LAKE HAVASU CITY, ARIZONA - ISLAND WWTP FILTER UPGRADES PROJECT

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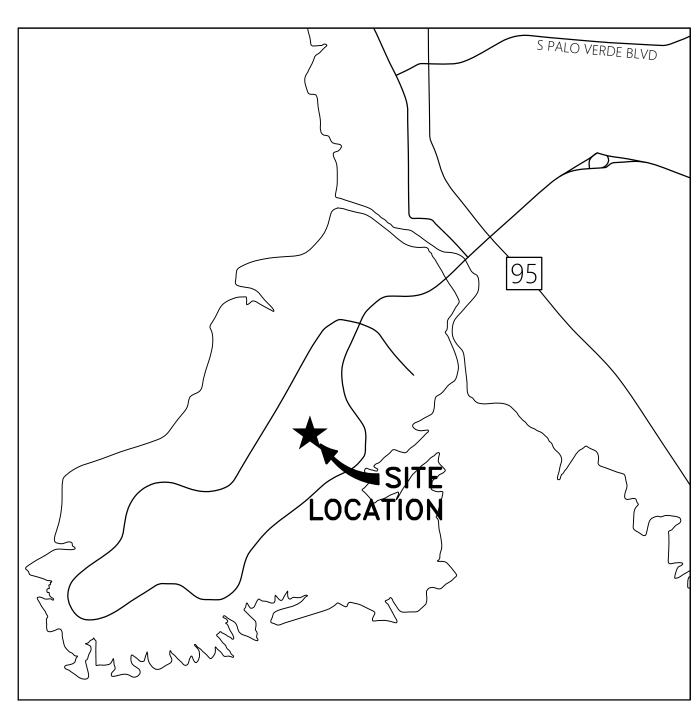
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LOCATION MAP SCALE: 1" = 2000'

JULY 2025
PROJECT NO. B26-PW-107026-500605
CONSTRUCTION DRAWINGS





CITY COUNCIL

CAL SHEEHY
MICHELE LIN
VICE MAYOR

JENI COKE
COUNCIL MEMBER

NANCY CAMPBELL
CAMERON MOSES
COUNCIL MEMBER

JIM DOLAN
COUNCIL MEMBER

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CITY MANAGER JESS KNUDSON

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UTILITY CONTACTS

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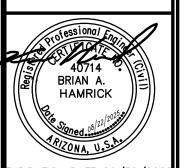
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LAKE HAVASU CITY
AND WWTP FILTER UPGRADE







XPIRATION DATE: 06/30/2028

Drawn:
JL

Design:
VM

Approved:
BH

Client Project No.
B26-PW-107026-500605
Project No.
2477
Sheet No.
G-01

<u>GENERAL</u>

- 1. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL IMPROVEMENTS ARE BUILT, CONSTRUCTED, AND/OR INSTALLED IN ACCORDANCE WITH THESE PROJECT PLANS AND THE TECHNICAL SPECIFICATIONS FOR THE WORK.
- 2. THE CONTRACTOR IS RESPONSIBLE FOR THE SURVEY, LAYOUT, AND STAKING OF THE PROPOSED IMPROVEMENTS FOR CONSTRUCTION PURPOSES.
- 3. IF THERE ARE ANY QUESTIONS REGARDING THE PLANS OR THE INTENT OF THE DESIGN, THE CONTRACTOR SHALL CONTACT THE ENGINEER AND DISCUSS THE ISSUE SO THAT IT IS CLARIFIED OR RESOLVED PRIOR TO THE START OF CONSTRUCTION.
- 4. THE CONTRACTOR SHALL TAKE THE NECESSARY STEPS AND PRECAUTIONS TO PROTECT AND SAFEGUARD ADJACENT IMPROVEMENTS AND PROPERTY FROM DAMAGE DUE TO CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT.
- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING AND OBTAINING ANY PERMITS NEEDED TO COMPLETE THE PROJECT, POTENTIALLY INCLUDING AN AGENCY BUSINESS LICENSE, RIGHT OF WAY WORK PERMIT, WATER USAGE AGREEMENT, ETC., AND INCLUDE THE COSTS FOR THE SAME, IF ANY, IN THE PROJECT BID PRICES.
- 6. ALL PROJECT IMPROVEMENTS INCLUDING BUT NOT LIMITED TO MANHOLE FRAMES, VALVE BOXES, VAULTS, HANDHOLES, FIRE HYDRANTS, ETC., SHALL BE SET OR RESET TO FINISHED GRADE OF THE SURROUNDING GROUND OR PAVEMENT SURFACE WHETHER OR NOT SPECIFICALLY CALLED OUT ON THE PLANS OR IN THE SPECIFICATIONS.

<u>UTILITIES</u>

- 1. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES OR UTILITY STRUCTURES SHOWN ON THESE PLANS SHOULD BE VERIFIED BASED ON AN AZ 811 UTILITY MAPPING REQUEST.
- 2. THE LOCATION OF THE UTILITIES MAY OR MAY NOT BE ACCURATELY SHOWN ON THE UTILITY MAPPING PROVIDED AND ON THE PROJECT PLANS.
- 3. THERE MAY BE OTHER UTILITY LINES AND FACILITIES PRESENT THAT ARE IN SERVICE OR HAVE BEEN ABANDONED WITHIN THE PROJECT CORRIDOR OR AREA THAT ARE NOT SHOWN ON THE MAPPING AND ON THE PLANS.
- 4. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AZ811 (BLUE STAKE) PRIOR TO COMMENCING ANY DIGGING ACTIVITIES TO HAVE THE LOCATIONS OF THE UTILITIES MARKED IN THE FIELD AT THE PROJECT SITE. EXISTING PIPING, ELECTRICAL, AND UTILITIES ARE BASED ON EXISTING RECORDS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL EXISTING PIPING, ELECTRICAL, AND UTILITIES AND AVOIDING DAMAGE TO THE SAME.
- 5. THE CONTRACTOR IS ALSO RESPONSIBLE FOR VISUALLY INSPECTING THE MARKED UTILITIES AT THE PROJECT SITE TO ASCERTAIN IF ANY POTENTIAL CONFLICTS EXIST BETWEEN THE PROPOSED IMPROVEMENTS UNDER THIS PROJECT AND THE EXISTING UTILITY FACILITIES.
- 6. THE CONTRACTOR SHALL 'POTHOLE' TO DETERMINE THE EXACT LOCATION AND DEPTH OF EXISTING UTILITY FACILITIES TO IDENTIFY ANY POTENTIAL CONFLICTS BETWEEN UTILITY FACILITIES AND THE PROPOSED IMPROVEMENTS AND, IF NEEDED, REVIEW THE INFORMATION WITH THE OWNER AND THE ENGINEER TO RESOLVE ANY POTENTIAL CONFLICT PRIOR TO CONSTRUCTION.
- 7. THE CONTRACTOR SHALL OBSERVE ALL POSSIBLE PRECAUTIONS WHEN WORKING IN CLOSE PROXIMITY TO EXISTING UTILITY LINES AND/OR STRUCTURES TO PROTECT THE SAME AND AVOID ANY DAMAGE TO THE UTILITY FACILITIES.
- 8. SHOULD ANY UTILITY FACILITY BE DAMAGED BY THE CONTRACTOR'S ACTIVITIES, THE CONTRACTOR SHALL CONTACT AND COORDINATE WITH THE UTILITY OWNER FOR THE REPAIR OF THE FACILITY AT NO ADDITIONAL COST TO THE PROJECT.

