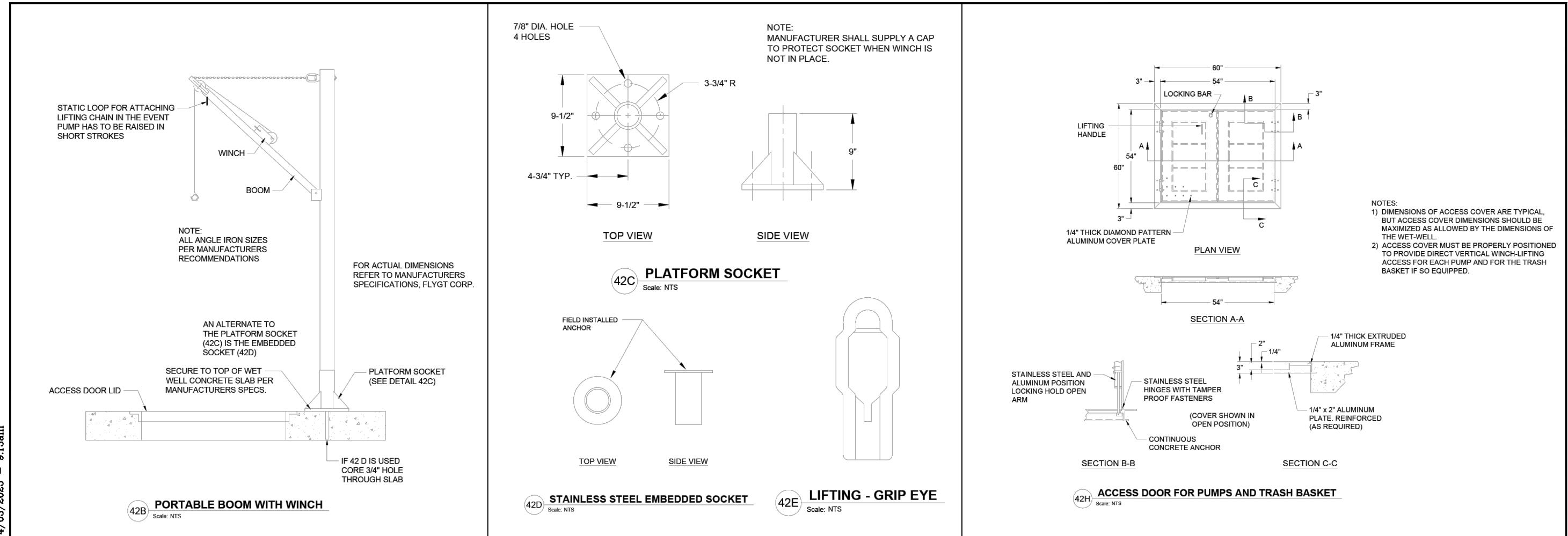
P2 - PROPOSED LIFT STATION - EQUIPMENT PLAN	
EAST COCOPAH LIFT STATION RENOVATION	
COCOPAH INDIAN RESERVATION, ARIZONA	
DRAWN BY: SL	FILE NAME: COCOPAH-D1-DETAILS
CHECKED BY: QH	AYOUT NAME: P2
APPROVED BY: XB	PROJ. ENG: ---
	SCALE: N. T. S.

PP2 - PROPOSED LIFT STATION - EQUIPMENT PLAN EAST COCOPAH LIFT STATION RENOVATION

BAI ENGINEERS
5550 DTC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-5941

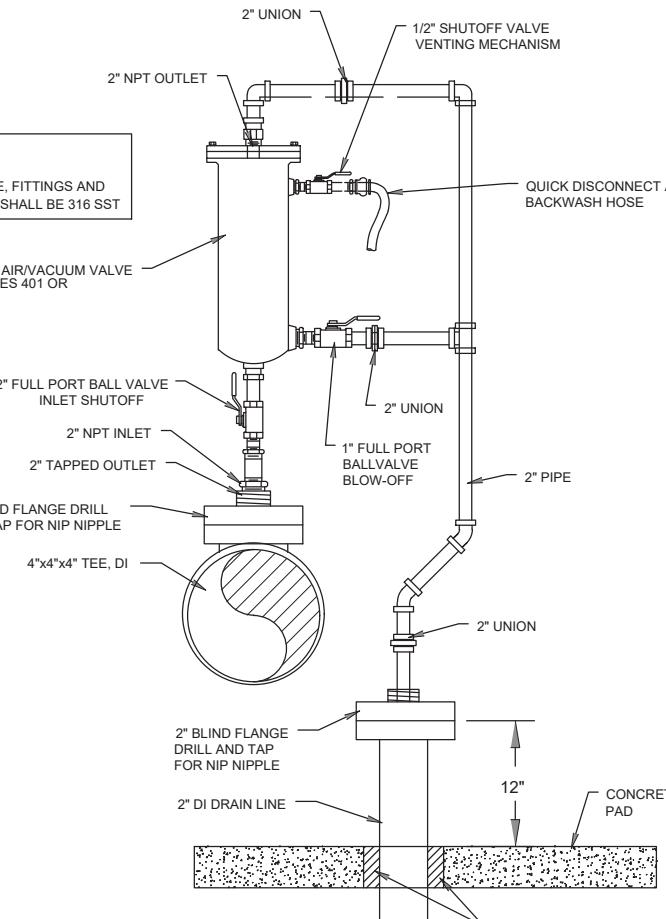
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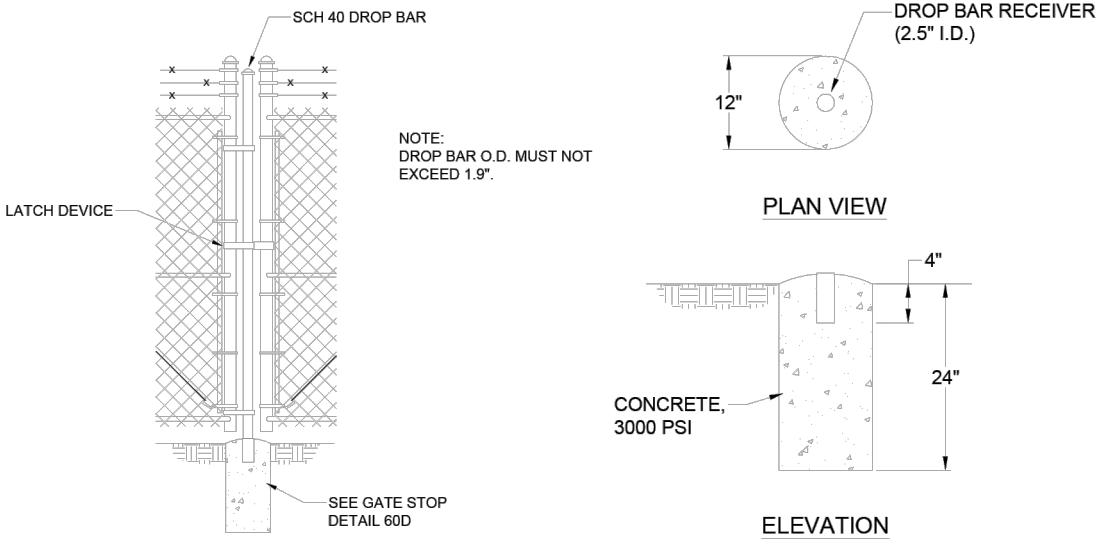
Expires: 03-31-2025

DETAIL 1 - SEWAGE AIR/VACUUM VALVE DETAIL
N.T.S.

60C DROP BAR LOCKING DEVICE

Scale: N.T.S.

NOTE:
DROP BAR O.D. MUST NOT
EXCEED 1.9".

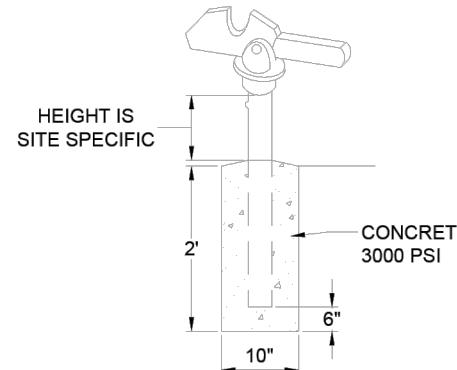


60D GATE STOP

Scale: N.T.S.

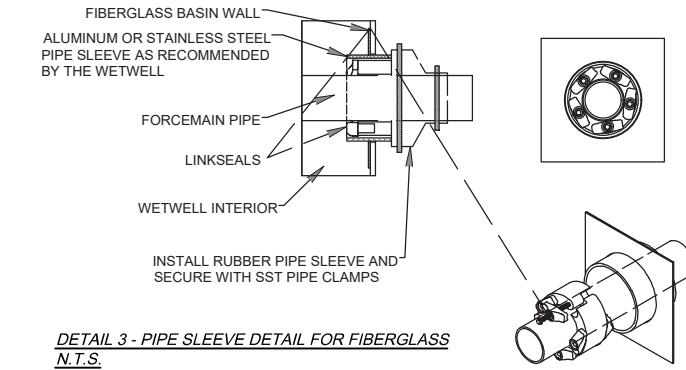
SEE GATE STOP
DETAIL 60D

ELEVATION

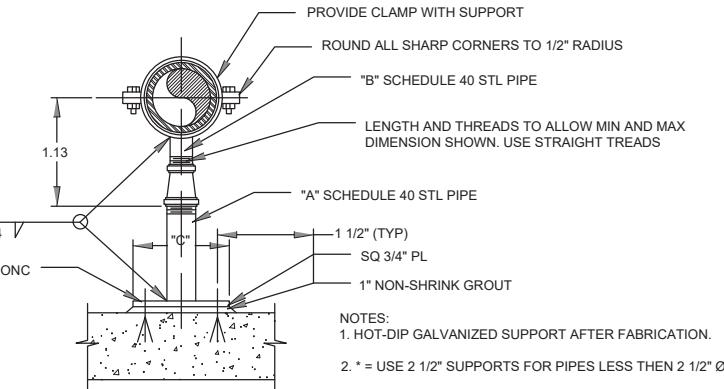
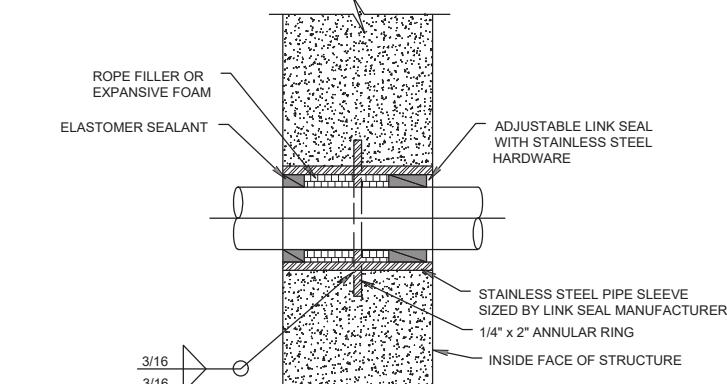


NOTES:

1. CONTRACTOR SHALL UTILIZE EXISTING WETWELL MANUFACTURER (L.F. MANUFACTURER, INC., GIDDINGS, TX) OR MANUFACTURER'S CERTIFIED REPRESENTATIVE TO GLASS FUSE THE SLEEVES TO THE WETWELL WALLS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. NO REPAIRS, PENETRATIONS OR PROTRUSIONS TO THE EXISTING FIBERGLASS WETWELL SHALL BE MADE BY ANYONE OTHER THAN THE WETWELL MANUFACTURER OR MANUFACTURER'S CERTIFIED REPRESENTATIVE.
3. ALL PIPE SLEEVE FOR FORCEMAIN LINES AND DRAIN LINES SHALL BE GLASS FUSED TO WALL OF FIBERGLASS WETWELL MANUFACTURER'S RECOMMENDATIONS.
4. THE FIBERGLASS WETWELL SHALL BE CLEANED AND PREPARED IN AND AROUND THE WALL PENETRATIONS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS TO FULLY SECURE THE SLEEVES.
5. ALL LINKSEAL HARDWARE SHALL BE NON CORROSIVE STAINLESS STEEL MATERIALS.
6. LINKSEALS SHALL BE INSTALLED IN ACCORDANCE WITH LINKSEAL MANUFACTURER'S RECOMMENDATIONS.

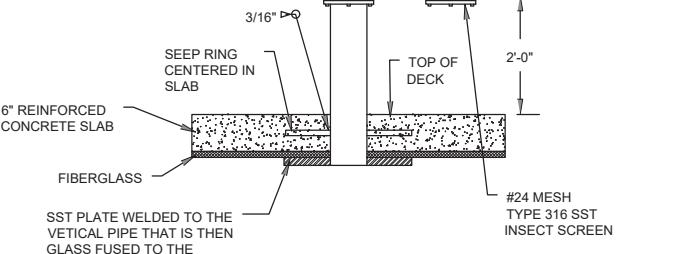
DETAIL 4 - VENT PIPE DETAIL
N.T.S.

SIZE OF SUPPORT PIPE **	PIPE SIZE "A"	PIPE SIZE "B"	"C"	"D"	
				MINIMUM	MAXIMUM
2 1/2"	2 1/2	1 1/2	12	8	13
3	2 1/2	1 1/2	12	8 1/2	13 1/2
3 1/2	2 1/2	1 1/2	12	8 1/2	13 1/2
4	3	2 1/2	12	9 1/2	14
6	3	2 1/2	12	10 1/2	15 1/2
8	3	2 1/2	12	11 1/2	16 1/2
10	3	2 1/2	12	13 1/2	18 1/2
12	3	2 1/2	12	15	19 1/2
14	4	3	12	16 1/2	20 1/2
16	4	3	12	17 1/2	22 1/2
18	6	3 1/2	14	19 1/2	24
20	6	3 1/2	14	21	25 1/2
24	6	4	14	23 1/2	28 1/2
30	6	4	14	27	31 1/2
32	6	4	14	28 1/2	32 1/2
36	6	4	14	30 1/2	34 1/2

DETAIL 5 - PIPE SWAY BRACE DETAIL
N.T.S.

NOTES:

1. CONTRACTOR TO VERIFY AND COORDINATE LOCATION OF PIPE SLEEVE WITH PRECAST CONCRETE MANUFACTURER.
2. IN WALLS THICKER THAN 12", LINK SEAL SHALL BE INSTALLED AT BOTH ENDS OF WALL SLEEVE.
3. WHERE OUTSIDE FACE OF STRUCTURE IS ABOVE GRADE, FILL THE OUTSIDE 2" OF THE SLEEVE WITH NON-SHRINK GROUT.

DETAIL 7 - VENT PIPE DETAIL
N.T.S.

D3 - DETAILS
EAST COCOPAH LIFT STATION RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA

DRAWN BY: SL	FILE NAME: COCOPAH-D1-DETAILS
CHECKED BY: QH	LAYOUT NAME: D3
APPROVED BY: XB	PROJ ENG: --
	SCALE: N.T.S.

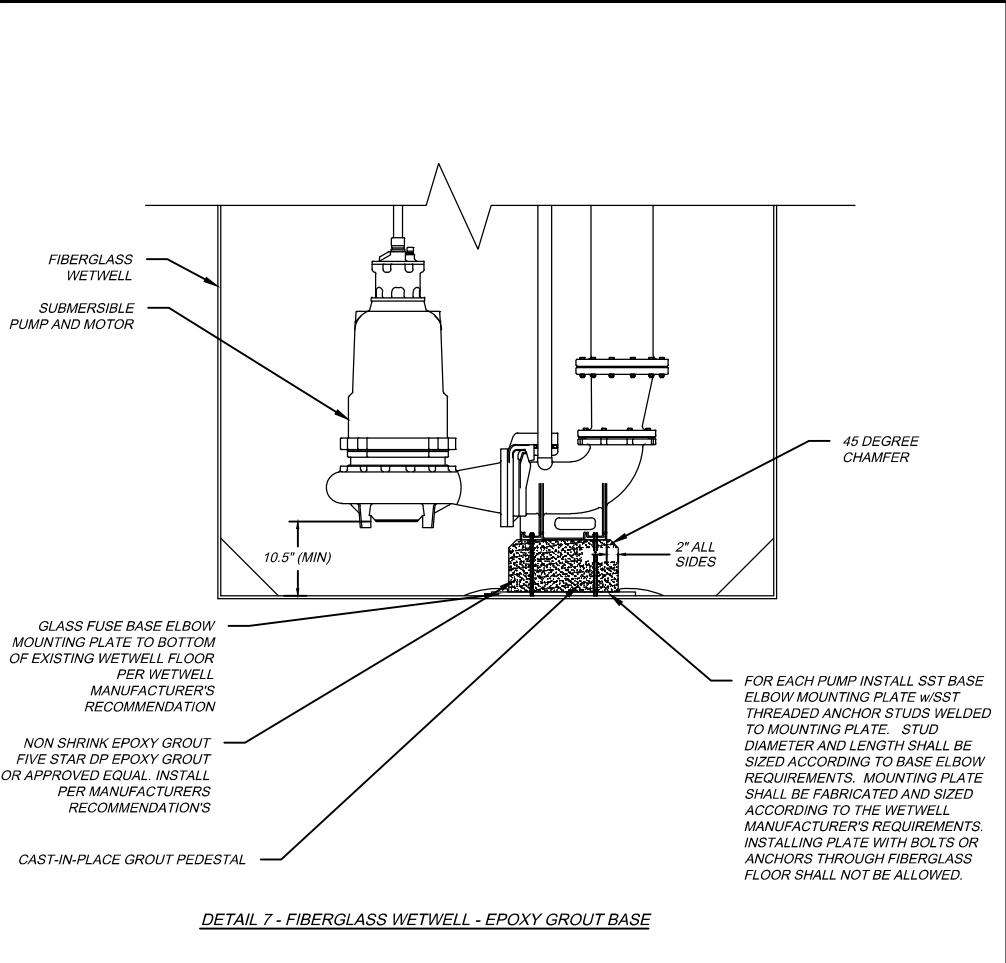
BAI ENGINEERS
5550 DTC PKWY SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-3541



