SACRAMENTO AREA
SEWER DISTRICT
SERVING YOU 24/7

AUGUST 2025

CONTRACT DOCUMENTS FOR THE CONSTRUCTION OF

ECHOWATER RESOURCE RECOVERY FACILITY

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

Version: 2024.1.0

BID SET

PART C - DRAWINGS
VOLUME 2 OF 2

RFB 8515
CONTRACT NUMBER

SACRAMENTO AREA SEWER DISTRICT

SERVING YOU 24/7

AUGUST 2025

BOARD OF DIRECTORS

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PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

BID SET

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PART C - DRAWINGS

VOLUME 2 OF 2

APPROVALS

Signed by: Milad Khorasani 31B60B61471B440... 8/4/2025	Signed by: Gerardo Aguirre 5E2DD9F0A4E644D... 8/4/2025	
SUBMITTED: DATE	SUBMITTAL APPROVED: DATE	
MILAD KHORASANI, PE	***GERARDO AGUIRRE, PE***	
PROJECT MANAGER	**PROJECT SUPERVISOR**	
Signed by: William Yu D432B6D55629454... 8/6/2025	Signed by: C.M. Lunde 1C33FE8AE2DC4BE... 8/11/2025	DocuSigned by: Christoph Dobson ABF187D2508B41C... 8/11/2025
SUBMITTAL APPROVED: DATE	SUBMITTAL APPROVED: DATE	APPROVED: DATE
W. YU, PE	***S. LUNDE, PE***	***C. DOBSON, PE***
ENGINEERING MANAGER, ECHOWATER OPERATIONS DEPARTMENT	**DIRECTOR, ECHOWATER OPERATIONS DEPARTMENT**	**DISTRICT ENGINEER**

CONTRACT NUMBER

RFB 8515

INDEX OF DRAWINGS

SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE
GENERAL		
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2	G-001	SIGNATURE SHEET
3	G-002	INDEX OF DRAWINGS
4	GI001	LOCATION AND AREA MAPS
5	GI002	EXISTING ECHOWATER RESOURCE RECOVERY FACILITY SITE PLAN AND PROJECT AREA
6	GI003	GENERAL SYMBOLS, MATERIALS, CROSS REFERENCING SYSTEM, DRAWING NUMBER SYSTEM, AND MISCELLANEOUS SYMBOLS
7	GI004	PIPING, VALVE, AND EQUIPMENT PREFIXES
8	GC001	CONSTRUCTION ACCESS
9	GC002	CONTRACTOR LAYDOWN AREA
DEMOLITION		
10	31D101	DEMOLITION PLAN
11	31D501	DEMOLITION DETAILS 1
12	31D502	DEMOLITION DETAILS 2
13	31D503	DEMOLITION DETAILS 3
14	31D504	DEMOLITION DETAILS 4
PROCESS MECHANICAL		
15	D-001	STANDARD DETAILS 1
16	D-002	STANDARD DETAILS 2
17	31DP101	PRIMARY DECK WRH PIPING PLAN
18	31DP501	PIPING SECTIONS AND DETAILS 1
19	31DP502	PIPING SECTIONS AND DETAILS 2
20	31DP503	PIPING SECTIONS AND DETAILS 3
21	31DP901	PRIMARY DECK WRH PIPING ISOMETRIC LAYOUT
22	31DP902	PRIMARY DECK WRH PIPING - BATTERY 1 - EAST SIDE - ISOMETRIC LAYOUT
23	31DP903	PRIMARY DECK WRH PIPING - BATTERY 1 - WEST SIDE - ISOMETRIC LAYOUT
24	32DP902	PRIMARY DECK WRH PIPING - BATTERY 2 - EAST SIDE - ISOMETRIC LAYOUT
25	32DP903	PRIMARY DECK WRH PIPING - BATTERY 2 - WEST SIDE - ISOMETRIC LAYOUT
26	33DP902	PRIMARY DECK WRH PIPING - BATTERY 3 - EAST SIDE - ISOMETRIC LAYOUT
27	33DP903	PRIMARY DECK WRH PIPING - BATTERY 3 - WEST SIDE - ISOMETRIC LAYOUT
28	34DP902	PRIMARY DECK WRH PIPING - BATTERY 4 - EAST SIDE - ISOMETRIC LAYOUT
29	34DP903	PRIMARY DECK WRH PIPING - BATTERY 4 - WEST SIDE - ISOMETRIC LAYOUT
INSTRUMENTATION AND CONTROLS		
30	31X-601	P&ID - PRIMARY DECK WRH PIPING

ATTACHMENTS:

