

LAKE HAVASU CITY, ARIZONA

PROJECT NO. 107018

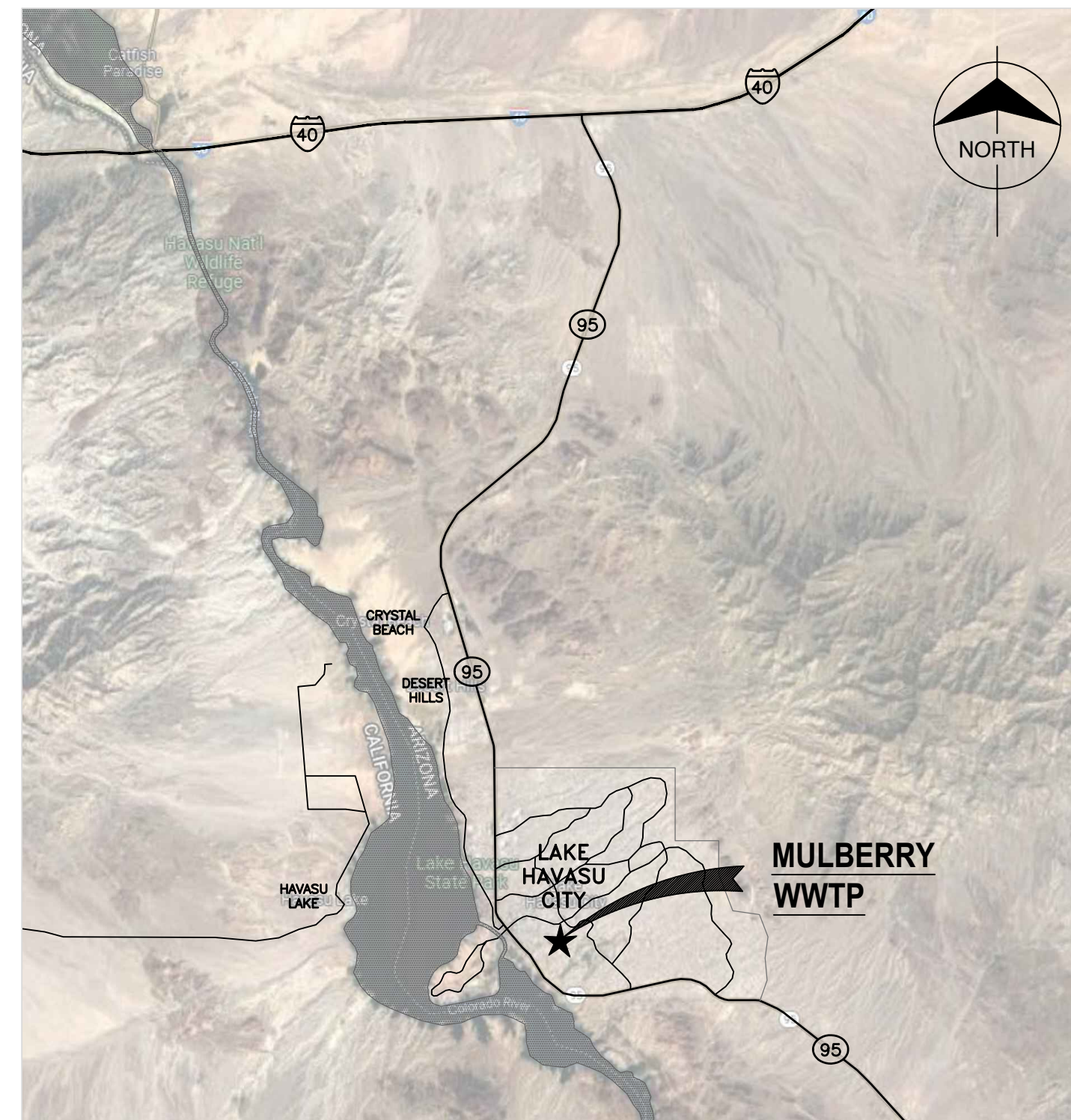
MULBERRY WWTP - AERATION BASINS, STRUCTURAL AND MCC UPGRADES

MAY 2023

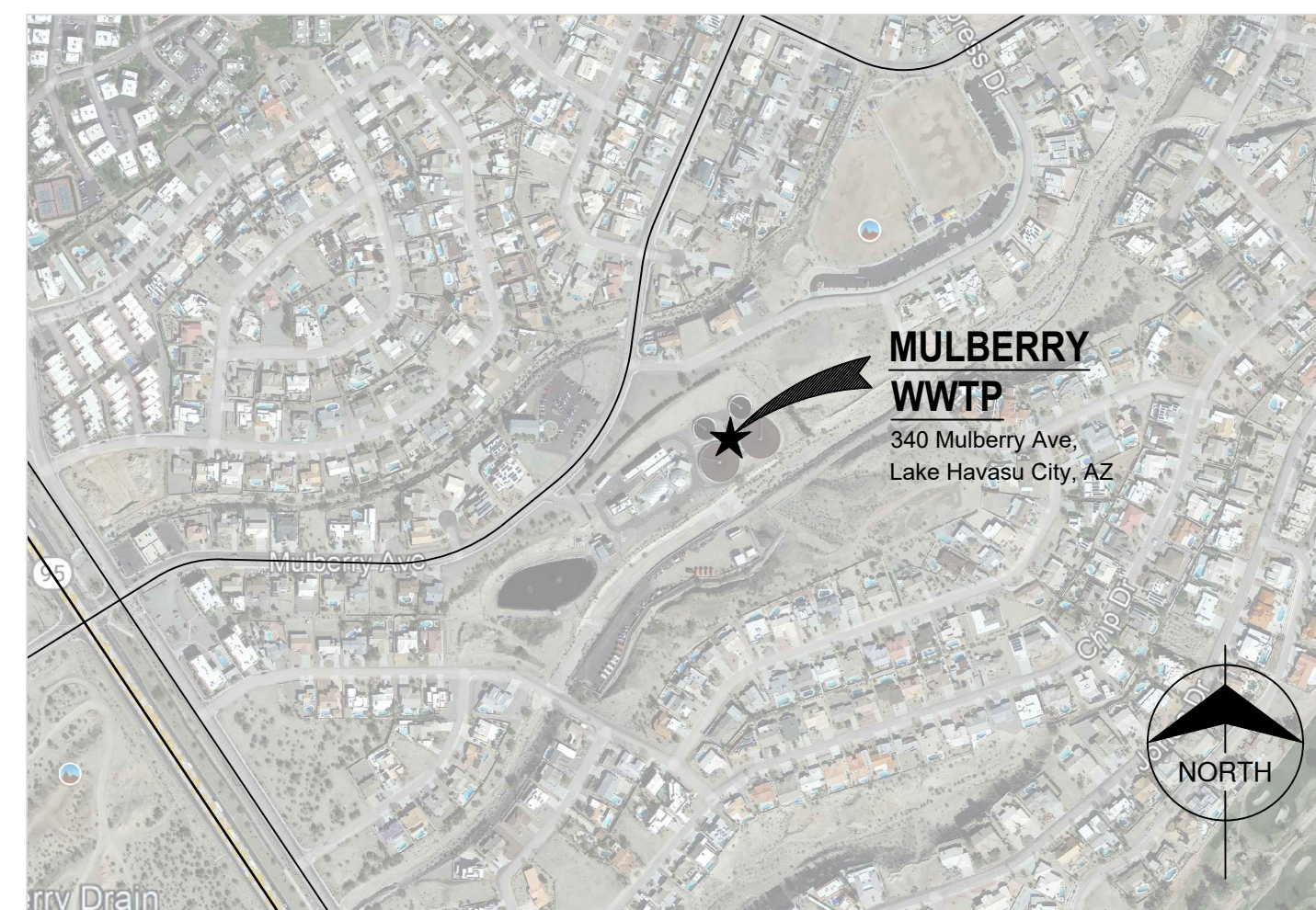
VOLUME III - DESIGN DRAWINGS

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LOCATION MAP



VICINITY MAP

CITY COUNCIL

CAL SHEEHY	MAYOR
DAVID LANE	VICE MAYOR
JIM DOLAN	COUNCIL MEMBER
JENI COKE	COUNCIL MEMBER
NANCY CAMPBELL	COUNCIL MEMBER
MICHELE LIN	COUNCIL MEMBER
CAMERON MOSES	COUNCIL MEMBER

CITY MANAGER
JESS KNUDSON

CITY ENGINEER
GREG FROSLIE, P.E.

PROJECT MANAGER
JASON HART

UTILITY CONTACTS

LAKE HAVASU CITY (WASTEWATER)	(928) 855-3999
LAKE HAVASU CITY (WATER)	(928) 855-2618
SUDDEN LINK	(928) 855-9855
FRONTIER COMMUNICATION	(928) 453-0541
UNISOURCE ENERGY SERVICES (GAS)	(928) 505-7025
UNISOURCE ENERGY SERVICES (ELECTRIC)	(928) 505-7031



NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY
MULBERRY WWTP
AERATION BASINS, STRUCTURAL
AND MCC UPGRADES

Designed by: GB	Drawn by: KWB	Checked by: RN	Date: 01-26-23	Dwg scale: AS NOTED
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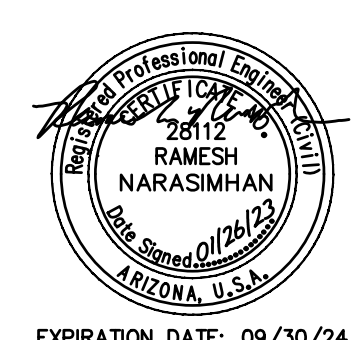
COVER SHEET



Sheet Number:

G-01

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GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS. ALL WORK AND MATERIALS NOT IN CONFORMANCE WITH THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.
2. CONTRACTOR TO OBTAIN ANY PERMITS REQUIRED UNLESS OTHERWISE INDICATED.
3. CONTRACTOR SHALL COMPLY WITH THE PROVISIONS FOR TRAFFIC CONTROL AND BARRICADING AS PER CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. CONTRACTOR TO COORDINATE ALL DRIVEWAY LOCATIONS, AND REMOVAL OR RESETS OF PRIVATE PROPERTY PINS ON ALL STREETS WITH OWNERS.
4. ANY AND ALL MORE STRINGENT REQUIREMENTS IN ACCORDANCE WITH FEDERAL, STATE, COUNTY, OR LOCAL CODES OR ORDINANCES TAKE PRECEDENCE OVER THE CONTRACT DOCUMENTS.
5. 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. PRIOR TO ANY CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL CONTACT ARIZONA 811. IF NEEDED, CONTRACTOR SHALL CONFIRM LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION AND SHALL BE RESPONSIBLE FOR:
 - a. DAMAGE TO SUCH UTILITIES CAUSED AS A RESULT OF THE WORK.
 - b. DAMAGES TO EXISTING WALKS, WALLS, CURBS, DRIVES, TREES, LANDSCAPING, AND PAVING.
6. CONTRACTOR IS RESPONSIBLE FOR REVIEWING ALL PLANS FOR DEMOLITION ITEMS.
7. ALL UTILITIES SHALL BE PROTECTED FROM DAMAGE AS A RESULT OF THE WORK. THE CONTRACTOR SHALL RELOCATE, REPAIR OR REPLACE AT HIS EXPENSE, ANY AFFECTED UTILITIES TO THE SATISFACTION OF THE OWNER.
8. CONTRACTOR SHALL PROTECT THE ADJACENT PROPERTY AND IMPROVEMENTS THERETO FROM ANY DAMAGE DURING CONSTRUCTION. ANY DAMAGE TO ADJACENT PROPERTY OR IMPROVEMENTS MUST BE REPAIRED OR REPLACED TO THE PROPERTY OWNER'S SATISFACTION, AT THE CONTRACTOR'S EXPENSE.
9. WHERE INDICATED, DIMENSIONS AND ELEVATIONS TO BE FIELD VERIFIED.
10. EXISTING EQUIPMENT TO BE REMOVED AND SALVAGED WILL BE MARKED BY ENGINEER PRIOR TO WORK BEGINNING, UNLESS OTHERWISE NOTED IN THE CONTRACT DOCUMENTS.
11. CONTRACTOR TO MAINTAIN ACCESS TO ALL FACILITIES AT THE SITE TO OWNER TO CONTINUE OPERATIONS DURING CONSTRUCTION. IF THE WORK REQUIRES INTERRUPTION OF EXISTING ACCESS TO OPERATING FACILITIES, THE CONTRACTOR SHALL PROVIDE TEMPORARY ACCESS AS APPROVED BY THE OWNER TO THESE FACILITIES.
12. GOVERNING BUILDING CODES:
 2018 INTERNATIONAL BUILDING CODE
 2017 NATIONAL ELECTRICAL CODE
 2018 INTERNATIONAL PLUMBING CODE
 2018 INTERNATIONAL FIRE CODE
 2018 INTERNATIONAL MECHANICAL CODE
13. CONTRACTOR TO MAINTAIN ACCESS FOR EMERGENCY RESPONSE VEHICLES DURING CONSTRUCTION.
14. CONTRACTOR SHALL COORDINATE WORK SCHEDULES WITH THE OWNER SO AS TO PREVENT ANY CONFLICTING WORK CONDITIONS. LOCATIONS OF TEMPORARY FACILITIES, PARKING, ETC. SHALL BE COORDINATED WITH THE OWNER.
15. CONTRACTOR SHALL PROVIDE TEMPORARY SAFETY AND SECURITY FENCING AND SITE IMPROVEMENTS AS NEEDED AT NO EXTRA COST. THE EXISTING FACILITY SHALL BE MAINTAINED IN A SECURE CONDITION AT ALL TIMES.
16. CONSTRUCTION DEBRIS SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT LEAST WEEKLY BY THE CONTRACTOR. KEEP SITE AREA CLEAN.
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. PROPERTY LINES AND DIMENSIONS WHERE SHOWN FOR THE EXISTING FACILITY SITE IS BASED ON EXISTING RECORDS DRAWINGS.
19. DURING CONSTRUCTION, THE WASTEWATER TREATMENT PLANT WILL BE IN SERVICE. THE PLANT OPERATION IS CRITICAL TO THE OWNER AND SHUTDOWN OF THE PLANT WILL NOT BE PERMITTED. THE EXISTING AERATION BASIN NO. 2 WILL BE IN OPERATION WHEN WORK IS OCCURRING ON AERATION BASIN NO. 1, AND VICE VERSA.
20. AN APPROVED SET OF PLANS SHALL BE LOCATED ON THE SITE DURING CONSTRUCTION AND INSPECTION.
21. ANY WORK PERFORMED WITHOUT THE KNOWLEDGE OF THE ENGINEER IS SUBJECT TO REMOVAL AND REPLACEMENT OF SAME TO BE DONE AT THE CONTRACTOR'S EXPENSE.
22. THE ENGINEER OF RECORD SHALL BE NOTIFIED AT LEAST 5 WORKING DAYS IN ADVANCE OF ANY CONSTRUCTION.



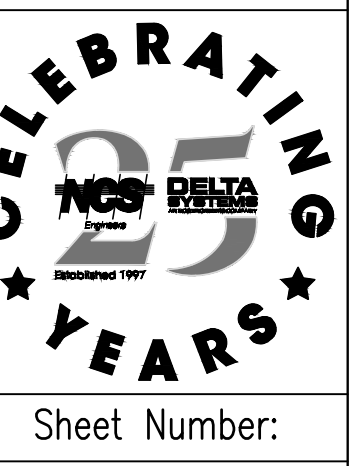
							DATE
							REVISIONS / SUBMISSIONS
							NO.

LAKE HAVASU CITY

**MULBERRY WWTP
AERATION BASINS, STRUCTURAL
AND MCC UPGRADES**

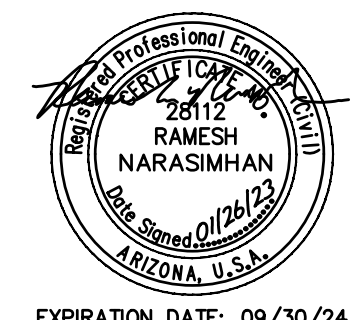
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**GENERAL NOTES
AND SHEET INDEX**