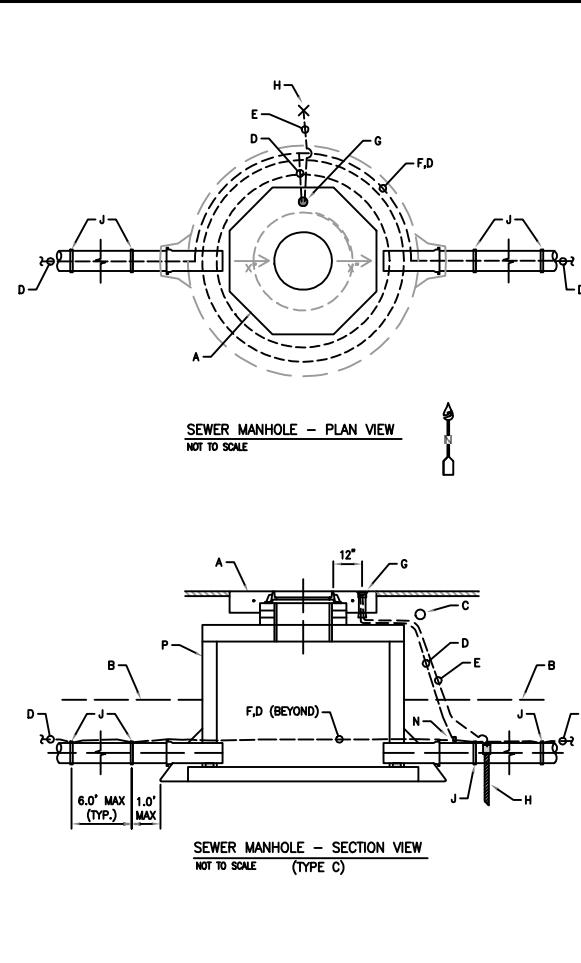
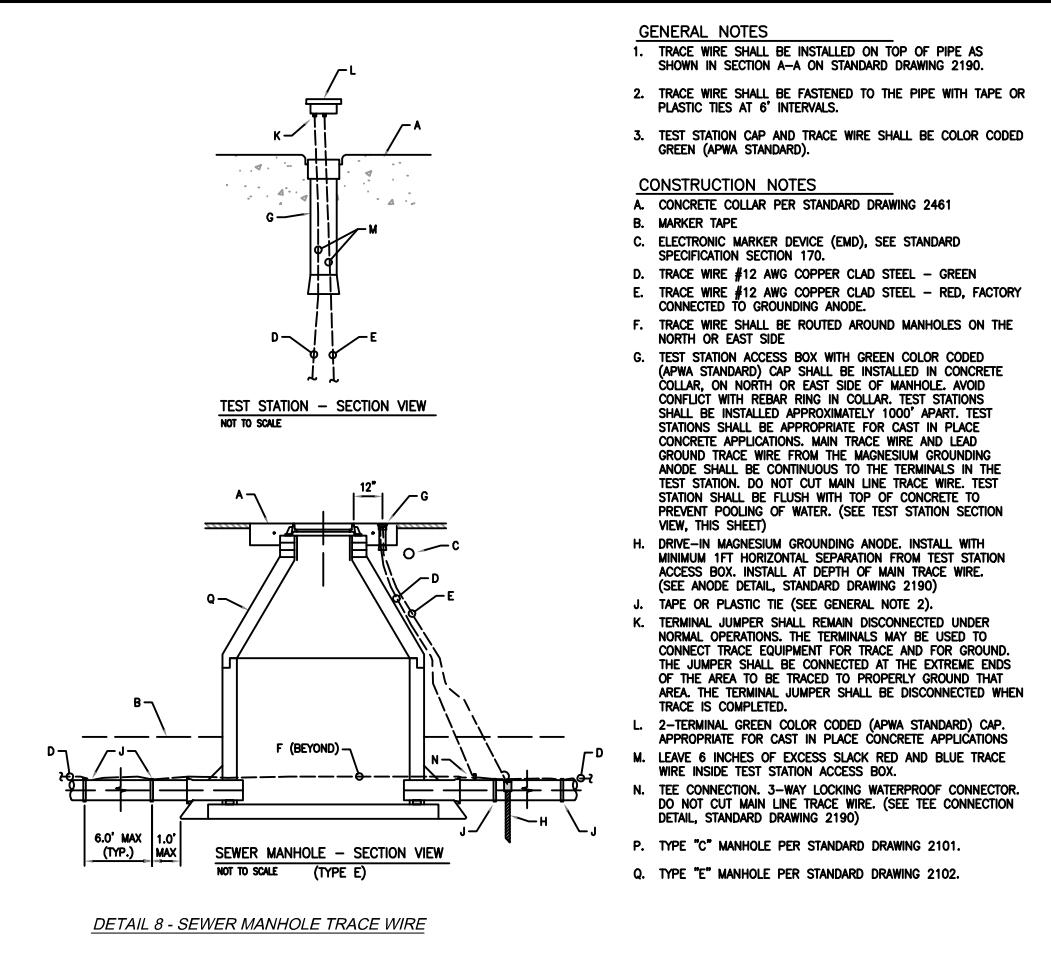
D3

DATE	REVISIONS
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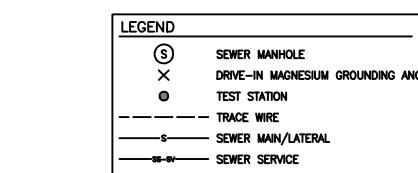
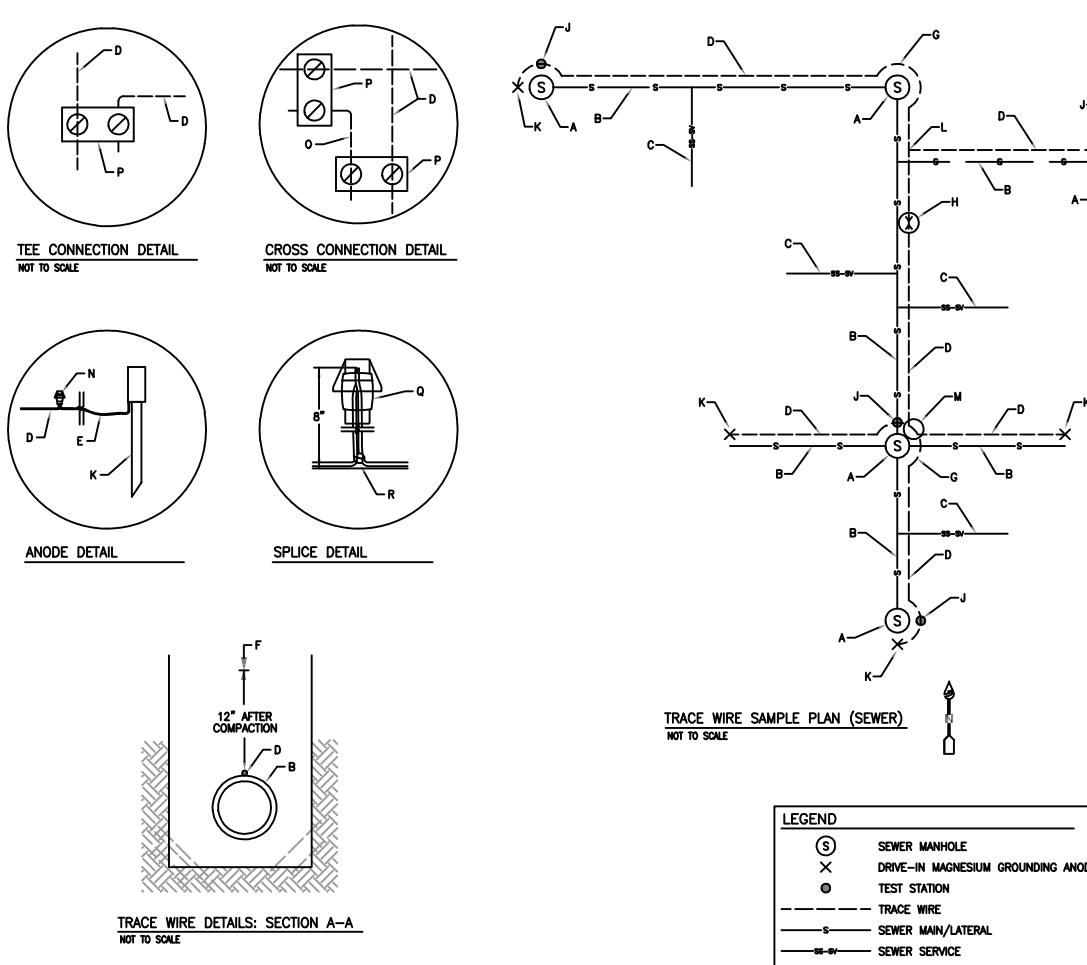
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DETAIL 7 - FIBERGLASS WETWELL - EPOXY GROUT BASE

SEWER MANHOLE - PLAN VIEW
NOT TO SCALESEWER MANHOLE - SECTION VIEW
NOT TO SCALE (TYPE C)TEST STATION - SECTION VIEW
NOT TO SCALESEWER MANHOLE - SECTION VIEW
NOT TO SCALE (TYPE E)

DETAIL 8 - SEWER MANHOLE TRACE WIRE

TRACE WIRE DETAILS: SECTION A-A
NOT TO SCALE

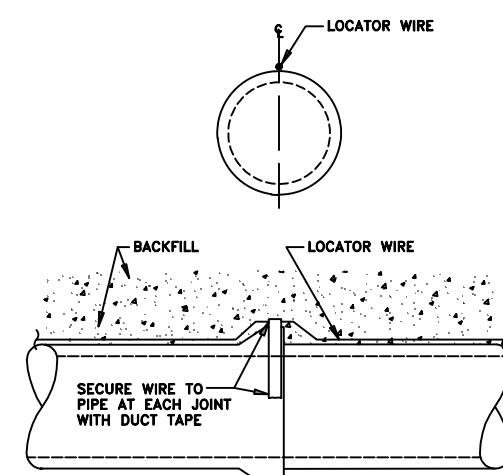
DETAIL 9 - SEWER TRACE WIRE - SAMPLE PLAN

GENERAL NOTES

1. TRACE WIRE SHALL BE INSTALLED ON TOP OF PIPE AS SHOWN IN SECTION A-A.
2. TRACE WIRE SHALL BE FASTENED TO THE PIPE WITH TAPE OR PLASTIC TIES AT 6' INTERVALS.
3. TEST STATION CAP AND TRACE WIRE SHALL BE COLOR CODED GREEN (APWA STANDARD).

CONSTRUCTION NOTES

- A. CONCRETE COLLAR PER STANDARD DRAWING 2461
- B. MARKER TAPE
- C. ELECTRONIC MARKER DEVICE (EMD), SEE STANDARD SPECIFICATION SECTION 170.
- D. TRACE WIRE #12 AWG COPPER CLAD STEEL - GREEN
- E. TRACE WIRE #12 AWG COPPER CLAD STEEL - RED, FACTORY CONNECTED TO GROUNDING ANODE.
- F. TRACE WIRE SHALL BE ROUTED AROUND MANHOLES ON THE NORTH OR EAST SIDE
- G. TEST STATION ACCESS BOX WITH GREEN COLOR CODED (APWA STANDARD) CAP SHALL BE INSTALLED IN CONCRETE COLLAR, ON NORTH OR EAST SIDE OF MANHOLE. AVOID CONFLICT WITH REBAR RING IN COLLAR. TEST STATIONS SHALL BE INSTALLED APPROXIMATELY 1000' APART. TEST STATIONS SHALL BE APPROPRIATE FOR CAST IN PLACE CONCRETE APPLICATIONS. MAIN TRACE WIRE AND LEAD GROUND TRACE WIRE FROM THE MAGNESIUM GROUNDING ANODE SHALL BE CONTINUOUS TO THE TERMINALS IN THE TEST STATION. DO NOT CUT MAIN LINE TRACE WIRE. TEST STATION SHALL BE FLUSH WITH TOP OF CONCRETE TO PREVENT POOLING OF WATER. (SEE TEST STATION SECTION VIEW, THIS SHEET)
- H. DRIVE-IN MAGNESIUM GROUNDING ANODE. INSTALL WITH MINIMUM 1FT HORIZONTAL SEPARATION FROM TEST STATION ACCESS BOX. INSTALL AT DEPTH OF MAIN TRACE WIRE. (SEE ANODE DETAIL, STANDARD DRAWING 2190)
- I. TAPE OR PLASTIC TIE (SEE GENERAL NOTE 2).
- J. TERMINAL JUMPER SHALL REMAIN DISCONNECTED UNDER NORMAL OPERATIONS. THE TERMINALS MAY BE USED TO CONNECT TRACE EQUIPMENT FOR TRACE AND FOR GROUND. THE JUMPER SHALL BE CONNECTED AT THE EXTREME ENDS OF THE AREA TO BE TRACED TO PROPERLY GROUND THAT AREA. THE TERMINAL JUMPER SHALL BE DISCONNECTED WHEN TRACE IS COMPLETED.
- L. 2-TERMINAL GREEN COLOR CODED (APWA STANDARD) CAP. APPROPRIATE FOR CAST IN PLACE CONCRETE APPLICATIONS
- M. LEAVE 6 INCHES OF EXCESS SLACK RED AND BLUE TRACE WIRE INSIDE TEST STATION ACCESS BOX.
- N. TEE CONNECTION. 3-WAY LOCKING WATERPROOF CONNECTOR. DO NOT CUT MAIN LINE TRACE WIRE. (SEE TEE CONNECTION DETAIL, STANDARD DRAWING 2190)
- P. TYPE "C" MANHOLE PER STANDARD DRAWING 2101.
- Q. TYPE "E" MANHOLE PER STANDARD DRAWING 2102.



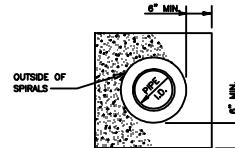
DETAIL 10 - LOCATOR WIRE



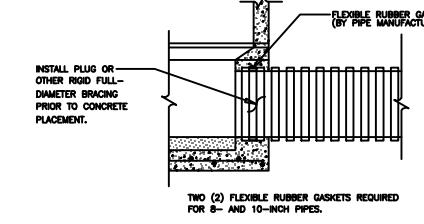
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D4 - DETAILS
EAST COCOPAH LIFT STATION RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA

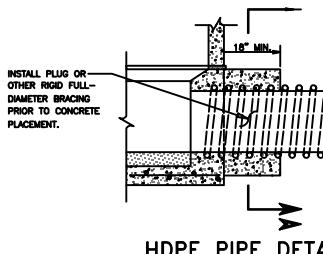
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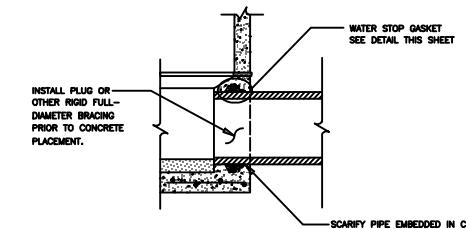
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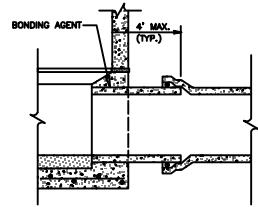
PVC PIPE (CORRUGATED) DETAIL



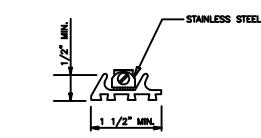
HDPE PIPE DETAIL



PVC PIPE (SMOOTH-WALL) DETAIL

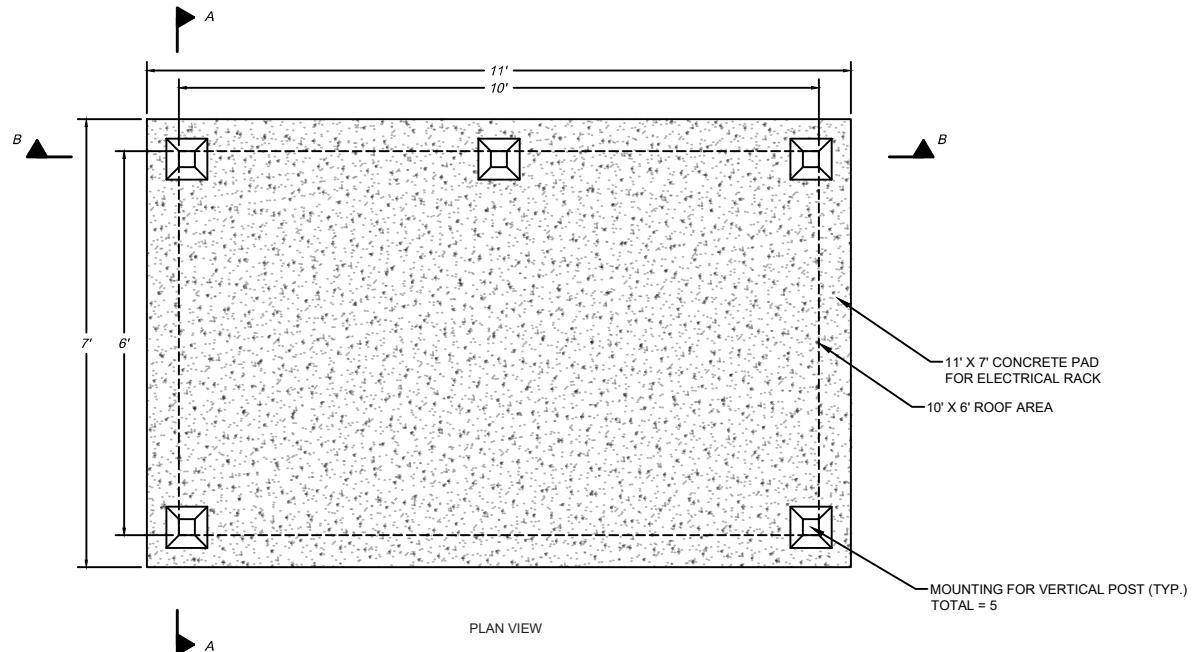


CONCRETE PIPE DETAIL

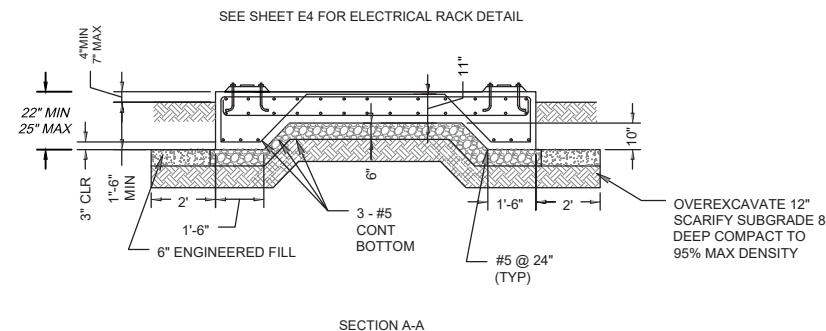


TYPICAL WATER STOP GASKET DETAIL

DETAIL 11 - CAST-IN-PLACE CONNECTIONS

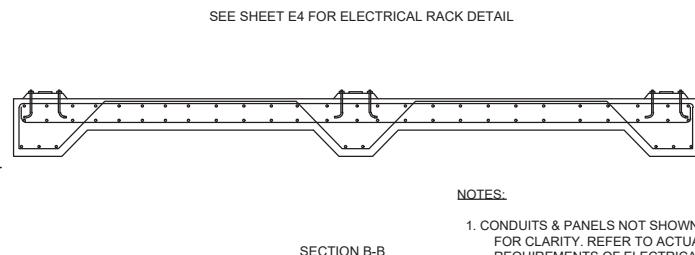


PLAN VIEW



SECTION A-A

DETAIL 12 - ELECTRICAL RACK CONCRETE DETAIL



SECTION B-B

NOTES:

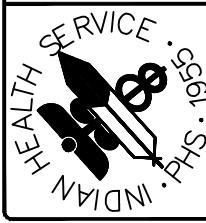
1. CONDUITS & PANELS NOT SHOWN FOR CLARITY. REFER TO ACTUAL REQUIREMENTS OF ELECTRICAL ENGINEER.
2. INSTALL NIPPLES BETWEEN EQUIPMENT AND WIREWAY SIZED AS REQUIRED TO ACCOMODATE CONDUCTORS PER NEC.

D5 - DETAILS
EAST COCOPAH LIFT STATION RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA

DRAWN BY: SL	FILE NAME: COCOPAH-D1-DETAILS
CHECKED BY: QH	LAYOUT NAME: D5
PROJ ENG: --	SCALE: N.T.S.
APPROVED BY: XB	PROJ. NO. 100PCT

BAI ENGINEERS
5550 DTC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-3541

BAI ENGINEERS



D5



Expires: 03-31-2026

ELECTRICAL SYMBOL LEGEND	
SYMBOL	DESCRIPTION
□	WALL OUTLET AND SURFACE MOUNTED FIXTURE
□	FLUORESCENT OUTLET AND FIXTURE
◆	SINGLE POLE SWITCH, FLUSH MOUNTED 48" A.F.F.
◆	DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
◆ WP	WEATHERPROOF DUPLEX CONVENIENCE OUTLET, 18" A.F.F.
◆ GFCI	DUPLEX CONVENIENCE OUTLET, GROUND FAULT CIRCUIT INTERRUPTER, 18" A.F.F.
○	JUNCTION BOX INSTALLED ABOVE LAY-IN CEILING WITH FLEXIBLE CONDUIT CONNECTION TO LAY-IN FIXTURES. MAXIMUM 4'0" LENGTH OF CONDUIT, WITH REQUIRED CONDUCTORS ALONG WITH GREEN GROUND CONDUCTOR
○	JUNCTION BOX FLUSH IN WALL, HEIGHT AS INDICATED ON DRAWINGS, WITH CONNECTION TO EQUIPMENT
—	CONCEALED BRANCH CIRCUIT WITH CONDUCTORS AS INDICATED. NEUTRAL, HOT, SWITCH LEG AND GROUND RESPECTIVELY
—	BRANCH CIRCUIT OR CONDUIT INSTALLED UNDERGROUND OR UNDER FLOOR
P2-2,4	HOMERUN TO PANELBOARD WITH BRANCH CIRCUIT NUMBERS INDICATED
○	SOLENOID VALVE
○	LIMIT SWITCH
○	PRESSURE TRANSMITTER
○	FIRE ALARM SMOKE AND HEAT DETECTOR, PHOTOELECTRIC TYPE, 120V AUX CONTACTS
○	MOTOR CONNECTION FOR FRACTIONAL HP MOTOR (1/3 HP OR LESS). PROVIDE THERMAL OVERLOAD SWITCH (WEATHERPROOF IF OUTSIDE) ADJACENT TO MOTOR UNLESS SWITCH IS SHOWN ELSEWHERE ON PLANS
○	MOTOR CONNECTION FOR MOTOR WITH HP INDICATED
○	DISCONNECT SWITCH, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
○	FUSED DISCONNECT SWITCH, FUSE, POLES AND RATING AS INDICATED OR AS REQUIRED, NEMA 3R IF INSTALLED OUTSIDE
○	COMBINATION MAGNETIC MOTOR CONTROLLER/DISCONNECT SWITCH. SIZE, POLES, FUSES AND OVERLOADS PER MOTOR SERVED
○	MAGNETIC MOTOR CONTROLLER, SIZE AND POLES PER MOTOR SERVED
○	TRANSFORMER, DRY TYPE, SIZE AS INDICATED
○	THERMOSTAT(M), 48" A.F.F.
—	120V PANELBOARD, REFER TO PANEL SCHEDULE
—	277V PANELBOARD, REFER TO PANEL SCHEDULE
○	SPECIAL PURPOSE CABINET, AS INDICATED ON DRAWINGS
○	INTRUSION ALARM DOOR CONTACT MAGNETIC
—	NORMALLY OPEN CONTACT
—	NORMALLY CLOSED CONTACT
○	CONTACTOR
—	MOTOR OVERLOADS
○	RED PILOT LIGHT
○	GREEN PILOT LIGHT
○	TRANSFORMER
○	RELAY
—	SWITCH
○	FUSE(S)
○	CIRCUIT BREAKER
○	PLC
○	PROGRAMMABLE LOGIC CONTROLLER
○	RTU
○	REMOTE TERMINAL UNIT
○	THERMOSTAT
○	WP
○	WEATHERPROOF (NEMA 3R)

NOTES:

- LIGHTING FIXTURES ARE OF TYPE AS INDICATED ON LIGHT FIXTURE SCHEDULE U.N.O.
- MOUNTING HEIGHTS FOR DEVICES CALLED OUT AT 18" A.F.F. ARE TO THE BOTTOM OF THE DEVICE UNLESS OTHERWISE NOTED.
- MOUNTING HEIGHTS FOR DEVICES CALLED OUT AT 48" A.F.F. ARE TO THE TOP OF THE DEVICE UNLESS OTHERWISE NOTED.
- ANY SPECIFIC DETAILS ABOVE (MOUNTING HEIGHTS, PART NUMBERS, CONNECTION METHODS, ETC.) MAY BE MODIFIED OR REPLACED BY INFORMATION ON PLANS, SCHEDULES, DETAILS, RISERS, ETC. DETAILS NOT SPECIFICALLY MODIFIED REMAIN AS GIVEN ABOVE.