A	-	PRIMARY DECK LOAD LIMITS

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP 3-31-2027
CIVIL
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

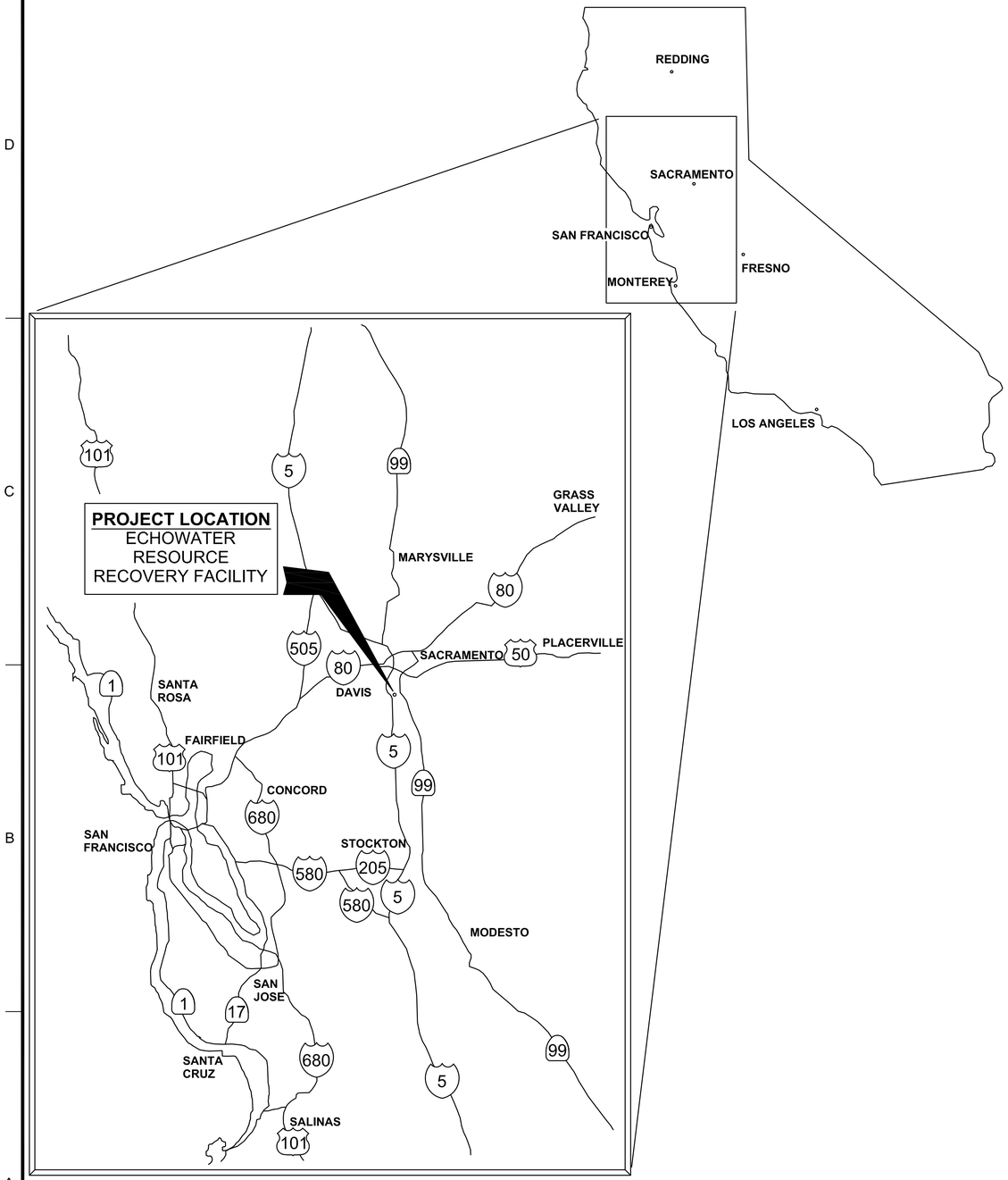
DISCIPLINE
GENERAL

INDEX OF DRAWINGS

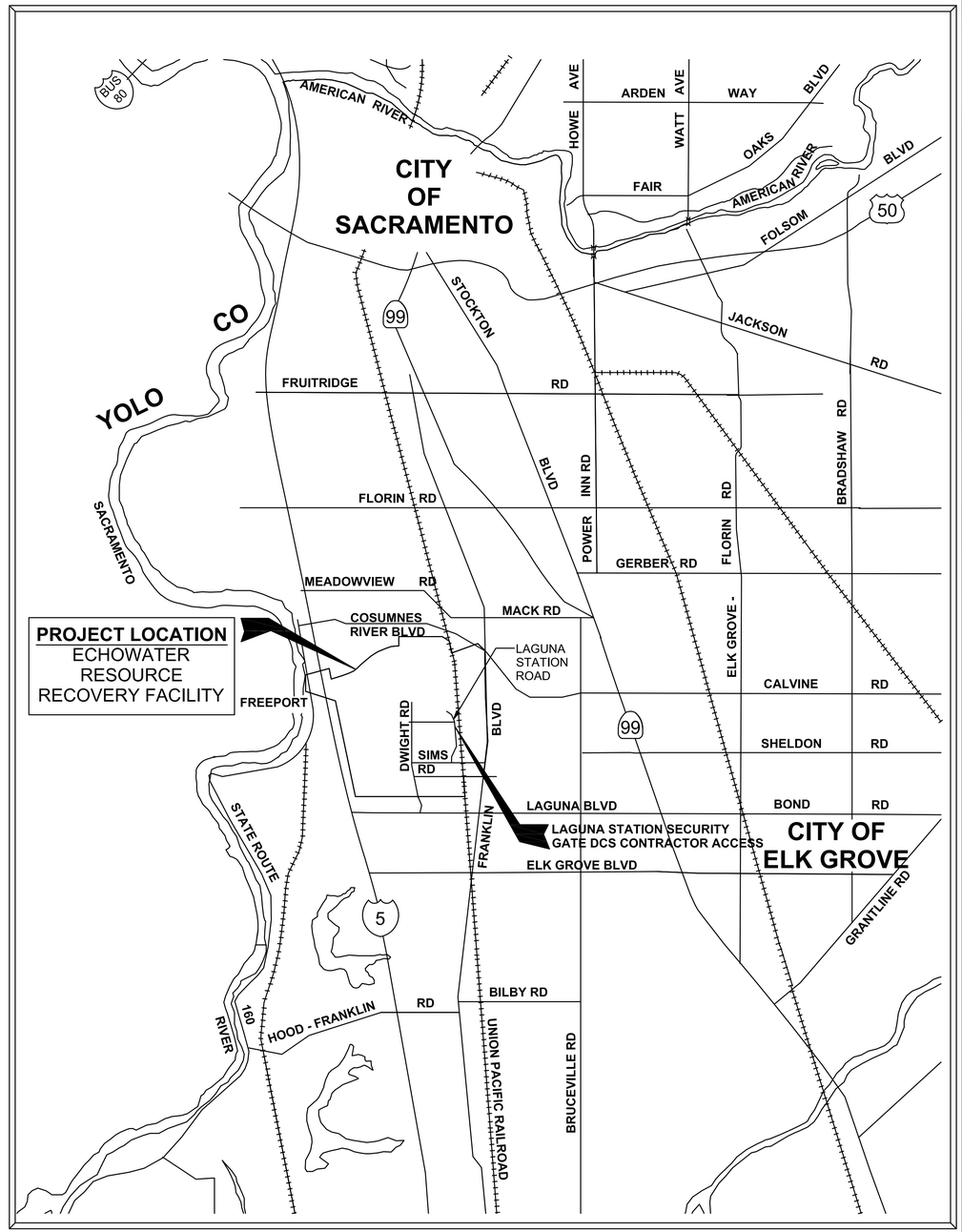
DRAWING NUMBER
G-002

3 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



VICINITY MAP



LOCATION MAP

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED: MILAD KHORASANI, PE
DRAWN: REZA SAFAVI
CHECKED: MILAD KHORASANI, PE
APPROVED: GERARDO AGUIRRE, PE
FILENAME:
DESIGNER PROJECT NUMBER: -
CONTRACT NUMBER: RFB 8515
CONTRACT SEQUENCE NUMBER: -
DISCIPLINE: GENERAL

LOCATION AND AREA MAPS

DRAWING NUMBER: **GI001**

4 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

SITE PLAN

0 250' 500' 1000'

SCALE: 1" = 500'