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G-02

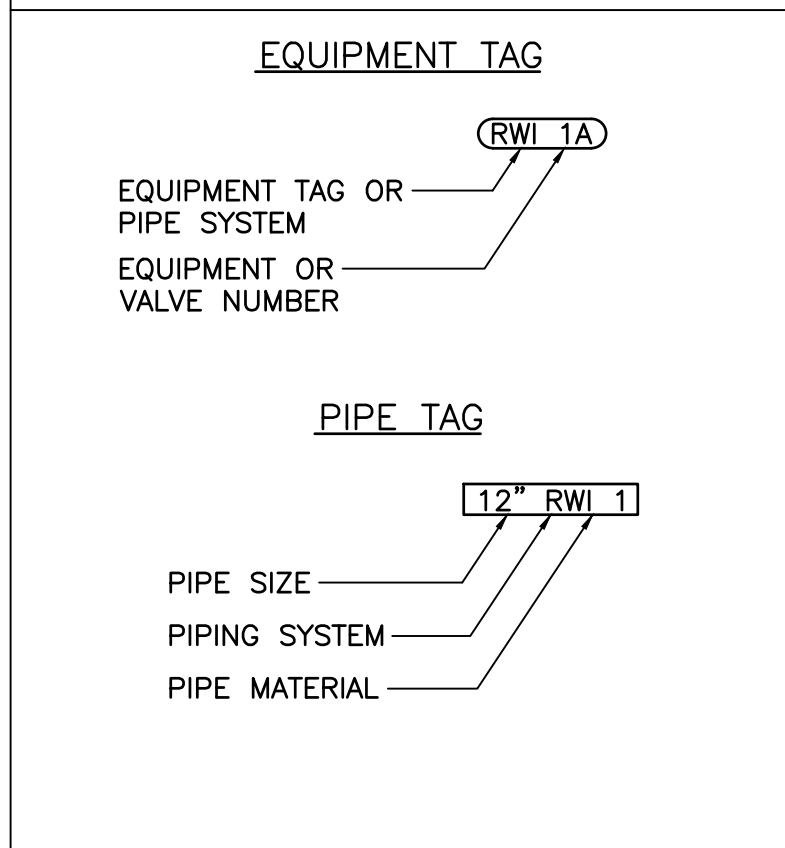
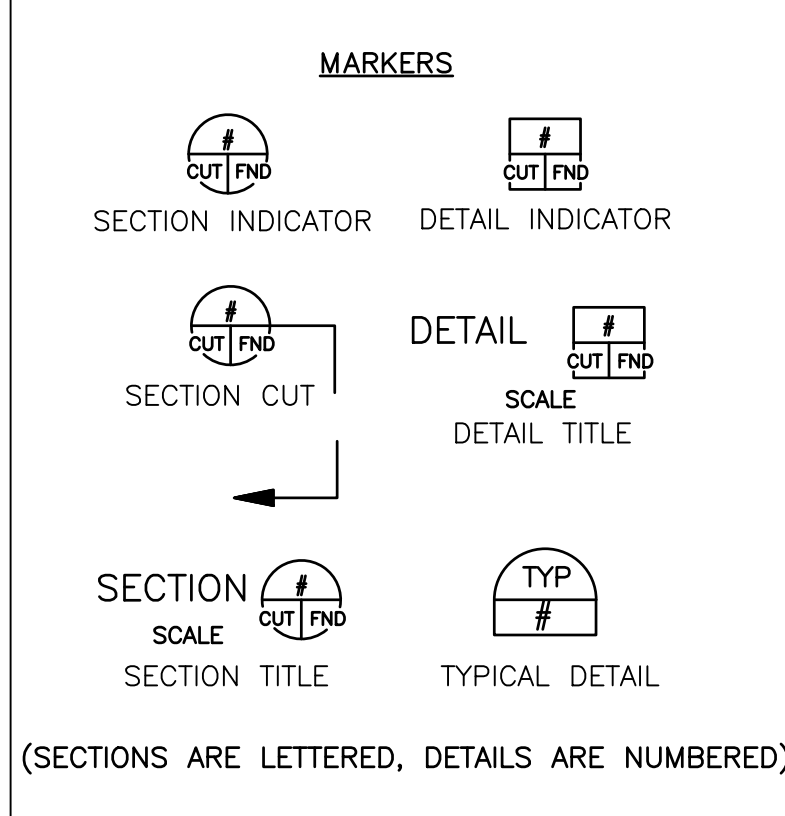
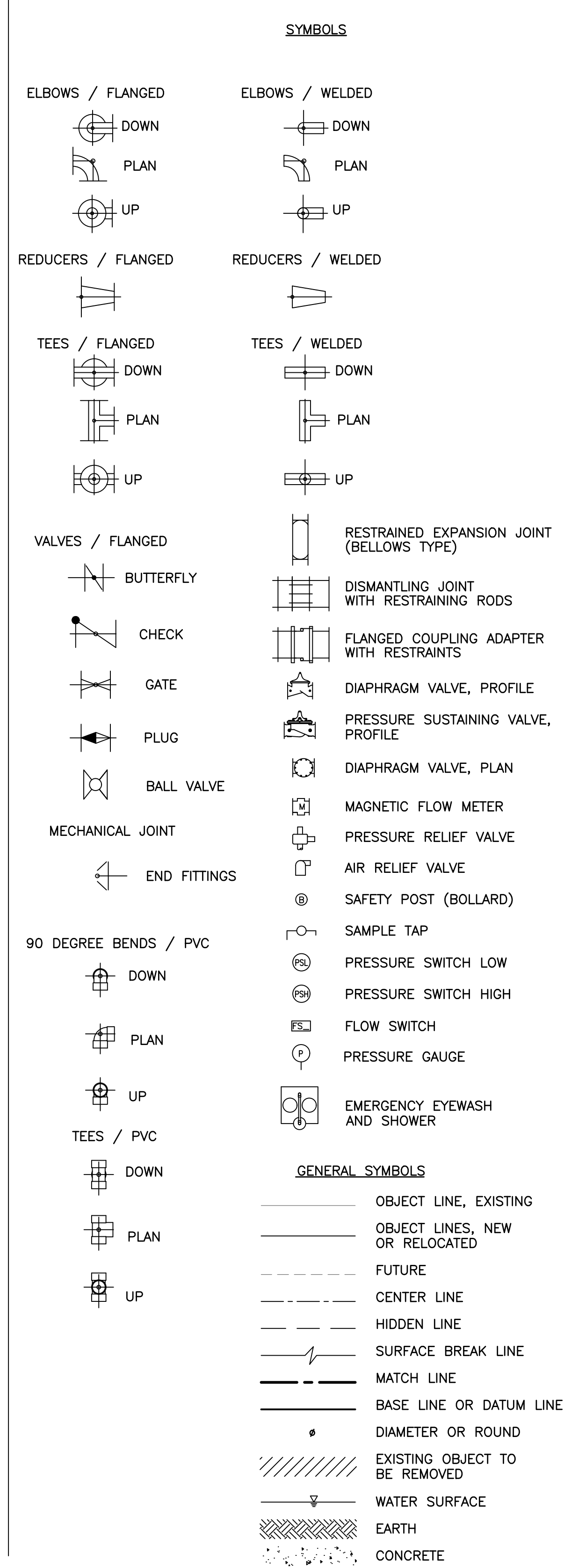
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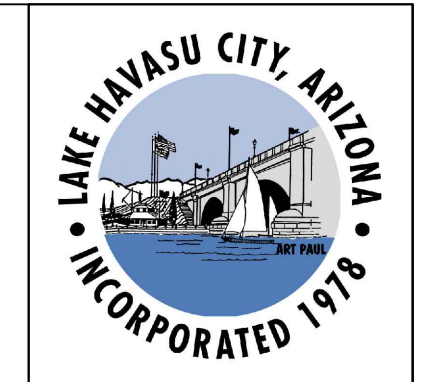
EXPIRATION DATE: 09/30/24

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
&	AND	LCP	LOCAL CONTROL PANEL
⊙	AT	LF	LINEAR FEET
⊖	CENTERLINE	LL	LOW LEVEL
∅	DIAMETER	LLV	LONG LEG VERTICAL
ABC	AGGREGATE BASE COURSE	LOC	LOCATION (S)
AC	ASBESTOS CEMENT	LPHH	LEVEL PROBE HIGH HIGH
ADD	ADDITION OR ADDITIONAL	LS	LAND SURVEYOR
ADJ	ADJUST OR ADJUSTABLE	LT	LEFT OR LEVEL TRANSMITTER
AE	ANALYZER ELEMENT	MAX	MAXIMUM
AGGR	AGGREGATE	MCJ	MASONRY CONTROL JOINT
AL	ALIGNMENT	MFR	MANUFACTURER
ALUM	ALUMINUM	MG	MILLION GALLONS
ARV	AIR/VACUUM RELEASE VALVE	MGD	MILLION GALLONS PER DAY
ASL	AIR SUPPLY LINE	MH	MANHOLE
ASPH	ASPHALT	MIN	MINIMUM
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS	MILS	MILLIMETER
AUTO	AUTOMATIC	MCF	MANUAL CLEANING FILTER
AUX	AUXILIARY	MJ	MECHANICAL JOINT
AVG	AVERAGE	MOV	MOTOR OPERATED VALVE
AWS	AMERICAN WELDING SOCIETY	MS	MECHANICAL STRAINER
		MSD	MECHANICAL STRAINER DRAIN
BDL	BOOSTER PUMP DISCHARGE LINE	NG	NATURAL GRADE
BF	BLIND FLANGE	NO.	NUMBER
BFP	BACKFLOW PREVENTER	NTC	NITRATE TREATED LINE
BFV	BUTTERFLY VALVE	NTF	NITRATE TREATMENT FACILITY
BLV	BALL CHECK VALVE	NTL	NITRATE TREATED LINE
BM	BENCH MARK	NTS	NOT TO SCALE
BOF	BOTTOM OF FOOTING		
BP	BOOSTER PUMP	OC	ON CENTER
BSL	BOOSTER PUMP SUCTION LINE	OD	OUTSIDE DIAMETER
		OF	OVERFLOW
CCP	CONSTRUCTION CONTROL POINT	OS&Y	OUTSIDE SCREW & YOKE
CFM	CUBIC FEET PER MINUTE	PE	POLYETHYLENE
CFS	CUBIC FEET PER SECOND	PDL	PREFILTER DRAIN LINE
CJ	CONSTRUCTION JOINT	PF	PREFILTER
CL	CENTER LINE	PI	PRESSURE INDICATOR
CLR	CLEAR	PIL	PREFILTER INLET LINE
CLSM	CONCRETE LOW STRENGTH MATERIAL	PLC	PROCESS LOGIC CONTROLLER
CMU	CONCRETE MASONRY UNIT	PLT	PRESSURE LEVEL TRANSMITTER
CND	CONDUIT	PLV	PLUG VALVE
CONC	CONCRETE	PMP	PUMP
CONT	CONTINUOUS	POL	PREFILTER OUTLET LINE
CONST	CONSTRUCTION	PPM	PART PER MILLION
CU	CUBIC	PR	PIPE RESTRAINT
CV	CHECK VALVE	PRLV	PRESSURE RELIEF VALVE
CY	CUBIC YARD	PRV	PRESSURE REDUCING VALVE
		PSH	HIGH PRESSURE SWITCH
D	DEEP	PSI	POUNDS PER SQUARE INCH
DET	DETAIL	PSV	PRESSURE SUSTAINING VALVE
DIA	DIAMETER	PUE	PUBLIC UTILITY EASEMENT
DIM	DIMENSION	PVC	POLYVINYL CHLORIDE
DI	DUCTILE IRON	PWS	POTABLE WATER SUPPLY
DIP	DUCTILE IRON PIPE		
DISCH	DISCHARGE	RCP	REINFORCED CONCRETE PIPE
DPS	DIFFERENTIAL PRESSURE SWITCH	RED	REDUCER
D/S	DOWNSTREAM	REINF	REINFORCEMENT
		RIO	REMOTE INPUT OUTPUT
EA	EACH	RMJ	RESTRAINED MECHANICAL JOINT
EF	EACH FACE	RMJ	RESTRAINED MECHANICAL JOINT
EJ	EXPANSION JOINT	RPP	REDUCED PRESSURE PRINCIPLE
EL	ELEVATION	REQD	REQUIRED
ELEC	ELECTRONIC	RRP	REGENERATION AND RINSE PUMP
EP	EDGE OF PAVEMENT	RT	RIGHT
EQ	EQUALIZATION	RW	RIGHT-OF-WAY
EST	ESTIMATE		
EW	EACH WAY	S	SLOPE
EXST	EXISTING	SCH	SCHEDULE
		SD	SANITARY DRAIN
F	EDGE OF FILL AREA	SHT	SHEET
FAB	FABRICATED	SJ	SHRINKAGE JOINT
FCA	FLANGED COUPLING ADAPTER	SQ	SPECIFICATIONS
FCV	FLOW CONTROL VALVE	SS	SQUARE
FD	FLOOR DRAIN	SS	STAINLESS STEEL
FE	FLOW ELEMENT	ST	STREET
FF	FINISH FLOOR	STA	STATION
FG	FINISH GRADE	STD	STANDARD
FIN	FINISH	STL	STEEL
FL	FLANGED	SV	SOLENOID VALVE
FRP	FIBERGLASS REINFORCED PLASTIC	SWL	SERVICE WATER LINE
FT	FEET		
FTG	FOOTING	T	THICKNESS
		T&B	TOP AND BOTTOM
GAL	GALLON	TBD	TO BE DETERMINED
GALV	GALVANIZED	TBM	TEMPORARY BENCH MARK
GND EL	GROUND ELEVATION	TCE	TEMPORARY CONSTRUCTION EASEMENT
GPM	GALLONS PER MINUTE	THRU	THROUGH
GSN	GENERAL STRUCTURAL NOTES	TOC	TOP OF CURB
GV	GATE VALVE	TOCS	TOP OF CONCRETE SLAB
		TOF	TOP OF FOOTING
H	HEIGHT	TOP	TOP OF PIPE
HDPE	HIGH DENSITY POLYETHYLENE	TOS	TOP OF SLAB
HORIZ	HORIZONTAL	TOW	TOP OF WALL
HP	HORSE POWER	TS	TUBE STEEL
HPT	HYDROPNEUMATIC TANK	TYP	TYPICAL
HWL	HIGH WATER LEVEL		
		UGND	UNDERGROUND
I	MOMENT OF INERTIA	UNO	UNLESS NOTED OTHERWISE
IBC	INTERNATIONAL BUILDING CODE	U/S	UPSTREAM
ICBO	INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS	UV	ULTRAVIOLET
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION	YD	YARDS
IOP	INDEPENDENT OPERATING PRESSURE		
INV	INVERT		
IV	ISOLATION VALVE		
KW	KILOWATT		

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
LCP	LOCAL CONTROL PANEL	MAX	MAXIMUM
LF	LINEAR FEET	MCJ	MASONRY CONTROL JOINT
LL	LOW LEVEL	MFR	MANUFACTURER
LLV	LONG LEG VERTICAL	MG	MILLION GALLONS
LOC	LOCATION (S)	MGD	MILLION GALLONS PER DAY
LPHH	LEVEL PROBE HIGH HIGH	MH	MANHOLE
LS	LAND SURVEYOR	MIN	MINIMUM
LT	LEFT OR LEVEL TRANSMITTER	MILS	MILLIMETER
		MCF	MANUAL CLEANING FILTER
		MJ	MECHANICAL JOINT
		MOV	MOTOR OPERATED VALVE
		MS	MECHANICAL STRAINER
		MSD	MECHANICAL STRAINER DRAIN
		NG	NATURAL GRADE
		NO.	NUMBER
		NTC	NITRATE TREATED LINE
		NTF	NITRATE TREATMENT FACILITY
		NTL	NITRATE TREATED LINE
		NTS	NOT TO SCALE
		OC	ON CENTER
		OD	OUTSIDE DIAMETER
		OF	OVERFLOW
		OS&Y	OUTSIDE SCREW & YOKE
		PE	POLYETHYLENE
		PDL	PREFILTER DRAIN LINE
		PF	PREFILTER
		PI	PRESSURE INDICATOR
		PIL	PREFILTER INLET LINE
		PLC	PROCESS LOGIC CONTROLLER
		PLT	PRESSURE LEVEL TRANSMITTER
		PLV	PLUG VALVE
		PMP	PUMP
		POL	PREFILTER OUTLET LINE
		PPM	PART PER MILLION
		PR	PIPE RESTRAINT
		PRLV	PRESSURE RELIEF VALVE
		PRV	PRESSURE REDUCING VALVE
		PSH	HIGH PRESSURE SWITCH
		PSI	POUNDS PER SQUARE INCH
		PSV	PRESSURE SUSTAINING VALVE
		PUE	PUBLIC UTILITY EASEMENT
		PVC	POLYVINYL CHLORIDE
		PWS	POTABLE WATER SUPPLY
		RCP	REINFORCED CONCRETE PIPE
		RED	REDUCER
		REINF	REINFORCEMENT
		RIO	REMOTE INPUT OUTPUT
		RMJ	RESTRAINED MECHANICAL JOINT
		RMJ	RESTRAINED MECHANICAL JOINT
		RPP	REDUCED PRESSURE PRINCIPLE
		REQD	REQUIRED
		RRP	REGENERATION AND RINSE PUMP
		RT	RIGHT
		RW	RIGHT-OF-WAY
		S	SLOPE
		SCH	SCHEDULE
		SD	SANITARY DRAIN
		SHT	SHEET
		SJ	SHRINKAGE JOINT
		SQ	SPECIFICATIONS
		SS	SQUARE
		SS	STAINLESS STEEL
		ST	STREET
		STA	STATION
		STD	STANDARD
		STL	STEEL
		SV	SOLENOID VALVE
		SWL	SERVICE WATER LINE
		T	THICKNESS
		T&B	TOP AND BOTTOM
		TBD	TO BE DETERMINED
		TBM	TEMPORARY BENCH MARK
		TCE	TEMPORARY CONSTRUCTION EASEMENT
		THRU	THROUGH
		TOC	TOP OF CURB
		TOCS	TOP OF CONCRETE SLAB
		TOF	TOP OF FOOTING
		TOP	TOP OF PIPE
		TOS	TOP OF SLAB
		TOW	TOP OF WALL
		TS	TUBE STEEL
		TYP	TYPICAL
		UGND	UNDERGROUND
		UNO	UNLESS NOTED OTHERWISE
		U/S	UPSTREAM
		UV	ULTRAVIOLET
		YD	YARDS



- PIPE MATERIAL**
- 1 - DUCTILE IRON
 - 2 - STEEL
 - 3 - C-900 PVC
 - 4 - SCHEDULE 80 PVC
 - 5 - SCHEDULE 80 CPVC
 - 6 - COPPER
 - 7 - STAINLESS STEEL
 - 8 - SCH 80 BLACK STEEL
 - 9 - CAST IRON
 - 10 - PVC-SEWER PIPE
- SHEET CATEGORY**
- G - GENERAL
- C - CIVIL
- S - STRUCTURAL
- M - MECHANICAL PROCESS
- E - ELECTRICAL
- I - INSTRUMENTATION



NO.	REVISIONS / SUBMISSIONS	DATE

LAKE HAVASU CITY

MULBERRY WWTP

AERATION BASINS, STRUCTURAL AND MCC UPGRADES

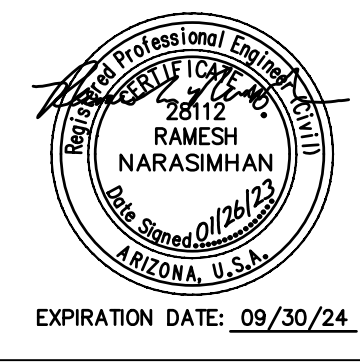
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ABBREVIATIONS AND SYMBOLS



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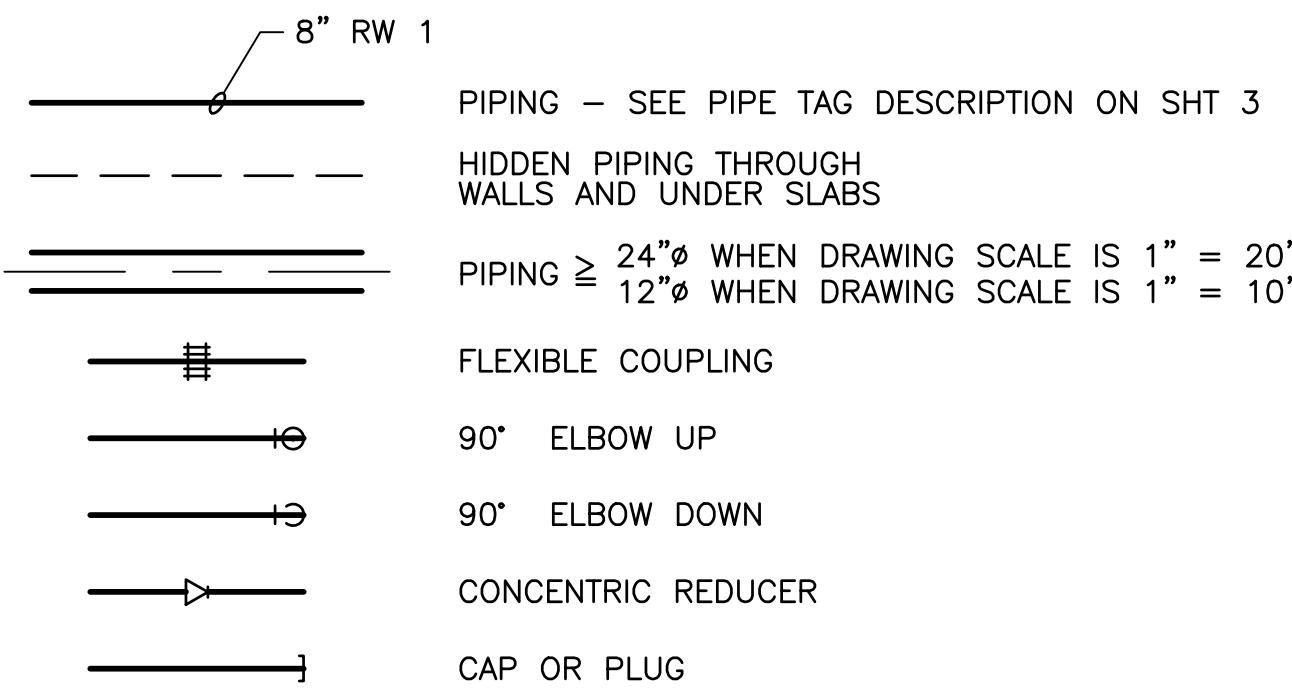
GENERAL SITE NOTES

1. SOURCE OF TOPOGRAPHY SHOWN ON THE CIVIL PLANS IS A BASE MAP FROM RECORD DRAWINGS, DATED 02/2017. EXISTING CONDITIONS MAY VARY FROM THOSE SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND ADJUST WORK PLAN ACCORDINGLY PRIOR TO BEGINNING CONSTRUCTION.
2. EXISTING TOPOGRAPHY, STRUCTURES AND SITE FEATURES ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW FINISH GRADE, STRUCTURES, AND SITE FEATURES ARE SHOWN HEAVY-LINED.
3. HORIZONTAL DATUM: NAD 83, ARIZONA CENTRAL TIME.
VERTICAL DATUM: NGVD 29
4. 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.
5. COORDINATES AND DIMENSIONS SHOWN FOR ROADWAY IMPROVEMENTS ARE TO FACE OF CURB OR EDGE OF PAVEMENT.
6. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE SHOWN. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
7. UNLESS SHOWN ON THE GRADING & DRAINAGE DRAWINGS, ALL DISTURBED AREA NOT RECEIVING A HARD SURFACE OR GRAVEL SURFACE SHALL BE GRADED SMOOTH AND COMPACTED AS SPECIFIED.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION. EROSION CONTROL INCLUDING DEVICES, SILT FENCING, RUNOFF CONTAINMENT BERMS, AND STRAW BALES ARE THE MINIMUM REQUIRED.
9. CONTRACTOR SHALL TAKE ALL OTHER MEASURES TO POSITIVELY PRECLUDE EROSION MATERIALS FROM LEAVING THE SITE.