GENERAL NOTES

SPECIFICATIONS

- IF THERE IS A CONFLICT BETWEEN PLANS/SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS FOR ANY DEVICE, PART, OR MATERIAL USED IN THE PROJECT, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY IN WRITING THE ENGINEER FOR CLARIFICATION.
- THE CONTRACTOR SHALL FAMILIARIZE HIM/HERSELF WITH THE PLANS, AND THE SITE CONDITIONS PRIOR TO BID OPENING AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY AMBIGUITIES, CONTRADICTIONS OR IRREGULARITIES IN THE PLANS.
- IF, DURING BIDDING OR CONSTRUCTION, THE CONTRACTOR IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE PLANS, SPECIFICATIONS, OR OTHER CONTRACT DOCUMENTS, OR DISCREPANCIES IN OR POSSIBLE OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS, THEY SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND REQUEST AN INTERPRETATION OF CORRECTION THEREOF. DURING THE BIDDING PROCESS AN ADDENDUM (IF NEEDED) WILL BE ISSUED.
- THE CONTRACT, IF AWARDED, WILL BE ON THE BASIS OF MATERIAL AND EQUIPMENT SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS WITHOUT CONSIDERATION OF POSSIBLE SUBSTITUTE OR "OR EQUAL" ITEMS. WHEREVER A BRAND NAME IS SPECIFIED OR DESCRIBED IN THE BIDDING DOCUMENTS A SUBSTITUTE OR "OR EQUAL" ITEM OF MATERIAL OR EQUIPMENT MAY BE FURNISHED OR USED BY CONTRACTOR IF ACCEPTABLE TO ENGINEER. APPLICATION FOR SUCH ACCEPTANCE WILL NOT BE CONSIDERED BY ENGINEER UNTIL AFTER THE EFFECTIVE DATE OF AGREEMENT. THE PROCEDURE FOR SUBMISSION OF ANY SUCH APPLICATION BY CONTRACTOR AND CONSIDERATION BY ENGINEER IS SET FORTH IN THE GENERAL CONDITIONS.

EXISTING UTILITIES & OBSTACLES TO WORK

- THE CONTRACTOR IS RESPONSIBLE TO INSTALL ALL ITEMS DESCRIBED IN THESE PLANS IN A MANNER THAT PROTECTS THE EXISTING FACILITY. THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY IF HE IS UNABLE TO PERFORM THIS WORK WITHOUT DAMAGE TO THE EXISTING FACILITY. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING INFORMATION SHOWN ON THESE PLANS. DESIGN ELEMENTS OF THIS PROJECT WILL NOT CHANGE WITHOUT CHANGE ORDER UNLESS THE CONTRACTOR NOTIFIES THE ENGINEER IN A TIMELY MANNER REGARDING ITEMS DESCRIBED IN THIS NOTE. CHANGES IN ALIGNMENT CAUSED BY UNKNOWN OR UNANTICIPATED SITE CONDITIONS SHALL BE ACCOUNTED FOR BY THE APPROPRIATE UNIT PRICES, AS RECOMMENDED BY THE ENGINEER AND APPROVED BY THE OWNER.
- THE EXISTENCE, CONDITION AND LOCATION OF ANY UNDERGROUND UTILITIES OR STRUCTURES SHOWN IN THESE PLANS WAS OBTAINED BY A CAREFUL SEARCH OF AVAILABLE RECORDS. THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO PROTECT THE UTILITIES SHOWN, AND ANY OTHER LINES OR STRUCTURES NOT SHOWN ON THESE PLANS, AND IS RESPONSIBLE FOR THEIR LOCATING, PROTECTION OF, OR ANY DAMAGE TO THESE LINES OR STRUCTURES. THIS DOES NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES AND OBTAIN LINE SPOTS.
- THE FOLLOWING IS A LIST OF POSSIBLE OBSTRUCTIONS AND SHALL NOT BE CONSIDERED A COMPLETE LIST OF POSSIBLE OBSTRUCTIONS: EXISTING UTILITIES, STRUCTURE, GEOTECHNICAL FEATURES, ALL CONDUIT, CABLES, PIPES, WATERLINES, SEWER LINES, GAS LINES, POWER LINES, TELEPHONE AND TELEGRAPH LINES, TREES, MONUMENTS, TRAFFIC CONTROL DEVICES AND OTHER STRUCTURES, BOTH BELOW AND ABOVE GROUND.
- CONTRACTOR SHALL BE HELD RESPONSIBLE FOR COSTS OF REPAIR OF ANY AND ALL DAMAGE TO ANY UTILITY (WHICH IS PREVIOUSLY KNOWN AND DISCLOSED TO HIM BY THE UTILITY OR SHOWN ON THESE PLANS) AS MAY BE CAUSED BY HIS OPERATIONS.
- FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT ARIZONA 811 WHICH CAN BE CONTACTED AT (602) 659-7500, FOR LOCATION OF EXISTING UTILITIES.
- CONTRACTOR SHALL GIVE ALL PUBLIC AND PRIVATE UTILITY COMPANIES NOTICE AS SOON AS POSSIBLE, IN NO EVENT LESS THAN FORTY EIGHT (48) HOURS, FOR ANY WORK THAT IS UNDERSTOOD TO INTERFERE WITH THE SERVICE OF ANY EXISTING PUBLIC OR PRIVATE UTILITY. IF SUCH PUBLIC OR PRIVATE UTILITY DOES NOT COOPERATE FOR THE PROTECTION OF ITS SERVICES, CONTRACTOR SHALL NOTIFY ENGINEER.
- CONTRACTOR SHALL IMMEDIATELY REPORT ANY DAMAGES TO PUBLIC OR PRIVATE PROPERTY TO THE OWNER OF THE PROPERTY INVOLVED AND TO THE ENGINEER. CONTRACTOR SHALL REPAIR OR RESTORE AT HIS OWN EXPENSE ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY, FOR WHICH THEY ARE DIRECTLY OR INDIRECTLY RESPONSIBLE, TO A CONDITION EQUAL TO THAT EXISTING BEFORE DAMAGE. CONTRACTOR SHALL PROMPTLY NOTIFY HIS INSURANCE CARRIER OF SUCH DAMAGE. IF CONTRACTOR FAILS TO GIVE SUCH NOTICE TO HIS INSURANCE CARRIER OR REFUSES TO EFFECT SUCH REPAIRS OR RESTORATION UPON RECEIPT OF NOTICE, THE ENGINEER MAY CAUSE SUCH REPAIRS OR RESTORATION AND DEDUCT THE COST THEREOF FROM MONEY DUE, OR WHICH MAY BECOME DUE, TO THE CONTRACTOR.
- CONTRACTOR IS RESPONSIBLE FOR RECORDING EXISTING CONDITIONS IN ACCORDANCE WITH THE SUPPLEMENTARY CONDITIONS OF THE CONTRACT BEFORE CONSTRUCTION BEGINS. THE RECORD OF EXISTING CONDITIONS SHALL BE USED AS THE "EQUAL CONDITION BEFORE DAMAGE" IN THE EVENT OF DAMAGE TO PUBLIC OR PRIVATE PROPERTY. CONTRACTOR FAILURE TO RECORD EXISTING CONDITIONS WILL MAKE THE OWNERS CLAIM OF "EQUAL CONDITION BEFORE DAMAGE" THE STANDARD THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING AND THE ENGINEER WILL BE IN THE POSITION OF NOT BEING ABLE TO SUPPORT THE CONTRACTOR IN THE MEDIATION OF ANY DISPUTE.
- UTILITY LOCATION CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF LOCATION OF ALL EXISTING UTILITIES.

SITE CONDITIONS

- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL FACILITIES ADJACENT TO THE CONSTRUCTION AREA.
- EPA STORM WATER DISCHARGE REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE TO APPLICABLE PORTIONS OF THE EPA STORM WATER DISCHARGE REGULATIONS.
- UST ABATEMENT. THE CONTRACTOR SHALL USE WATERING EQUIPMENT FOR DUST POLLUTION ABATEMENT AS REQUIRED OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND SUPPLYING WATER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.

SITE DESIGN

- SUBGRADE. ALL ELECTRICAL SUBGRADE AND TRENCH BACKFILL SHALL BE COMPAKTED TO 95 % OF STANDARD PROCTOR. ALL SUBGRADE AND BACKFILL SHALL BE COMPAKTED IN MAXIMUM 8" LOOSE LIFTS. MOISTURE CONTENT AT THE TIME OF COMPAKTION SHALL NOT EXCEED OPTIMUM OR BE LESS THAN 5 PERCENTAGE POINTS BELOW OPTIMUM. DRIVEWAYS, APRONS, FILLETS, CURB AND GUTTER, AND OTHER CONCRETE PAVEMENT SHALL BE PLACED ON 6" OF COMPAKTED SUBGRADE.
- RESTORE SURFACE AT TRENCH TO EXISTING CONDITIONS.

COMMUNICATION

- CONTRACTOR SHALL KEEP THE OWNER AND THE ENGINEER UPDATED WEEKLY ON THE CONSTRUCTION SCHEDULE AND/OR PHASE SCHEDULE, AND PROGRESS TO DATE.

STAGING STORAGE & DEBRIS DISPOSAL

- DEBRIS GENERATED BY CONSTRUCTION ACTIVITIES SHALL BE DISPOSED OF AT A PERMITTED LANDFILL OR OTHER DULY CERTIFIED REFUSE FACILITY. THE DISPOSAL OF DEBRIS IS NOT A PAY ITEM.

RECORD DRAWINGS

- THE CONTRACTOR SHALL PROVIDE A RECORD SKETCH ON THESE PLANS FOR THE AS-CONSTRUCTED CONDITIONS.

PHASE AND SCHEDULE

- CONTRACTOR SHALL PHASE AND SCHEDULE WORK IN SUCH A WAY AS TO PROVIDE MINIMAL POWER OUTAGES AT THE FACILITY. A PROJECT SCHEDULE SHALL BE SUBMITTED TO THE OWNER FOR REVIEW PRIOR TO ISSUANCE OF NOTICE-TO-PROCEED. CHANGES IN SCHEDULE SHALL BE PRESENTED TO OWNER AND ENGINEER AT LEAST 7 DAYS PRIOR TO PROPOSED IMPLEMENTATION. THESE SCHEDULES, SCHEMATICs AND DIAGRAMS SHALL BE UPDATED WEEKLY AS THE WORK PROGRESSES. MOST CHANGE OVER SHALL BE DONE ON WEEKENDS OR AFTER HOURS.

SUBMITTALS

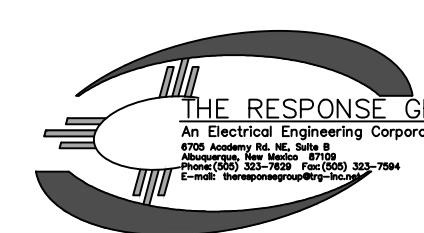
- CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ALL EQUIPMENT, MATERIALS, PROCESSES AND SCHEDULES AND AS REQUESTED BY ENGINEER.

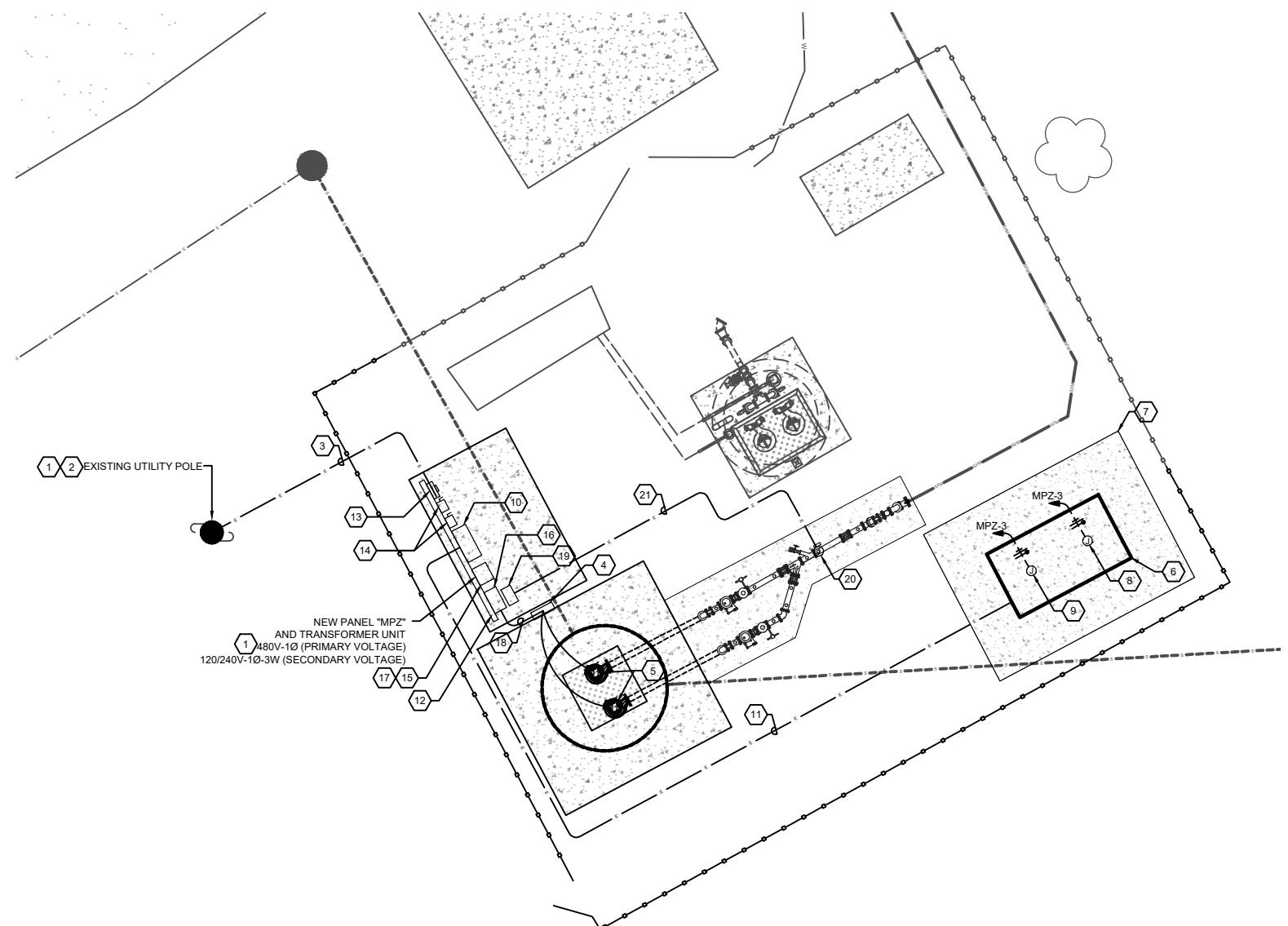
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03/17/2025	---	---	---

BAI ENGINEERS
5550 DTC PKWY SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0041



FILE NAME: E1 ELECTRICAL LEGEND AND NOTES	SCALE: N.T.S.
LAYOUT NAME: E1	---
PROJ ENG: --	---
DRAWN BY: SL	CHECKED BY: QH
APPROVED BY: XB	---





WARNING

IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE UTILITY OR PIPELINE COMPANY, THE OWNER OR BY OTHERS, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES.

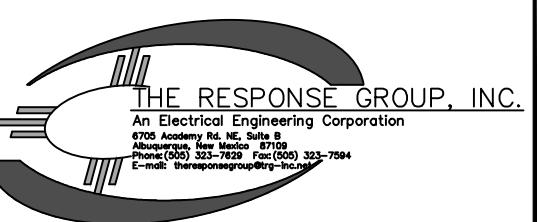
THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF TO THE LOCATION OF ANY UTILITY LINE, PIPELINE OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE OF ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES, AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES IN PLANNING AND CONDUCTING EXCAVATION, WHETHER BY CALLING OR NOTIFYING THE UTILITIES, COMPLYING WITH "NM ONE CALL" PROCEDURES, OR OTHERWISE.

GENERAL NOTES

- A. REFER TO SHEET E1 FOR PROJECT GENERAL NOTES AND ELECTRICAL SYMBOL LEGEND.
- B. REFER TO SHEET E3 FOR POWER RISER DIAGRAMS AND PANEL SCHEDULES.
- C. ALL CONDUIT SHOWN DASHED SHALL BE BURIED A MINIMUM OF 36" BELOW FINISHED GRADE, ANY CONDUIT THAT COMES IN CONTACT WITH THE EARTH SHALL BE PVC, PVC COATED, OR DOUBLE LAPPED WRAPPED WITH SCOTCHWRAP-51.