CONSTRUCTION JOBSITE SAFETY NOTES

- 1. THE CONTRACTOR ASSUMES SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.
- 2. THIS SAFETY REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.
- 3. NEITHER THE OWNER NOR THE ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS.
- 4. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, CONSTRUCTION, AND MAINTENANCE OF ALL SAFETY DEVICES INCLUDING SHORING.
- 5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS, AND REGULATIONS.
- 6. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES AND REGULATIONS AS SET FORTH BY OSHA CONCERNING THE PROJECT WORK AND JOBSITE ACTIVITIES.
- 7. CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL PLANS FOR DEMOLITION ITEMS.
- 8. PROVIDE TEMPORARY THRUST RESTRAINT FOR EXISTING PIPING WHENEVER THE WORK REQUIRES. CONTRACTOR SHALL REPLACE OR RESTORE THE EXISTING RESTRAINT SYSTEM TO LIKE-NEW CONDITION.
- 9. DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATION TO BE DETERMINED BASED UPON EQUIPMENT MANUFACTURER SELECTED.
- 10. WHERE INDICATED, DIMENSIONS AND ELEVATIONS SHALL BE FIELD VERIFIED.
- 11. EXISTING EQUIPMENT TO BE REMOVED AND SALVAGED SHALL BE MARKED BY ENGINEER OR OWNER PRIOR TO WORK, UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS.
- 12. ALTHOUGH SUCH WORK MAY NOT BE SPECIFICALLY INDICATED, FURNISH AND INSTALL SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES AND DEVICES INCIDENTAL TO, OR NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.
- 13. CONTRACTOR TO MAINTAIN ACCESS FOR EMERGENCY RESPONSE VEHICLES DURING CONSTRUCTION.
- 14. CONTRACTOR SHALL PROVIDE TEMPORARY SAFETY AND SECURITY FENCING AND SITE IMPROVEMENTS AS NEEDED AT NO EXTRA
- 15. CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT LEAST WEEKLY BY THE CONTRACTOR. KEEP SITE AREA CLEAN.
- 16. EXCAVATED SOIL IS TO BE USED TO FILL IN LOW SPOTS PRIOR TO BEING HAULED OFF SITE. CONTRACTOR SHALL ESTABLISH A SUITABLE STAGING AREA FOR STORAGE OF EXCAVATED SOIL.
- 17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY AT THE SITE WHILE CONSTRUCTION IS IN PROGRESS. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE PUBLIC FROM ANY HAZARDS ARISING FROM CONSTRUCTION OPERATIONS AND PROTECTING EXISTING AND NEW IMPROVEMENTS FROM DAMAGE DUE TO ACCIDENT OR VANDALISM.
- 18. REFER TO PROJECT SPECIFICATION FOR ANY SUPPLEMENT DETAILS REFERRED TO IN THE DRAWINGS.
- 19. MAINTAIN, RELOCATE, OR REPLACE EXISTING SURVEY MONUMENTS, CONTROL POINTS, AND STAKES WHICH ARE DISTURBED OR DESTROYED. PERFORM THE WORK TO PRODUCE THE SAME LEVEL OF ACCURACY AS THE ORIGINAL MONUMENT(S) IN A TIMELY MANNER, AND AT THE CONTRACTOR'S EXPENSE.
- 20. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL DEVICES, SILT FENCING, RUNOFF CONTAINMENT BERMS, AND STRAW BALES ARE THE

MINIMUM REQUIRED.

- 21. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE.
- 22. WHERE ALUMINUM IS TO BE EMBEDDED IN CONCRETE, THE ALUMINUM SHALL FIRST BE COATED WITH COAL TAR EPOXY.
- 23. UNLESS OTHERWISE NOTED, ALL PVC INSTALLED ABOVE GROUND SHALL BE PAINTED PER SPECIFICATION SECTION 09800.
- 24. ALL WORK SHALL CONFORM TO THE BUILDING CODES SHOWN BELOW:
- GOVERNING BUILDING CODES:
- 2018 INTERNATIONAL BUILDING CODE
- 2017 NATIONAL ELECTRICAL CODE
- 2018 INTERNATIONAL PLUMBING CODE 2018 INTERNATIONAL FIRE CODE
- 25. CONTRACTOR TO SUBMIT A PROCUREMENT AND OVERALL PROJECT SCHEDULE TO THE ENGINEER AND OWNER WITHIN TWO WEEKS OF THE NOTICE TO PROCEED. CONTRACTOR WILL PROVIDE AN UPDATED PROJECT SCHEDULE WITH THE MONTHLY PAYMENT APPLICATION.
- 26. CONTRACTOR TO PROVIDE A THREE WEEK LOOK-AHEAD SCHEDULE TO THE OWNER EVERY TWO WEEKS.
- 27. CONTRACTOR TO TAKE PHOTOGRAPHS AND VIDEO THE TERTIARY FILTERS PRIOR TO CONSTRUCTION TO DOCUMENT THE EXISTING CONDITIONS. PROVIDE THE PHOTOGRAPHS AND VIDEO TO THE OWNER.
- 28. CONTRACTOR SHALL NOTIFY THE OWNER/ENGINEER AT LEAST 48 HOURS IN ADVANCE TO INSPECT THE FILTER POROUS PLATES AFTER THE MEDIA IS REMOVED. DEPENDING ON THE POROUS PLATES AND CELL DIVIDERS CONDITION, OWNER MAY REQUEST THEY ARE REPLACED AS PART OF THIS PROJECT.
- 29. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND STRUCTURAL CALCULATIONS FOR GRATING AND HANDRAILS PRIOR TO STARTING CONSTRUCTION FOR OWNER/ENGINEER APPROVAL. CONTRACTOR TO FIELD VERIFY THE THICKNESS OF THE EXISTING GRATING TO ENSURE THE NEW GRATING DOES NOT CREATE A TRIPPING HAZARD. CALCULATIONS MUST BE SEALED BY AN ARIZONA REGISTERED STRUCTURAL ENGINEER.
- 30. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS FOR TRAVELING BRIDGE AND ASSOCIATED FILTER EQUIPMENT FOR OWNER/ENGINEER APPROVAL PRIOR TO STARING CONSTRUCTION. SEE SPECIFICATION 15501.
- 31. ELEVATIONS SHOWN IN THIS DRAWINGS ARE AS PER RECORD DRAWINGS BY MOORE AND ASSOCIATES, INC. DATED: 07-08-1986.

ABBREVIATIONS & SYMBOLS

DIAMETER

FIELD VERIFY VERIFY WITH VENDOR

ELEVATION

INVERT ELEVATION

MAX MAXIMUM MIN MINIMUM

PVC

MOPO MAINTENANCE OF PLAN OPERATIONS

MJ MECHANICAL JOINT

SCH SCHEDULE

POLYVINYL CHLORIDE

SANITARY SEWER, STAINLESS STEEL

TYP TYPICAL

MARKERS











SECTION CUT

TYPICAL DETAIL

(SECTIONS ARE LETTERED, DETAILS ARE NUMBERED)

LEGEND

— — — BURIED/HIDDEN

----- CENTERLINE

CONSTRUCTION KEYNOTE

EARTH

EXISTING PIPE

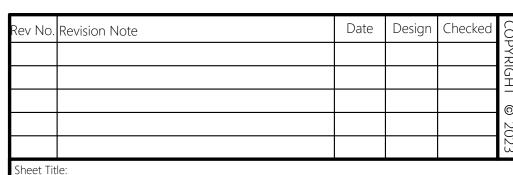
FLANGED 90° BEND

NEW PIPE

PIPE CONTINUATION

///// REMOVALS

REMOVALS KEYNOTE

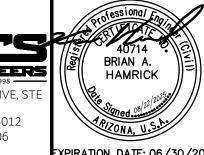


GENERAL NOTES

LAKE HAVASU CITY, ARIZONA oject name ISLAND WWTP FILTER UPGRADES PROJECT

roject Location LAKE HAVASU CITY, ARIZONA







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OVERALL SITE PLAN

SCALE: 1" = 50'

NOTE:

1) SITE PLAN RECREATED FROM GOOGLE
EARTH IMAGERY, DATED APRIL 2023

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OVERALL SITE PLAN

LAKE HAVASU CITY, ARIZONA -ISLAND WWTP FILTER UPGRADES PROJECT

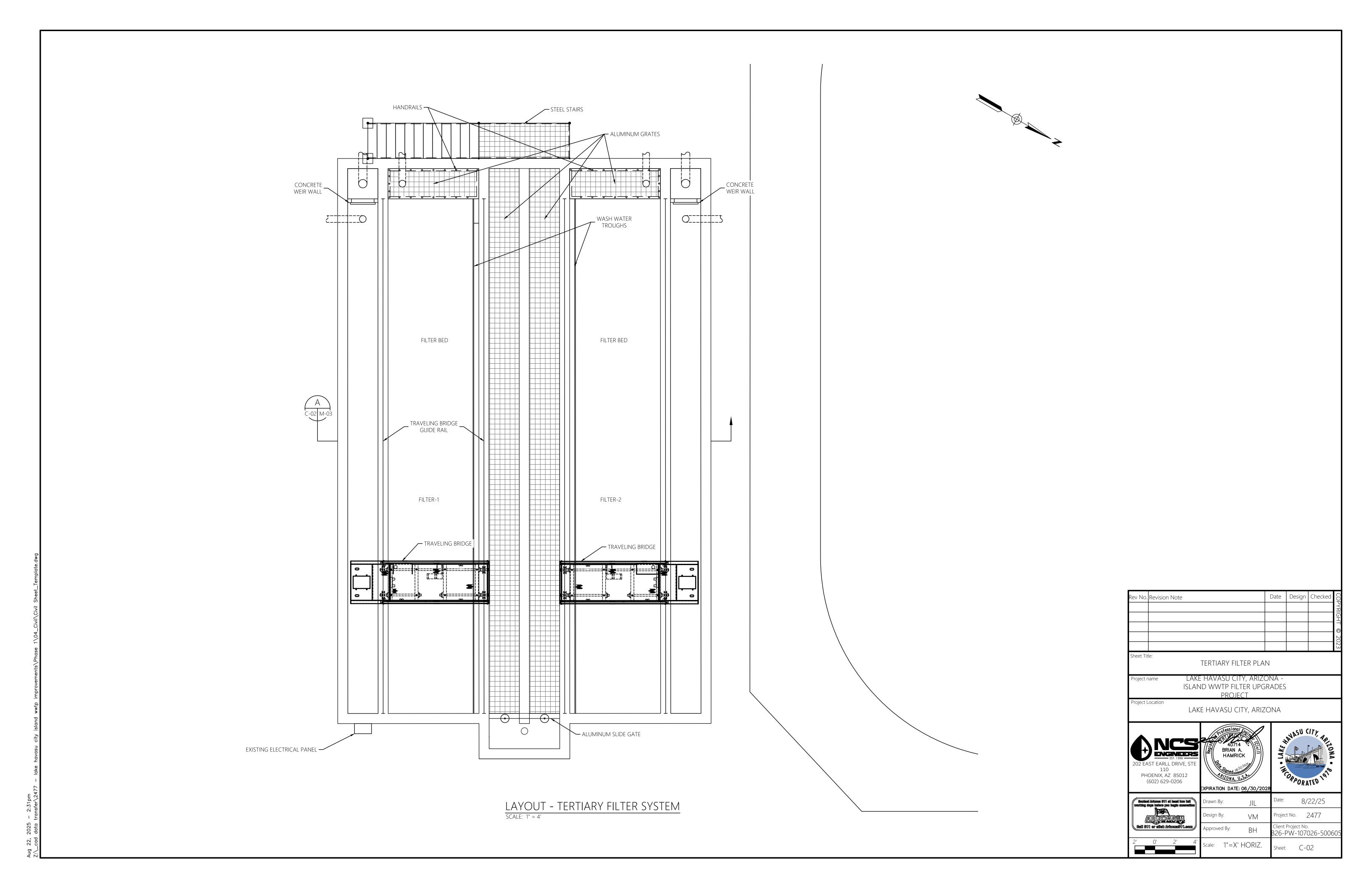
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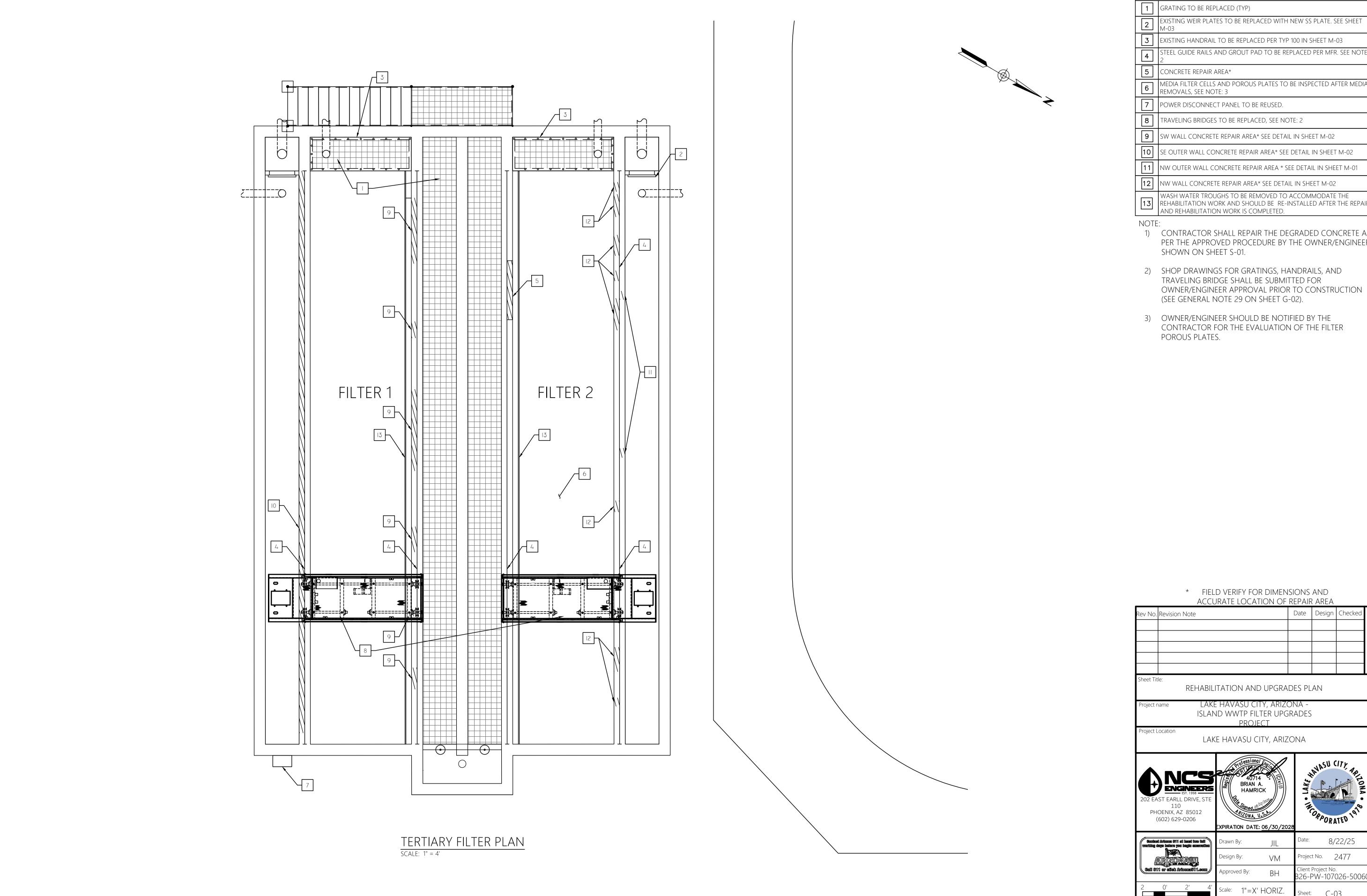




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REMOVAL AND RECONSTRUCTION NOTES

STEEL GUIDE RAILS AND GROUT PAD TO BE REPLACED PER MFR. SEE NOTE:

MEDIA FILTER CELLS AND POROUS PLATES TO BE INSPECTED AFTER MEDIA REMOVALS, SEE NOTE: 3

WASH WATER TROUGHS TO BE REMOVED TO ACCOMMODATE THE REHABILITATION WORK AND SHOULD BE RE-INSTALLED AFTER THE REPAIR AND REHABILITATION WORK IS COMPLETED.

1) CONTRACTOR SHALL REPAIR THE DEGRADED CONCRETE AS PER THE APPROVED PROCEDURE BY THE OWNER/ENGINEER

2) SHOP DRAWINGS FOR GRATINGS, HANDRAILS, AND TRAVELING BRIDGE SHALL BE SUBMITTED FOR OWNER/ENGINEER APPROVAL PRIOR TO CONSTRUCTION (SEE GENERAL NOTE 29 ON SHEET G-02).