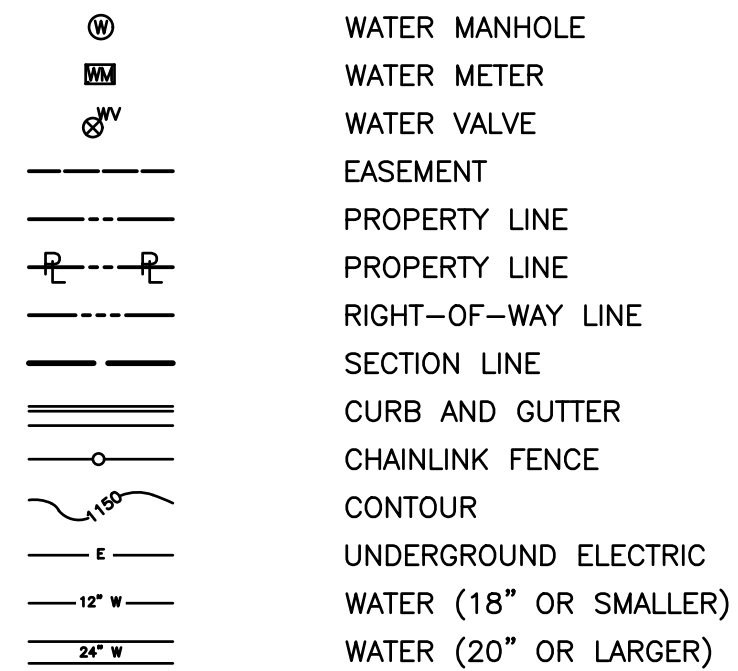
GENERAL YARD PIPING AND UTILITIES NOTES:

1. EXISTING UNDERGROUND UTILITIES OBTAINED FROM AS-BUILTS AND DRAWINGS PROVIDED BY CITY, UTILITIES MAPS, AND FROM FIELD SURVEY. CONTRACTOR SHALL FIELD VERIFY DEPTH AND LOCATION PRIOR TO EXCAVATION. PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION.
2. FOR PIPING FLOW STREAM IDENTIFICATION, SEE PIPING SCHEDULE.
3. EXISTING PIPING AND EQUIPMENT ARE SHOWN SCREENED AND/OR LIGHT-LINED. NEW PIPING AND EQUIPMENT ARE SHOWN HEAVY-LINED.
4. UNLESS OTHERWISE SHOWN, ALL PIPING SHALL HAVE A MINIMUM OF 4' COVER.
5. ALL PIPES SHALL HAVE A CONSTANT SLOPE BETWEEN INVERT ELEVATIONS UNLESS A FITTING IS SHOWN.
6. ALL NEW WATER PIPES MUST BE PROPERLY FLUSHED, PRESSURE TESTED, CHLORINATED AND BACTERIOLOGICALLY TESTED, AS SPECIFIED.
7. RESTORE DIRT AND/OR GRAVEL ROADS TO CONDITIONS THAT EXISTED BEFORE START OF CONSTRUCTION.
8. MINIMUM ALLOWABLE CLEARANCE BETWEEN PIPES AT CROSSINGS SHALL BE 6". CONTROLLED LOW STRENGTH MATERIAL IS REQUIRED AS SHOWN ON SHT 9A AND PER SPEC 15050.

YARD PIPING LEGEND



CIVIL LEGEND



						DATE
						REVISIONS / SUBMISSIONS
						NO.

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CIVIL SITE NOTES
AND SYMBOLS



Sheet Number:

C-01
 Sheet 4 of 8



EXPIRATION DATE: 09/30/24



NCS
Engineers
202 E. Earl Drive Suite 110
Phoenix, AZ 85012
Phone (602)629-0206
www.ncseng.com

NO.	REVISIONS / SUBMISSIONS	DATE

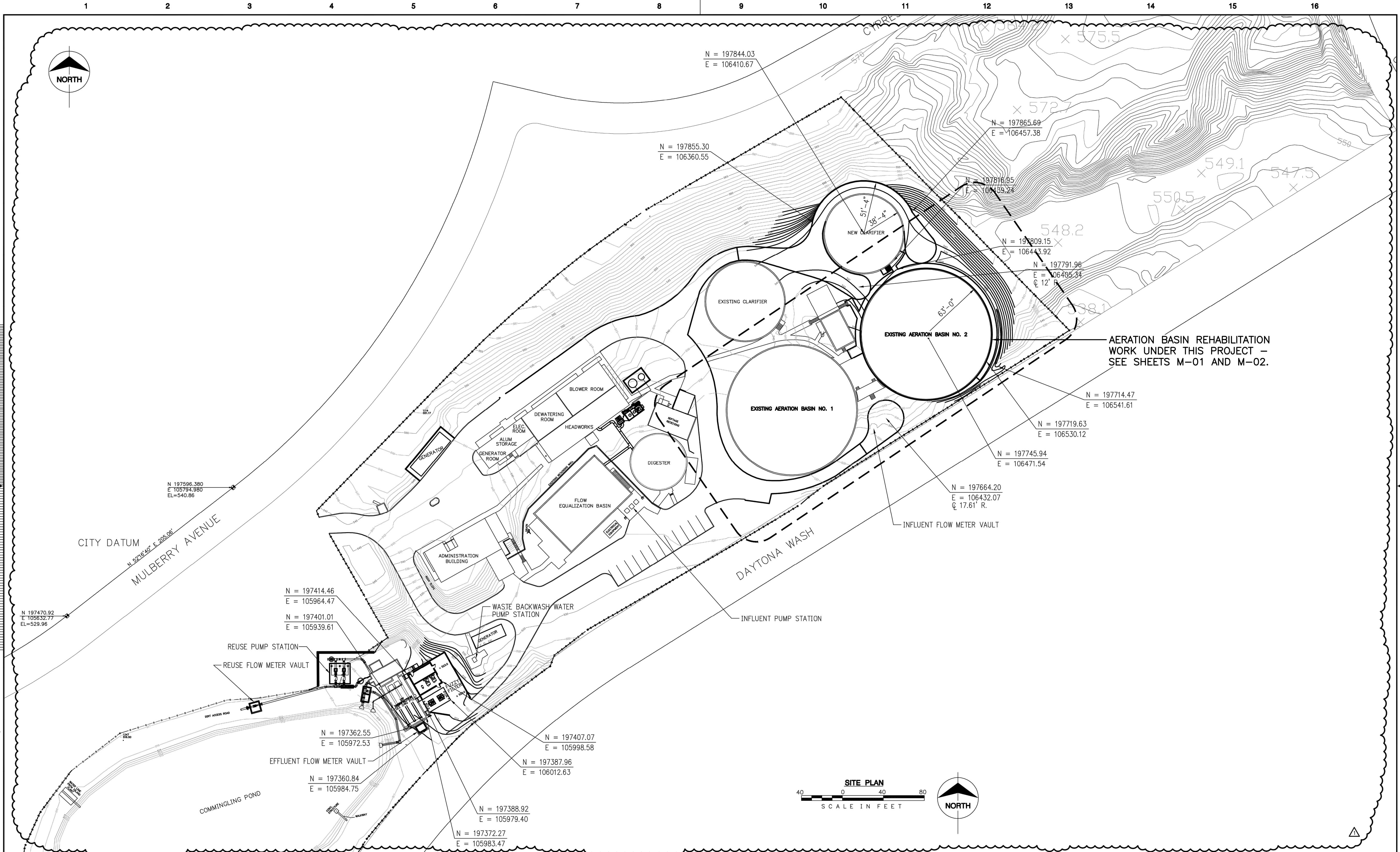
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**MULBERRY WWTP
SITE PLAN**



Sheet Number:
C-02
Sheet 5 of 8



no.	date	by	revision
1	04/29/05	KRE	CONFORMING TO RECORD DRAWINGS

CALL TWO WORKING DAYS BEFORE TO SET
1-800-STAKE-IT
1-800-782-3348
(OUTSIDE MARICOPA COUNTY)

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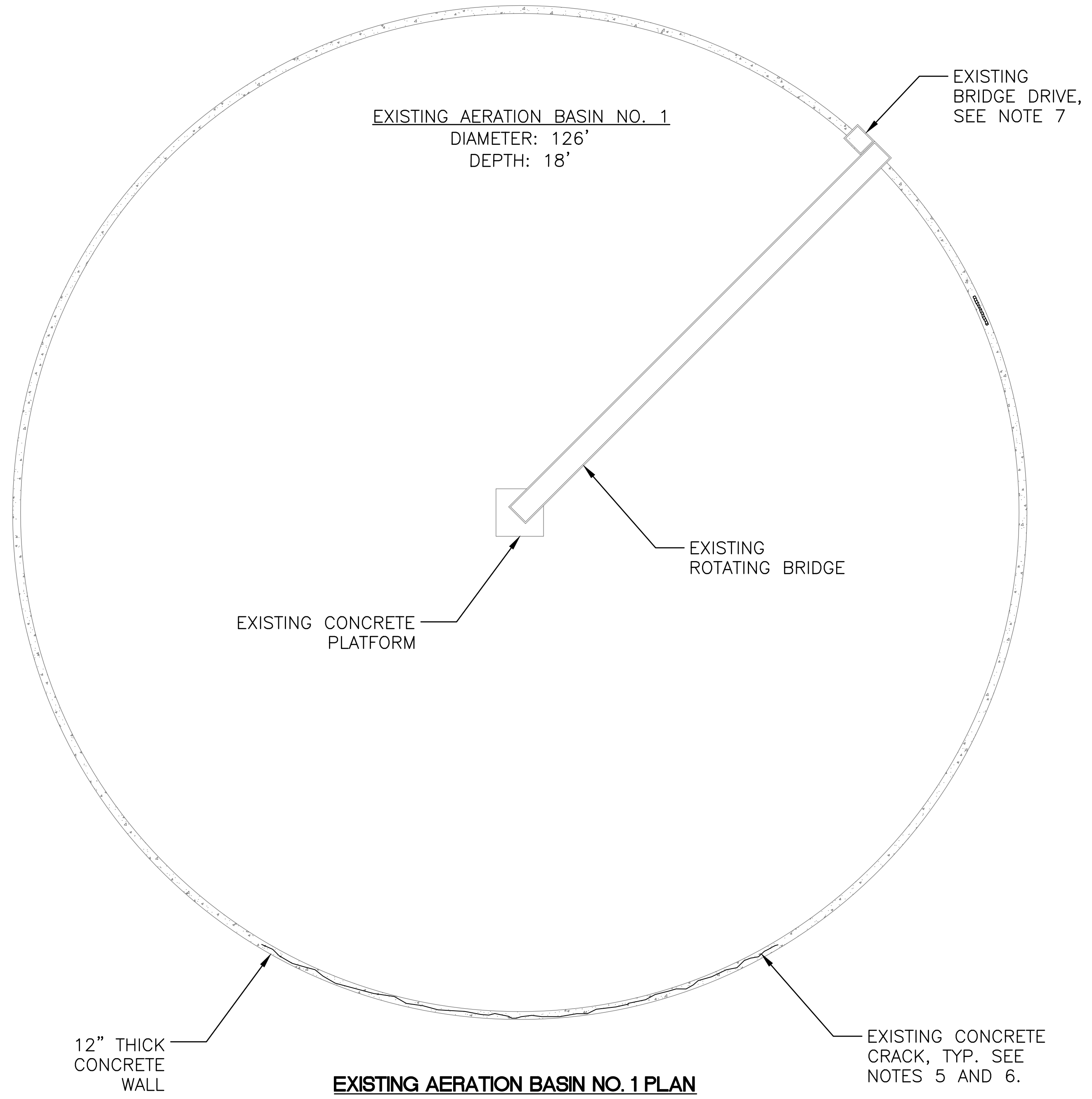
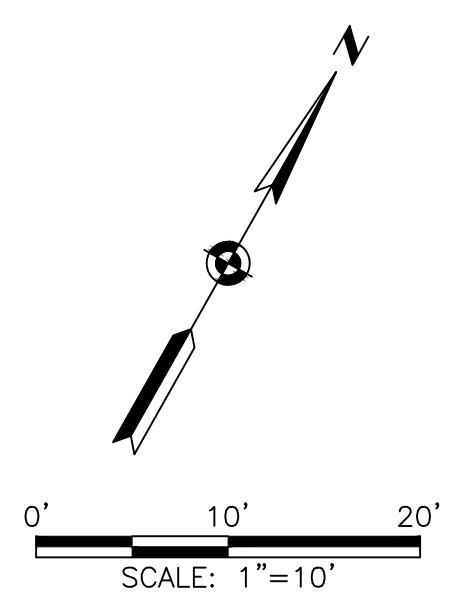
"RECORD DRAWINGS"

date	JANUARY 23, 2003	detailed	D. REISNER
designed	R. GREAVES	checked	J.P.M.

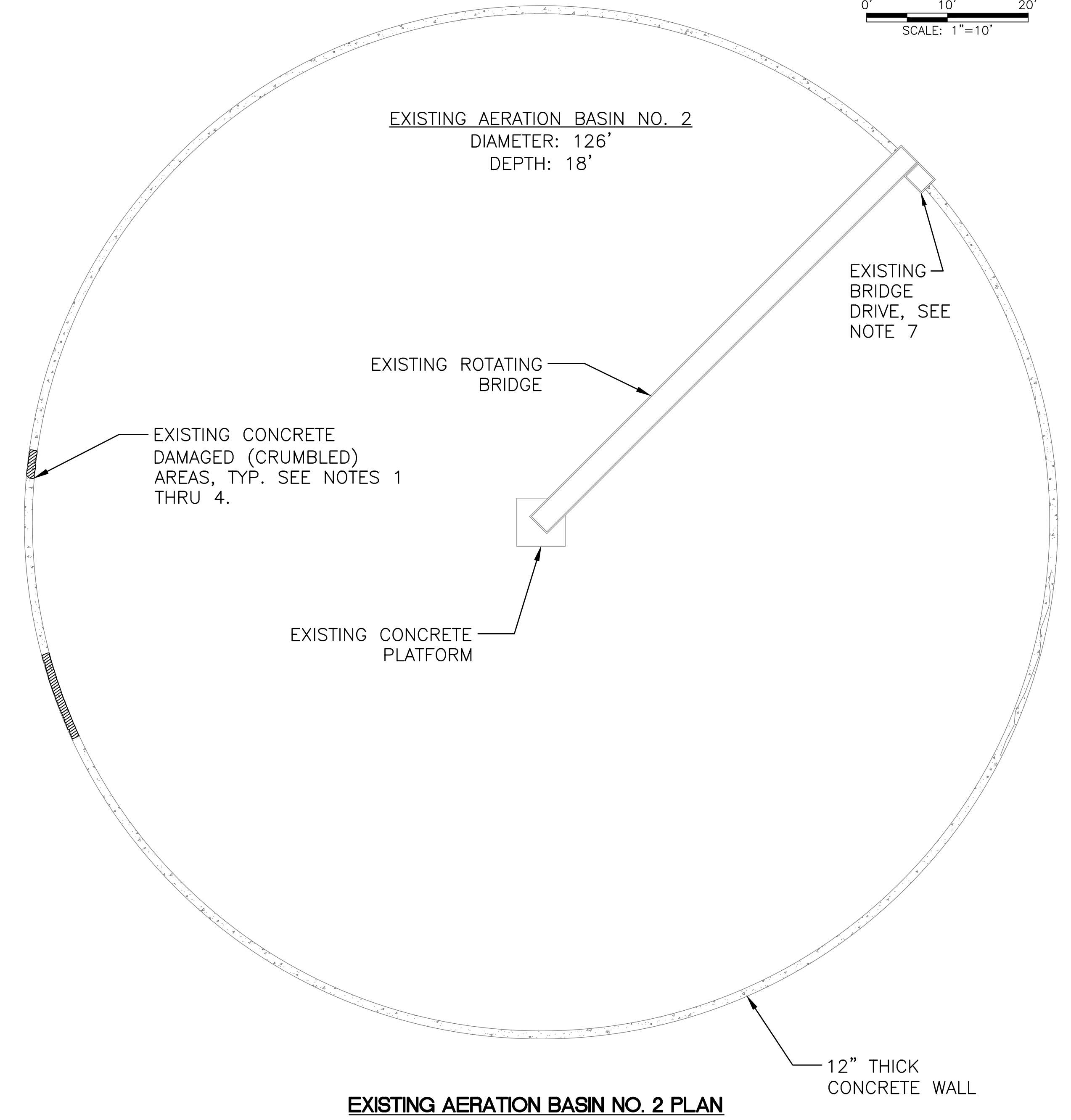


MULBERRY WWTP EXPANSION - PHASE 1 ISLAND WWTP UPGRADES - PHASE 1 NEW SITE PLAN	
project	30030
contract	SS1830
drawing	C02
rev.	1
sheet	of sheets
file	

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EXISTING AERATION BASIN NO. 1 PLAN



EXISTING AERATION BASIN NO. 2 PLAN

- NOTES:**
1. FOR THE CONCRETE DAMAGED AREAS, PERFORM POWER TOOL CLEANING TO REMOVE ALL LOOSE CONCRETE, DIRT, DEBRIS, AND OTHER CONTAMINANTS.
 2. PERFORM HIGH PRESSURE WASH, MINIMUM 2000 PSI, TO OBTAIN AGGREGATE SURFACE PROFILE OF $\pm 1/16'' - 1/8''$ (CONCRETE SURFACE PROFILE 5-6).
 3. LENGTH AND WIDTH OF THE EXISTING CONCRETE DAMAGED AREAS VARY BETWEEN 3' TO 15' AND 3" TO 12", RESPECTIVELY.
 4. FOR BIDDING PURPOSES, THE ESTIMATED CONCRETE DAMAGED AREA THAT NEED TO BE POWER TOOL CLEANED, POWER WASHED, AND PREPARED IS APPROXIMATELY 150 SQ. FT.
 5. FOR THE CONCRETE CRACKED SURFACE, PERFORM 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.
 7. OWNER TO OPERATE THE DRIVE TO ACCOMMODATE THE CONTRACTOR TO COMPLETE THE IMPROVEMENTS. CONTRACTOR TO COORDINATE WITH OWNER. REMOVAL OF THE DRIVE IS NOT REQUIRED.