KEYED NOTES

1. REFER TO "POWER RISER DIAGRAM ON SHEET E3 FOR ADDITIONAL INFORMATION.
2. NEW OVERHEAD THREE PHASE PRIMARY CONDUCTORS PROVIDED AND INSTALLED BY PNM. CONTRACTOR SHALL COORDINATE ALL REQUIRED WORK WITH PNM PRIOR TO COMMENCEMENT OF WORK.
3. NEW UNDERGROUND SERVICE CONDUIT AND CONDUCTORS ROUTED 36" BELOW FINISHED GRADE WITH RED WARNING TAPE BURIED 12" ABOVE CONDUIT. REFER TO "POWER RISER DIAGRAM" ON SHEET E3 FOR CONDUIT AND CONDUCTOR SIZES AND ADDITIONAL INFORMATION.
4. 20" x 20" x 8" NEMA 4X (STAINLESS STEEL) JUNCTION BOX PROVIDED BY PUMP SUPPLIER. JUNCTION BOX INCLUDES TERMINAL STRIPS FOR TERMINATION OF POWER CONDUCTORS AND CONTROL CABLEING FOR EACH PUMP. ALL WIRING (INCLUDING CONTROL CABLEING) WITHIN THIS JUNCTION BOX SHALL BE RATED FOR 600 VOLT MINIMUM.
5. (2) 11 HORSEPOWER SUBMERSIBLE PUMPS AND MOTORS LOCATED WITHIN WETWELL.
6. PROVIDE AND INSTALL A 30kW, 277/480V-3Ø, 60Hz, 1800 RPM, STANDBY ENGINE-GENERATOR IN A TYPE 2 SOUND ATTENUATING ENCLOSURE. DIESEL FUEL, COOLANT JACKET HEATER, EMERGENCY STOP SWITCH, AUXILIARY OUTPUT RELAYS, 100A/3P CIRCUIT BREAKER, COLD WEATHER OPTIONS, BATTERY RACK, BATTERY HEATER KIT, BATTERY CHARGER, OVERSIZED ALTERNATOR, AND 24-MONTH WARRANTY. PROVIDE AND INSTALL CONCRETE PAD. GENERATOR SHALL BE RATED FOR SITE ALTITUDE, AMBIENT TEMPERATURES, AND RELATIVE HUMIDITY, AS MANUFACTURED BY CUMMINS OR OWNER AND ENGINEER APPROVED EQUAL. COORDINATE EXACT LOCATION IN THE FIELD. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
7. PROVIDE AND INSTALL CONCRETE PAD FOR USE WITH ENGINE-GENERATOR. FINAL DIMENSIONS OF CONCRETE PAD SHALL BE COORDINATED PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ALL REQUIRED PENETRATIONS THROUGH CONCRETE PAD. REFER TO "ENGINE-GENERATOR CONCRETE PAD DETAIL" ON SHEET E4 FOR ADDITIONAL INFORMATION.
8. EXTEND A 120V DEDICATED CIRCUIT FROM JACKET HEATER TO PANEL AND CIRCUIT AS INDICATED.
9. EXTEND A 120V DEDICATED CIRCUIT FROM BATTERY CHARGER TO PANEL AND CIRCUIT AS INDICATED.
10. PROVIDE AND INSTALL A 480V, 100A, 3-POLE, AUTOMATIC TRANSFER SWITCH (ATS) IN A WEATHERPROOF ENCLOSURE. OPEN TRANSITION, MICROPROCESSOR CONTROLLED, AUXILIARY CONTACTS, MANUAL OPERATION HANDLES, LED INDICATORS AND DIGITAL PUSHBUTTON CONTROLS, NON-SWITCHED NEUTRAL, ATS BY CUMMINS OR OWNER AND ENGINEER APPROVED EQUAL. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
11. EXTEND ENGINE START SIGNAL FROM ATS TO ENGINE-GENERATOR CONTROL PANEL. PROVIDE AND INSTALL CONTROL CABLE IN CONDUIT. MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.
12. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW ELECTRICAL RACK FOR MOUNTING OF ELECTRICAL GEAR. REFER TO "ELECTRICAL RACK DETAIL" ON SHEET E3 FOR ADDITIONAL INFORMATION.
13. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW 200 AMP METER SOCKET PER PNM STANDARD METER DRAWING MS-2-6.3. COORDINATE ALL REQUIREMENTS WITH PNM PRIOR TO COMMENCEMENT OF WORK.
14. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW HEAVY DUTY, 100 AMP, 600 VOLT, 3-POLE (PLUS SOLID NEUTRAL), GROUND LUG, FUSIBLE DISCONNECT SWITCH IN A NEMA 3R ENCLOSURE. FUSIBLE DISCONNECT SWITCH SHALL BE SERVICE ENTRANCE RATED.
15. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW NEMA 5-20 GFCI TYPE RECEPTACLE IN A WEATHERPROOF WHILE IN USE ENCLOSURE. RECEPTACLE SHALL BE MOUNTED TO ELECTRICAL EQUIPMENT RACK.
16. PUMP CONTROLLER PROVIDED BY PUMP SUPPLIER. CONTRACTOR IS RESPONSIBLE FOR POWER FEED TO PUMP CONTROLLER. CONTROL CIRCUITING FROM INSTRUMENTATION (PROVIDED BY PUMP SUPPLIER) TO PUMP CONTROLLER. CONTRACTOR IS ALSO RESPONSIBLE FOR EXTENSION OF ALL POWER AND CONTROL CONDUCTORS FROM PUMP CONTROLLER TO JUNCTION BOX LOCATED NEAR WET WELL (KEYED NOTE 4).
17. PROVIDE AND INSTALL A NEW WEATHERPROOF TOGGLE SWITCH FOR MANUAL CONTROL OF LIGHT FIXTURE THAT IS MOUNTED TO THE UNDERSIDE OF THE ELECTRICAL RACK. REFER TO "ELECTRICAL RACK DETAIL" ON SHEET E4 FOR ADDITIONAL INFORMATION.
18. PROVIDE AND INSTALL (4) NEW CONDUITS BETWEEN THE PUMP CONTROLLER AND THE WET WELL JUNCTION BOX. (2) CONDUITS SHALL BE UTILIZED FOR POWER CONDUCTORS TO THE SUBMERSIBLE PUMPS, AND (2) CONDUITS SHALL BE UTILIZED FOR CONTROL CONDUCTORS. REFER TO "POWER RISER DIAGRAM" ON SHEET E3 FOR ADDITIONAL INFORMATION.
19. PROVIDE AND INSTALL A NEW FLOW METER DISPLAY UNIT ON ELECTRICAL EQUIPMENT RACK. EXTEND 3/4" CONDUIT BACK TO PANEL "MPZ" AND CONNECT TO CIRCUIT 5 AS SHOWN ON PANEL SCHEDULE ON SHEET E3. EXTEND 1" CONDUIT TO FLOW METER JUNCTION BOX AND MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM. REFER TO "ELECTRICAL RACK DETAIL" ON SHEET E3 FOR ADDITIONAL INFORMATION.
20. WEATHERPROOF JUNCTION BOX FOR CONNECTION TO FLOW METER. CONTRACTOR SHALL MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.
21. EXTEND 1" CONDUIT WITH COMMUNICATION CABLEING FROM FLOW METER DISPLAY UNIT TO FLOW METER. COMMUNICATION CABLEING TO BE SUPPLIED WITH FLOW METER. CONTRACTOR SHALL MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.



E2 - ELECTRICAL SITE PLAN
EAST COCOPAH LIFT STATION, RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA

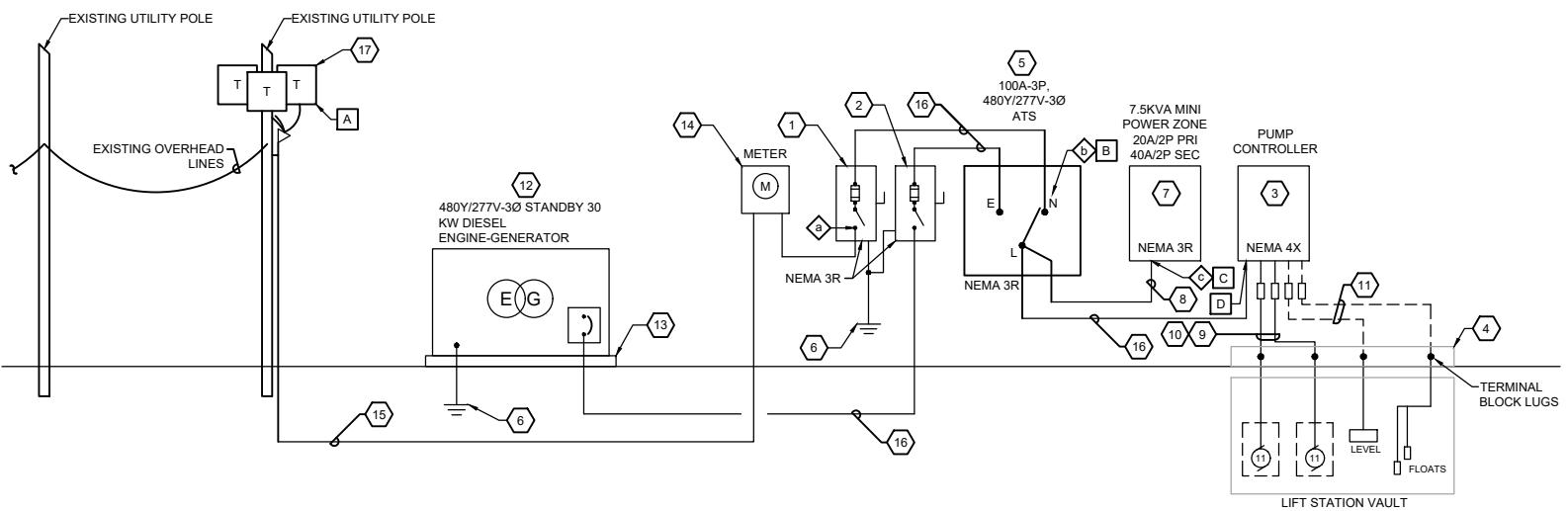
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CHECKED BY: QH LAYOUT NAME: E2
APPROVED BY: XB PROJ ENG: -- SCALE: N.T.S.

BAI ENGINEERS
5350 DTC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0541

E2

19 OF 31

DATE	ISSUE FOR 100% SUBMITTAL	REVISIONS	INIT.
04/03/2025			



POWER RISER DIAGRAM

LOAD SUMMARY - SERVICE DISC	
DESCRIPTION	
100A SERVICE FUSIBLE DISCONNECT SWITCH	
ESTIMATED DEMAND PER NEC 220	
11HP LIFT PUMP (10.8 KVA AT 125%)	13.5 KVA
11HP LIFT PUMP (10.8 KVA AT 100%)	10.8 KVA
PANEL "MPZ" CALCULATED LOAD	4.9 KVA
TOTAL ESTIMATED LOAD:	29.2 KVA
35 AMPERES AT 277/480V-3Ø-4W	
MINIMUM SERVICE CAPACITY =125% x TOTAL ESTIMATED LOAD	36.5 KVA
44 AMPERES AT 277/480V-3Ø-4W	
MINIMUM RECOMMENDED SERVICE SIZE =	100 AMPS

PANEL / LOAD SCHEDULE - NEW PANELBOARD "MPZ"												
LOCATION: Electrical Rack			VOLTAGE: 120/240V-1P, 3W			AMPACITY: 40 AMPERE			Main: 40A/2P MCB			
FED FROM: AUTOMATIC TRANSFER SWITCH			ENCLOSURE: NEMA 3R			MOUNTING: SURFACE			A/C: 18,000			
BKR SIZE	DESCRIPTION	DEMAND CODE	LOAD (VA)	Ckt #	LOAD (VA)		Ckt #	LOAD (VA)	DEMAND CODE	DESCRIPTION	BKR SIZE	
					PHASE A	PHASE B						
20A-1P	GENERATOR JACKET HEATER	EOP	1500	1	1700		2	200	LTG	LIGHTING	20A-1P	
20A-1P	GENERATOR BATTERY CHARGER	EOP	1500	3		3000	4	1500	REC	RECEPTACLE	20A-1P	
20A-1P	FLOW METER	EOP	100	5	100		6			SPARE	20A-1P	
1P	SPACE ONLY	EOP		7			8			SPACE ONLY	1P	
1P	SPACE ONLY	EOP		9			10			SPACE ONLY	1P	
					Total Phase Loads (VA):	1,800	3,000	Notes: 1. New Panelboard and Transformer Unit				
					Total Phase Loads (Amps):	15.0	25.0	2. 10-Circuit				
					Total Connected Loads (kVA):	4.8		3. Copper Neutral and Ground Bus Bars				
LOAD CALCULATIONS	Connected (kVA) by Type:				Estimated Demand (kVA) by Load Type							
	LTG	Lighting	0.2	Lighting at 125% (kVA)				0.3	Total Estimated Demand (kVA)			4.9
	REC	Receptacles	1.5	Receptacles:				1.5	amps at 120/240V-1 Phase (Amps)			20.2
	10kVA at 100% (kVA)				1.5	Panel Ampacity(Rating)			40			
	Rest at 50% (kVA)				0.0							
	EQP	Equipment	3.1	Eqp at 100% (kVA)				3.1	Spare Capacity			49.5%
	UMECH	Largest Mech		Largest at 125% (kVA)								
MECH	Mechanical		Rest at 100% (kVA)									

KEYED NOTES

1. PROVIDE AND INSTALL A NEW 600V, 100A-3P, HEAVY-DUTY, FUSIBLE DISCONNECT SWITCH IN NEMA 3R ENCLOSURE. FUSE AT 100 AMPERES WITH CLASS RK5 FUSES. SERVICE ENTRANCE RATED
2. PROVIDE AND INSTALL A NEW 600V, 100A-3P, HEAVY-DUTY, FUSIBLE DISCONNECT SWITCH IN NEMA 3R ENCLOSURE. FUSE AT 100 AMPERES WITH CLASS RK5 FUSES.
3. PUMP CONTROLLER PROVIDED BY PUMP SUPPLIER. CONTRACTOR IS RESPONSIBLE FOR POWER FEED TO PUMP CONTROLLER. CONTROL CIRCUITING FROM INSTRUMENTATION (PROVIDED BY PUMP SUPPLIER) TO PUMP CONTROLLER. CONTRACTOR IS ALSO RESPONSIBLE FOR EXTENSION OF ALL POWER AND CONTROL CONDUCTORS FROM PUMP CONTROLLER TO JUNCTION BOX LOCATED NEAR WET WELL (KEYED NOTE 4).
4. 20"X20"X8" NEMA 4X (STAINLESS STEEL) JUNCTION BOX PROVIDED BY PUMP SUPPLIER. JUNCTION BOX INCLUDES TERMINAL STRIPS FOR TERMINATION OF POWER CONDUCTORS AND CONTROL CABLING FOR EACH PUMP. ALL WIRING (INCLUDING CONTROL CABLING) WITHIN THIS JUNCTION BOX SHALL BE RATED FOR 600 VOLT MINIMUM.
5. PROVIDE AND INSTALL A 480V, 150A, 3-POLE, FUSIBLE, AUTOMATIC TRANSFER SWITCH (ATS) IN A WEATHERPROOF ENCLOSURE. OPEN TRANSITION, MICROPROCESSOR CONTROLLED, AUXILIARY CONTACTS, MANUAL OPERATION HANDLES, LED INDICATORS AND DIGITAL PUSHBUTTON CONTROLS. NON-SWITCHED NEUTRAL. ATS BY CUMMINS OR OWNER AND ENGINEER APPROVED EQUAL. REFER TO SPECIFICATION FOR ADDITIONAL INFORMATION.
6. GROUNDING PER GROUNDING RISER DIAGRAM. CONTRACTOR SHALL REFER TO GROUNDING RISER DIAGRAM ON SHEET E4 FOR ADDITIONAL INFORMATION.
7. PROVIDE AND INSTALL A 7.5 KVA, MINI POWER ZONE SUBSTATION. 480V-10 20A/2P PRIMARY CIRCUIT BREAKER, 120/240V-10 40A/2P SECONDARY CIRCUIT BREAKER, 10-POLE, NEMA 3R ENCLOSURE. MINI POWER ZONE SHALL BE SQUARE D #MPUS740F OR ENGINEER AND OWNER APPROVED EQUAL.
8. PROVIDE AND INSTALL #8/10 THWN CU AND #10 CU GROUND IN 3/4" CONDUIT.
9. PUMP CABLE (3 POWER LEADS, GROUND LEAD, GROUND CHECK LEAD, 2 LEADS FOR SEAL LEAK/OVER-TEMP SENSORS) SUPPLIED WITH PUMPS. TYPICAL FOR TWO PUMPS. CONNECT PUMP CABLES TO CONTROL BOX CONDUCTS AT TERMINAL BLOCKS LOCATED IN JUNCTION BOX. TYPICAL FOR TWO PUMPS.
10. PROVIDE AND INSTALL 1-1/4" CONDUIT FOR PUMP CABLES AS INDICATED IN KEYED NOTE 9. CONTRACTOR SHALL COORDINATE PENETRATIONS IN WET WELL VAULT. COORDINATE ROUTING IN THE FIELD. PROVIDE SEAL-OFFS AS INDICATED ON POWER RISER DIAGRAM.
11. PROVIDE AND INSTALL 1" CONDUIT FOR USE WITH FLOATS/SENSORS. CONTRACTOR SHALL COORDINATE PENETRATIONS IN WELL VAULT. COORDINATE ROUTING IN THE FIELD. PROVIDE PERMANENT SEAL-OFF AS INDICATED ON POWER RISER DIAGRAM.
12. PROVIDE AND INSTALL A 30KW/38kVA, 277/480V-3Ø, 60HZ, 1800 RPM, DIESEL STANDBY ENGINE-GENERATOR IN A LEVEL 1 SOUND ATTENUATING ENCLOSURE WITH 24 HR DIESEL FUEL BELLY TANK, COOLANT JACKET HEATER, EMERGENCY STOP SWITCH, AUXILIARY OUTPUT RELAYS, 100A/3P CIRCUIT BREAKER, COLD WEATHER OPTIONS, BATTERY RACK, BATTERY HEATER KIT, BATTERY CHARGER, OVERSIZED ALTERNATOR, AND 24-MONTH WARRANTY. PROVIDE AND INSTALL CONCRETE PAD. GENERATOR SHALL BE RATED FOR AMBIENT TEMPERATURES, AND RELATIVE HUMIDITY. AS MANUFACTURED BY CUMMINS OR OWNER AND ENGINEER APPROVED EQUAL. COORDINATE EXACT LOCATION IN THE FIELD. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
13. PROVIDE AND INSTALL CONCRETE PAD FOR USE WITH ENGINE-GENERATOR. FINAL DIMENSIONS OF CONCRETE PAD SHALL BE COORDINATED PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ALL REQUIRED PENETRATIONS THROUGH CONCRETE PAD. REFER TO ENGINE-GENERATOR CONCRETE PAD DETAIL, THIS SHEET, FOR ADDITIONAL INFORMATION.
14. PROVIDE AND INSTALL METER SOCKET PER LOCAL UTILITY REQUIREMENTS.
15. PROVIDE AND INSTALL #4#10 XHHW-2 AL IN 2" CONDUIT.
16. PROVIDE AND INSTALL #4#10 XHHW-2 AL AND #14 AL GROUND IN 2" CONDUIT. COORDINATE ROUTING IN THE FIELD.
17. CONTRACTOR SHALL COORDINATE REMOVAL OF EXISTING 240V THREE PHASE SECONDARY POLE MOUNTED TRANSFORMERS. CONTRACTOR SHALL COORDINATE INSTALLATION OF NEW POLE MOUNTED TRANSFORMERS ON EXISTING UTILITY POLE. NEW POLE MOUNTED TRANSFORMERS SHALL BE 277/480V-3Ø-4W Y/Δ SECONDARY.