3) OWNER/ENGINEER SHOULD BE NOTIFIED BY THE CONTRACTOR FOR THE EVALUATION OF THE FILTER

> * FIELD VERIFY FOR DIMENSIONS AND ACCURATE LOCATION OF REPAIR AREA

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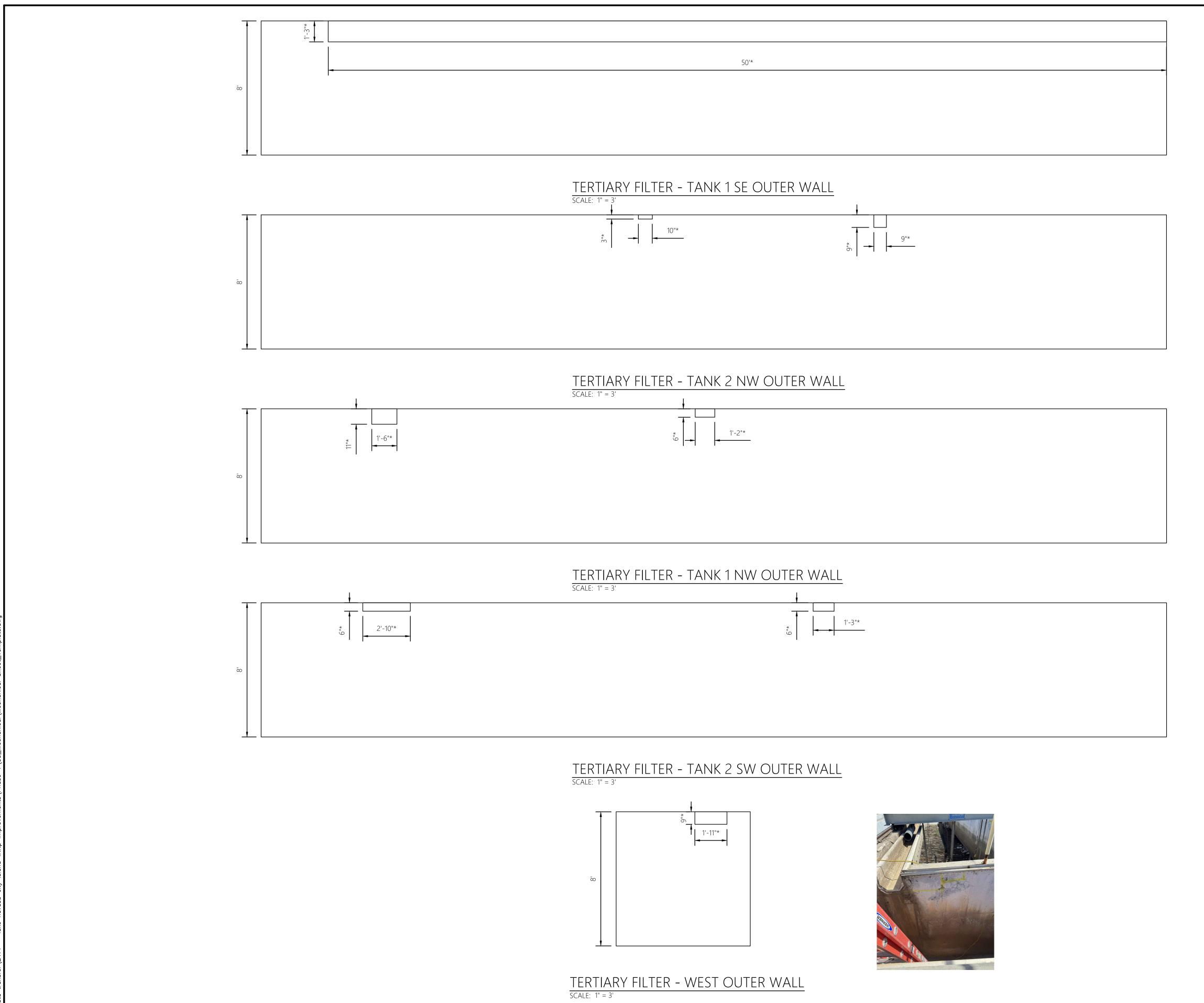
lake havasu city, arizona -ISLAND WWTP FILTER UPGRADES

LAKE HAVASU CITY, ARIZONA





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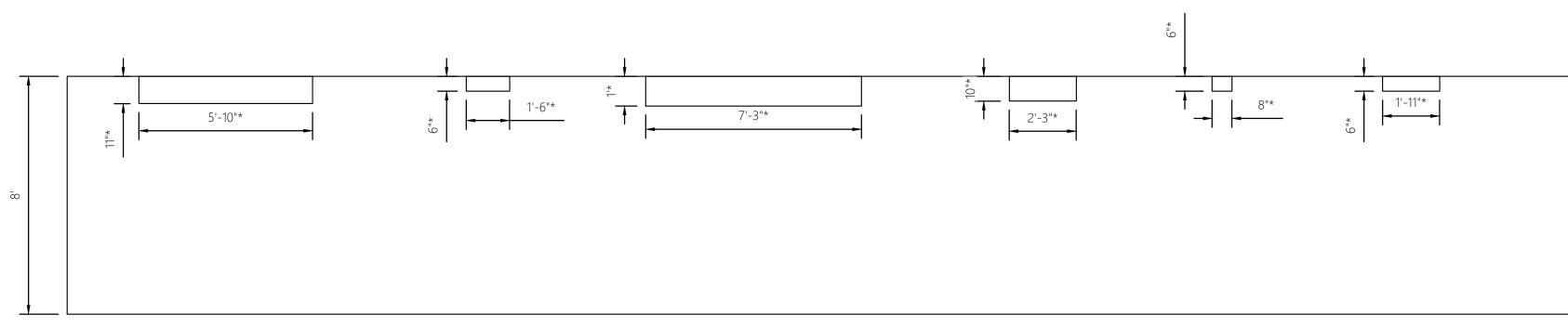
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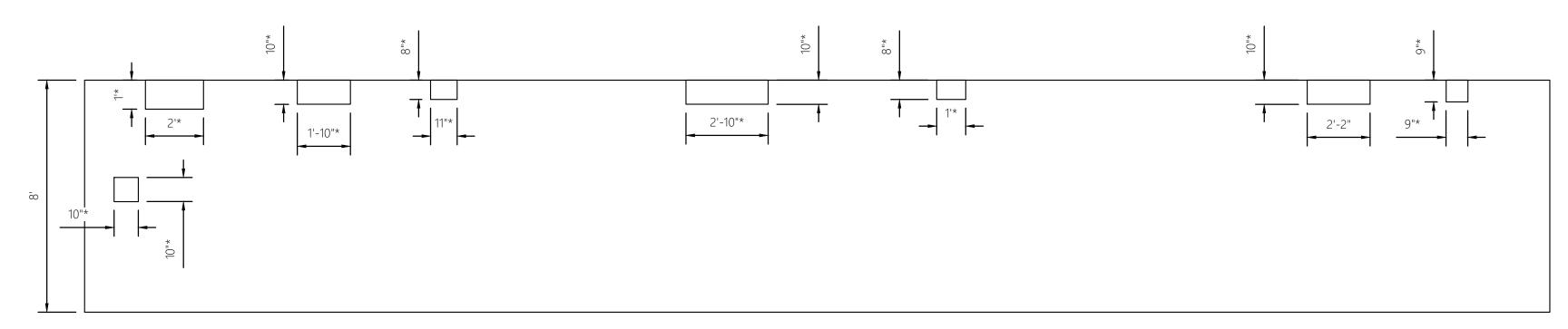


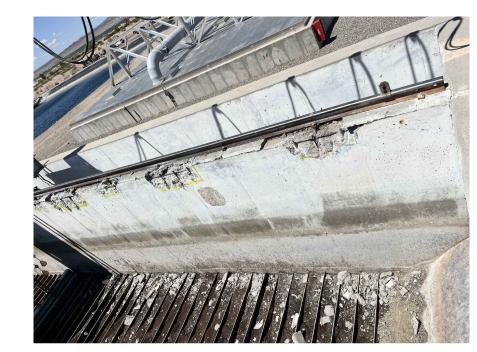


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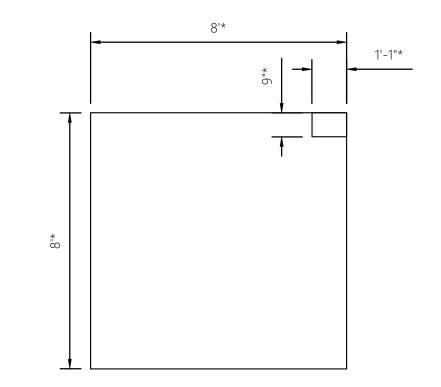
TERTIARY FILTER - TANK 1 SOUTH EAST WALL