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LAKE HAVASU CITY
MULBERRY WWTP
AERATION BASINS, STRUCTURAL
AND MCC UPGRADES

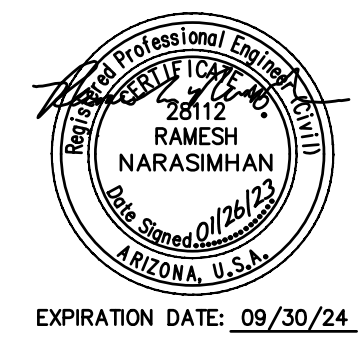
Designed by: GB	Drawn by: KWB	Checked by: RN	Date: 04-04-22	Dwg scale: AS NOTED
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AERATION BASIN
SURFACE PREP
PLAN



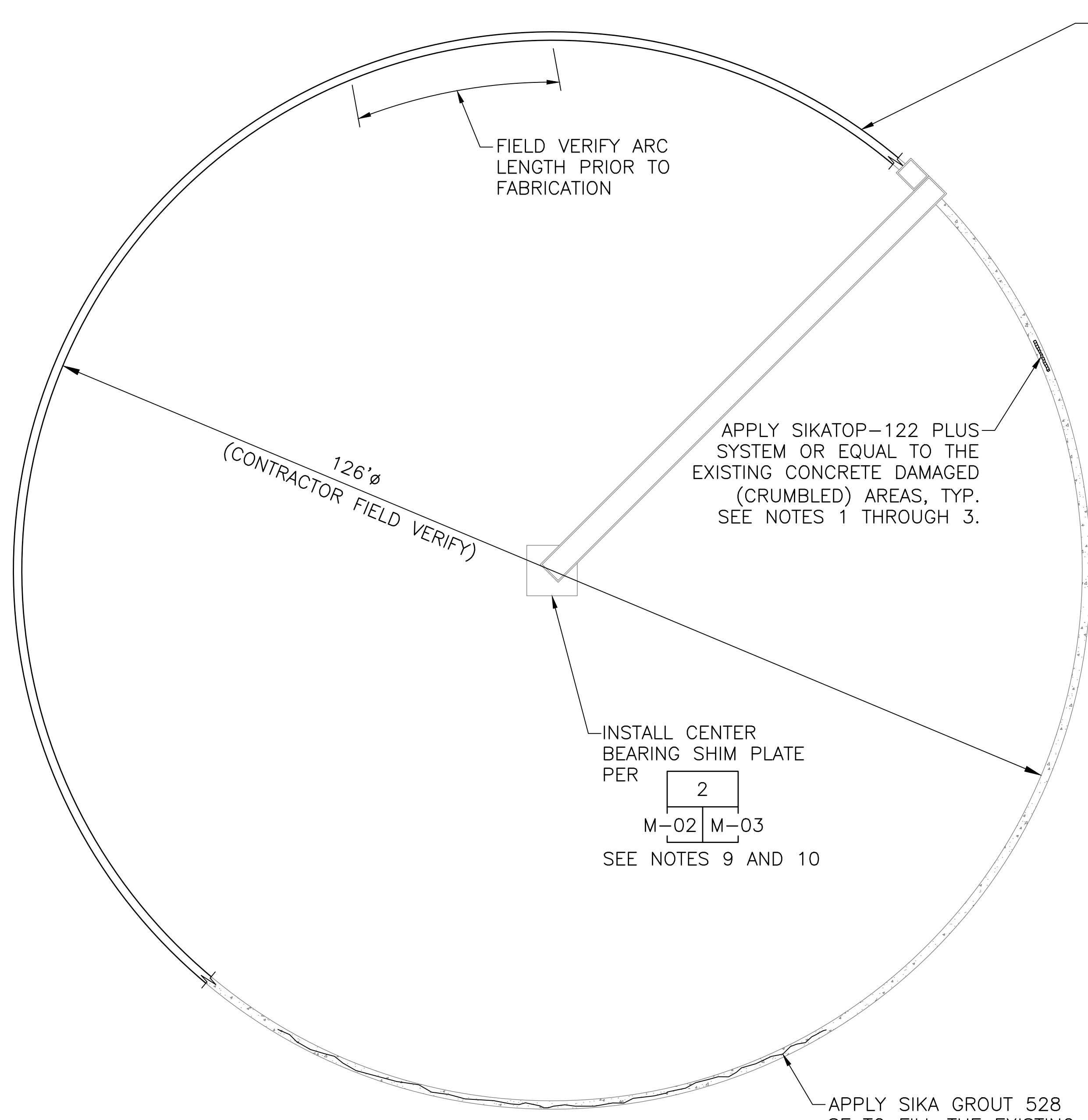
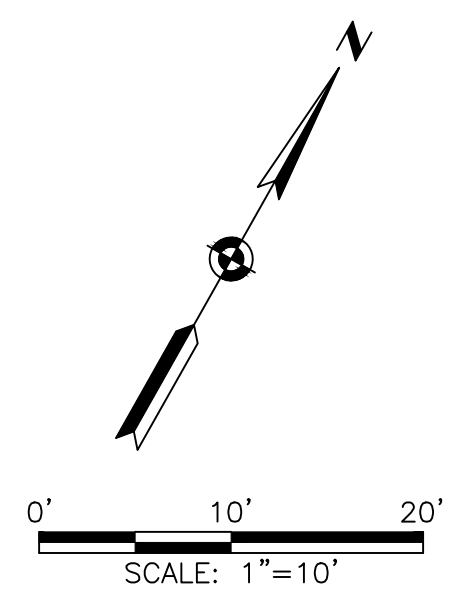
Sheet Number:

M-01
 Sheet 6 of 8



ALLOWANCE ITEMS:

1. CONCRETE CRACK REPAIR: APPLY SIKAGROUT 526 SF TO APPROXIMATELY 1/2" WIDE x 1/2" DEEP CRACKS. QTY: 400 LF.
2. CONCRETE SURFACE REPAIR: APPLY SIKATOP122 PLUS @ 1" THICK. QTY: 400 SF.

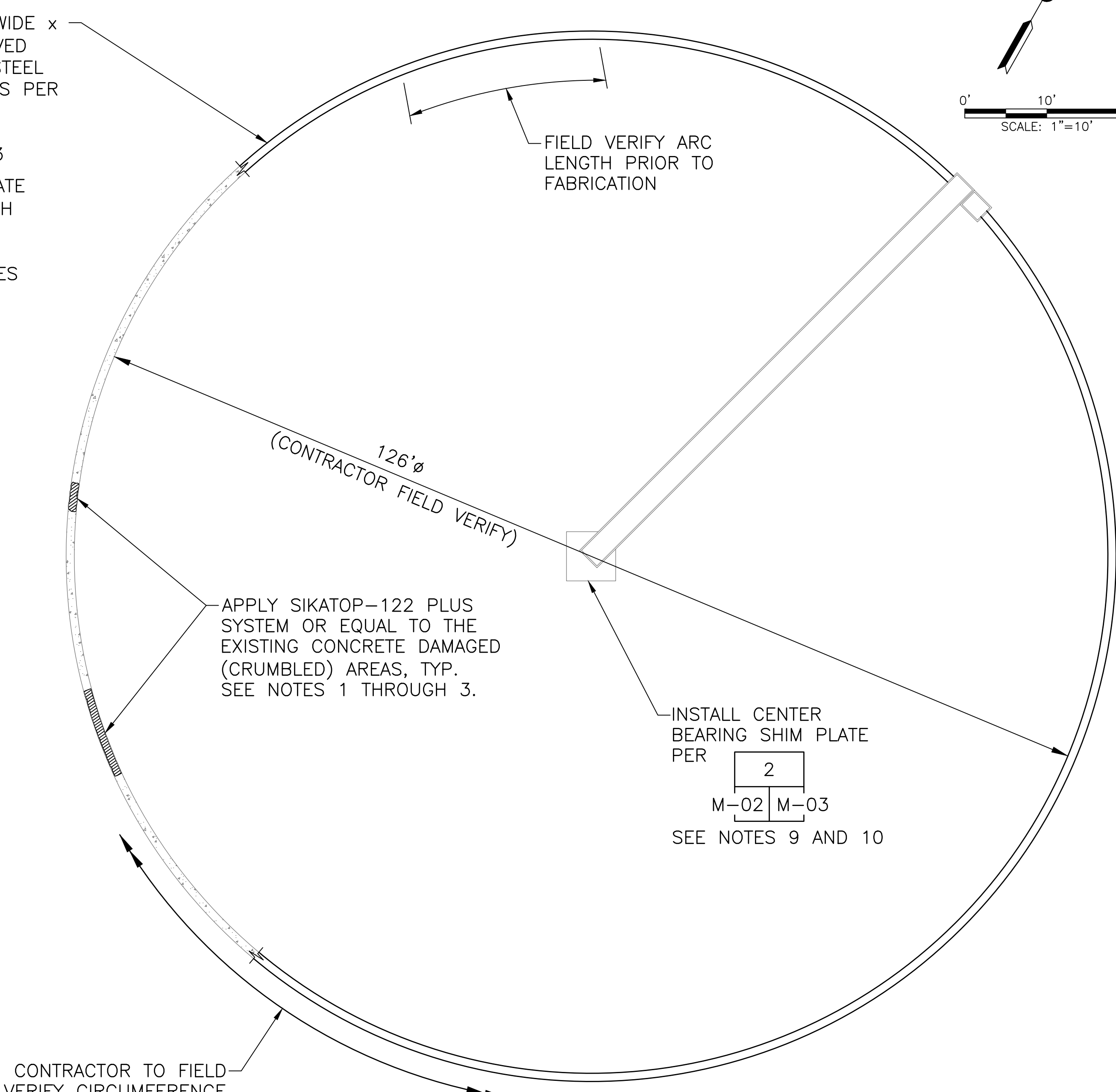


AERATION BASIN NO. 1 IMPROVEMENTS PLAN

8' LONG x 12" WIDE x 1/4" THICK CURVED 316 STAINLESS STEEL PLATES W/ STUDS PER

1
M-02 M-03

(CONTINUOUS PLATE ATOP WALLS) WITH 1/16" SPACING BETWEEN PLATES. INSTALL 50 PLATES PER BASIN



AERATION BASIN NO. 2 IMPROVEMENTS PLAN

NOTES:

1. FOR SURFACE PREP SEE SHEET M-01.
2. AFTER SURFACE PREP, APPLY SIKA ARMATEC-110 OR EQUAL PRIME COAT.
3. AFTER PRIME COAT, APPLY APPROXIMATELY 1/2" THICK SIKATOP122 PLUS OR EQUAL ON THE CONCRETE DAMAGED AREAS.
4. LENGTH AND WIDTH OF THE EXISTING CONCRETE DAMAGED AREAS VARY BETWEEN 3' TO 15' AND 3" TO 12", RESPECTIVELY.
5. FOR BIDDING PURPOSES, THE ESTIMATED CONCRETE DAMAGED AREA THAT NEEDS TO BE APPLIED WITH SIKATOP-122 PLUS SYTEM IS APPROXIMATELY 150 SF.
6. FOR BIDDING PURPOSES, THE ESTIMATED LENGTH OF CONCRETE CRACKS THAT NEED TO BE APPLIED WITH SIKAGROUT528 SF IS APPROXIMATELY 250 LF.
7. AFTER COMPLETING THE CONCRETE REPAIR WORK, INSTALL THE STAINLESS SEEL PLATES PER

1
M-02 M-03

8. CONTRACTOR TO FIELD VERIFY DIMENSIONS PRIOR TO FABRICATION OF STAINLESS STEEL PLATES.
9. CONTRACTOR TO INSTALL THE SHIM PLATE PER THE MANUFACTURER INSTRUCTIONS.
10. THE BRIDGE LOAD AT THE CENTER BEARING IS APPROXIMATELY 10,000 LBS. CONTRACTOR TO USE CRANE TO RAISE THE BRIDGE TO ACCOMMODATE THE SHIM PLATE INSTALLATION.

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LAKE HAVASU CITY
MULBERRY WWTP
AERATION BASINS, STRUCTURAL AND MCC UPGRADES

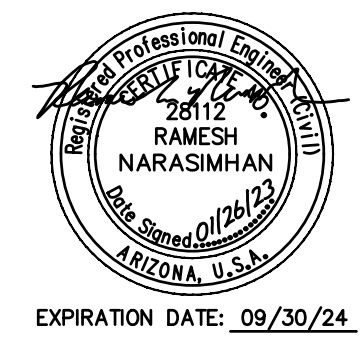
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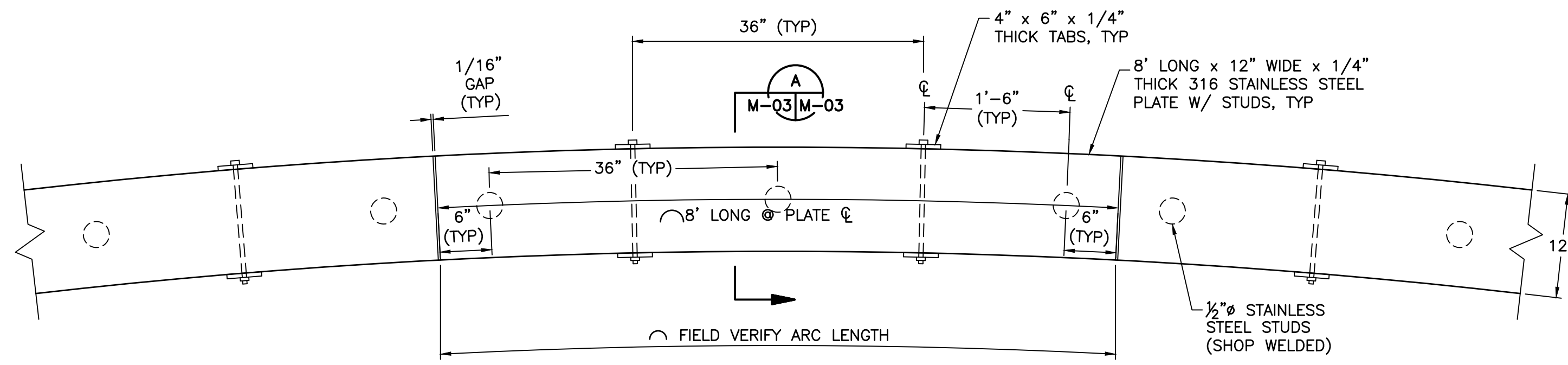
AERATION BASINS IMPROVEMENTS PLAN



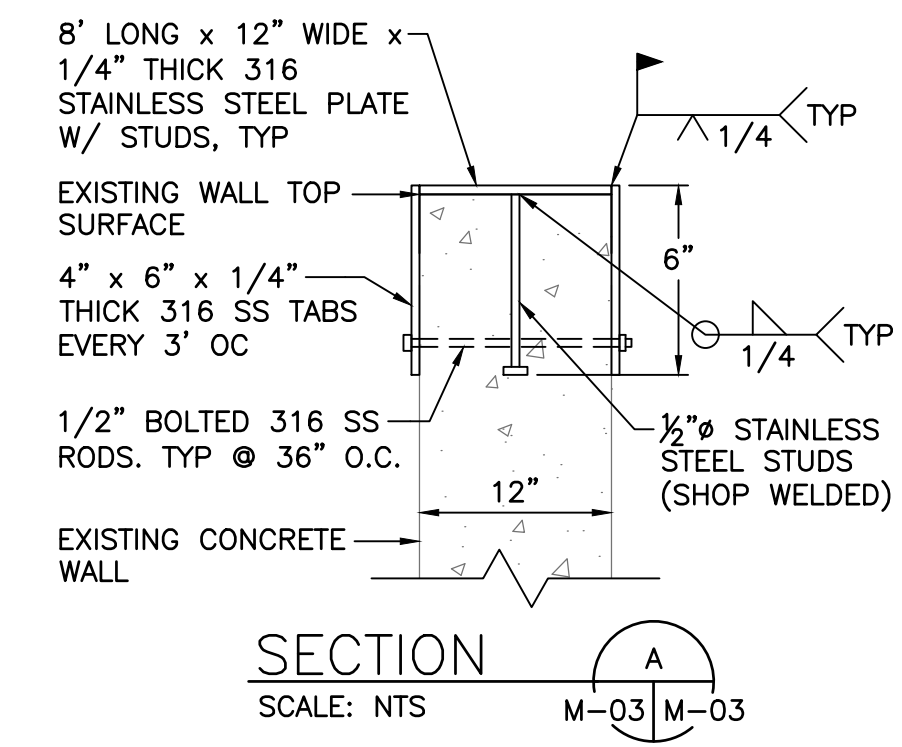
Sheet Number:

M-02
 Sheet 7 of 8





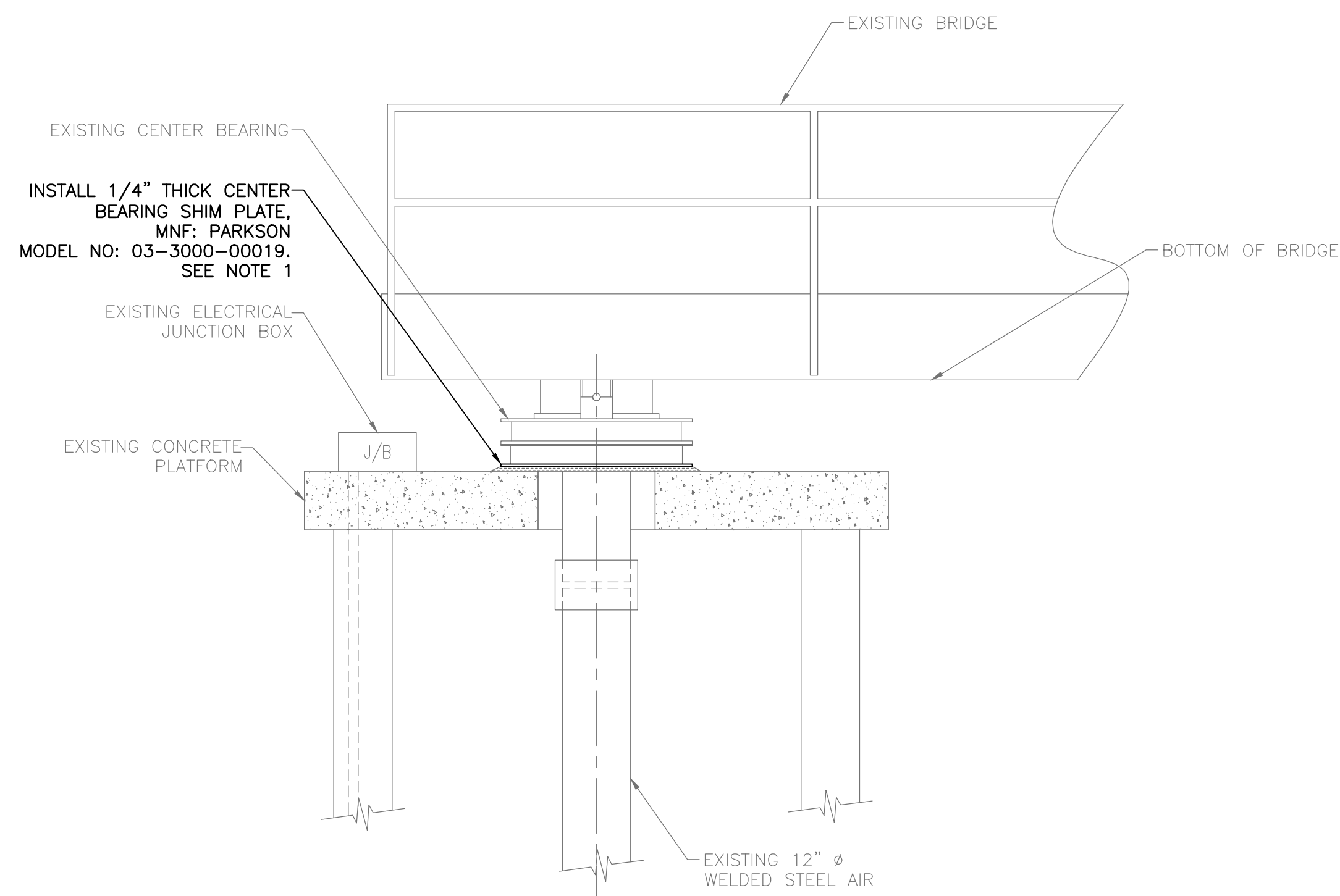
AERATION BASIN PARTIAL PLAN VIEW
SCALE: NTS



SECTION
SCALE: NTS

STEEL PLATE INSTALLATION DETAIL 1
SCALE: NTS

- NOTES:**
1. DRILL 5/8"Ø x 7" LONG HOLES TO ACCOMMODATE THE 1/2"Ø SS STUDS.
 2. PRIOR TO INSTALLING EPOXY, BRUSH CLEAN AND AIR BLOW HOLES TO REMOVE DUST OR LOOSE MATERIAL.
 3. DURING THE SS PLATES INSTALLATION, CONTRACTOR SHOULD REMOVE ANY EXCESSIVE EPOXY UNDERNEATH THE PLATES.
 4. ADJACENT PLATES SHOULD BE AT SAME LEVEL (ELEVATION).



CENTER BEARING SHIM PLATE INSTALLATION DETAIL 2
SCALE: NTS

- NOTE:**
1. REMOVE AND REINSTALL DRIVE EQUIPMENT AS NECESSARY.

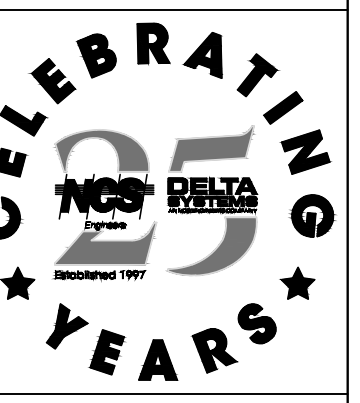


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MULBERRY WWTP
AERATION BASINS, STRUCTURAL
AND MCC UPGRADES

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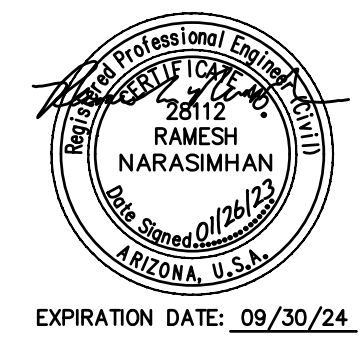
**SS PLATE
INSTALLATION
DETAILS**



Sheet Number:

M-03

Sheet 8 of 8



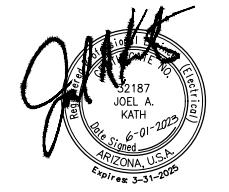
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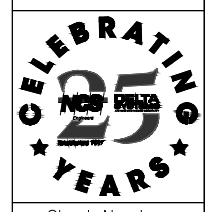


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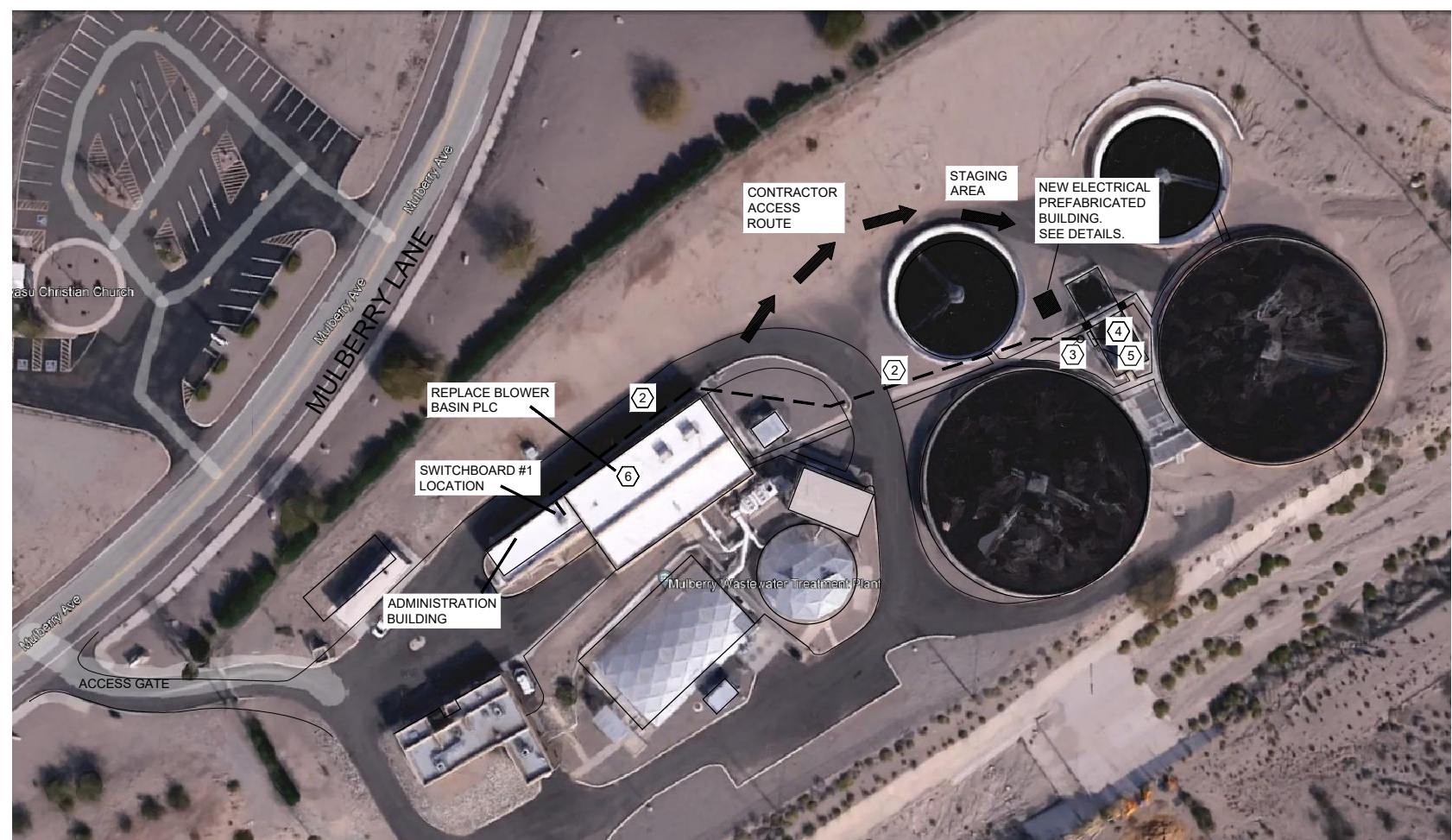
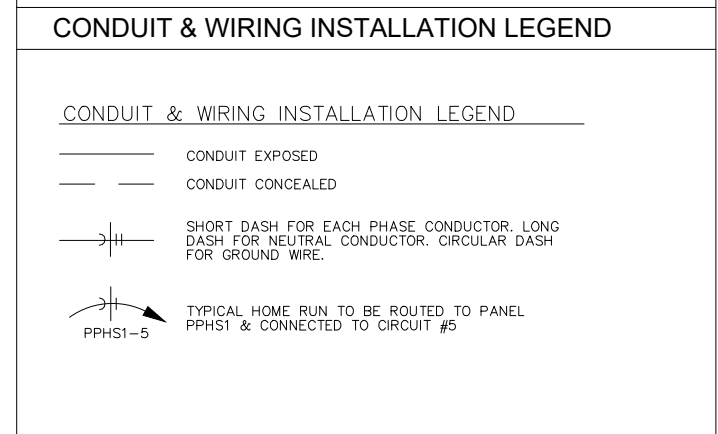
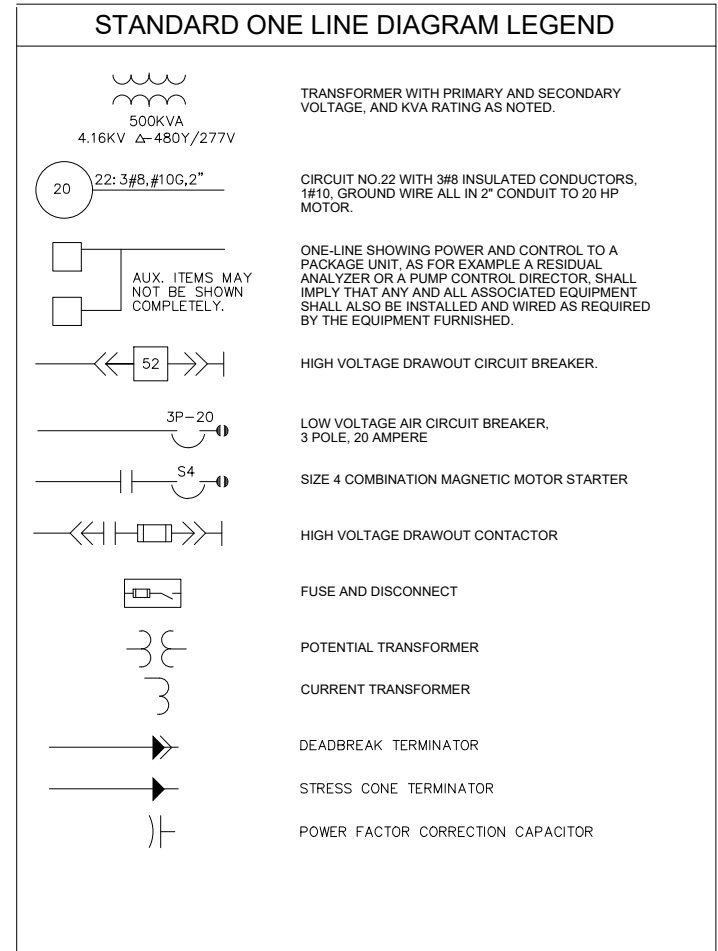
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AERATION BASINS, STRUCTURAL
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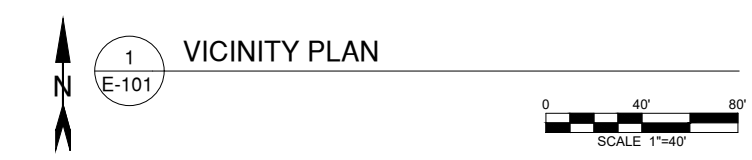
OVERALL ELECTRICAL PLAN



Sheet Number:
E-101
 Sheet of



- GENERAL NOTES**
- REFER TO ONE-LINE DIAGRAMS FOR FEEDER AND CONDUCTOR SIZES AND QUANTITIES.
- ALL NEW UNDERGROUND CONDUIT AND FEEDERS TO HAVE SAND BACKFILL AROUND CONDUIT AND CONCRETE CAP FOR PHYSICAL PROTECTION. SEE TRENCH DETAIL.
- PLAN VIEWS DO NOT INDICATE ALL CONDUITS. REFER TO ONE-LINE DIAGRAMS, EQUIPMENT SPECIFICATIONS, AND EQUIPMENT SHOP DRAWINGS FOR BRANCH CIRCUITRY, CONTROL, INSTRUMENTATION, POWER, AND COMMUNICATION CONDUIT AND CONDUCTORS. COORDINATE FIELD PLACEMENT OF INSTRUMENTATION CONDUIT AND CONDUCTORS WITH SYSTEMS INTEGRATOR.
- PLAN NOTES**
- ① EXISTING POWER SOURCE, 277/480V 3 PHASE, 300A BREAKER. TO REMAIN.
 - ② EXISTING POWER FEEDER FOR MCC-B. TO REMAIN.
 - ③ EXISTING ELECTRICAL MANHOLE: CONFINED SPACE. TAP EXISTING FEEDER AND EXTEND NEW TO NEW DISTRIBUTION PANEL DPB. SEE POWER ONE-LINE DIAGRAM.
 - ④ EXISTING MCC-B TO BE REPLACED. EXTEND EXISTING CIRCUITS TO NEW MCC-B AND DPB. SEE MCC-B ONE-LINE DIAGRAMS.
 - ⑤ EXISTING BLOWER BASIN REMOTE I/O PANEL TO BE REPLACED. EXTEND CIRCUITS TO NEW PANEL LOCATED IN NEW EQUIPMENT BUILDING. RETAIN EXISTING ENCLOSURE AS TERMINATION CABINET.
 - ⑥ EXISTING BLOWER BASIN PLC. REPLACE WITH NEW.



EXISTING UTILITY AND UNDERGROUND CONDUIT COORDINATION

CONTRACTOR IS RESPONSIBLE TO BLUE STAKE AND LOCATE ALL EXISTING UTILITIES.

COORDINATE EXACT PLACEMENT OF CONCRETE PADS WITH ENGINEER/OWNER PRIOR TO CONSTRUCTION OF CONCRETE PADS.

GENERAL NOTES

REFER TO ONE-LINE DIAGRAMS FOR FEEDER AND CONDUCTOR SIZES AND QUANTITIES.

ALL NEW UNDERGROUND CONDUIT AND FEEDERS TO HAVE SAND BACKFILL AROUND CONDUIT AND CONCRETE CAP FOR PHYSICAL PROTECTION. SEE TRENCH DETAIL.

PLAN VIEWS DO NOT INDICATE ALL CONDUITS. REFER TO ONE-LINE DIAGRAMS, EQUIPMENT SPECIFICATIONS, AND EQUIPMENT SHOP DRAWINGS FOR BRANCH CIRCUITRY, CONTROL, INSTRUMENTATION, POWER, AND COMMUNICATION CONDUIT AND CONDUCTORS. COORDINATE FIELD PLACEMENT OF INSTRUMENTATION CONDUIT AND CONDUCTORS WITH SYSTEMS INTEGRATOR.

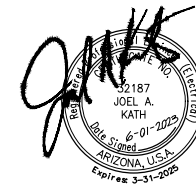
EXTENSIONS OF THE EXISTING CIRCUITS ARE DESIGNED BASED ON FIELD OBSERVATIONS AND EXISTING RECORD DRAWINGS. THE CONTRACTOR SHALL VERIFY EXACT CIRCUIT ROUTING AND SHALL MAKE APPROPRIATE CONNECTIONS FROM THE EXISTING CIRCUITS TO THE CIRCUIT EXTENSIONS.



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GENERAL NOTES

GENERAL CONSTRUCTION PHASING OUTLINE.
 NEW PANELS, MCC AND PLC EQUIPMENT TO BE FULLY OPERATIONAL PRIOR TO DISCONNECTING AND TRANSFERRING ANY CIRCUITS FROM THE EXISTING SOURCES.

TRANSFER CIRCUITS TO NEW SOURCES ONE CIRCUIT AT A TIME. REFER TO SCHEDULE FOR ALLOWED LENGTH OF OUTAGE TIME FOR EACH ITEM.

REFER TO EXISTING CONDITION PHOTO SHEETS.

PROVIDE J-BOX AND WIREWAYS AS REQUIRED TO FACILITATE CONNECTION TO EXISTING BRANCH CIRCUIT CONDUITS.