GENERAL NOTES

1. FOR PLANT AREAS RESERVED FOR THE USE OF CONTRACTORS ON THIS PROJECT, SEE DRAWING GC002.

LEGEND

PROJECT AREA

SHEET KEY NOTES

1 EMERGENCY STORAGE BASIN A
2 EMERGENCY STORAGE BASIN B
3 EMERGENCY STORAGE BASIN E
4 SEPTAGE DISPOSAL AREA
5 PMO/CMID BUILDING
6 INFLUENT JUNCTION STRUCTURE
7 TUNNEL VENTILATION BUILDING
8 BATTERY I DIGESTERS
9 BATTERY II DIGESTERS
10 BATTERY III DIGESTERS
11 MIXED SLUDGE BUILDING
12 GRAVITY BELT THICKENER BUILDING
13 SOLIDS CONTROL BUILDING
14 WASTE ACTIVATED SLUDGE THICKENERS
15 MSG GAS STORAGE SPHERES
16 MSG COMPRESSOR BUILDING
17 LSG GAS HOLDER TANKS
18 GROUND FLARES
19 CARBONEOUS OXIDATION STRUCTURE
20 PRIMARY SEDIMENTATION TANKS
21 INFLUENT/EFFLUENT BUILDING
22 CHEMICAL CONTROL BUILDING
23 STORM WATER PUMP STATION
24 FLOW METERING STRUCTURE
25 BIOLOGICAL NUTRIENT REMOVAL FACILITY
26 PRIMARY EFFLUENT PUMPING STATION
27 BATTERY I SECONDARY SEDIMENTATION TANKS
28 BATTERY II SECONDARY SEDIMENTATION TANKS
29 BATTERY III SECONDARY SEDIMENTATION TANKS
30 CHEMICAL STORAGE
31 MAINTENANCE STORAGE BUILDING
32 OPERATIONS AND ENGINEERING BUILDING
33 OXYGEN GENERATION BUILDING
34 OXYGEN PLANT SUBSTATION BUILDING
35 MAINTENANCE BUILDING
36 LABORATORY BUILDING
37 ADMINISTRATION BUILDING
38 69kV MAIN ELECTRICAL SUBSTATION BUILDING
39 UV DISINFECTION FACILITY
40 EFFLUENT OBSERVATION STRUCTURE
41 WATER RECLAMATION FACILITY
42 HEAVY EQUIPMENT MAINTENANCE STORAGE
43 GRIT LANDFILL CLOSURE AREA
44 DWIGHT RD GATE - SECURED
45 SMUD COGEN AND ICE PLANT
46 ACTIVATED CARBON STORAGE
47 SURPLUS STOCKPILE
48 MAIN GATE - SECURED
49 CENTRAL ST. GATE - SECURED
50 LAGUNA STATION RD GATE - SECURED
51 EAST ACCESS RD GATE - SECURED
52 CENTRAL STREET NORTH - SECURE
53 NOT USED
54 BUFFERLANDS BUILDING
55 DISINFECTION CHEMICAL STORAGE
56 DWIGHT ROAD SECURITY FACILITY
57 PAINT BUILDING AND MATERIALS TESTING LAB
58 HARVEST CREW TRAILER
59 NITRIFYING SIDESTREAM TRATMENT FACILITY
60 BIOLOGICAL NUTRIENT REMOVAL BLOWER BUILDING
61 BIOLOGICAL NUTRIENT REMOVAL ACC-52 BUILDING
62 PRIMARY EFFLUENT PUMPING STATION BIOFILTER
63 PRIMARY EFFLUENT PUMPING STATION ELECTRICAL BUILDING
64 PRIMARY EFFLUENT PUMPING STATION DISTRIBUTION STRUCTURE
65 INFLUENT DISCHARGE STRUCTURE

EchoWater Facility Engineering Design

SUB CONSULTANT

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EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE GENERAL

EXISTING ECHOWATER RESOURCE RECOVERY FACILITY SITE PLAN AND PROJECT AREA

DRAWING NUMBER **GI002**

5 OF 30

SCALE IN INCHES 0 1/2 1 2

4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

GENERAL SYMBOLS

- PROPERTY LINE
- CENTER LINE
- ℄ CENTER LINE
- SECTION OUTLINE, BOUNDARY
- PIPING
- EXISTING PIPING TO BE ABANDONED OR REMOVED UNDER THIS CONTRACT.
- FENCE
- HANDRAIL
- CONCRETE CURB AND GUTTER
- FUTURE EQUIPMENT, MATERIALS OR PIPING
- BURIED FACILITIES
- BARRIER WALL
- DAYLIGHT LINE FOR GRADING
- SWALE OR DITCH
- TOP OF SLOPE
EMBANKMENT
TOE OF SLOPE
- EXPANSION JOINT CONCRETE PAVEMENT
- DUMMY CONSTRUCTION JOINT CONCRETE PAVEMENT
- SLOPE — PIPING SLOPE (0.1 FT VERTICAL TO 1 FT HORIZONTAL)
- 30 — GRADE CONTOUR
- RAILROAD (SINGLE TRACK)
- RAILROAD (DOUBLE TRACK)
- PNEUMATIC PIPING
- CONCRETE MOWING STRIP
- RETAINING WALL
- HVAC EXHAUST VENT
- EL — SOIL BORING AND DESCRIPTION
- EL — MONUMENT OR BENCH MARK
- X 10.50 — SPOT ELEVATION
- ELEVATION
- F 112 — FIRE EXTINGUISHER (NUMBER INDICATES EXTINGUISHER NUMBER)
- UTILITY STATION
- HOSE RACK
- P51001 — EQUIPMENT NUMBER
- 101 — DOOR NUMBER
- A — WINDOW NUMBER
- 1 — WALL TYPE
- ROOM NAME / ROOM 101 — ROOM NUMBER
- 005 — CONTROL POINT NUMBER
- @ AT
- & AND
- ∅ ROUND OR DIAMETER
- ℄ PLATE OR PROPERTY LINE
- ∠ ANGLE