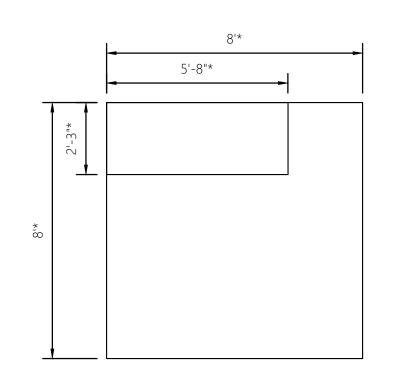


TERTIARY FILTER - TANK 2 NORTH WEST WALL

SCALE: 1" = 3'



TERTIARY FILTER - TANK 1 WEST OUTER WALL





TERTIARY FILTER - TANK 2 WEST WALL

SCALE: 1" = 3'

1. FOR THE CONCRETE DAMAGED AREAS, PERFORM POWER TOOL CLEANING TO REMOVE ALL LOOSE CONCRETE, DIRT, DEBRIS, AND OTHER CONTAMINANTS.

CONCRETE REPAIR NOTES:

- 2. PERFORM HIGH PRESSURE WASH, MINIMUM 2000 PSI, TO OBTAIN AGGREGATE SURFACE PROFILE OF 1/8" ± 1/16" (CONCRETE SURFACE PROFILE 5-6).
- 3. LENGTH AND WIDTH OF THE EXISTING CONCRETE DAMAGED AREAS VARY BETWEEN 1' TO 50' AND 3" TO 23", RESPECTIVELY.



- 4. FOR BIDDING PURPOSES, THE ESTIMATED CONCRETE DAMAGED AREAS THAT NEED TO BE POWER CLEANED, POWER WASHED, AND REPAIRED IS APPROXIMATELY 150 SQ. FT. CONTRACT TO PROVIDE A SQ FT UNIT PRICE WITH BID TO COVER ADDITIONAL REPAIR.
- 5. FOR THE CONCRETE CRACKED SURFACE, SURFACE PREPARATION TO INCLUDE CLEANING WITH WIRE BRUSH TO REMOVE ANY LOOSE MATERIAL, DIRT, LAITANCE, AND OTHER CONTAMINANTS.
- 6. FOR BIDDING PURPOSES, THE ESTIMATED LENGTH OF CONCRETE CRACKS THAT NEED TO BE PREPARED IS APPROXIMATELY 250 LF. CONTRACT TO PROVIDE A LF UNIT PRICE WITH BID TO COVER ADDITIONAL REPAIRS.
- 7. PICTURES ATTACHED ARE FOR REFERENCE ONLY. THEY DO NOT SHOW THE ENTIRE SECTION OF THE WALL.

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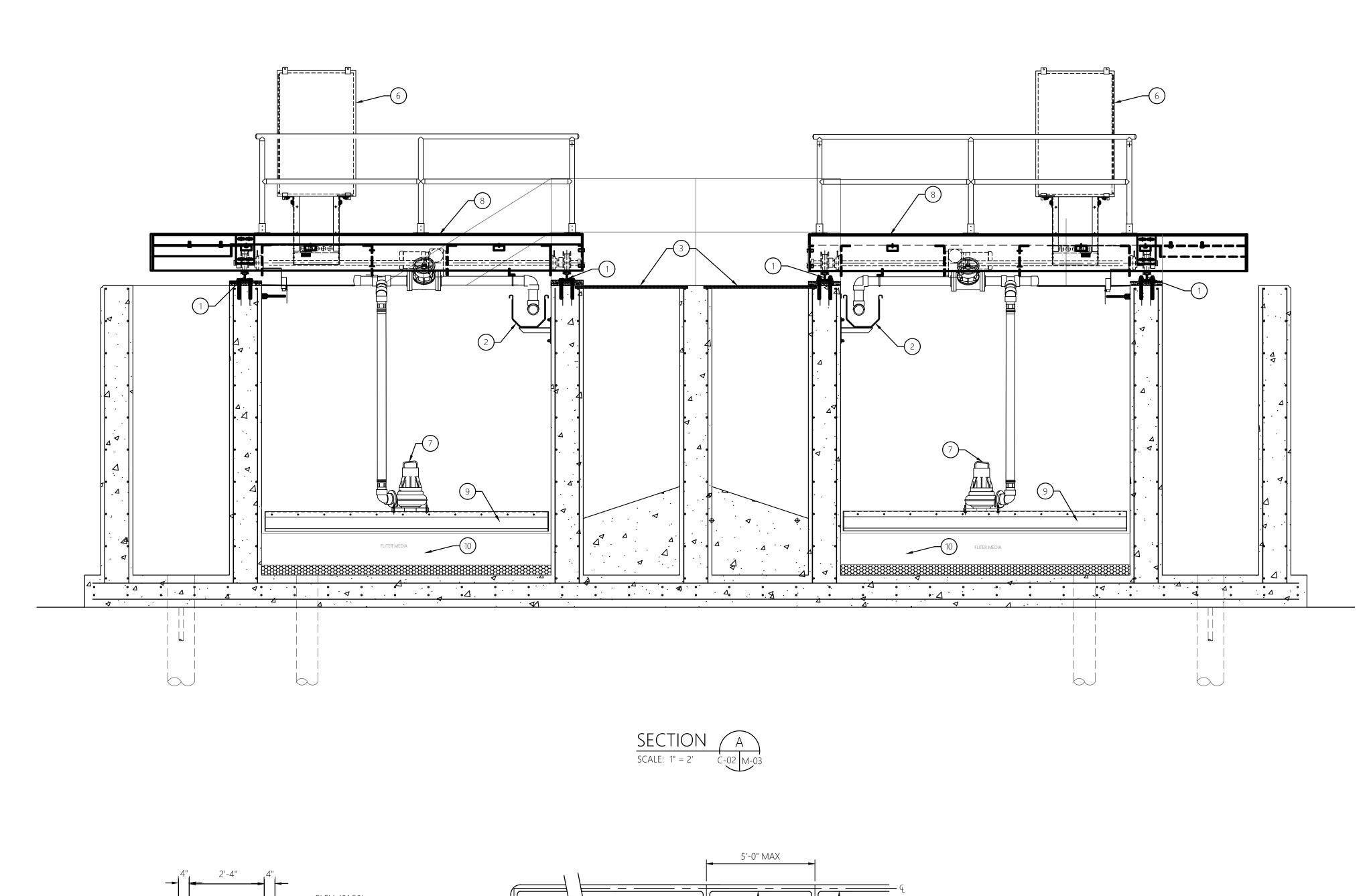
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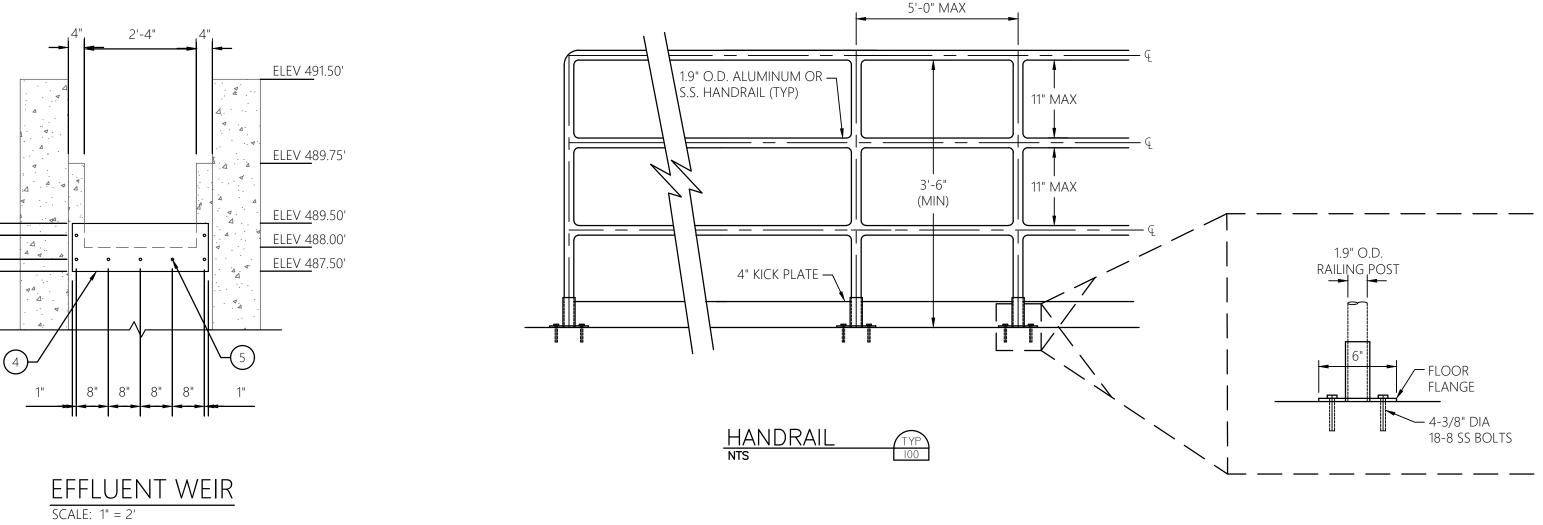
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CONSTRUCTION NOTES