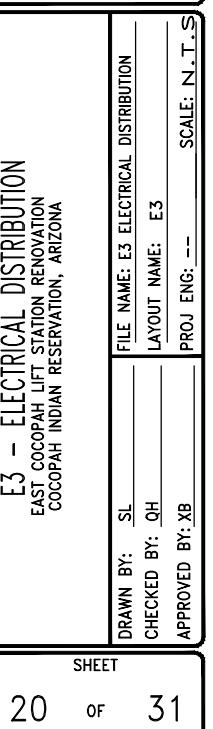
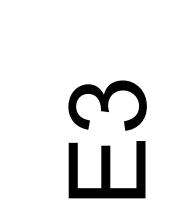
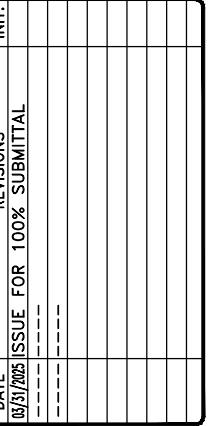
SHORT CIRCUIT CALCULATIONS ◇

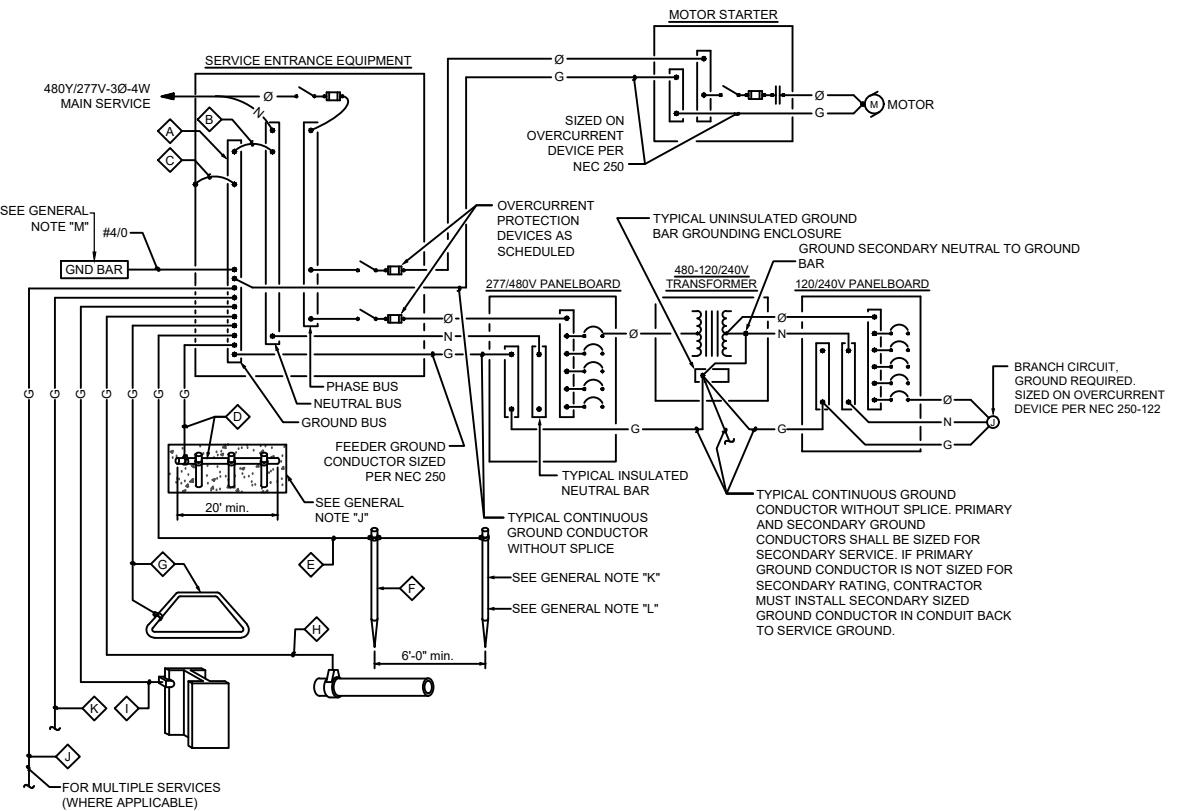
NOTE:
CONTRACTOR SHALL VERIFY RATING AND IMPEDANCE OF UTILITY TRANSFORMER PRIOR TO INSTALLATION OF EQUIPMENT. ANY DEVIATION SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

- a. ASSUMPTION: 45KVA THREE PHASE TRANSFORMER POD WITH AN IMPEDANCE OF 1.4%. THEREFORE MAXIMUM AVAILABLE FAULT CURRENT AT SECONDARY OF TRANSFORMERS ARE 3,800A.
- b. APPROXIMATELY 45' OF #1/0 AI CONDUCTORS LIMITS SHORT CIRCUIT CURRENT TO 3,359A AT LINE SIDE TERMINALS OF AUTOMATIC TRANSFER SWITCH.
- c. APPROXIMATELY 5' OF #10 CU CONDUCTORS LIMITS SHORT CIRCUIT CURRENT TO 3,201A. THEREFORE PANEL "IHS" SHALL HAVE A MINIMUM OF 10K AIC RATING.
- d. APPROXIMATELY 7' OF 1/0 AI CONDUCTORS LIMITS SHORT CIRCUIT CURRENT TO 3,299A AT PUMP CONTROL PANEL TERMINALS.

VOLTAGE DROP CALCULATIONS

- A. INCOMING NOMINAL VOLTAGE FROM THE UTILITY PROVIDER IS 277/480V-3Ø-4W WYE SYSTEM.
- B. APPROXIMATELY 45' OF #1/0 AI CONDUCTORS, WITH A LOAD OF 29.2KVA (35A AT 277/480V-3Ø-4W) CAUSES A VOLTAGE DROP OF APPROXIMATELY 0.67%.
- C. APPROXIMATELY 5' OF #10 CU CONDUCTORS, WITH A LOAD OF 4.9KVA (6A AT 277/480V-1Ø-3W) CAUSES A VOLTAGE DROP OF APPROXIMATELY 0.01%.
- D. APPROXIMATELY 7' OF #1/0 AI CONDUCTORS, WITH A LOAD OF 24.3KVA (29A AT 277/480V-3Ø-4W) CAUSES A VOLTAGE DROP OF APPROXIMATELY 0.01%.





GROUNDING SYSTEM DIAGRAM

480Y/277V

NOT TO SCALE

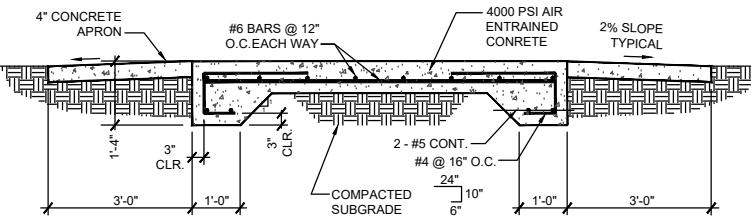
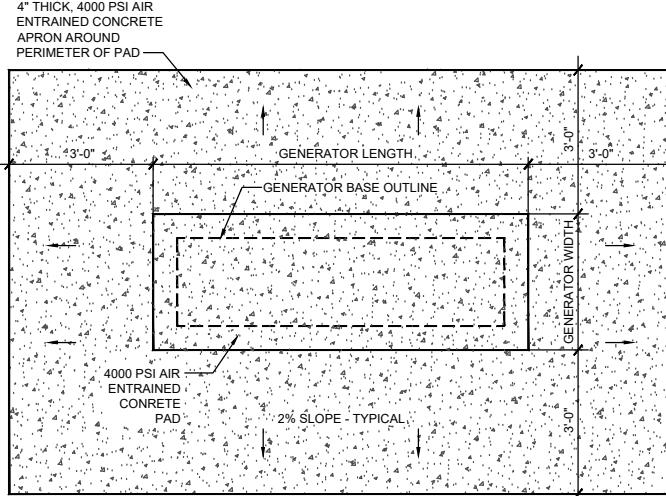
GROUNDING SYSTEM GENERAL NOTES

2018

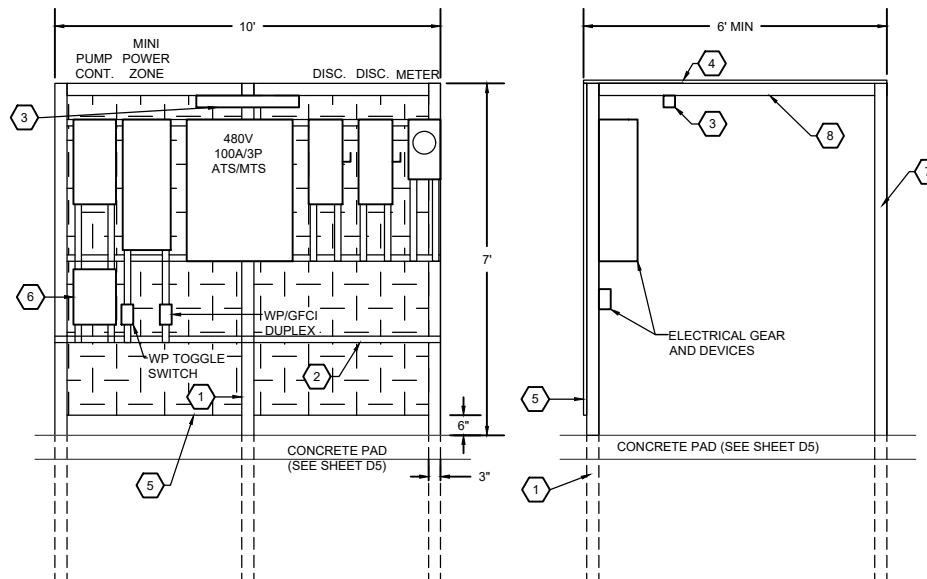
- A. THE GROUNDING ELECTRODE SYSTEM SHALL CONSIST OF ITEMS **A**, **B**, **C**, **D**, **E**, **F** AND **G**, WHERE APPLICABLE.
- B. ITEMS **H** AND **I** MUST BE BONDED TOGETHER AND TO THE GROUNDING ELECTRODE SYSTEM WHEN THEY ARE PRESENT.
- C. ITEM **D** CONCRETE ENCASED ELECTRODE (UFER) SHALL HAVE UFER SUPPORT CONSISTING OF 5/8" x 10' COPPER GROUND ROD CUT INTO 2' SECTIONS AND DRIVEN FOR SUPPORT OF UFER CONDUCTOR. ONLY COPPER TO COPPER CONNECTIONS ARE ACCEPTABLE. DO NOT USE RE-BAR FOR UFER SUPPORT. (THIS IS TO AVOID THE HARMFUL EFFECTS OF DISSIMILAR METALS IN CONTACT.) A U.L. LISTED COPPER TO RE-BAR CLAMP (SUCH AS GRAVES "JONES BOND" SYSTEM) IS AN APPROVED ALTERNATIVE.
- D. THIS DETAIL IS PROVIDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, ARTICLE 250, PERTAINING TO THE "GROUNDING ELECTRODE SYSTEM".
- E. ALL SPLICING AND UNDERGROUND CONNECTIONS SHALL BE ACCOMPLISHED VIA EXOTHERMIC WELD (CAD-WELD) ONLY.
- F. ALL CONDUCTOR SIZING INDICATED ON THE GROUNDING SCHEDULE ARE FOR COPPER CONDUCTORS. ALUMINUM IS NOT PERMITTED.
- G. ANY VARIANCES FROM THIS DIAGRAM AND ASSOCIATED SCHEDULE AND NOTES MUST BE REQUESTED AND APPROVED IN WRITING PRIOR TO INSTALLATION.
- H. ALL INSTALLATIONS SHALL COMPLY WITH THE LATEST ADOPTED EDITION OF N.E.C. ARTICLE 250 (ALL SUBPARAGRAPHS) AND ALL STATE AND LOCAL REQUIREMENTS.
- I. THE GROUNDING SYSTEM SHALL PROVIDE LESS THAN (4) FOUR OHMS RESISTANCE TO GROUND AT THE SERVICE CONNECTION. THE RESULTS SHALL BE VERIFIED BY AN INDEPENDENT TESTING AGENCY VIA GROUND TEST (FALL-OF-POTENTIAL) AND SUBMITTED TO ELECTRICAL ENGINEER UPON COMPLETION OF PROJECT.
- J. IF A 20'-0" LONG (MINIMUM) CONCRETE ENCASED ELECTRODE IS NOT AVAILABLE, CONTRACTOR MAY INSTALL A 20'-0" (MINIMUM) UFER GROUND 30" BELOW GRADE WITH AT LEAST TWO GROUND RODS (ONE AT EACH END).
- K. PROVIDE SECOND GROUND ROD AT LEAST 6'-0" FROM INITIAL GROUND ROD.
- L. WHEN INDICATED ON DRAWINGS, PROVIDE AND INSTALL HORIZONTAL CHEMICAL GROUND ELECTRODE KIT. 10' COPPER ELECTRODE LENGTH, FACTORY ATTACHED 6' #4/0 COPPER PIGTAIL, AND HIGH DENSITY POLYETHYLENE INSPECTION WELL & COVER. ERICO #ECHR102QGU OR APPROVED EQUAL. CONTRACTOR SHALL USE MANUFACTURER RECOMMENDED ELECTROLYTIC SALTS, BENTONITE CLAY BACKFILL MATERIAL, AND GROUND ENHANCEMENT MATERIAL (GEM). CONTRACTOR SHALL INSTALL PER MANUFACTURERS RECOMMENDATIONS. CONTRACTOR SHALL MAINTAIN 6'-0" SEPARATION (MINIMUM) BETWEEN GROUNDING ELECTRODES. INSPECTION WELL INSTALLED FLUSH WITH FINAL GRADE.
- M. PROVIDE AND INSTALL 1/4" X 4" X 18" COPPER MAIN GROUNDING BUS BAR WITH BRACKETS AND INSULATORS. CONTRACTOR SHALL COORDINATE PRE-DRILLED (12)-1/4" HOLES REQUIREMENTS WITH PNM (OWNER). ERICO OR APPROVED EQUAL. EXTEND #1/4" CU GROUNDING CONDUCTOR TO MAIN GROUND. COORDINATE EXACT LOCATION AND ROUTING IN THE FIELD. CONTRACTOR SHALL MAKE ALL FINAL TERMINATIONS AS REQUIRED.

GROUNDING SCHEDULE											
	 FACTORY INSTALLED GROUND BUS BAR	 INTEGRATED BUS BAR MAIN BOND JUMPER	 INTEGRATED BUS BAR CASE BOND JUMPER	 CONCRETE ENCASED ELECTRODE (UFER)	 GROUNDING ELECTRODE CONDUCTOR TO ROD, PIPE OR PLATE	 CU or CU-CLAD STEEL GROUND ROD	 COPPER GROUND RING CONDUCTOR	 METALLIC PIPING BONDING CONDUCTOR	 BUILDING STEEL BONDING CONDUCTOR	 MULTIPLE SERVICE BONDING CONDUCTOR	 TELEPHONE SYSTEM GROUNDING CONDUCTOR
		N.E.C. 250.102(C)	N.E.C. 250.102(C)	N.E.C. 250.52(A)(3) 250.66(B)	N.E.C. 250.52(A)(5) 250.52(A)(7) 250.66(A)	N.E.C. 250.52(A)(5)	N.E.C. 250.52(A)(4) 250.66(C)	N.E.C. 250.52(A)(2) 250.66	N.E.C. 250.50(A)(2) 250.66	N.E.C. 250.66	
200 AMP		#4	#4	#4	#6	5/8" x 8"	#2	#4	#4	#4	#6

SHALL BE SIZED TO ACCOMMODATE ALL GROUND WIRE LUGS AS INDICATED ON GROUNDING DIAGRAM AND/OR REFERENCED ELSEWHERE ON PLANS OR SPECIFICATIONS



ENGINE-GENERATOR CONCRETE PAD



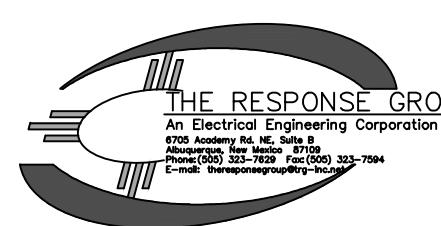
ELECTRICAL EQUIPMENT RACK DETAIL

KEYED NOTES

1. THREE SQUARE HOLLOW STRUCTURAL STEEL. EXTEND 7'-0" ABOVE TOP OF CONCRETE SLAB. HSS3X3X1/4 STEEL POST CAPPED WITH 1/4" THICK PLATE, OR APPROVED EQUAL. (TYPICAL).
2. UNISTRUT P1000 OR EATON B-LINE B2 CHANNEL, OR APPROVED EQUAL. PROVIDE ALL NECESSARY MOUNTING HARDWARE FOR A COMPLETE SYSTEM. (TYPICAL).
3. PROVIDE AND INSTALL A NEW WET LOCATION LISTED, 4 FOOT, VAPOR TIGHT LED FIXTURE, MOUNTED TO STEEL MEMBER ON THE ELECTRICAL RACK. LED LIGHT FIXTURE SHALL BE AUTOMATICALLY CONTROLLED VIA PHOTOCELL (CONTRACTOR PROVIDED AND INSTALLED) MOUNTED 12" ABOVE THE TOP OF THE ELECTRICAL RACK, AND MANUALLY CONTROLLED VIA TOGGLE SWITCH MOUNTED TO THE ELECTRICAL RACK. LUMINAIRE SHALL BE LITHONIA #CSV-T48-5000LM-MVOLT-40K-80CRI OR ENGINEER AND OWNER APPROVED EQUAL.
4. PROVIDE AND INSTALL A COATED CORRUGATED STEEL PLATE TO FUNCTION AS A ROOF FOR THE ELECTRICAL EQUIPMENT RACK. CONTRACTOR SHALL WELD PLATE TO EQUIPMENT RACK AS REQUIRED. THE COATED CORRUGATED STEEL PLATE SHALL BE A MINIMUM OF 20 GAUGE STEEL. CONTRACTOR SHALL INSPECT PLATE AND RE-COAT ALL IMPERFECTIONS AND CUTS TO MAINTAIN CORROSION PROTECTION.
5. PROVIDE AND INSTALL A COATED CORRUGATED STEEL PLATE TO FUNCTION AS A BACK WALL FOR THE ELECTRICAL EQUIPMENT RACK. CONTRACTOR SHALL WELD PLATE TO EQUIPMENT RACK AS REQUIRED. THE BACK WALL SHALL NOT EXTEND TO THE GROUND. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 6" SEPARATION BETWEEN THE COATED CORRUGATED STEEL PLATE AND THE GROUND. THE COATED CORRUGATED STEEL PLATE SHALL BE A MINIMUM OF 20 GAUGE STEEL. CONTRACTOR SHALL INSPECT PLATE AND RE-COAT ALL IMPERFECTIONS AND CUTS TO MAINTAIN CORROSION PROTECTION. MAINTAIN A MINIMUM OF 4" SPACING BETWEEN STEEL WALL AND PANELS. INSTALL HIGH-TEMP RIGID POLYISOCYANUATE FOAM BOARDS OR APPROVED EQUAL INSULATION IF THE 4" SPACING CANNOT BE ACHIEVED.
6. PROVIDE AND INSTALL A NEW FLOW METER DISPLAY UNIT ON ELECTRICAL EQUIPMENT RACK. EXTEND 3/4" CONDUIT BACK TO PANEL "MPZ" AND CONNECT TO CIRCUIT 5 AS SHOWN ON PANEL SCHEDULE ON SHEET E3. EXTEND 1" CONDUIT TO FLOW METER JUNCTION BOX AND MAKE ALL REQUIRED CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM. CONTRACTOR SHALL REFER TO MANUFACTURER'S WIRING DIAGRAM FOR ADDITIONAL INFORMATION.
7. TWO SQUARE HOLLOW STRUCTURAL STEEL AT THE END OF 6' ROOF EXTENSION. EXTEND 7'-0" ABOVE TOP OF CONCRETE SLAB. HSS3X3X1/4 STEEL POST CAPPED WITH 1/4" THICK PLATE, OR APPROVED EQUAL. (TYPICAL).
8. THREE SQUARE HOLLOW STRUCTURAL STEEL FOR HORIZONTAL SUPPORT. HSS4X4X1/4 STEEL POST CAPPED WITH 1/4" THICK PLATE, OR APPROVED EQUAL. (TYPICAL).