MATERIALS

- EXISTING EQUIPMENT OR MATERIALS TO BE REMOVED UNDER THIS CONTRACT
- REINFORCEMENT, IN SECTION
- REINFORCEMENT , IN PLAN OR ELEVATION
- CONCRETE
- PRECAST CONCRETE
- MORTAR, GROUT, OR PLASTER
- CONCRETE BLOCK
- BRICK OR CAST IRON
- GRATING, SPAN
- CHECKER PLATE
- STEEL OR STAINLESS STEEL
- ALUMINUM
- OPENING OR DEPRESSION IN SLAB OR WALL
- OPENING WITH GRATING COVER
- OPENING WITH CHECKER PLATE COVER
- AC PAVEMENT
- NEW GRAVEL (MAY BE SCREENED FOR CLARITY)
- WOOD
- TERRAZZO OR ARTIFICIAL STONE
- TILE
- TO BE BUILT FOR FUTURE REMOVAL
- RIGID INSULATION
- NEOPRENE
- PLASTIC LINING
- AC PAVEMENT (EL)
- NATURAL GROUND OR GRADE
- ROCK
- JOINT FILLER

CROSS REFERENCING SYSTEM

PHOTOGRAPH CALLOUT

C2 / 51A-901

PHOTOGRAPH VIEW TITLE

D1 PHOTO
51A-121 SOUTHWEST CORNER SSB

CROSS REFERENCING SYSTEM

PLAN TITLE

TOP PLAN
SCALE: 1" = 1'-0"

SECTION CUTS

C3 / 59M-301 — FULL SECTION

C3 / 59M-301 — DRAWING GRID IDENTIFICATION
DRAWING WHERE SECTION IS SHOWN

SHORT SECTION

C3 / 59M-301 — DRAWING GRID IDENTIFICATION
DRAWING WHERE SECTION IS SHOWN

SECTION TITLE

C3 / 59M-101 SECTION
SCALE: 1" = 1'-0"
59M-102, 59M-103 — ADDITIONAL DRAWING REFERENCES (AS REQUIRED)

DETAIL CALLOUT

B2 / 59M-504 — DRAWING GRID IDENTIFICATION
DRAWING WHERE DETAIL IS SHOWN
AREA TO BE DETAILED IS CIRCLED WITH LEADER TO DETAIL CALLOUT

BY CALLOUT

SEE DETAIL B2/59M-504

'B2' IS THE DRAWING GRID IDENTIFICATION
'59M-504' IS THE DRAWING WHERE DETAIL IS SHOWN

BY NOTE

DETAIL TITLE

B2 / 59M-101 CENTER WET WELL
SCALE: 1" = 1'-0"
59M-102, 59M-103 — ADDITIONAL DRAWING REFERENCES (AS REQUIRED)

ELEVATION CALLOUT

C3 / 51A-212 — EXTERIOR BUILDING ELEVATIONS

C2 / A4 51A-221 C4 / A2 — INTERIOR ELEVATIONS (MULTIPLE VIEWS)

C2 / 51A-225 — INTERIOR ELEVATIONS (SINGLE VIEW)

STANDARD DETAIL CALLOUT

S41

STANDARD DETAIL TITLE

S41 BOLTED COVER PLATE AND SUPPORTS

DESIGNER STANDARD DETAIL CALLOUT

52S41

DESIGNER STANDARD DETAIL TITLE

52S41 COVER SUPPORTS
- DESIGNER STANDARD DETAIL NUMBER
- TWO-DIGIT CONTRACT SEQUENCE NUMBER

NOTE:
WHEN A STANDARD DETAIL IS PROVIDED FROM WITHIN THE COUNTY OF SACRAMENTO STANDARD CIVIL DETAILS, SIMPLY REFER TO THE DETAIL BY ITS 'TITLE' AND 'DRAWING NUMBER' (I.E.: COMMERCIAL DRIVEWAY TYPE A-6, PER SACRAMENTO COUNTY STANDARD DWG NO 4-14). IT IS NOT REQUIRED TO INCLUDE THE DETAILS IN THE PLAN SET UNLESS IT IS MODIFIED.