- NEW GUIDE RAIL, ANCHOR BOLTS AND GROUT PER EQUIPMENT MANUFACTURE
- REMOVE AND REINSTALL WASH WATER TROUGHS AFTER CONCRETE REHABILITATION IS COMPLETE, REPLACE ALL HARDWARE AND SUPPORT
- (3) REMOVE GRATINGS PER APPROVED MFR
- $\frac{1}{4}$ ALUMINUM PLATE CUT OR FILE FOR SHARP UPSTREAM EDGE
- PROVIDE SST NUT AND WASHER IN 9/16" X 2" SLOTTED HOLES. SEAL WEIR PLATE WITH NEOPRENE GASKET ALL AROUND
- (6) REPLACE FILTER CONTROL PANEL AND FESTOON CABLE SYSTEM
- 7 REPLACE BACKWASH PUMP AND ACCESSORIES
- 8 REPLACE TRAVELING BRIDGE AND ALL ASSOCIATED EQUIPMENT AND COMPONENTS
- 9 REPLACE WASHWATER HOOD ASSEMBLY
- 10 REPLACE FILTER MEDIA

NOTES:

- 1. CONCRETE REPAIR AREA IS NOT SHOWN IN THIS SHEET. FIELD VERIFY FOR DIMENSIONS AND ACCURATE LOCATION OF THE REPAIR AREA.
- 2. WASHER TROUGHS, INFLUENT AND EFFLUENT PORTS, AND FESTOON POSTS WILL NOT BE REPLACED.
- 3. AFTER MEDIA IS REMOVED, INSPECT POROUS PLATES AND CELL DIVIDERS WITH ENGINEER. CITY WILL DETERMINE IF POROUS PLATES AND CELL DIVIDERS WILL BE REPLACED IN THIS PROJECT AFTER INSPECTION.

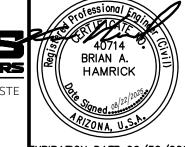
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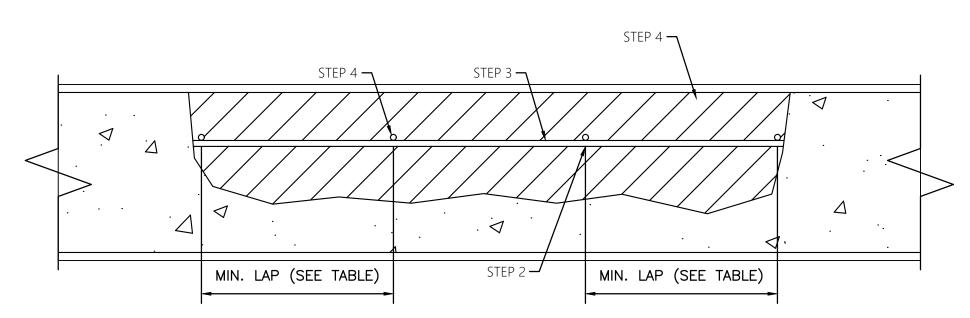




REPAIR DIRECTIONS AT CONCRETE SPALL AND DEGRADATION

SCALE: NTS

- 1. BREAKOUT/CHIP CRACKED OR DEGRADED CONCRETE TO EXPOSE SOLID CONCRETE.
- 2. PREPARE SURFACE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
- 3. APPLY SIKA ARMATEC 110 EPOCEM, OR APPROVED EQUAL, TO ALL EXPOSED REINFORCEMENT IF ANY.
- 4. APPLY SIKREPAIR SHB REPAIR MORTAR, OR APPROVED EQUAL TO SPALLED AREA WITHIN THE RECOMMENDED OPEN TIME BETWEEN APPLICATION OF ARMATEC 110.
- 5. APPLY TWO (2) COATS OF SIKATOP SEAL 107, OR APPROVED EQUAL OVER THE CONCRETE.



DETERIORATED REINFORCING REPLACEMENT

- 1. Breakout cracked or spalled concrete until solid concrete is in reach.
- 2. DETERMINE AMOUNT OF STEEL REINFORCEMENT REQUIRED TO BE REPLACED. DETERMINE STEEL SECTION LOSS FOR EACH EXPOSED REINFORCING BARS. REPLACE BARS WHERE MORE THAN 25% LOSS HAS OCCURRED.
- 3. SPLICE EXISTING BAR WITH A NEW BAR (ASTM A615 GR 60) OF STEEL CROSS SECTIONAL AREA
- EQUIVALENT TO 68% OF THE CROSS-SECTIONAL AREA OF THE EXISTING BAR.

 4. PREPARE SURFACE ACCORDING TO THE SPECIFICATION AND MANUFACTURE'S RECOMMENDATIONS.

 ALL SURFACE SHALL BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER DURING
- APPLICATION.
 5. APPLY SIKA ARMATEC 110 EPOCEM, OR APPROVED EQUAL, TO ALL NE AND EXISTING REINFORCEMENT.
- 6. WHILE SIKA ARMATEC 110 EPOCEM IS STILL WET OR WITHIN THE RECOMMENDED OPEN TIME BETWEEN APPLICATION OF ARMTEC 110, APPLY SIKREPAIR SHB OR APPROVED EQUAL.
- 7. APPLY TWO (2) COATS OF SIKATOP SEAL 107, OR APPROVED EQUAL OVER THE CONCRETE.
- 8. COMPLETE REPAIR

	STEP 1	
	STEP 2	
<		>

CRACK CONCRETE REPAIR DETAIL SCALE: NTS

- 1. SET PORTING DEVICES OVER CRACKS.
- SEAL POSTS AND CRACKS WITH SIKADUR 31, HI-MOD GEL, OR APPROVED EQUAL.
 APPLY SIKADUR 35, HI-MOD LV, OR APPROVED EQAUL, AS PER MANUFACTURER'S RECOMMENDATIONS.