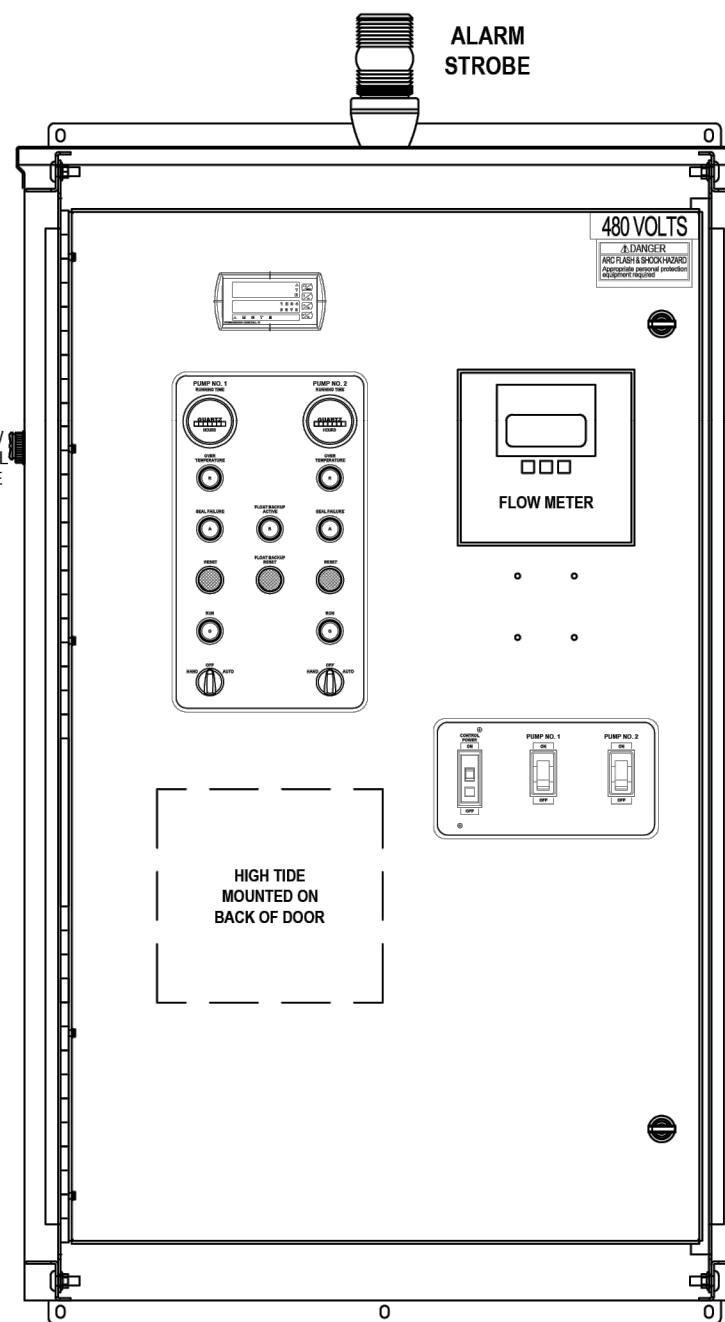
BAI ENGINEERS
5550 DIC PKWY SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

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THE RESPONSE GROUP, INC.
An Electrical Engineering Corporation
6705 Academy Rd. NE, Suite B
Albuquerque, New Mexico 87109
Phone: (505) 323-7628 Fax: (505) 323-7594

E4 - ELECTRICAL DETAILS		
EAST COCOPAH LIFT STATION RENOVATION		
COCOPAH INDIAN RESERVATION, ARIZONA		
DRAWN BY:	SL	FILE NAME: E4 - ELECTRICAL DETAILS
CHECKED BY:	QH	AYOUT NAME: E4
APPROVED BY:	XB	PROJ. ENG: -- SCALE: N.T.S.
SHEET		
21 OF 31		



ENCLOSURE - INNER DOOR VIEW
DOOR AND FRONT EDGES REMOVED FOR CLARITY

SCALE : 1/8" = 1

ENCLOSURE: NEMA 3R, SPLRHC-483012 (48" X 30" X 12") FABRICATED CRS. PAINTED WHITE

BACKPANEL · SPP-4830 (45" X 27") FABRICATED FROM 12 GAUGE STEEL

INSTALLATION GUIDELINES

IMPORTANT

SEAL ALL CONDUITS TO PREVENT GAS FROM ENTERING THE CONTROL PANEL. SERIOUS CORROSION WILL OCCUR IN THE CONTROL PANEL INTERNALLY IF THIS IS NOT DONE. FAILURE TO INSTALL THIS EQUIPMENT ACCORDING TO MANUFACTURERS RECOMMENDATIONS MAY VOID WARRANTY.

**FACTORY RECOMMENDED
PREVENTIVE MAINTENANCE**

BEFORE APPLYING POWER TO THIS CONTROL PANEL,
CHECK AND RE-TIGHTEN ALL POWER, DISTRIBUTION
AND CONTROL TERMINAL CONNECTIONS.

REPEAT ABOVE PROCEDURE 60-90 DAYS AFTER
SYSTEM START-UP.

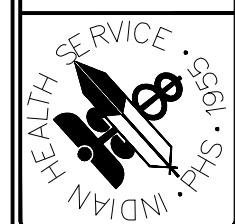
MUST USE COPPER CONDUCTORS RATED MIN. 60°C
WIRING TO TERMINALS/LUGS MUST
BE TIGHTENED TO THE FOLLOWING VALUES:

TERMINAL	WIRE SIZE	TORQUE
1492-J3	#22-12 AWG	4.5-7.1 LB · INCH
1492-J4	#22-10 AWG	9.0 LB · INCH
1492-J6	#22-8 AWG	12.4 LB · INCH
NSI #2T	#14-2 AWG	50 LB · INCH

- ▲ START KIT WIRING TERMINALS.
- ▲ CUSTOMER SUPPLIED PART.
- ◎ CONTROL WIRING TERMINALS.
- LAST WIRE NUMBER USED 58.
- PUMP WIRING TERMINALS.
- PANEL IS UL 508A LABELED.
- FIELD WIRING TERMINALS.
- FIELD WIRING (DEVICES EXTERNAL TO PANEL).
- PANEL WIRING (#16 AWG CONTROL WIRING,
UNLESS OTHERWISE NOTED).

Ei-1

BAI ENGINEERS
5350 DIC PKWY, SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

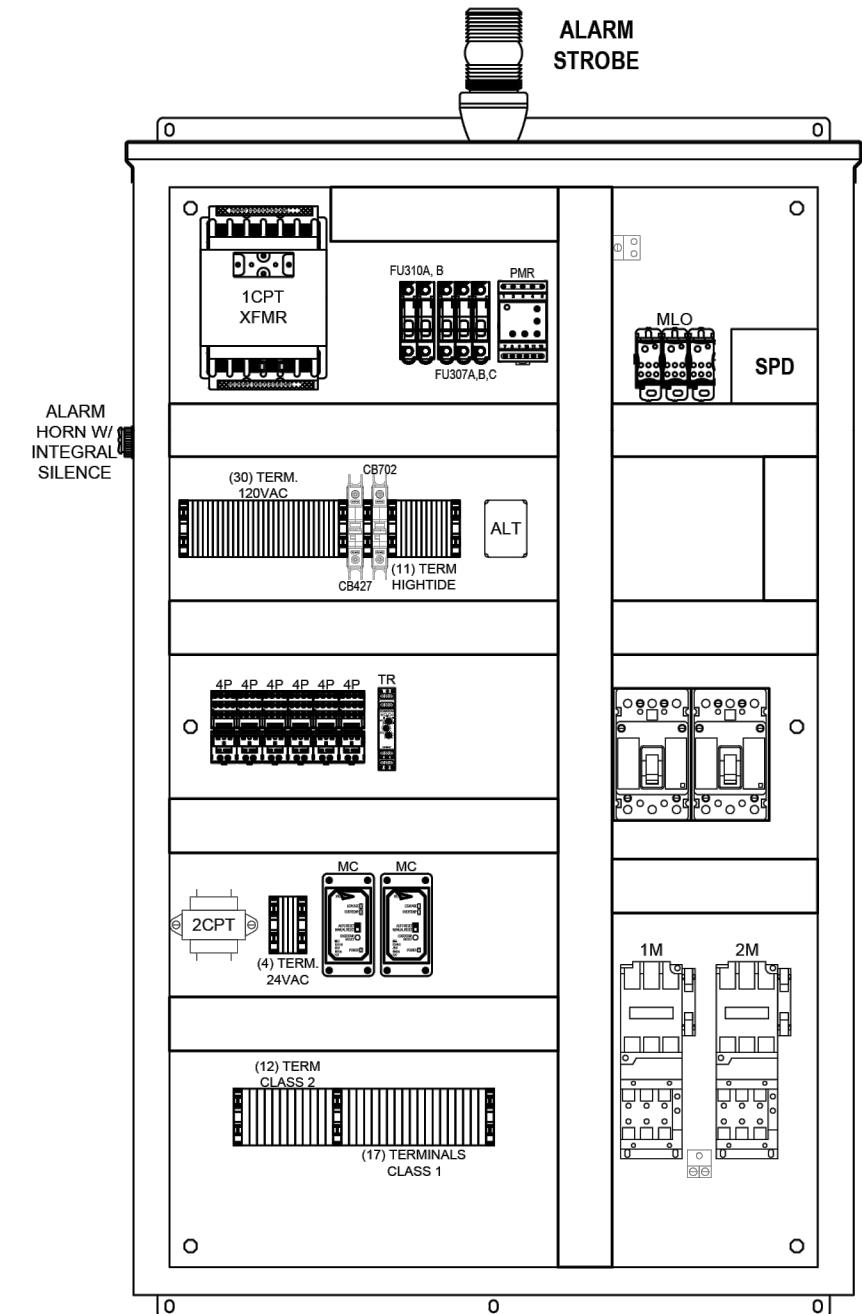


E11 - CONTROL PANEL FRONT VIEW (REFERENCE ONLY)
 EAST COCOPAH LIFT STATION RENOVATION
 COCOPAH INDIAN RESERVATION, ARIZONA

REFERENCE ONLY

BILL OF MATERIALS

ITEM	DESCRIPTION	MANUFACTURER	MANUFACTURER PART #	QTY
1	ENCLOSURE, NEMA 3R, PAINTED WHITE	SCHAEFER	SPLRHC-483012	1
2	CIRCUIT BREAKER, PUMP, 3 POLE, 30A	EATON	PDG13F0030TFFJ	2
3	CIRCUIT BREAKER, CONTROL POWER MAIN, 1 POLE, 10A	EATON	QC1010	1
4	CIRCUIT BREAKER, 1 POLE, 1A, 10KA	EATON	FAZ-B1-1-NA-L	2
5	STARTER, NEMA SIZE 2	EATON	AN16GN0AB	2
6	OVERLOAD HEATER PACK, 3 POLE	EATON	H2011B-3	2
7	SURGE PROTECTIVE DEVICE	SQUARE D	SDSA3650D	1
8	PHASE MONITOR RELAY	MACROMATIC	PMDU	1
9	TRANSFORMER, 480/120 VOLT, 750VA	EATON	C0750E2A	1
10	TRANSFORMER, 120/24 VOLT, 40VA	TRIAD	TCT40-01E07AB	1
11	FUSE, 600 VOLT, CLASS "CC", TIME DELAY, 4-1/2 AMP, XFMER PRIM	BUSSMAN	FNQ-R-4-1/2	2
12	FUSE, 600 VOLT, CLASS "CC", TIME DELAY, 1 AMP, PMR	BUSSMAN	FNQ-R-1	3
13	ALTERNATOR, 120VAC, DPDT, W/ SWITCH	MACROMATIC	ARP120A3R	1
14	RELAY, LED, PLUG-IN, 4PDT, 120 VAC	FINDER	55.34.8.120.0050	6
15	TIMER, MULT-FUNCTION, 12-240VAC	MACROMATIC	TE-8812U	1
16	ELAPSED TIME METER, 120VAC	REDINGTON	722-0003	2
17	ALARM STROBE, RED, 120VAC	GRAINGER	2ERP4	1
18	ALARM HORN, 120VAC W/ INTEGRAL SILENCE	FLOYD BELL	OC-19-201-QO	1
19	PROCESS METER, ANALOG	PRECISION DIGITAL	PD6000-6H7	1
20	PRESSURE XDUCER, 23.1', 10PSI, W/ 60FT CABLE (SHIPPED LOOSE)	BLUE RIBBON	01002AA-60FT	1
21	MINI-CAS UNIT, 24VAC △	FLYGT	83-58-57	2
22	REMOTE PUMP MONITORING AND CONTROL SYSTEM △	OMNISITE	CRYSTAL BALL	1
23	FLOW METER, 120VAC △	BADGER	M2000	1



ENCLOSURE - BACKPANEL VIEW

DOOR AND FRONT EDGES REMOVED FOR CLARITY

SCALE : 1/8" = 1"

ENCLOSURE: NEMA 3R, SPLRHC-483012 (48" X 30" X 12") FABRICATED CRS, PAINTED WHITE.

BACKPANEL: SPP-4830 (45" X 27") FABRICATED FROM 12 GAUGE STEEL.

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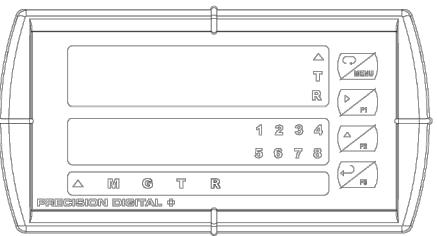
El-2

BAI ENGINEERS
5550 DTC PKWY SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0641

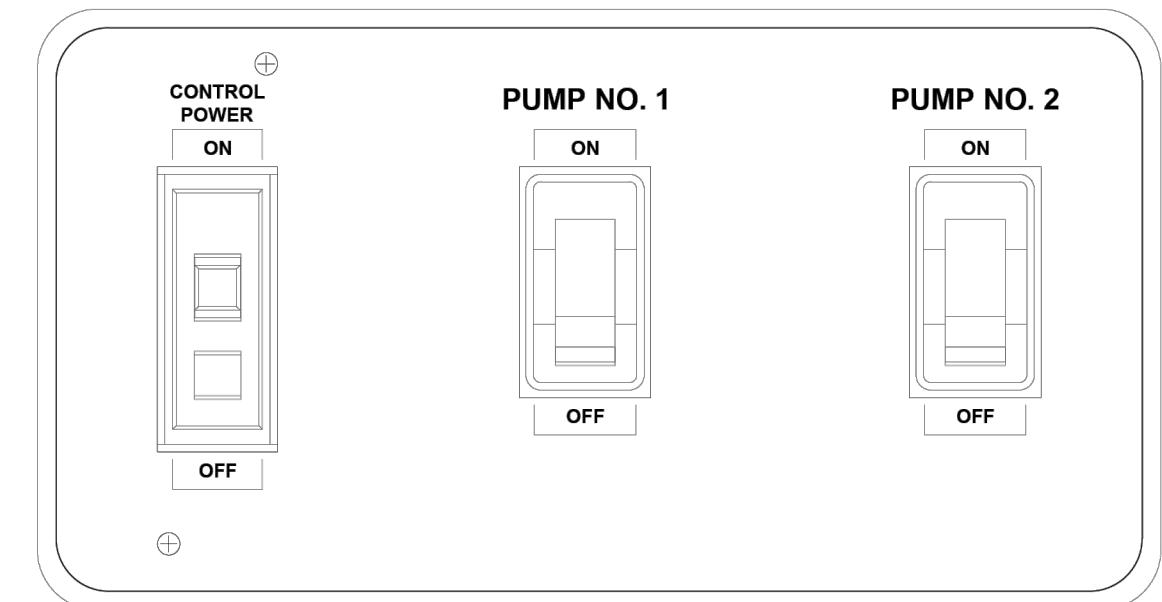
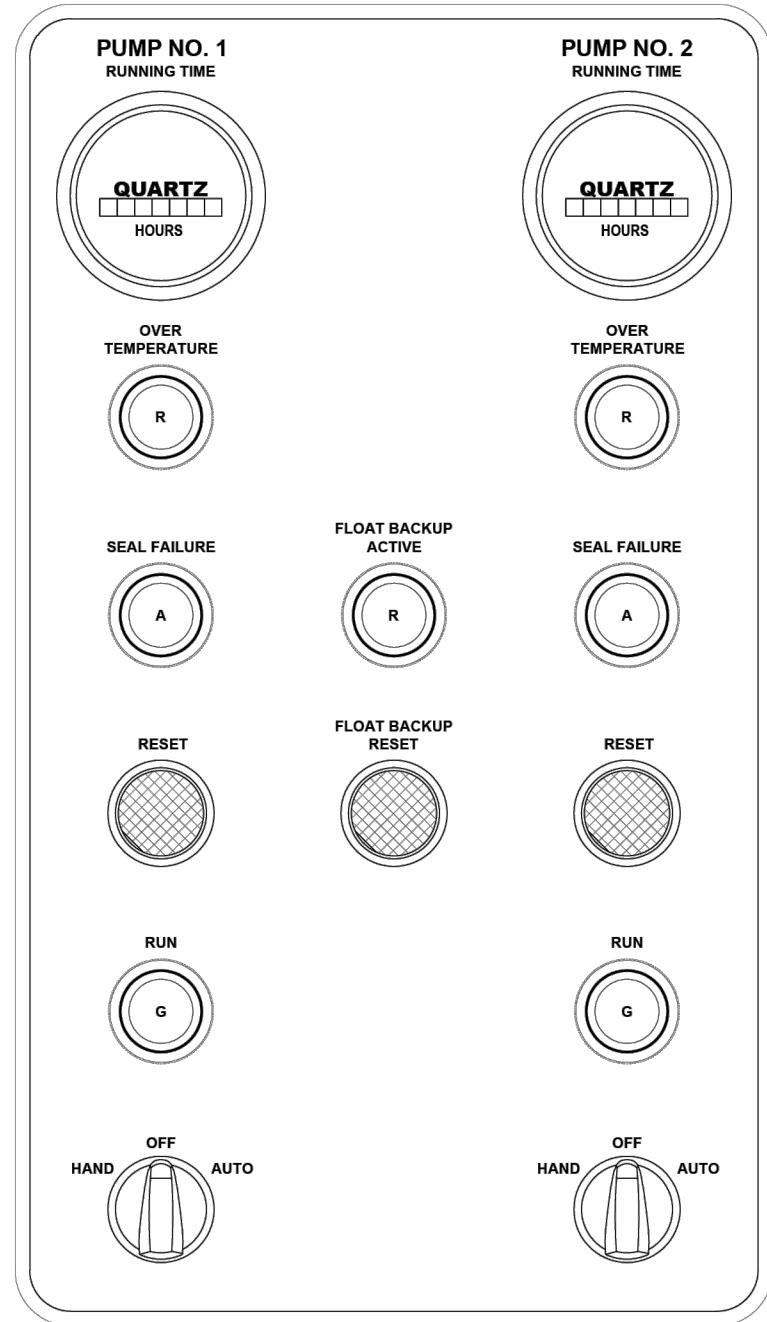


E12 - BACKPANEL (REFERENCE ONLY)	FILE NAME: El-CONTROL
EAST COCOAH LIFT STATION RENOVATION	LAYOUT NAME: El-2
COCOAH INDIAN RESERVATION, ARIZONA	PROJ ENG: --
DRAWN BY: SL	SCALE: 1" = 20'
CHECKED BY: QH	
APPROVED BY: XB	
SHEET 23 OF 31	