KEYNOTES

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GENERAL NOTES

1. FOR ADDITIONAL SYMBOLS, SEE DRAWING 31X-601.
2. SYMBOLS ARE FOR REFERENCE ONLY, NOT ALL SYMBOLS ARE USED IN THESE CONTRACT DRAWINGS.
3. ITEMS SHOWN AS SCREENED ARE EXISTING. WORK UNDER THIS CONTRACT IS DEPICTED WITH BOLD LINES.
4. THE NOTE IN THE TITLEBLOCK OF THIS DRAWING WHICH READS "FOUR (4) INCHES AT FULL SCALE" APPEARS ON DRAWINGS FOR IDENTIFICATION OF SCALE DISTORTIONS ON HALF SIZE DRAWINGS AND DRAWING REPRODUCTIONS. IT SHALL MEAN THAT THE DRAWING IS FULL SIZE AND THE DRAWING SCALES ACCURATE WHEN THE LENGTH OF THIS LINE IS FOUR INCHES. IF THE LENGTH IS OTHER THAN FOUR INCHES, DRAWING SCALES MUST BE ADJUSTED ACCORDINGLY.
5. EXISTING PIPING IS DESIGNATED BY SERVICE RATHER THAN MATERIAL TYPE. MATERIAL TYPES, IF KNOWN, APPEAR OUTSIDE THE PIPING CALLOUT BUBBLE, AND MAY NOT BE THE SAME MATERIAL TYPES SPECIFIED FOR NEW PIPING.
6. ABBREVIATIONS USED IN THIS CONTRACT DOCUMENT CONFORM TO ANSI Y1.1, UNLESS NOTED OTHERWISE ON DRAWINGS.
7. ALL STANDARD DETAILS APPLY TO ALL THE CONTRACTOR'S WORK WHETHER SPECIFICALLY REFERENCED OR NOT.
8. SEE FRONT END SHEETS FOR EACH DISCIPLINE'S STANDARD SYMBOLS, ETC.
9. SEE ADDITIONAL GENERAL NOTES THROUGHOUT DRAWING SET.

MISCELLANEOUS

MATCH LINE, FOR CONTINUATION SEE DWG XXXXX

MATCH LINE

N — NORTH ARROW

DRAWING NUMBER SYSTEM

59DP11123

- 59 — ADDITIONAL SEQUENTIAL NUMBER (IF NEEDED)
- DP — SEQUENTIAL NUMBER
- 1 — SHEET TYPE
- 1 — SHEET SEQUENCE*
- 1 — LEVEL 2 DISCIPLINE DESIGNATOR (DASH IF NOT USED)
- 1 — LEVEL 1 DISCIPLINE DESIGNATOR
- 23 — PLANT ZONE NUMBER

LEVEL 1 DISCIPLINE DESIGNATORS

G	GENERAL
C	CIVIL
L	LANDSCAPE
S	STRUCTURAL
A	ARCHITECTURAL
F	FIRE PROTECTION
P	PLUMBING
D	PROCESS MECHANICAL
M	BUILDING MECHANICAL/HVAC
E	ELECTRICAL
X	INSTRUMENTATION AND CONTROLS

LEVEL 2 DISCIPLINE DESIGNATORS

REFER TO THE UNITED STATES NATIONAL CAD STANDARD 5.0, MODULE 1 -DRAWING SET ORGANIZATION, 1.6 APPENDIX A - DISCIPLINE DESIGNATORS

***SHEET SEQUENCE (ELECTRICAL)**
NULL GENERAL (SYMBOLS LEGENDS, NOTES)
SITE
1 STANDARD ELEMENTARY DIAGRAMS
2 12Kv DIAGRAMS
3 SITE PLANS
4 MANHOLE AND HANDHOLE SCHEDULES
5 DUCTBANK PROFILES
6 MANHOLE AND HANDHOLE SECTIONS
BUILDING/STRUCTURE
1 480v SINGLE LINE DIGRAMS
2 SWR AND MCC ELEVATIONS
3 ELECTRICAL BUILDING PLANS
4 GROUNDING PLANS
5 INSTRUMENTATION PLANS
6 LIGHTING PLANS