BAR SIZE	DIAMETER (IN.)	CROSS-SECTIONAL AREA (IN²)	MIN. LAP (IN.)	
#3	0.3750	0.1100	12	
#4	0.5000	0.2000	15	
#5	0.6250	0.3100	19	
#6	0.7500	0.4400	23	
#7	0.8750	0.6000	33	

NOTES:

LAP LENGTHS SHOWN ARE FOR COVERS OF AT LEAST1.0 BAR DIAMETER AND HORIZONAL c.c. SPACING OF AT LEAST2.0 BAR DIAMETERS. IF AN ADEQUATE SPLICE LEGTH CAPABLE OF DEVELOPING AT LEAST 125% OF THE SPECIFIED YIELD STREGTH OF THE BAR. ALL WELDING SHALL CONFORM TO "STRUCTURAL WELDING CODE - REINFORCING STEEL" (ANSI/AWS D1.4). NEW REINFORCING TO BE WELDED SHALL CONFORM TO ASTM A706. IF A CHEMICAL ANALYSIS OF THE EXISTING BARS IS NOT KNOWN OR OBTAINED, THEN THE EXISTING BARS SHOULD BE PREHEATED PER ANSI/AWS D1.4

Rev No.	Revision Note		Date	Design	Checked

Project name LAKE HAVASU CITY, ARIZONA ISLAND WWTP FILTER UPGRADES
PROJECT

Project Location

LAKE HAVASU CITY, ARIZONA







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Drawn By: JIL Date: 8/22/25

Design By: JT Project No. 2477

Approved By: BH Client Project No. 826-PW-107026-500605

Scale: 1"=X' HORIZ. Sheet: S-01

	SCHEM	ATIC DIAGRAM	SYMBOLS		POWER SINGLE LINE	DIAGRAM	M SYMBOLS		ELECTRICAL ABBREVIATIONS		COPYRIGHT © 2025
CR	CONTROL RELAY	0 0	AUTO 2 POSITION SELECTOR SWITCH D POSITION LEGEND: X=CLOSED XO O=OPEN		JUNCTION BOX WITH POWER DISTRIBUTION BLOCK OR LUGS	AMPS O O POLES	CIRCUIT BREAKER, SHOWN WITH TRIP RATING AND NUMBER OF POLES	A AMPERE AFD ADJUSTABLE FREQUENCY DRIVE AFF ABOVE FINISHED FLOOR AFG ABOVE FINISHED GRADE AI ANALOG INPUT AIC AMPS INTERRUPTING CAPACITY	JB JUNCTION BOX PO PULSE OUTPUT L, LO LOW PPB POWER PULLBO LAN LOCAL AREA NETWORK PPG POUNDS PER LC LOOP CONTROLLER PPH POUNDS PER LCL LEVEL CONTROL, LOW PPM PARTS PER MI LCP LOCAL CONTROL PANEL PR PAIR LOS LOCK-OUT-STOP PRES PRESSURE	OX GALLON HOUR LLION	Drawn Check
TD	TIME DELAY RELAY	OFF HAND A	AUTO 3 POSITION SELECTOR SWITCH D HAND - OFF - AUTO POSITION XOO LEGEND: X=CLOSED O=OPEN		CONDUIT SEALOFF	AMPS MCP O O POLES	MOTOR CIRCUIT PROTECTOR WITH TRIP RATING AND NUMBER OF POLES	AO ANALOG OUTPUT AS AIR SUPPLY ATS AUTOMATIC TRANSFER SWITCH BC BYPASS CONTACTOR C CONDUIT CB CIRCUIT BREAKER CCW COUNTER CLOCKWISE	LOS LOCK-OUT-STOP LOR LOCAL/OFF/REMOTE LS LEVEL (i.e FLOAT) SWITCH LTC LIQUIDTIGHT FLEXIBLE METAL CONDUIT M MOTOR MA MANUAL/AUTO MA MILLIAMP PRES PRESSURE PSH PRESSURE SW CONDUIT PSI POUNDS PER PV PROCESS VARI RAS RETURN ACTIVA RAW WATER	TCH, HIGH SQUARE INCH ABLE	Design
AR	ALARM RELAY	مله	NORMALLY CLOSED PUSH BUTTON	\sim	LTC CONNECTION	AMPS O O POLES	DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES	CL2 CHLORINE CON CONTACTOR CPB CONTROL PULLBOX CU COPPER, BARE CV CONTROL VALVE	MAX MAXIMUM RF RADIO FREQUE MC MANUFACTURER'S CABLE RIO REMOTE INPUT MCB MAIN CIRCUIT BREAKER RS RAW SEWAGE MCC MOTOR CONTROL CENTER RSP RAW SEWAGE MCP MOTOR CIRCUIT PROTECTOR RST RESET	PUMP	Date
ETM	ELAPSED TIME MET	ER O	D LOCKOUT STOP PUSH BUTTON	~	MC CONNECTION	MMR	MOTOR MANAGEMENT RELAY	CW CLOCKWISE DCS DISTRIBUTED CONTROL SYSTEM DI DISCRETE INPUT DO DISCRETE OUTPUT DP DISTRIBUTION PANEL	MGD` MILLION GALLONS PER DAY RTU REMOTE TELEM MGL MILLIGRAMS PER LITER RWT REFLECTED WA MH MANHOLE SCA SHORT CIRCUI	VE TRAP	
M	MOTOR STARTER C CONTACTOR COIL	R O	NORMALLY OPEN PUSH BUTTON	•	BOND TO METALLIC WATER PIPE	SPD	SURGE PROTECTIVE DEVICE SOLID STATE	DV/DT DIFFERENTIAL VOLTAGE/TIME DWG DRAWING ED3 ELECTRICAL DISTRICT NO. 3 ETM ELAPSED TIME METER EOL ELECTRONIC OVERLOAD	MOV MOTOR OPERATED VALVE SEQ SERVICE ENTRA MMR MOTOR MANAGEMENT RELAY SES SERVICE ENTRA MTU MASTER TELEMETRY UNIT SLC SINGLE LOOP NEC NATIONAL ELECTRICAL CODE SLOS START-LOCK— NECA NATIONAL ELECTRICAL CONTRACTOR SMC SUBMERSIBLE	NNCE EQUIPMENT NNCE SECTION CONTROLLER DUT—STOP MANUFACTURER CABLE	
PC	PHOTO CELL	\mathcal{T}_{α}	EMERGENCY STOP PUSH BUTTON (MAINTAINED)	UM	UTILITY METER	SSS VFD	STARTER VARIABLE FREQUENCY DRIVE	FA FOUL AIR FC FAIL CLOSED FE FLOW ELEMENT FLA FULL LOAD AMPS FS FLOW SWITCH	N.C. NORMALLY CLOSED SP SET POINT N.O. NORMALLY OPEN SPC SPARE CONDU NIC NOT IN CONTRACT SPD SURGE PROTECT NOTC NORMALLY OPEN TIMED CLOSED SPR SPARE NPW NON-POTABLE WATER SS START/STOP	T CTIVE DEVICE	
R	BEACON ALARM LIC LETTER INDICATES R=RED, A=AMBER, B=BLUE, G=GREEN	COLOR AMPS	DISCONNECT SWITCH SHOWN WITH RATING AND NUMBER OF POLES	HP	MOTOR, NUMBER DESIGNATES NEMA HORSEPOWER SIZE	HF	HARMONIC FILTER	FVNR FULL VOLTAGE NON—REVERSING FW FINISHED WATER GFCI GROUND FAULT CIRCUIT INTERRUPTER GFP GROUND FAULT PROTECTION GND GROUND GPD GALLONS PER DAY	NTS NOT TO SCALE NTU TURBIDITY OF OVERFLOW OIT OPERATOR INTERFACE TERMINAL OL OVERLOAD ST SHUNT TRIP TC TELEPHONE CA TS TEMPERATURE TVSS TRANSIENT VOI TYP TYPICAL	TARTER (SOFT START) BLE SWITCH TAGE SURGE SUPPRESSOR	
R	PILOT LIGHT LETTER INDICATES R=RED, A=AMBER, B=BLUE, G=GREEN	0~70	LIMIT OR POSITION SWITCH	AMPS	FUSEHOLDER OR	EOL	ELECTRONIC OVERLOAD RELAY GROUND CONNECTION	GPH GALLONS PER HOUR GPM GALLONS PER MINUTE GRS GALVANIZED RIGID STEEL H, HI HIGH H2S HYDROGEN SULFIDE HMI HUMAN MACHINE INTERFACE	OLR OVERLOAD RELAY OO ON/OFF (MAINTAINED) OR OFF-REMOTE OSC OPEN/STOP/CLOSE P PHASE PB PULL BOX UG UNDERGROUND UL UNDERWRITERS UM UTILITY METER V VOLT VFD VARIABLE FREC		