REFERENCE ONLY



CONTROL AND ANNUNCIATION LABEL DETAIL



BREAKER LABEL DETAIL

REFERENCE ONLY

24 of 31

SHEET

31

EI-3

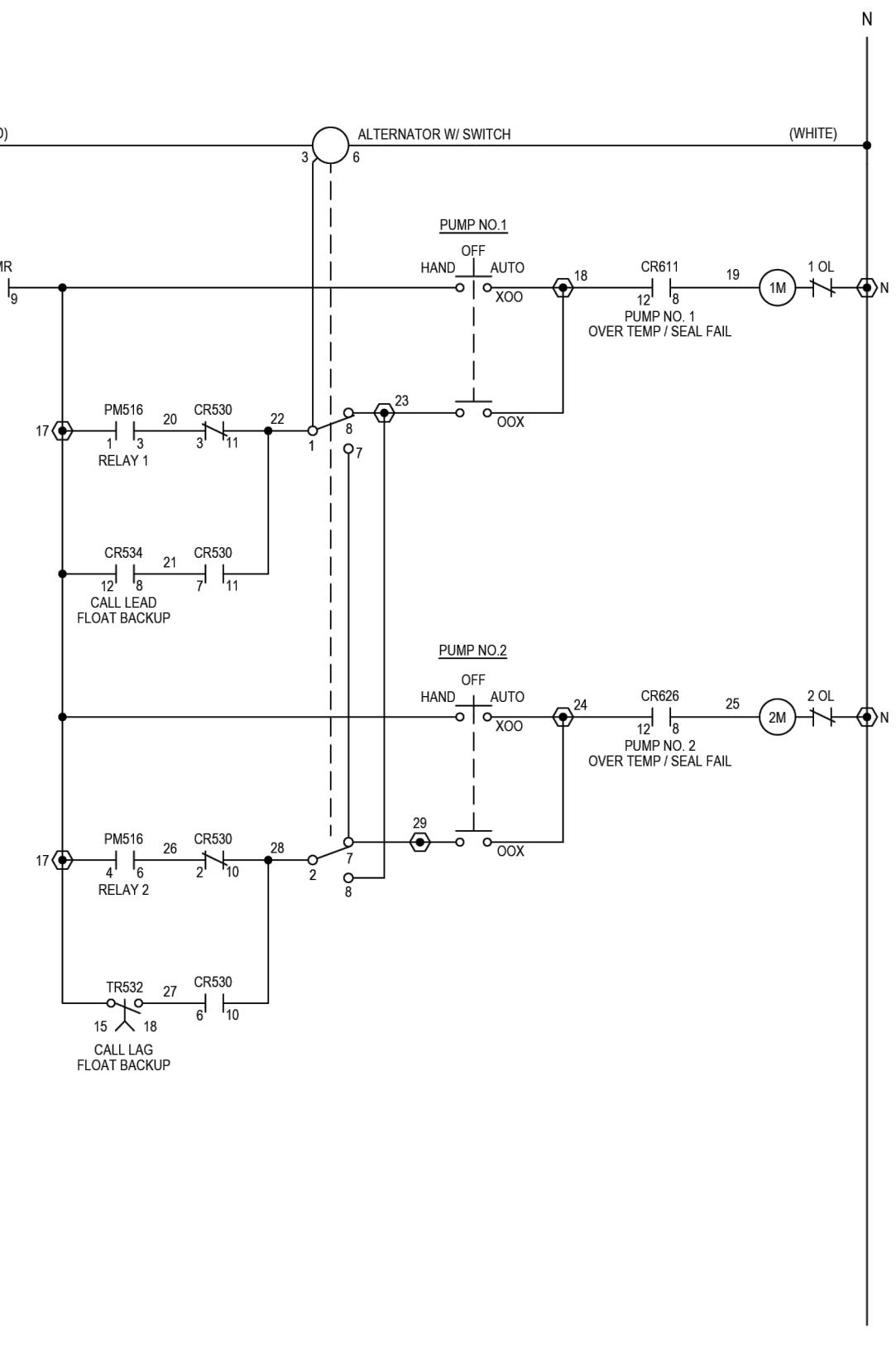
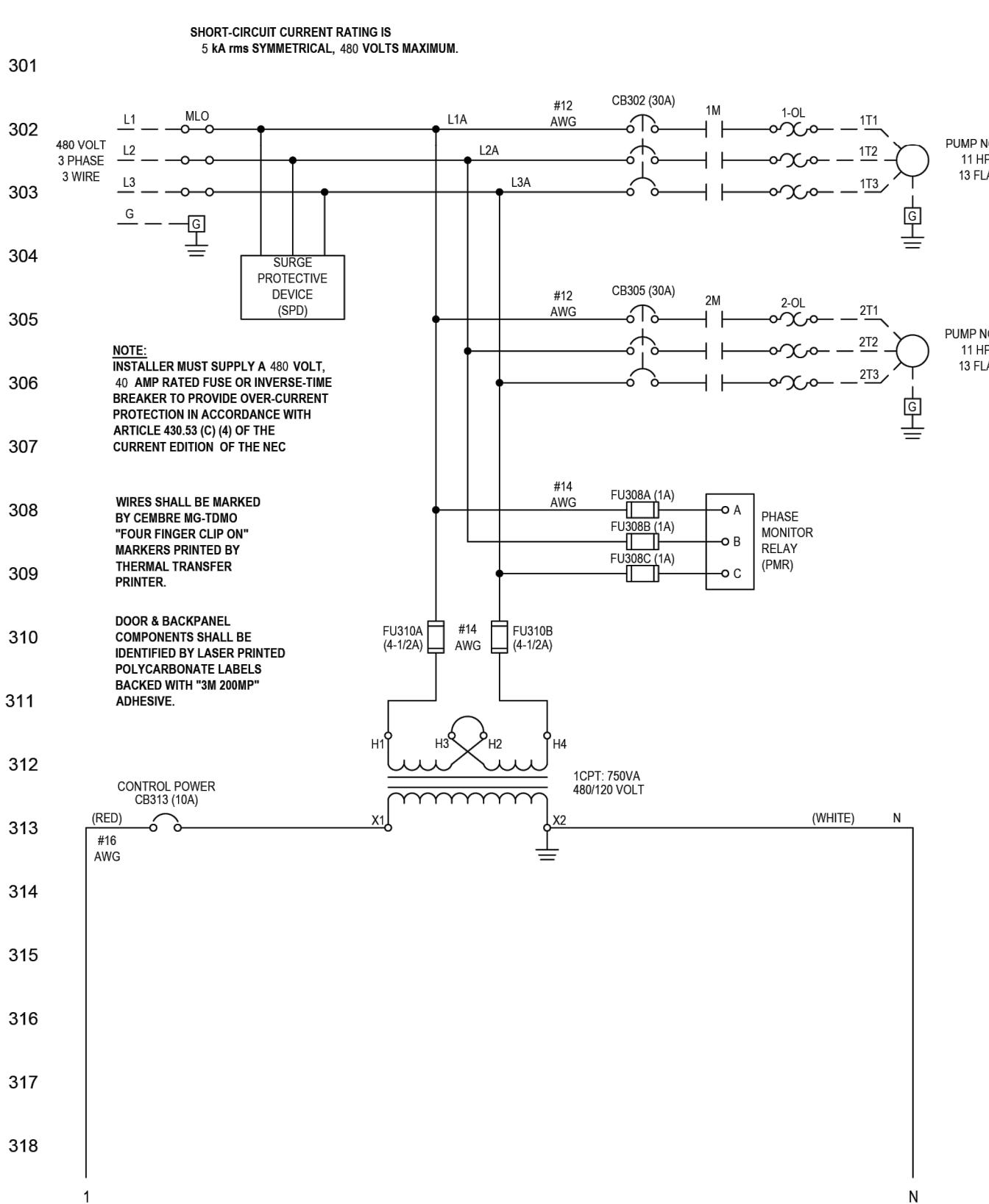
SHORT-CIRCUIT CURRENT RATING IS
5 kA rms SYMMETRICAL, 480 VOLTS MAXIMUM

306 **NOTE:**
INSTALLER MUST SUPPLY A 480 VOL
40 AMP RATED FUSE OR INVERSE-TI
BREAKER TO PROVIDE OVER-CURRE
PROTECTION IN ACCORDANCE WITH
ARTICLE 430.53 (C) (4) OF THE
307 CURRENT EDITION OF THE NEC

308 WIRES SHALL BE MARKED
BY CEMBRE MG-TDMO
"FOUR FINGER CLIP ON"
MARKERS PRINTED BY
309 THERMAL TRANSFER
PRINTER.

310 DOOR & BACKPANEL
COMPONENTS SHALL BE
IDENTIFIED BY LASER PRINTED
POLYCARBONATE LABELS
BACKED WITH "3M 200MP"
ADHESIVE.
311

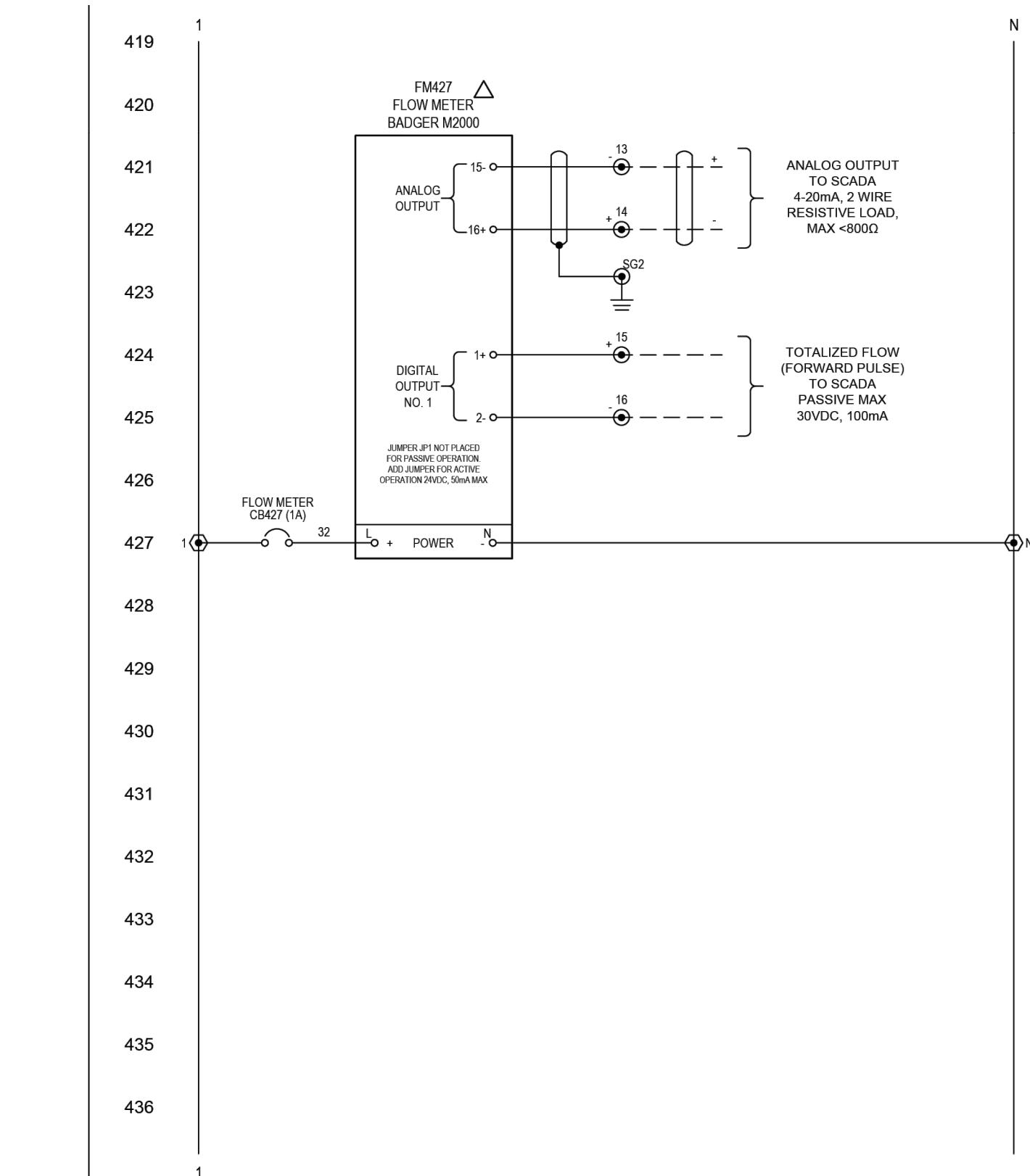
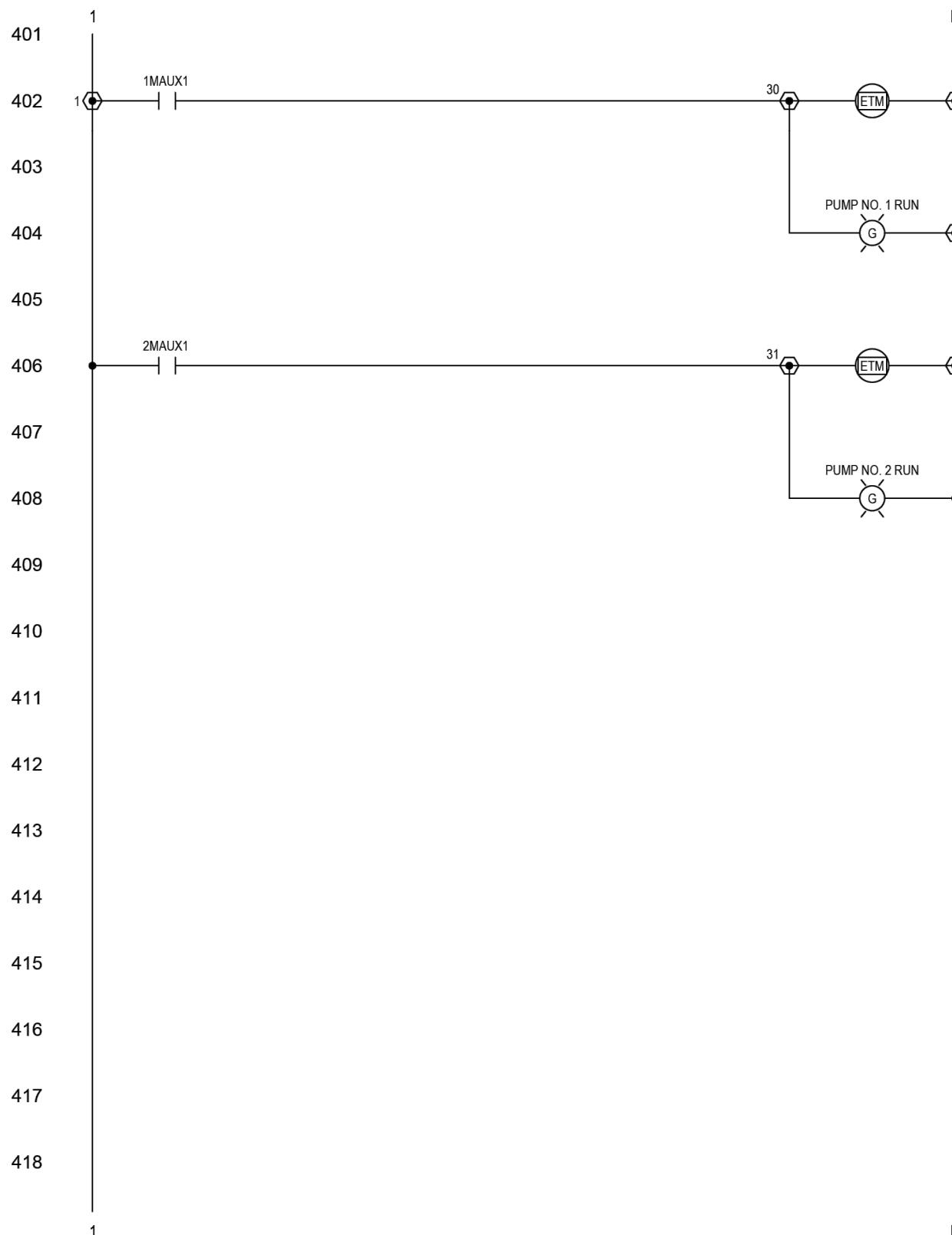
CONTROL POW
CB313 (10A)



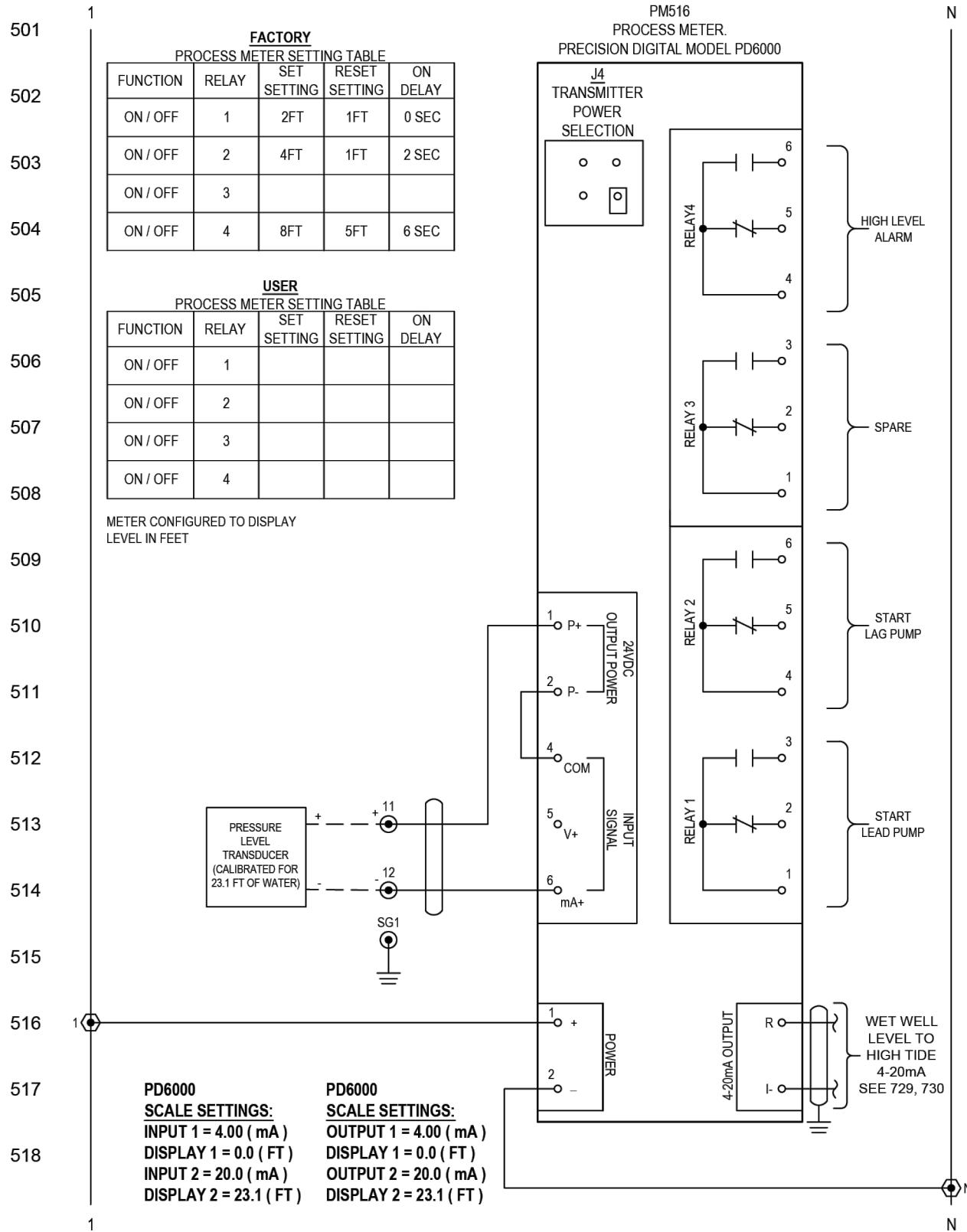
E14 - POWER DIAGRAM (REFERENCE ONLY)
EAST COCOPAH LIFT STATION RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA

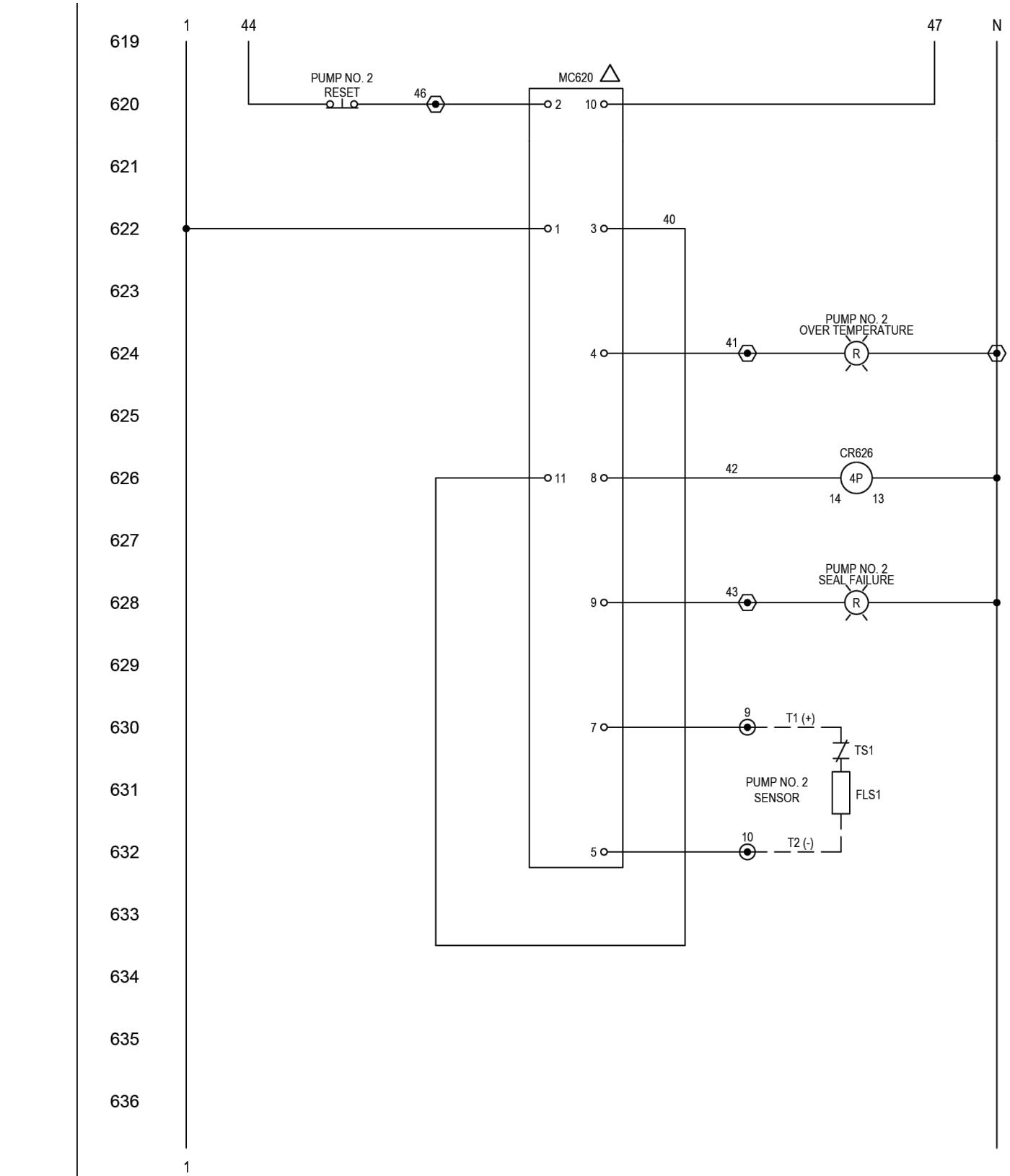
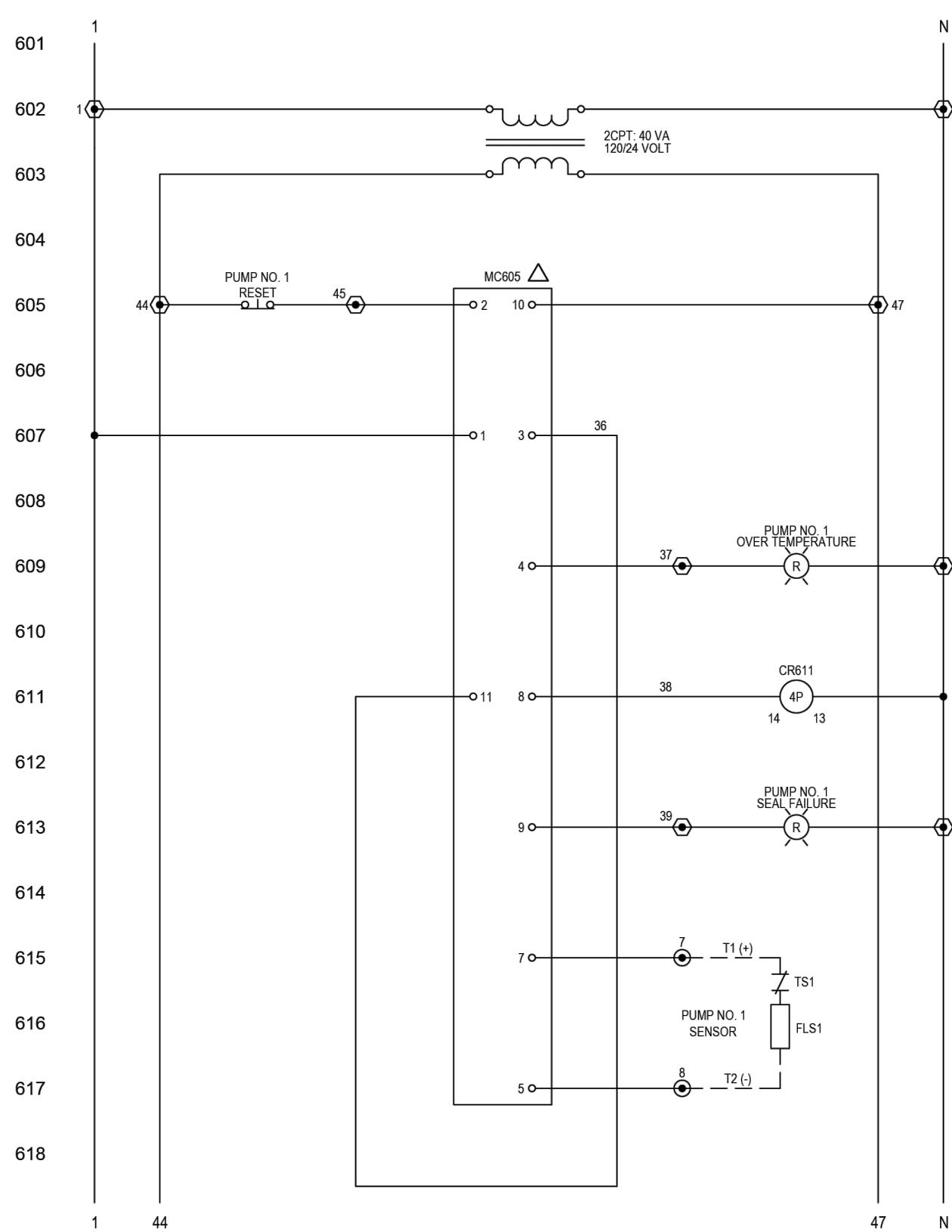
E1-4

REFERENCE ONLY



REFERENCE ONLY





REFERENCE ONLY

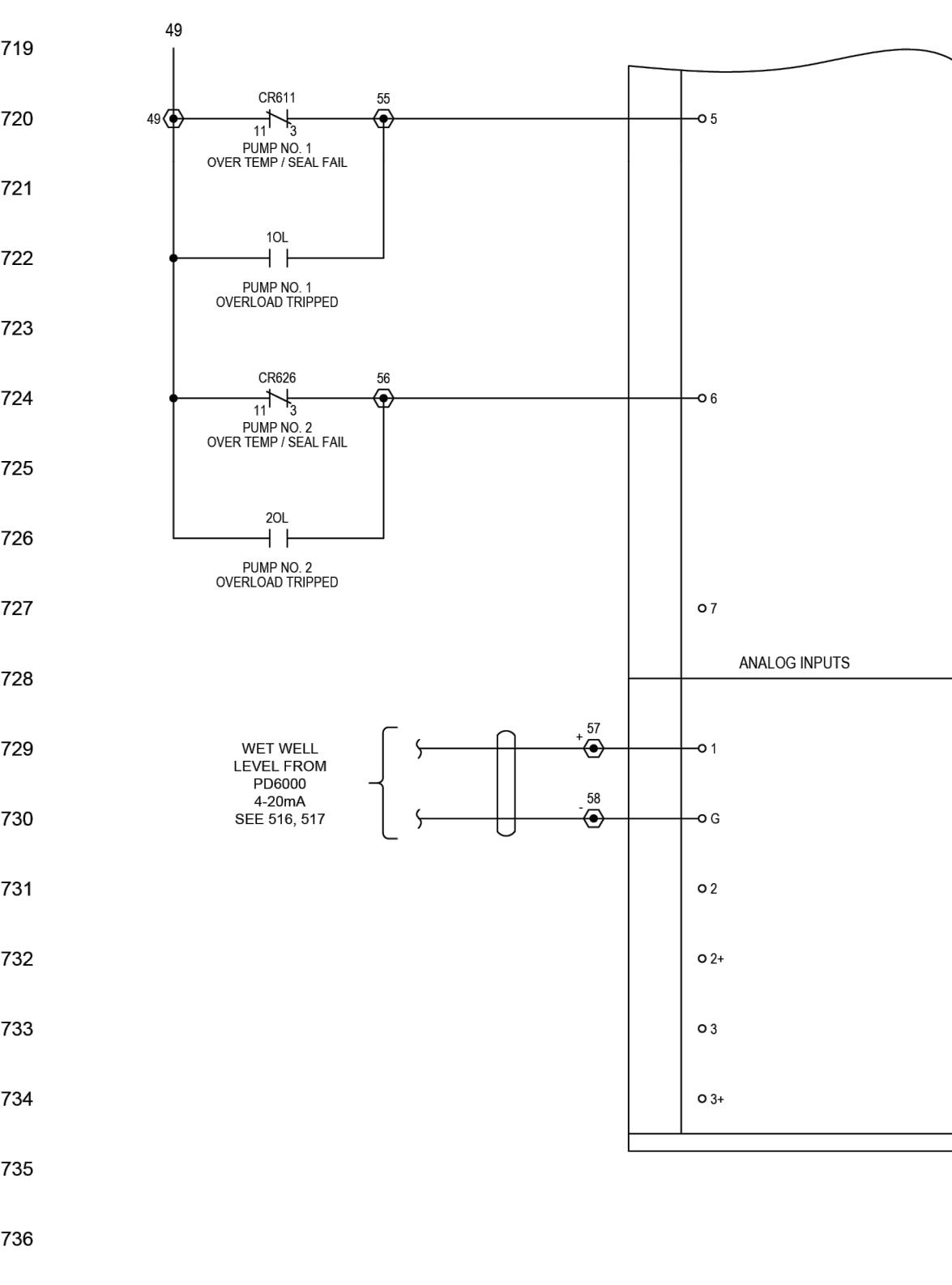
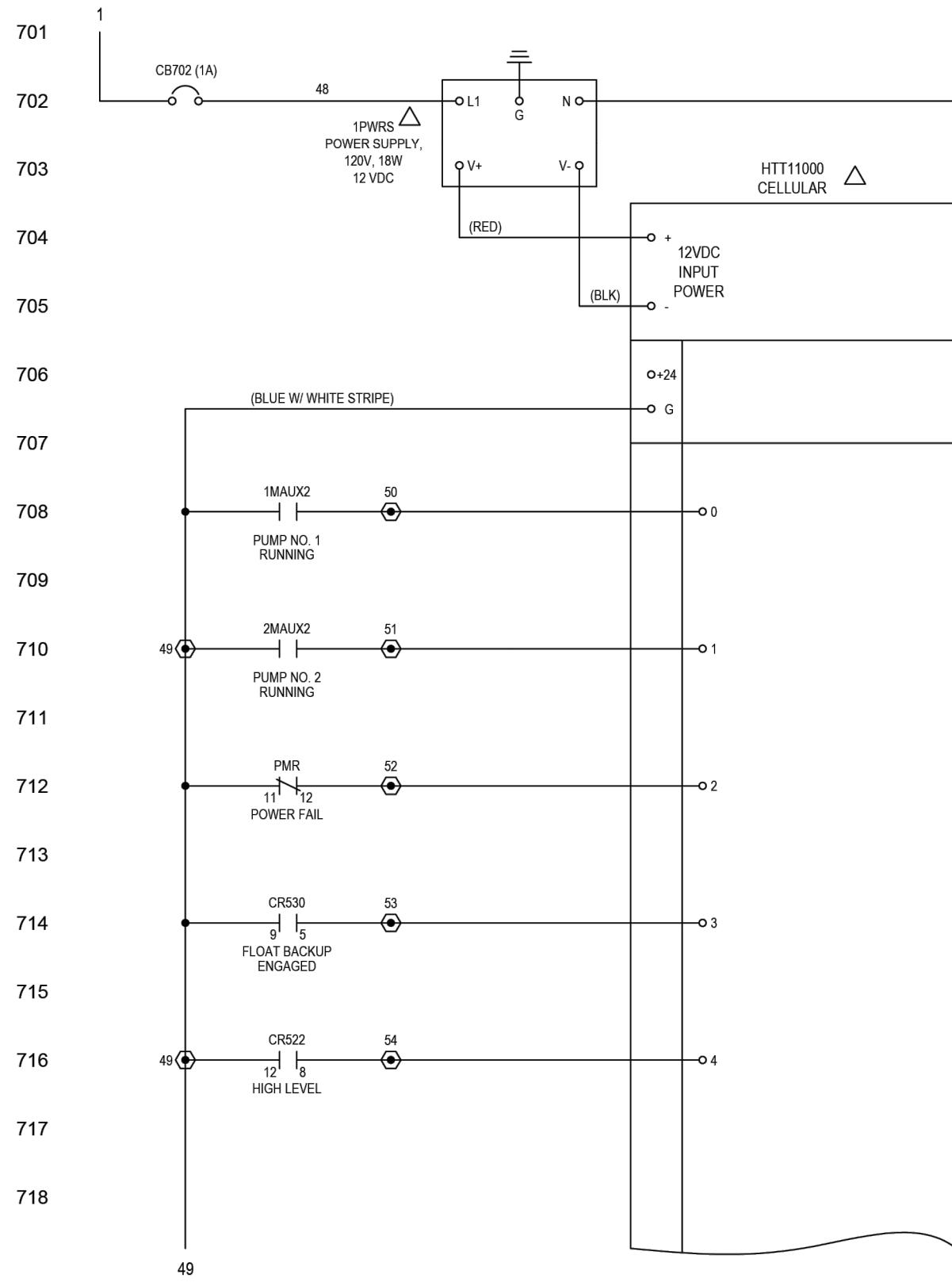
28 OF 31

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BAI ENGINEERS
5530 DTC PKWY SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0941

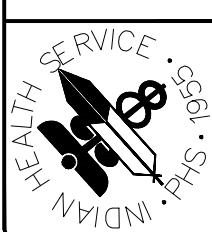
E17 - RELAYS (REFERENCE ONLY)	
EAST COCOPAH LIFT STATION RENOVATION	
COCOPAH INDIAN RESERVATION, ARIZONA	
L	FILE NAME: E1-CONTROL
H	AYOUT NAME: E1-7
B	PROJ. FNG: ---

DRAWN BY:
CHECKED BY:
APPROVED BY:



EL-8
E18 - 12V DC SUPPLY (REFERENCE ONLY)
EAST COCOPAH LIFT STATION RENOVATION
COCOPAH INDIAN RESERVATION, ARIZONA
DRAWN BY: SL FILE NAME: EL-CONTROL
CHECKED BY: QH LAYOUT NAME: EL-8
APPROVED BY: XB PROJ ENG: --
SCALE: 1" = 20'

BAI ENGINEERS
5550 DTC PKWY SUITE 206
GREENWOOD VILLAGE, CO 80111
PHONE: 720-474-0641

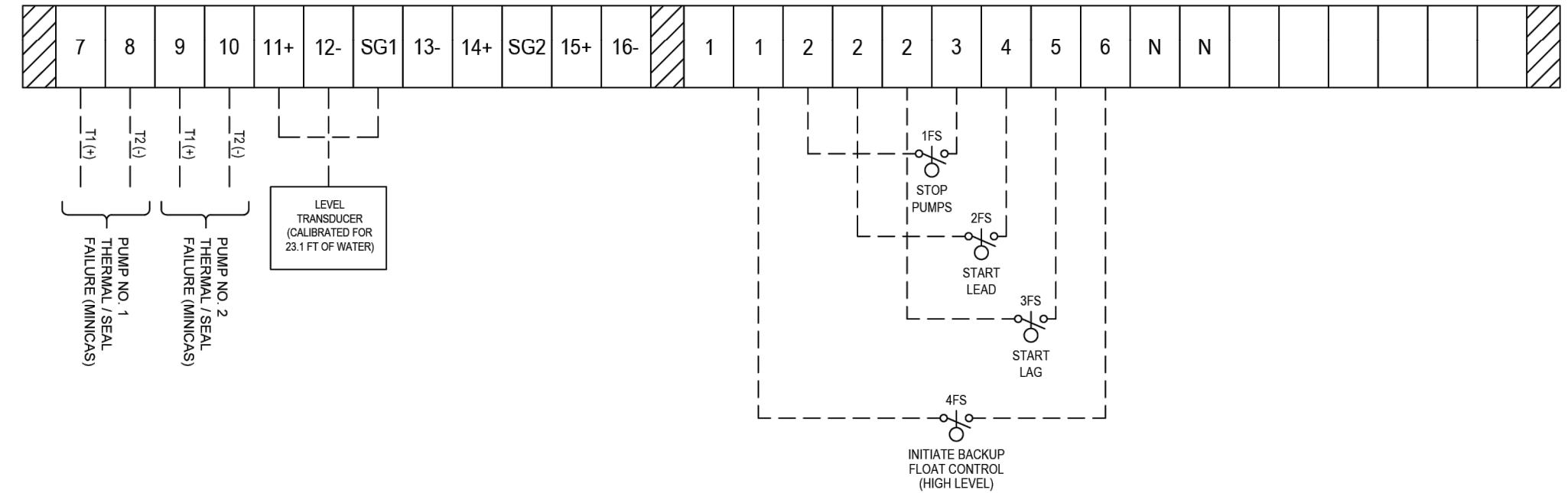


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EL-8

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FIELD TERMINAL WIRING



FIELD WIRING SHALL USE MINIMUM
60°C (140°F) CONDUCTORS FOR
TERMINALS RATED LESS THAN 100A

75°C (167°F) CONDUCTORS SHALL BE USED FOR TERMINALS RATED 100A OR MORE.

30

REFERENCE ONLY

30

OF

[19 - FIELD TERMINAL WIRING (REFERENCE ONLY)

FILE NAME: EI-CONTROL

BAI ENGINEERS

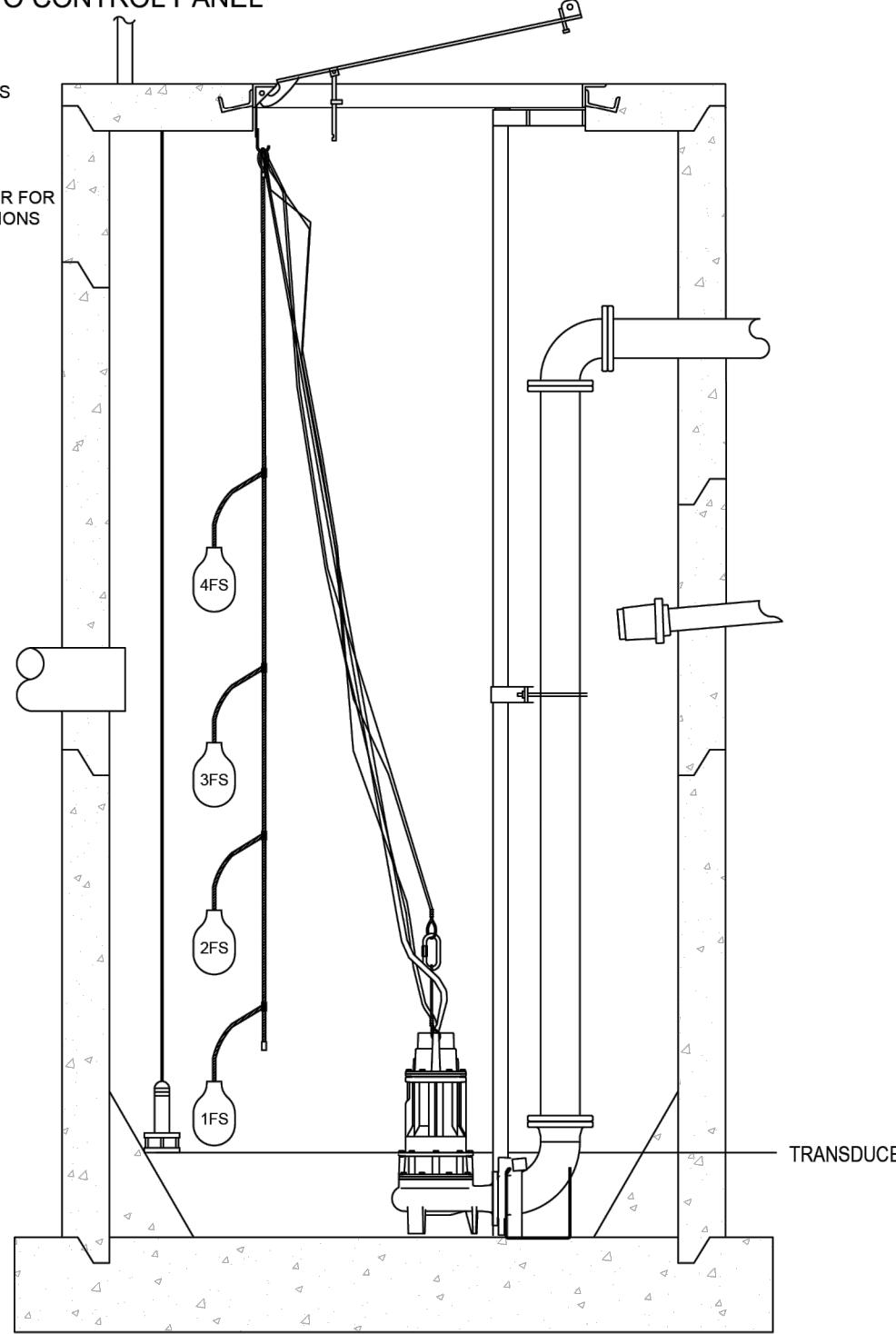
/AI ENGINEERS

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NOT FOR CONSTRUCTION.
FOR REFERENCE ONLY.

NOTE:
1. INSTALL FLOAT SWITCHES
ACCORDING
TO MANUFACTURER
INSTALLATION
REQUIREMENTS.
2. CONSULT PUMP SUPPLIER FOR
FLOAT PLACEMENT ELEVATIONS

TO CONTROL F



TYPICAL WET WELL DETAIL

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31

OF

31

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E110 - TYPICAL WETWELL WIRING (REFERENCE ONLY)

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ANSWER