***SHEET SEQUENCE (CONTROL AND INSTRUMENTATION)**
NULL GENERAL (SYMBOLS LEGENDS, NOTES)
1 CONTROL AND LOGIC DIAGRAMS
2 PROCESS AND INSTRUMENTATION DIAGRAMS
3 CABINET AND PANEL ELEVATIONS
4 MISCELLANEOUS HARDWARE DETAILS
5 MISCELLANEOUS SYSTEMS
6 EXAMPLE DIAGRAMS

SHEET TYPE
0 GENERAL (SYMBOLS LEGENDS, NOTES)
1 PLANS
2 ELEVATIONS
3 SECTIONS
4 LARGE SCALE VIEWS (PARTIAL PLANS, SECTIONS)
5 DETAILS
6 SCHEDULES AND DIAGRAMS
7 USER DEFINED
8 USER DEFINED
9 3D MODEL (ISOMETRICS, PHOTOGRAPHS)

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER — MILAD R. KHORASANI — M 40283 — EXP. 3-31-2027 — MECHANICAL — STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED: MILAD KHORASANI, PE
DRAWN: REZA SAFAVI
CHECKED: MILAD KHORASANI, PE
APPROVED: GERARDO AGUIRRE, PE
FILENAME:
DESIGNER PROJECT NUMBER: -
CONTRACT NUMBER: RFB 8515
CONTRACT SEQUENCE NUMBER: -
DISCIPLINE: GENERAL

GENERAL SYMBOLS, MATERIALS, CROSS REFERENCING SYSTEM, DRAWING NUMBER SYSTEM, AND MISCELLANEOUS SYMBOLS

DRAWING NUMBER: **GI003**
6 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