BURIED DUCTS

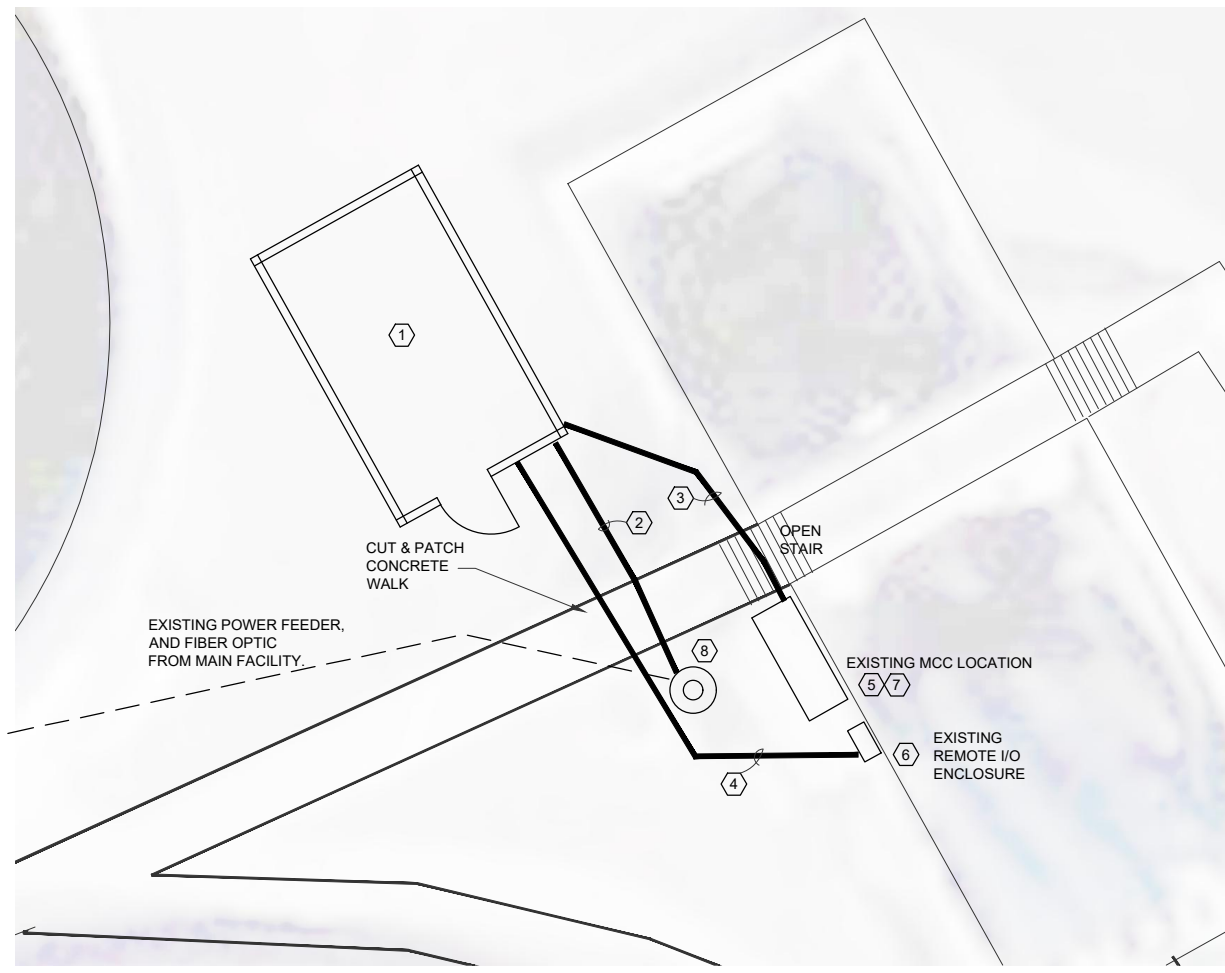
BURIED DUCTS TO BE SAND ENCASED WITH 2" CONCRETE CAP. TYPICAL OF ALL.

EXPOSED CONDUIT

ALL ABOVE GRADE CONDUIT TO BE PVC COATED RIGID STEEL. MASTIC WRAP IS NOT PERMITTED ABOVE GRADE.

PLAN NOTES

- ① NEW PREFABRICATED ELECTRICAL EQUIPMENT BUILDING. SEE DETAILS
- ② NEW POWER FEED TO NEW MCC LOCATION. SEE POWER ONE LINE DIAGRAM. CUT AND PATCH CONCRETE SIDEWALK.
- ③ NEW POWER AND CONTROL DUCTBANK BETWEEN EXISTING MCC-B/PLC AND NEW. SEE ONE-LINE DIAGRAMS AND DETAILS.
- ④ NEW DUCTBANK TO EXTEND I/O CIRCUITS TO NEW REMOTE I/O PANEL. 5-2" DUCTS TOTAL. SEE PLC ONE-LINE DIAGRAMS.
- ⑤ EXISTING MCC-B. TO BE REMOVED AND REPLACED WITH NEW. EXISTING
- ⑥ EXISTING REMOTE I/O CABINET. RETAIN ENCLOSURE AS TERMINATION JUNCTION STRUCTURE. PROVIDE NEW REMOTE I/O UNIT IN NEW EQUIPMENT SHELTER. SEE CONTROL ONE-LINE DIAGRAM.
- ⑦ UPON REMOVAL OF MCC STRUCTURE, PROVIDE NEMA 4X STAINLESS STEEL ENCLOSURES TO BE USED AS TRANSITION JUNCTION BOXES FROM THE NEW MCC POWER FEEDS TO THE EXISTING FIELD CONDUITS AND CONDUCTORS. SEE DETAIL
- ⑧ EXISTING COMBINED POWER AND COMMUNICATION MANHOLE. CONFINED SPACE ENTRY REQUIRED. TAP EXISTING 277/480 FEEDER AND EXTEND TO NEW MCC LOCATION. PROVIDE NEW RACKING SUPPORTS FOR EXISTING CONTROL AND POWER CABLES. PROVIDE NEW LABELS FOR ALL CABLE AND CONDUCTORS. SEE ONE-LINE AND DETAILS.



1 ELECTRICAL AREA PLAN
 E-102
 SCALE 1"=5'

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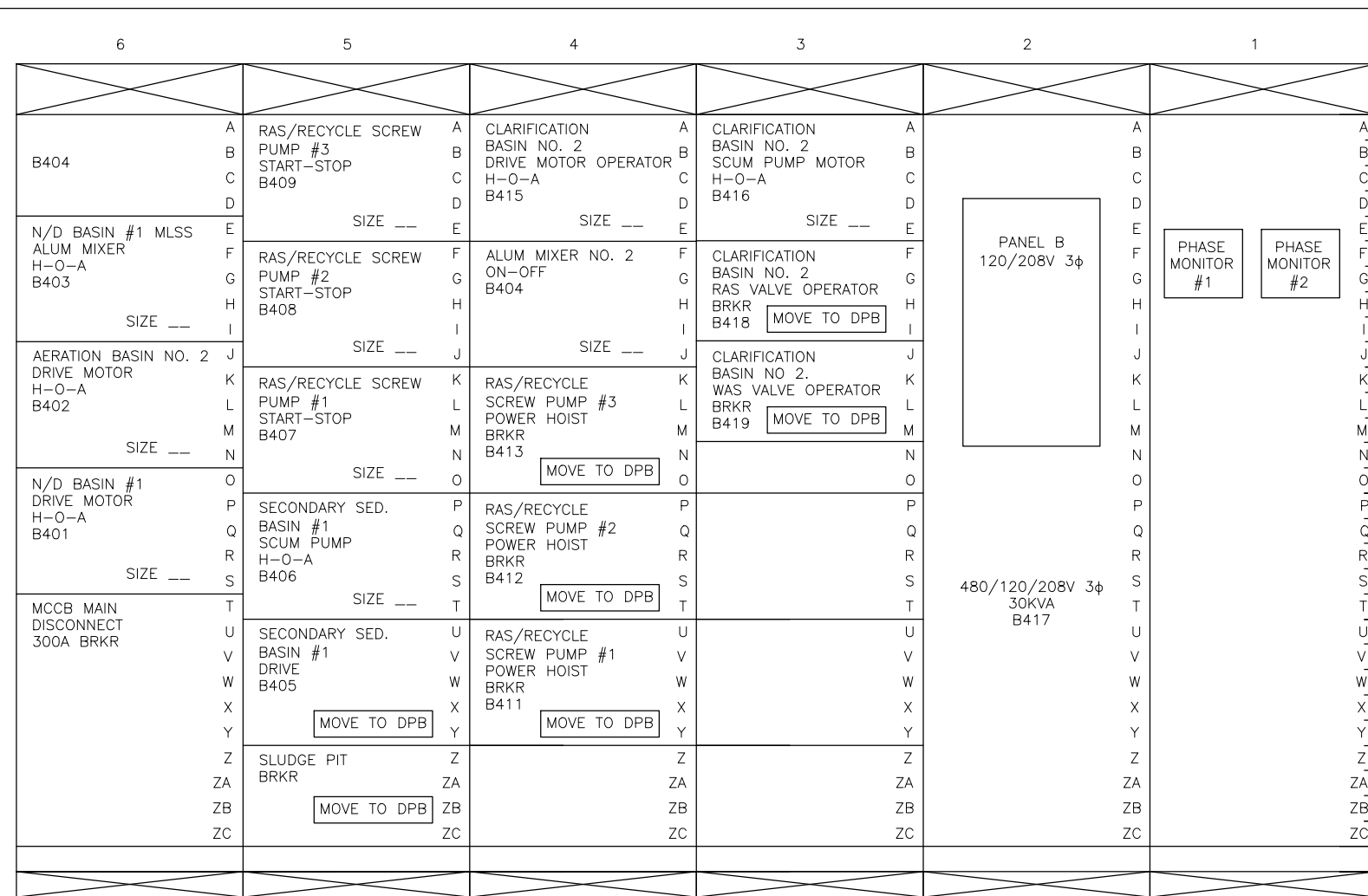
LAKE HAVASU CITY
 MULBERRY WWTP
 AERATION BASINS, STRUCTURAL
 AND MCC UPGRADES

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ELECTRICAL PLAN



Sheet Number:
E-102
 Sheet of



1 EXISTING MCC-B
E-201

POWER SUPPLY: 120/208V 3PH, 4W BUS RATING: 100A, 10K A.I.C. MAIN BREAKER - MAIN LUGS ONLY		NAME: B ENCLOSURE: NEMA 1						
DESCRIPTION	CCT BKR AMP	VA	CCT No	CCT No	CCT BKR AMP	VA	DESCRIPTION	
SEC. SED. BASIN RECPT	20/1	180	1	2	20/1	360	MLSS FLOW METER	
N/D BASIN RECPT	20/1	180	3	4	20/1	360	AERATION BASIN #2 FLOW METER FIT-104	
SPARE	20/1		5	6	20/1	500	RAS	
RAS MOTORIZED VALVE	20/1	500	7	8	20/1	360	RAS FLOW METER	
WAS MOTORIZED VALVE	20/1	500	9	10	20/1	360	WAS FLOW METER	
RAS PUMP STATION LIGHTS	20/1	500	11	12	20/1	360	SLUDGE FLOW CONTROL PANEL	
LIGHT POLE RECPT	20/1	180	13	14	20/1	180	RAS PUMP STATION RECPT	
SPARE	20/1		15	16	20/1	500	RAS PUMP STATION SUMP	
SPARE	20/1		17	18	20/1		SPARE	
SPARE	20/1		19	20	20/1		SPARE	
SPARE	20/1		21	22	20/1		SPARE	
AERATION BASIN #2 RECPT	20/1		23	24	20/1	180	SEC SED BASIN #2 RECPT	
DO REMOTE I/O PANEL	20/1		25	26	50/2	5000	UNKNOWN	
			27	28				
			29	30				
MAIN			100/3					

EXISTING MCCB							
MCC LOCATION	DESCRIPTION	CIRCUIT DESIGNATION	BREAKER	STARTER		CONTROL DIAGRAM	NOTES
				TYPE	SIZE		
SECTION 6							
6A	INCOMING BRANCH CIRCUIT CONDUIT AND JUNCTION BOX.	B404					BRANCH CIRCUITS J-BOX
6E	N/D BASIN #1 MLSS ALUM MIXER (NOT USED)	B403				H-O-A	ELIMINATE FROM NEW
6I	AERATION BASIN #2 DRIVE MOTOR	B402	30A	ACL	S2	O-O-A	
6O	N/D BASIN #1 DRIVE MOTOR	B401	20A	ACL	S1	H-O-A	SAFETY SWITCH AND SOFT START DRIVE ON BRIDGE.
6T	MCCB SERVICE DISCONNECT		300A				
SECTION 5							
5A	RAS/RECYCLE SCREW PUMP #3	B409	50A	ACL	S2	START-STOP CHANGE TO H-O-A	WITH HOUR METER
5F	RAS/RECYCLE SCREW PUMP #2	B408	50A	ACL	S2	START-STOP CHANGE TO H-O-A	WITH HOUR METER
5K	RAS/RECYCLE SCREW PUMP #1	B407	50A	ACL	S2	START-STOP CHANGE TO H-O-A	WITH HOUR METER
5P	SECONDARY SED. BASIN #1 SCUM PUMP	B406	20A	ACL	S1	H-O-A	
5U	SECONDARY SED. BASIN #1 DRIVE	B405	20A	ACL	S1	H-O-A	ELIMINATE H-O-A, PROVIDE BREAKER ONLY
5Z	SLUDGE PANEL		100A				UNIDENTIFIED
SECTION 4							
4A	CLARIFICATION BASIN #2 DRIVE MOTOR OPERATOR	B415	3A	ACL	S1	H-O-A	
4F	ALUM MIXER #2 (NOT USED)	B404				ON-OFF	ELIMINATE
4K	RAS/RECYCLE SCREW PUMP #3 POWER HOIST	B413	BREAKER	---	---	NA	BREAKER ONLY
4P	RAS/RECYCLE SCREW PUMP #2 POWER HOIST	B412	BREAKER	---	---	NA	BREAKER ONLY
4U	RAS/RECYCLE SCREW PUMP #1 POWER HOIST	B411	BREAKER	---	---	NA	BREAKER ONLY
4ZA	BLANK						
SECTION 3							
3A	CLARIFICATION BASIN #2 SCUM PUMP MOTOR	B416	3A	ACL	S1	H-O-A	
3F	CLARIFICATION BASIN #2 RAS VALVE OPERATOR	B418	15A				BREAKER ONLY
3I	CLARIFICATION BASIN #2 WAS VALVE OPERATOR	B419	15A				BREAKER ONLY
3N	BLANK						
3P	BLANK						
3U	BLANK						
3Z	BLANK						
SECTION 2							
2A	PANEL B 120/208V 3 PHASE 100A 30 CKT						SEE SCHEDULE
2S	30KVA TRANSFORMER 480/120/208V 3 PHASE						BREAKER DISCONNECT AND TRANSFORMER
SECTION 1							
1A	PHASE MONITOR #1 CIRCUIT 401 PHASE MONITOR #2 CIRCUIT 402						

EXISTING MCCB.XLSX

NO.	DATE	REVISIONS / SUBMISSIONS

LAKE HAVASU CITY
MULBERRY WWTP
AERATION BASINS, STRUCTURAL
AND MCC UPGRADES

Designed by: JAK
Drawn by: RBB
Checked by: JAK
Date: 06-01-2023
Dwg. scale: AS SHOWN

EXISTING MCC-B
SCHEDULES AND
DETAILS



1	2	3
B404	RAS/RECYCLE SCREW PUMP #3 START-STOP B409	CLARIFICATION BASIN NO. 2 DRIVE MOTOR OPERATOR H-O-A B415
SPARE	RAS/RECYCLE SCREW PUMP #2 START-STOP B408	SPARE
AERATION BASIN NO. 2 DRIVE MOTOR H-O-A B402	RAS/RECYCLE SCREW PUMP #1 START-STOP B407	CLARIFICATION BASIN NO. 2 SCUM PUMP MOTOR H-O-A B416
N/D BASIN #1 DRIVE MOTOR H-O-A B401	SECONDARY SED. BASIN #1 SCUM PUMP H-O-A B406	DISTRIBUTION PANEL DP-S BRKR 200A-3P
MCCB MAIN DISCONNECT 300A BRKR		

1 NEW MCC-B
E-301

NEW PANEL S		NAME: S	
POWER SUPPLY: 120/208V 3PH, 4W BUS RATING: 100A, 10K A.I.C. MAIN BREAKER - 100A-3P		ENCLOSURE: NEMA 1	
DESCRIPTION	CCT BKR AMP	VA	DESCRIPTION
SEC. SED. BASIN RECPT	20/1	180	MLSS FLOW METER
N/D BASIN RECPT	20/1	180	AERATION BASIN #2 FLOW METER FIT-104
SPARE	20/1	500	RAS
RAS MOTORIZED VALVE	20/1	500	RAS FLOW METER
WAS MOTORIZED VALVE	20/1	500	WAS FLOW METER
RAS PUMP STATION LIGHTS	20/1	500	SLUDGE FLOW CONTROL PANEL
LIGHT POLE RECPT	20/1	180	RAS PUMP STATION RECPT
SPARE	20/1	1500	RAS PUMP STATION SUMP
SPARE	20/1	1500	SPARE
SPARE	20/1	1500	SPARE
SPARE	20/1	1500	SPARE
AERATION BASIN #2 RECPT	20/1	180	SEC SED BASIN #2 RECPT
DO REMOTE I/O PANEL	20/1	5000	UNKNOWN
RECEPT.	20/1	20/2	AC-1
RECEPT.	20/1	20/2	
PLC	20/1	20/2	AC-2
PLC	20/1	20/2	
FIRE SUPPRESSION	20/1	20/1	NEW
NEW	20/1	20/1	NEW
MAIN	100/3		

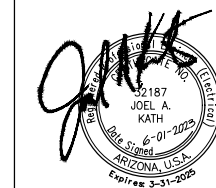
NEW MCCB								
MCC LOCATION	DESCRIPTION	CIRCUIT DESIGNATION	BREAKER	STARTER		CONTROL DIAGRAM	HOURS ALLOWED OUT OF SERVICE	NOTES
				TYPE	SIZE			
SECTION 1								
1A	CIRCUIT B404	B404						UNIDENTIFIED
1E	SPARE		50A	ACL	2	H-O-A		
1J	AERATION BASIN #2 DRIVE MOTOR	B402	30A	ACL	2	O-O-A	8 HOURS	
1O	N/D BASIN #1 DRIVE MOTOR	B401	20A	ACL	1	H-O-A	8 HOURS	
1T	MCCB SERVICE DISCONNECT		300A					
SECTION 2								
2A	RAS/RECYCLE SCREW PUMP #3	B409	50A	ACL	2	START-STOP	8 HOURS	
2F	RAS/RECYCLE SCREW PUMP #2	B408	50A	ACL	2	START-STOP	8 HOURS	
2K	RAS/RECYCLE SCREW PUMP #1	B407	50A	ACL	2	START-STOP	8 HOURS	
2P	SECONDARY SED. BASIN #1 SCUM PUMP	B406	20A	ACL	1	H-O-A	8 HOURS	
2U	SPARE		20A	BREAKER	---			
2Z - 2ZC	BLANK							
SECTION 3								
3A	CLARIFICATION BASIN #2 DRIVE MOTOR OPERATOR	B415	3A	ACL	1	H-O-A	8 HOURS	
3B	SPARE		20A	ACL	1	H-O-A		
3K	CLARIFICATION BASIN #2 SCUM PUMP MOTOR	B416	3A	ACL	1	H-O-A	8 HOURS	
3P	DISTRIBUTION PANEL DPS		BREAKER	---	---	NA	NA	BREAKER ONLY
3T - 3ZC	BLANK							