~~~	OUTPUT DV/DT FILTER	PSH	O PRESSURE SWITCH HIGH		FUSEBLOCK GENERATOR	\times_\times_\times_\times_\tilde{\times_\times_\tilde{\times_\times_\times_\tilde{\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\times_\t	TRANSFORMER  CONTACTOR	HOA HAND-OFF-AUTO HOR HAND-OFF-REMOTE I CURRENT IC INSTRUMENTATION CABLE ICR INTERMITTENT CYCLE REACTOR IO INPUT/OUTPUT	PCP PROCESS CONTROL PANEL W WATT, WIRE PCV PRESSURE CONTROL VALVE WAS WASTE ACTIVAT PFR PHASE/POWER FAILURE RELAY WP WEATHERPROOF PI PULSE INPUT XFMR TRANSFORMER PLC PROGRAMMABLE LOGIC CONTROLLER XMR TRANSFORMER PLI PLANT INFLUENT XMTR TRANSMITTER	ED SLUDGE	Revision Note
0-444-4	HEATING ELEMENT	PSL	PRESSURE SWITCH LOW		SITE PLAN	SYMBOL	S	ISC SHORT CIRCUIT CURRENT  ELECTRICAL LINETYPES	PMP PUMP ZS POSITION (i.e PNL PANEL GENERAL NOTES	LIMIT) SWITCH	Se No
	TRANSFORMER		FLOW SWITCH	▼	TELEPHONE OUTLET		FIELD DEVICE	EXPOSED CONDUIT	THE COMPLETED INSTALLATION SHALL COMPLY WITH LATEST REVISION OF ALL COCAL CODES, ORDINANCES, AND REGULATIONS. THE CONTRACTOR SHALL CONSPECTIONS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. ALL WONEAT, WORKMANLIKE MANNER IN ACCORDANCE WITH THE LATEST NECA STAIR	BTAIN NECESSARY PERMITS AND RK SHALL BE COMPLETED IN A	TANASU CITY, PASIONA.
30	CURRENT TRANSFO	RMER	LEVEL FLOAT SWITCH	\$	SINGLE POLE SWITCH		GROUND ROD	EXISTING EXPOSED CONDUIT	COMPETENT SUPERVISION. INSTALL GROUNDING PER NEC.  2. VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING COIL WHICH MAY AFFECT THE EXECUTION OF THE WORK. INCLUDE ALL RELATED	NDITIONS AND OTHER FACTORS,	TORPORATED 1918
=	GROUND CONNECTION	DN TO		\$3	3 WAY SWITCH	Ф	DUPLEX RECEPTACLE		PROPOSAL.  3. THE CONTRACTOR SHALL COORDINATE WORK WITH THE UTILITIES PROVIDING AND SHALL COMPLY WITH ALL THEIR INSTALLATION REQUIREMENTS.	SERVICES ON THIS PROJECT,	
	GENERATOR	T C		\$4	4-WAY SWITCH		ANTENNA MAST	——————————————————————————————————————	4. ALL MATERIALS SHALL BE NEW AND OF THE BEST QUALITY, MANUFACTURED LATEST REVISION OF NEMA, ANSI, UL, OR OTHER APPLICABLE STANDARDS. NAMES, MODELS, AND NUMBERS IS INTENDED TO ESTABLISH STYLE, QUALITAND BID PRICE.	THE USE OF MANUFACTURERS'	
HORN	HORN	0-50	TEMPERATURE SWITCH	\$м	MANUAL MOTOR STARTER		CONDUIT SEALOFF	BARE COPPER GROUND CONDUCTOR	5. PROTECT ALL ELECTRICAL MATERIAL AND EQUIPMENT INSTALLED AGAINST DA WEATHER CONDITIONS, OR ANY OTHER PREVENTABLE CAUSES. EQUIPMENT I CONSTRUCTION, PRIOR TO ACCEPTANCE BY THE ENGINEER OR THE OWNER, DEFECTIVE.	AMAGED DURING SHIPPING OR WILL BE REJECTED AS	
.24_E01.dwg	FULL VOLTAGE NON (FVNR) MOTOR STA CONTACTOR NUMBE DESIGNATES NEMA	RTER OR			SPECIAL PURPOSE OR WELDING OUTLET		DISCONNECT SWITCH	EXISTING OR FUTURE	6. LEAVE THE SITE CLEAN. REMOVE ALL DEBRIS, EMPTY CARTONS, TOOLS, COI MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THE WORK DL COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS, LE ACCEPTANCE OF WORK. DAMAGED PAINT AND FINISHES SHALL BE TOUCHED MATCHING COLOR PAINT AND FINISH.	RING CONSTRUCTION. ALL FT AS NEW BEFORE FINAL	202 E. Earll Drive Suite 110 Phoenix, AZ 85012 Phone (602)629-0206 http://www.ncseng.com/
Files\D2477	NORMALLY OPEN C	~	O FUSEHOLDER OR FUSEBLOCK	S	SMOKE DETECTOR	M	MOTOR		7. CIRCUIT CONDUCTORS #6 AWG OR SMALLER SHALL BE THWN STRANDED CO AWG SHALL BE XHHW STRANDED COPPER, UNLESS OTHERWISE NOTED ON SHALL BE XHHW-2 STRANDED COPPER. MINIMUM POWER CONDUCTOR SIZE AWG GROUND, UNLESS OTHERWISE NOTED ON PLANS.	PLANS. #1 AWG OR LARGER	otessional Engine
Jesign_CAI	NORMALLY CLOSED	CONTACT	O THERMAL OVERLOAD RELAY	(T)	THERMOSTAT	0	CONDUIT TURN UP	//////////////////// DEMOLITION	8. UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC. MINIMUM CONDUIT MINIMUM UNDERGROUND CONDUIT SIZE SHALL BE 1 INCH.		74459 AARON G. ARMENTA  ARIZONA, U.S.A.
- DI C	→ RTU OR PLC CONT	ACT ■	TERMINAL BLOCK			•	CONDUIT TURN DOWN		9. CONDUITS SHALL BE MARKED AT EACH END WITH MATCHING NUMBERED BR SHALL HAVE A PULL STRING INSTALLED, SECURED, AND CAPPED.  10. EXPOSED CONDUITS SHALL BE GALVANIZED RIGID STEEL (GRS). MINIMUM SI	Sheet Title:	EXPIRATION DATE: 12/31/27  CAL NOTES,
abilitation/10		Δ	DEVICE LOCATED AT REMOTE LOCATION		CIRCUIT SCHE	DULE LEC	GEND	_	<ul> <li>3/4 INCH, UNLESS OTHERWISE NOTED ON THE PLANS.</li> <li>11. SAFETY SWITCHES, ELECTRICAL DISTRIBUTION EQUIPMENT, CONTROL PANELS, AND OTHER ELECTRICAL DEVICES SHALL BE UL LISTED, AND RATED FOR HIDUTY SERVICE.</li> </ul>	SYMBOLS	AND LEGENDS
- Island WWTP Ref			CONDUIT SEALOFF		⊢ AAA−BC ↓ ↓ ↓ ↓ SEQUI	NCE NUMBER	₹	PXXX GROUPED CONDUIT AND CIRCUIT IDENTIFICATION TAGS. REFER TO THE POWER SINGLE-LINE, SCHEMATIC CONNECTION DIAGRAMS AND CIRCUIT SCHEDULE FOR CONDUIT SIZES AND	<ul> <li>12. WIRING DEVICES SHALL BE SPECIFICATION GRADE.</li> <li>13. THE CONTRACTOR IS RESPONSIBLE FOR MANAGING, SCHEDULING, DOCUMEN AND PERFORMING THE WORK SO THAT A COMPLETE ELECTRICAL, INSTRUME AND CONTROL SYSTEM FOR THE FACILITY IS PROVIDED. ACCURATE SHO RECORD DRAWINGS, AND O&amp;M MANUALS SHALL BE SUBMITTED PRIOR TO F ACCEPTANCE OF THE WORK.</li> </ul>	ISLAND WW7 ING, NTATION Project Location NAL	ASU CITY-ARIZONA  TP FILTER UPDRAGES  PROJECT
5:49pm		9	WIRE PIGTAIL		TYPE	C=CONTROL P=POWER		CONTENTS.  P=POWER C=CONTROL	14. TYPICAL DETAILS SHALL APPLY IN ALL CASES, WHETHER SPECIFICALLY REFERRED TO OR NOT.	Drawn By: ML	AVASU CITY  Date: 8/12/2025
Aug 12, 2025 – 3:49pm X:\2400's\N2477.25 Lake										Design By: ML Approved By: AGA	Date: 8/12/2025  Date: 8/12/2025
100% - DESIGN SUBMITTAL - ISSU							- ISSUED FOR CONSTRUCTION		Client Project No. Project No. 247	Sheet E-01	