NEW MCCB.XLSX

NEW PANEL DPB		NAME: DPB	
POWER SUPPLY: 277/480V 3PH, 4W BUS RATING: 400A, 35K A.I.C. MAIN LUGS ONLY		ENCLOSURE: NEMA 1	
DESCRIPTION	CCT BKR AMP	VA	DESCRIPTION
SLUDGE PIT BREAKER - UNLABELED	100A 3P		CLARIFICATION BASIN NO. 2 RAS VALVE OPERATOR BRKR B418
RAS/RECYCLE SCREW PUMP #1 POWER HOIST BRKR B411	20A 3P		CLARIFICATION BASIN NO. 2 WAS VALVE OPERATOR BRKR B419
RAS/RECYCLE SCREW PUMP #2 POWER HOIST BRKR B412	20A 3P		SECONDARY SED. BASIN #1 DRIVE B405
RAS/RECYCLE SCREW PUMP #3 POWER HOIST BRKR B413	20A 3P		30KVA TRANSFORMER PANEL S
SPARE	20A 3P		SPARE



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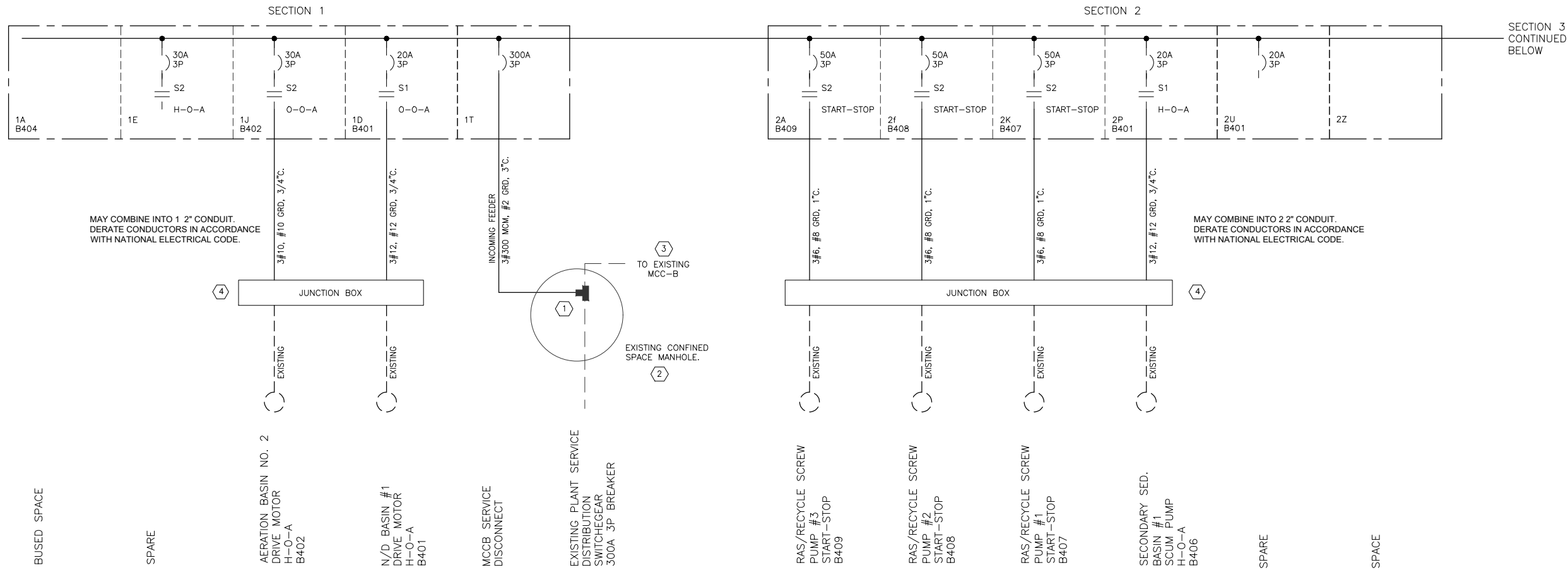
LAKE HAVASU CITY
 MULBERRY WWTP
 AERATION BASINS, STRUCTURAL
 AND MCC UPGRADES

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NEW MCC-B
 SCHEDULES AND
 DETAILS



Sheet Number:
E-301
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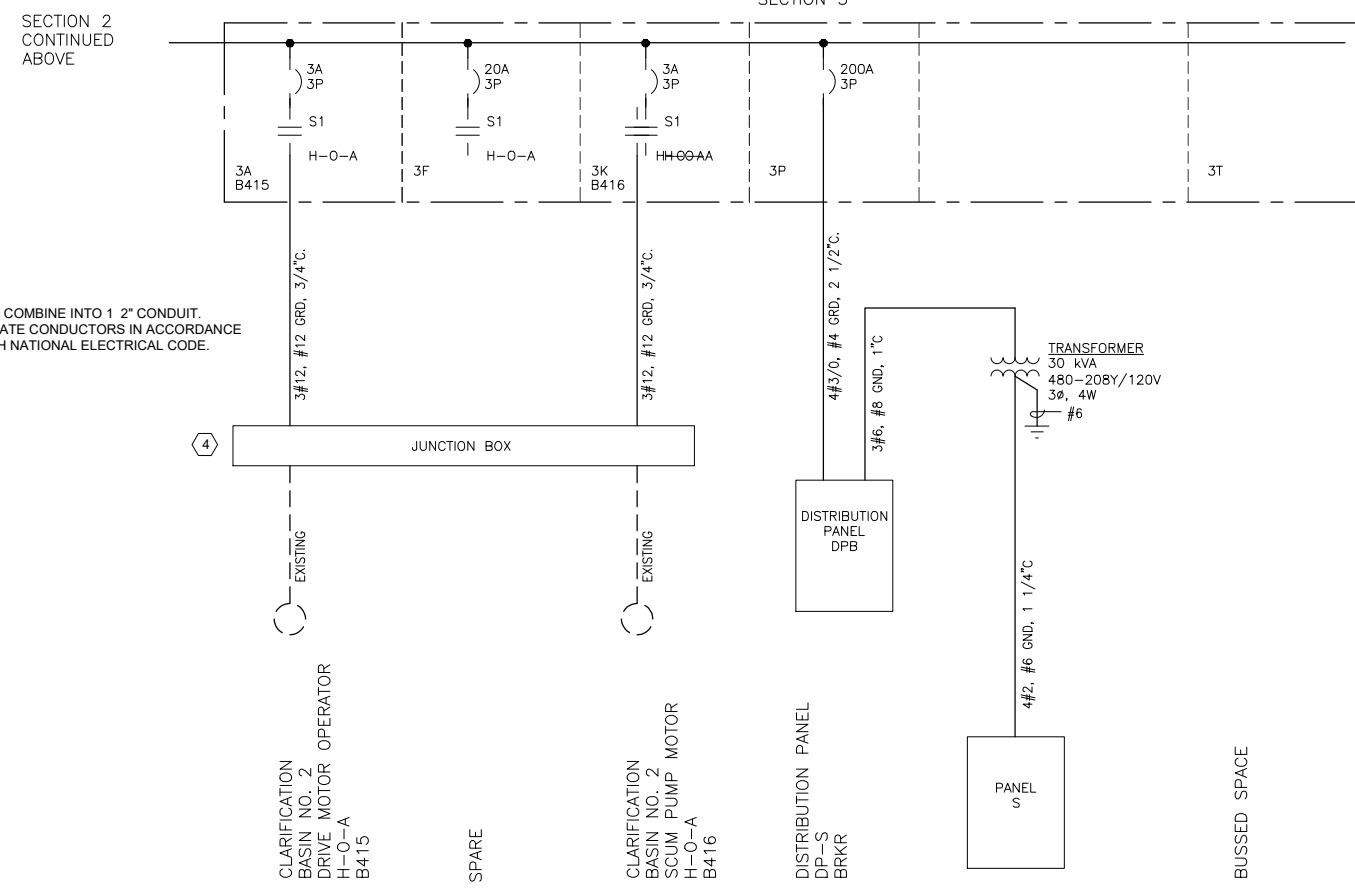
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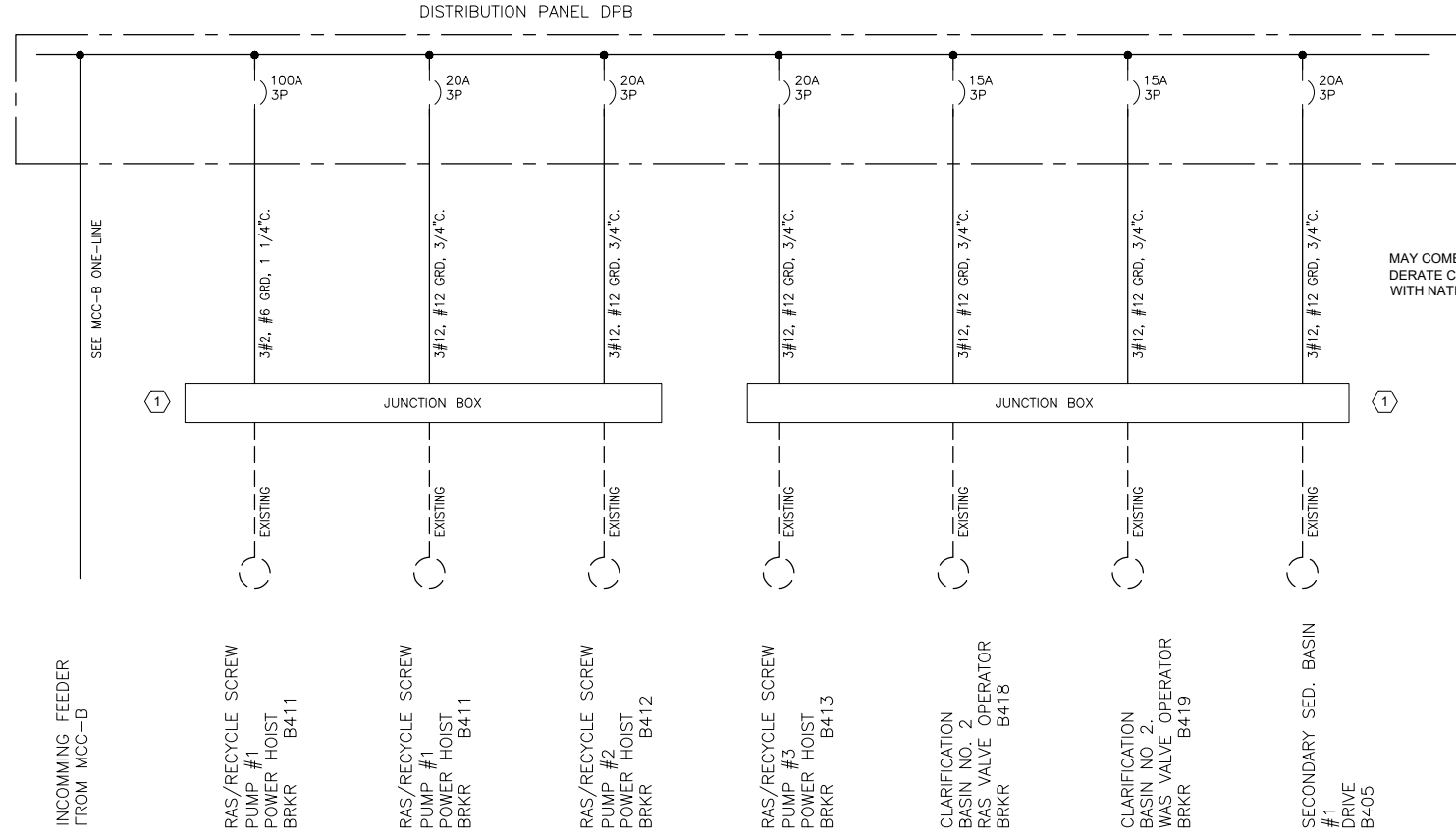
MCC-B
ONE-LINE DIAGRAMS



Sheet Number:
E-302
Sheet of



- ONE-LINE NOTES:
- SEE MAXIMUM HOURS OF INTERRUPTION. CONSTRUCTION PHASING REQUIREMENTS.
 - ① TEE-TAP SPLICE TO EXISTING 300A FEEDER IN EXISTING CONFINED SPACE MANHOLE NEAR THE EXISTING MCC-B LOCATION. PROVIDE NEW FEEDER TO MCC IN EQUIPMENT BUILDING. ENERGIZE BOTH THE NEW AND EXISTING EQUIPMENT DURING INTERIM CONDITIONS OF CONSTRUCTION.
 - ② CONTRACTOR TO CLEAN MANHOLE AND RE-RACK EXISTING CABLES. TRACE AND LABEL EXISTING CABLES. COORDINATE FINDINGS WITH ENGINEER AND CITY.
 - ③ EXISTING MCC-B TO BE DEMOLISHED. UPON DEMOLITION OF EXISTING PANELS, REMOVE TEE SPLICE AND INSTALL PERMANENT ENCAPSULATED BUTT SPLICE.
 - ④ PROVIDE JUNCTION BOX ENCLOSURES TO TRANSITION FROM EXISTING CONDUIT STUB-UPS TO NEW BRANCH CIRCUITRY. SEE PHOTO DETAIL. ENCLOSURES TO BE STAINLESS STEEL NEMA 4. PROVIDE TERMINATION BLOCKS FOR INDIVIDUAL CIRCUITS. WIRE NUTS OR SPLIT BOLT CONNECTIONS ARE NOT ALLOWED.



MAY COMBINE INTO 2" CONDUIT.
DERATE CONDUCTORS IN ACCORDANCE
WITH NATIONAL ELECTRICAL CODE.

ONE-LINE NOTES:

- SEE MAXIMUM HOURS OF INTERRUPTION. CONSTRUCTION PHASING REQUIREMENTS.
- PROVIDE JUNCTION BOX ENCLOSURES TO TRANSITION FROM EXISTING CONDUIT STUB-UPS TO NEW BRANCH CIRCUITRY. SEE PHOTO DETAIL. ENCLOSURES TO BE STAINLESS STEEL NEMA 4. PROVIDE TERMINATION BLOCKS FOR INDIVIDUAL CIRCUITS. WIRE NUTS OR SPLIT BOLT CONNECTIONS ARE NOT ALLOWED.

1 PANEL DPB ONE-LINE DIAGRAM
E-303

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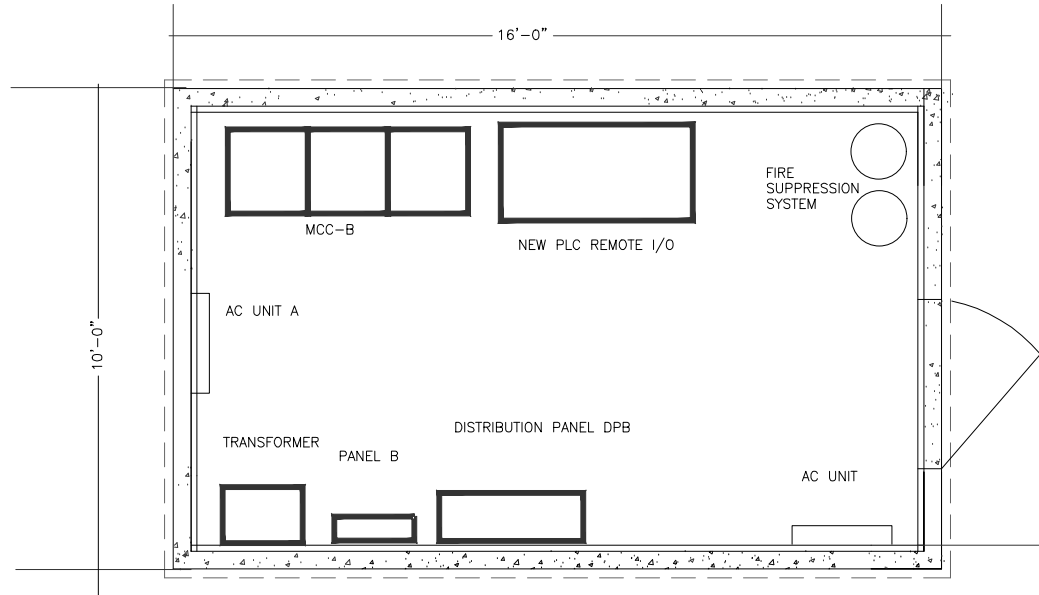
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DISTRIBUTION PANEL
ONE-LINE DIAGRAM



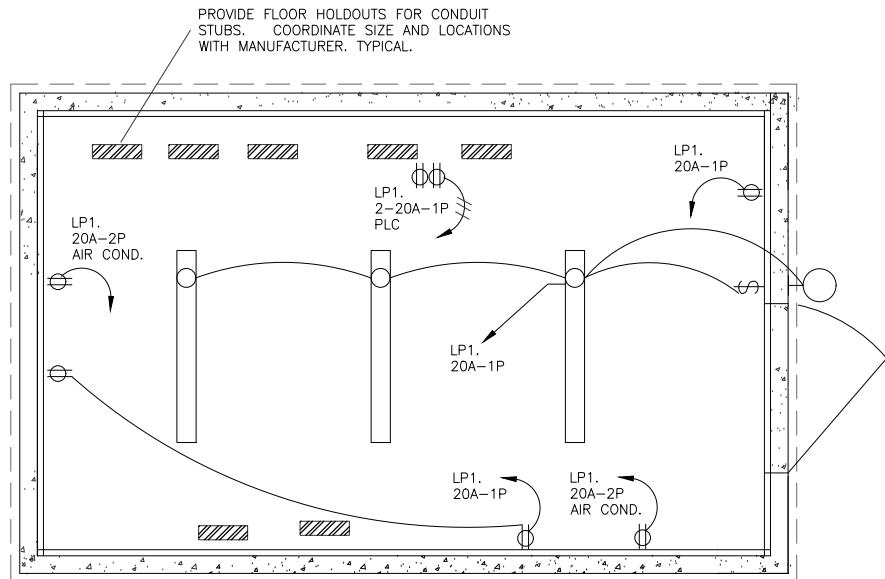
Sheet Number:
E-303
Sheet of



1
E-401
16'-0"
10'-0"
MCC-B
NEW PLC REMOTE I/O
FIRE SUPPRESSION SYSTEM
AC UNIT A
TRANSFORMER
PANEL B
DISTRIBUTION PANEL DPB
AC UNIT

1
E-401
0 2' 4'
SCALE 1"=2'

1
E-401
PREFABRICATED EQUIPMENT SHELTER - PLAN VIEW



2
E-401
0 2' 4'
SCALE 1"=2'

2
E-401
FLOOR SLAB HOLD OUT & CONVENIENCE ELECTRICAL

PLAN NOTES:

- ① PROVIDE 4' SURFACE LED FIXTURE. EQUAL TO LITHONIA.
- ② PROVIDE 18W LED WALLPACK WITH PHOTOCELL. EQUAL TO LITHONIA.

PRECAST EQUIPMENT SHELTER NOTES AND SPECIFICATIONS

PROVIDE NEW PRECAST CONCRETE EQUIPMENT SHELTER. EQUAL TO 'OLDCASTLE PRECAST' MODEL #1122 OR 'ROCKWAY PRECAST'.

SPECIFICATIONS:
EXTERIOR DIMENSIONS = 10'-6" WIDE X 16'-6" LONG X 10'-1" HEIGHT.
2" OVERHANG AT ALL WALLS.
SLOPE ROOF FROM 10'-1" TO 10'-0" FOR RUNOFF.
SINGLE ENTRY 42" WIDE DOOR.

EQUIPMENT TO BE PROVIDED WITH PRECAST EQUIPMENT SHELTER:

REMOVABLE THROUGH WALL AIR CONDITIONING UNITS 2 EACH
EQUIPMENT HEAT LOAD = 7,500 BTU/H
BUILDING LOAD = 12,500 BTU/H
TOTAL LOAD = 20,000 BTU/H MINIMUM AC SIZE = 24,000BTU/H = 2.0 TONS
240V 1 PHASE CORD CONNECTION.

PROVIDE FIRE SUPPRESSION SYSTEM INCLUDING DETECTORS, HEADS, PIPING, CONTROL PANEL AND SUPPRESSION CANISTERS. CONNECT DETECTION TO EXTERIOR RED LIGHT.
PROVIDE CONTACTS FOR CONNECTION TO REMOTE ANNUNCIATION.

PROVIDE PHOTOELECTRIC SMOKE DETECTOR WITH AUDIBLE ALARM.

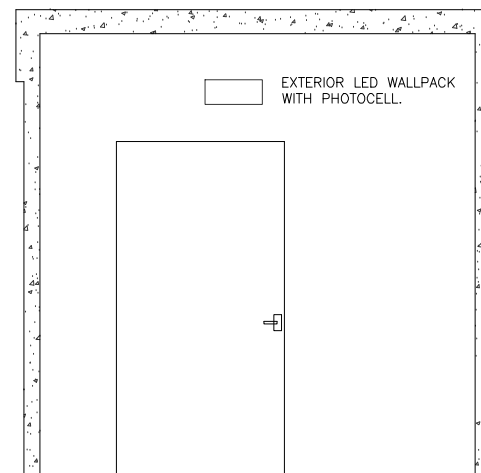
PROVIDE BLOCK-OUTS IN FLOOR TO ACCOMMODATE CABLE AND DUCT ENTRY. COORDINATE OPENINGS AND DIMENSIONS AT TIME OF SHOP DRAWINGS.

PROVIDE ALL ELECTRICAL CONNECTIONS WITH EQUIPMENT.

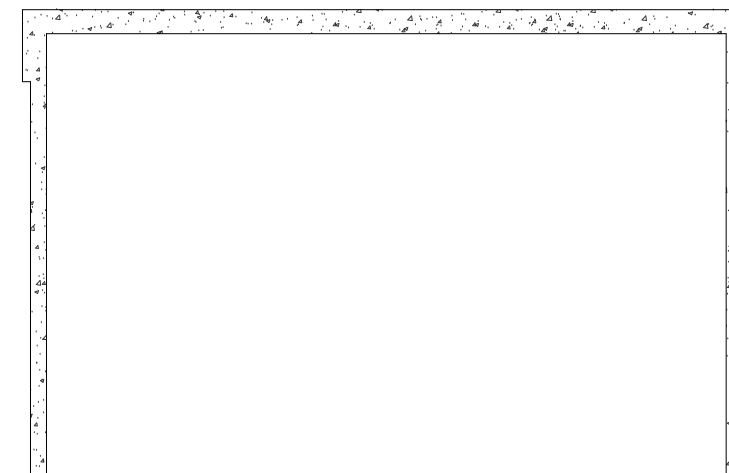
DESIGN LOADS: LIVE LOAD 250 PSF
ROOF LOAD 65 PSF
WIND LOAD 110 MPH, EXP.'C'
SEISMIC ZONE 4

DESIGN CODE: 2020 IBC

MATERIALS: PRECAST CONCRETE OPTION
CONCRETE: 5000 PSI @ 28 DAYS
REBAR: ASTM A-615 GRADE 60 MESH:
ASTM A-496 AND A-497



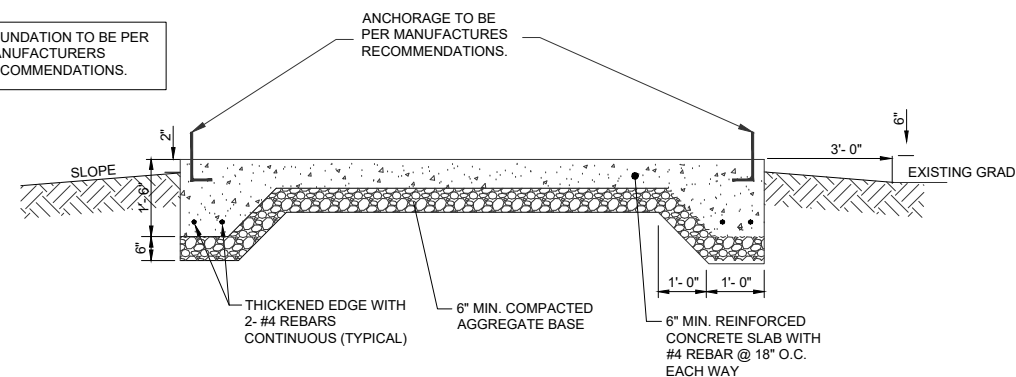
END VIEW



SIDE VIEW

4
E-401
0 2' 4'
SCALE 1"=2'

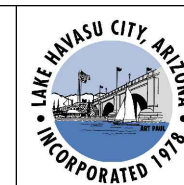
4
E-401
PREFABRICATED EQUIPMENT SHELTER ELEVATIONS



3
E-401
FOUNDATION DETAILS FOR PREFABRICATED EQUIPMENT SHELTER

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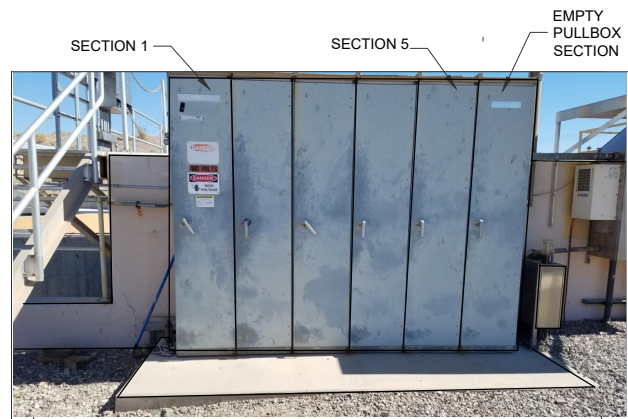
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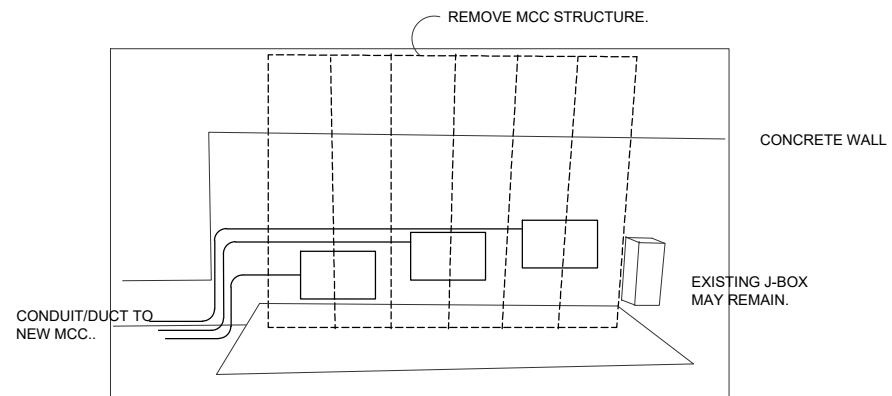
PREFABRICATED EQUIPMENT BUILDING



Sheet Number:
E-401
Sheet of



1 PHOTO 1 - EXISTING MCC-B ELEVATION
E-402 NO SCALE



EXISTING CIRCUITS TO FIELD PENETRATE THROUGH CONCRETE SLAB. PROVIDE JUNCTION BOX ENCLOSURES TO TRANSITION TO NEW CONDUITS TO NEW MCC.

NOTE: ALL CONDUIT ABOVE GRADE TO BE PVC COATED RIGID STEEL CONDUIT.

2 J-BOX ELEVATION DETAIL AT EXISTING MCC
E-402 NO SCALE



3 PHOTO 2 - EXISTING REMOTE I/O CABINET
E-402 NO SCALE



3 PHOTO 3 - ELECTRICAL MANHOLE
E-402 NO SCALE



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EXISTING CONDITION PHOTOGRAPHS



Sheet Number:
E-501
Sheet of

POINT	DESCRIPTION	CABLE	ALLOWED OUTAGE
O : 0/0	Bridge Drive No. 1 Motor Call to Run Output OTE - File #21 I/O INTERF - 19	(1) CABLE 4#16	8 HOURS
O : 0/1	Clarifier 1 Motor Call to Run Output OTE - File #21 I/O INTERF - 20	(1) CABLE 4#16	8 HOURS
O : 0/2	Scum Pump 1 Motor Call to Run Output OTE - File #21 I/O INTERF - 21	(1) CABLE 4#16	8 HOURS
O : 0/3	Bridge Drive No. 2 Motor Call to Run Output OTE - File #21 I/O INTERF - 22	(1) CABLE 4#16	8 HOURS
O : 0/4	Clarifier 2 Motor Call to Run Output OTE - File #21 I/O INTERF - 23	(1) CABLE 4#16	8 HOURS
O : 0/5	Scum Pump 2 Motor Call to Run Output OTE - File #21 I/O INTERF - 24	(1) CABLE 4#16	8 HOURS
O : 0/7	Spare OTE - File #21 I/O INTERF - 25	(1) CABLE 4#16	8 HOURS
O : 0/8	Spare OTE - File #21 I/O INTERF - 26	(1) CABLE 4#16	8 HOURS

POINT	DESCRIPTION	CABLE	ALLOWED OUTAGE
I : 0/0	Bridge No. 1 Stall Prox Switch XIC - File #21 I/O INTERF - 2	(1) CABLE 4#16	8 HOURS
I : 0/1	Bridge No 1 Drive Motor Running Feedback XIC - File #21 I/O INTERF - 3	(1) CABLE 4#16	8 HOURS
I : 0/2	Clarifier 1 Motor Running Feedback XIC - File #21 I/O INTERF - 4	(1) CABLE 4#16	8 HOURS
I : 0/3	Scum Pump 1 Motor Running Feedback XIC - File #21 I/O INTERF - 5	(1) CABLE 4#16	8 HOURS
I : 0/4	Aeration Bridge No. 1 Ready Signal XIC - File #21 I/O INTERF - 9	(1) CABLE 4#16	8 HOURS
I : 0/5	Alum Mixer Running Feedback XIC - File #21 I/O INTERF - 12	(1) CABLE 4#16	8 HOURS
I : 0/6	Alum Mixer Motor Overload Tripped XIC - File #21 I/O INTERF - 13	(1) CABLE 4#16	8 HOURS
I : 0/10	Aeration Bridge No. 2 Ready Signal XIC - File #21 I/O INTERF - 10	(1) CABLE 4#16	8 HOURS
I : 0/11	Spare XIC - File #21 I/O INTERF - 11	(1) CABLE 4#16	8 HOURS

POINT	DESCRIPTION	CABLE	ALLOWED OUTAGE
I : 1/0	Bridge No. 2 Stall Prox Switch XIC - File #21 I/O INTERF - 14	(1) CABLE 4#16	8 HOURS
I : 1/1	Bridge No 2 Drive Motor Running Feedback XIC - File #21 I/O INTERF - 15	(1) CABLE 4#16	8 HOURS
I : 1/2	Clarifier 2 Motor Running Feedback XIC - File #21 I/O INTERF - 16	(1) CABLE 4#16	8 HOURS
I : 1/3	Scum Pump 2 Motor Running Feedback XIC - File #21 I/O INTERF - 17	(1) CABLE 4#16	8 HOURS
I : 1/4	Aeration Bridge No. 2 Ready Signal XIC - File #21 I/O INTERF - 18	(1) CABLE 4#16	8 HOURS

POINT	DESCRIPTION	CABLE	ALLOWED OUTAGE
I : 3/0	Clarifier Basin No. 1 RAS Flow Raw Input Data SCP - File #22 FLOW RATES - 2	1-#16S	8 HOURS
I : 3/1	Clarifier Basin No. 2 RAS Flow Raw Input Data SCP - File #22 FLOW RATES - 3	1-#16S	8 HOURS
I : 3/2	WAS Flow Raw Input Data SCP - File #22 FLOW RATES - 4	1-#16S	8 HOURS

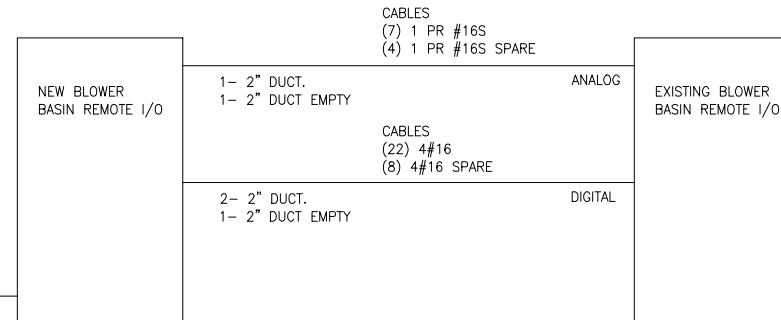
POINT	DESCRIPTION	CABLE	ALLOWED OUTAGE
I : 2/0	SCP - File #7 ANALOG - 0	1-#16S	8 HOURS
I : 2/1	SCP - File #7 ANALOG - 5	1-#16S	8 HOURS
I : 2/2	Aeration Basin No. 1 Discharge Flow Raw Input Data SCP - File #22 FLOW RATES - 0	1-#16S	8 HOURS
I : 2/3	Aeration Basin No. 2 Discharge Flow Raw Input Data SCP - File #22 FLOW RATES - 0	1-#16S	8 HOURS

1 REMOTE PLC PANEL I/O LIST

I-101

PROVIDE CUTOVER SUCH THAT POWER AND COMMUNICATION DOES NOT EXCEED MAXIMUM OUTAGE TIMES.

(3) #12 IN 1/2" C.
120V SOURCE



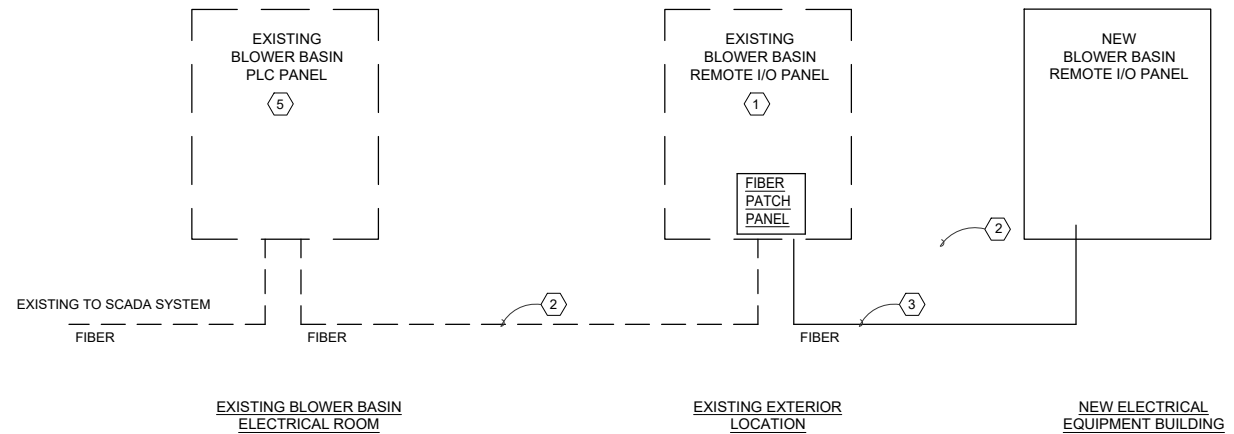
3 CABLE AND DUCT ONE-LINE DIAGRAM

I-101

SCADA SYSTEM PLC AND REMOTE I/O NOTES

SEE SECTIONS 16900, 16901, AND 16924 FOR FURTHER DETAILS.

- 1 EXISTING REMOTE I/O PANEL AND EQUIPMENT. EXTERIOR LOCATION UNDER SUNSHADE. ENCLOSURE TO REMAIN AS TERMINATION CABINET. INSTALL FIBER OPTIC PATCH PANEL AND EXTEND FIBER OPTIC COMMUNICATION TO NEW REMOTE I/O PANEL LOCATED IN NEW ELECTRICAL EQUIPMENT BUILDING. REMOVE REMOTE I/O MODULES AND ALL UNUSED EQUIPMENT FROM EXISTING. RETAIN TERMINATION BLOCKS IN EXISTING CABINET. PROVIDE NEW CABLES AND EXTEND ALL I/O TO NEW PANEL.
- 2 EXISTING COMMUNICATION AND EXISTING REMOTE I/O TO REMAIN IN SERVICE CONTINUOUS DURING CONSTRUCTION. PROVIDE FIBER OPTIC PATCH PANEL IN EXISTING REMOTE I/O CABINET TO FEED NEW REMOTE I/O PANEL. THE NEW REMOTE I/O PANEL IS TO BE OPERATED SIMULTANEOUS WITH EXISTING REMOTE I/O DURING TRANSITION OF I/O DEVICES TO NEW PANEL.
- 3 NEW FIBER TO BE (1) 6 PAIR, SINGLE MODE FIBER OPTIC CABLE GEL FILLED OVERALL JACKET. INSTALL IN 1" C. FIBER OPTIC PATCH PANEL TERMINATION ENCLOSURE. 48 FIBER CAPACITY. EQUAL TO FS:FHD-FWME2.
- 4 NEW BLOWER BASIN REMOTE I/O PANEL.
- 5 EXISTING BLOWER BASIN PLC. RETAIN EXISTING ENCLOSURE IN INCOMING I/O. REMOVE AND REPLACE EXISTING AB-505 SERIES PLC AND COMPONENTS AND REPLACE WITH NEW AB-5069 SERIES. PROVIDE ONE 16PT 120V DIGITAL INPUT MODULE AND ONE 16PT DIGITAL OUTPUT MODULE. PROVIDE DISPLAY AND KEYBOARD. MATCH I/O TERMINATIONS TO EXISTING.



2 PLC AND REMOTE PLC ONE-LINE DIAGRAM

I-101

PROVIDE CUTOVER SUCH THAT POWER AND COMMUNICATION DOES NOT EXCEED MAXIMUM OUTAGE TIMES.

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PLC AND SCADA
DIAGRAMS