PIPING SYSTEMS

ABBREVIATION	DEFINITION
A	
A	AERATION AIR
AA	AGITATION AIR
ASH	ASH PNEUMATIC
B	
BD	BOILER BLOWDOWN
BF	BOILER FEEDWATER
C	
CAA	CHANNEL AERATION AIR
CC	CENTRIFUGE CAKE
CD	CHEMICAL DRAIN
CEN	CENTRATE
CF	CENTRIFUGE FEED
CFE	CHLORINATED FINAL EFFLUENT
CL	LOW PRESSURE CONDENSATE
CLG	CHLORINE GAS
CLL	CHLORINE LIQUID
CLS	CHLORINE SOLUTION
CLV	CHLORINE VACUUM
CM	MEDIUM PRESSURE CONDENSATE
CPA	CHEMICAL PADDING AIR
CS	CIRCULATING SLUDGE
CSO	CAUSTIC SODA
CV	CHEMICAL VENT
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	
D	DRAIN
DFE	DECHLORINATED FINAL EFFLUENT
DIZ	DEIONIZED WATER
DS	DIGESTED SLUDGE
DSSG	DIGESTED SLUDGE/SLUDGE GAS
DWV	DRAIN-WASTE-VENT
E	
ED	EQUIPMENT DRAIN
EWS	ESB WASHDOWN SYSTEM
F	
FAE	FOUL AIR EXHAUST
FBW	FILTERED BACKWASH WATER
FC	FERRIC CHLORIDE
FE	FINAL EFFLUENT
FMSC	FOAM SUPPRESSING CHEMICAL
FOG	FATS, OILS, AND GREASE
FTE	FILTERED EFFLUENT
G	
GC	GAS CIRCULATION
GLY	GLYCOL/WATER COOLANT
GR	GRIT
GRC	GAS RECIRCULATION COMPRESSOR
GRO	GRIT OVERFLOW
H	
HCL	HYDROCHLORIC ACID
HNG	HIGH PRESSURE NATURAL GAS
HOH	HIGH PRESSURE HYDRAULIC OIL
HOL	LOW PRESSURE HYDRAULIC OIL
HRR	HEAT RESERVOIR RETURN
HRS	HEAT RESERVOIR SUPPLY
HS	HARVESTED SLUDGE
HSO	SULFURIC ACID
HTV	HIGH TEMPERATURE VENT
HWR	DOMESTIC HOT WATER RETURN
HWS	DOMESTIC HOT WATER SUPPLY
I	
IA	INSTRUMENT AIR
L	
LSG	LOW PRESSURE SLUDGE GAS
LOS	LUBRICATING OIL SUPPLY
M	
MG	MIXED GAS
ML	MIXED LIQUOR
MS	MIXED SLUDGE
MSCS	MIXED SLUDGE/CIRCULATING SLUDGE
MSDS	MIXED SLUDGE/DIGESTER SLUDGE
MSG	MEDIUM PRESSURE SLUDGE GAS
N	
NG	NATURAL GAS
O	
OCA	ODOR CONTROL AIR
ODG	OXYGEN DRY GAS
OF	OVERFLOW
OFSG	OVERFLOW/SLUDGE GAS
OHP	OXYGEN HIGH PRESSURE
OLPD	OXYGEN LOW PRESSURE DISCHARGE
OLPS	OXYGEN LOW PRESSURE SUCTION
P	
PA	PREAERATION AIR
PAS	PRIMARY AND ACTIVATED SLUDGE
PCH	HIGH PRESSURE PROCESS CONDENSATE
PCL	LOW PRESSURE PROCESS CONDENSATE
PCR	PROCESS CONDENSATE RETURN
PD	PUMPED DRAINAGE
PE	PRIMARY EFFLUENT
PEJ	PRIMARY EFFLUENT JETTING
PF	PRESSURIZED FLOW
POL	POLYELECTROLYTE
PRS	PROCESS SAMPLING
PS	PRIMARY SLUDGE
PSC	PRIMARY SCUM
PSCS	PRIMARY SLUDGE/CIRCULATING SLUDGE
PSG	PRIMARY SLUDGE AND GRIT
PSO	POLYMER SOLUTION
PSR	PRIMARY SLUDGE RECIRCULATION
PSS	PROCESS STEAM SUPPLY
R	
RAS	RETURN ACTIVATED SLUDGE
RD	ROOF DRAIN
RG	REFRIGERANT GAS
RL	REFRIGERANT LIQUID
RS	RAW SEWAGE
RWL	RAIN WATER LEADER
RWP	RAIN WATER PIPE
S	
S	STEAM
SA	SERVICE AIR
SBIS	SODIUM BISULFITE
SCD	SCUM DECANT
SCLS	SODIUM HYPOCHLORITE SOLUTION
SCO	SCUM OVERFLOW
SCR	STEAM CLEAN RINSE
SCS	STEAM CLEAN SUPPLY
SD	SANITARY DRAIN
SE	SECONDARY EFFLUENT
SG	SLUDGE GAS
SHS	SODIUM HYDROXIDE SOLUTION
SME	SAMPLE-EFFLUENT
SMI	SAMPLE-INFLUENT
SMML	SAMPLE MIXED LIQUOR
SMO	SAMPLE OXYGEN
SMP	SAMPLE-PRIMARY EFFLUENT
SMS	SLUDGE SAMPLE-SLUDGE
SN	SUPERNATANT
SOG	SULFUR DIOXIDE GAS
SOL	SULFUR DIOXIDE LIQUID
SOS	SULFUR DIOXIDE SOLUTION
SOV	SULFUR DIOXIDE VACUUM
SR	SCREENINGS
SRA	SCUM REMOVAL AIR
SRF	SCREENINGS FEED
SRO	SCREENINGS OVERFLOW
SSC	SECONDARY SCUM
SSE	SIDESTREAM EFFLUENT
STD	STORM DRAIN
SWAS	SAMPLE-WASTE ACTIVATED SLUDGE
T	
TA	THICKENER AIR
TD	TANK DRAIN
TE	THICKENER EFFLUENT
THS	THICKENED SLUDGE
TO	THICKENED OVERFLOW
TS	TRANSFER SLUDGE
TSC	THICKENED SCUM
TWAS	THICKENED WASTE ACTIVATED SLUDGE
U	
UA	UTILITY AIR
UD	UNDER DRAIN
V	
V	VENT
VA	VACUUM
VS	STEAM VENT
W	
WAS	WASTE ACTIVATED SLUDGE
WFBW	FILTERED BACKWASH WATER
WFP	WATER FIRE PROTECTION
WFSW	FILTERED SURFACE WASH WATER
WHWC	WASTE HEAT COOLING WATER RETURN-COGENERATION
WHWR	WASTE HEAT COOLING WATER RETURN
WHWS	WASTE HEAT COOLING WATER SUPPLY
WI	WETLANDS INFLUENT
WML	WASTE MIXED LIQUOR
WN	NON-POTABLE WATER
WNI	LANDSCAPE IRRIGATION NON-POTABLE WATER
WNM	NON-POTABLE WATER, MONITORING
WNS	NON-POTABLE WATER SOFT
WP	POTABLE WATER
WPS	POTABLE WATER SOFT
WR	RECLAIMED WATER
WRF	RECLAMATION WATER, FILTERED
WRH	RECLAIMED WATER HIGH PRESSURE
WRL	RECLAIMED WATER LOW PRESSURE
WRS	FOAM SUPPRESSING SPRAY WATER

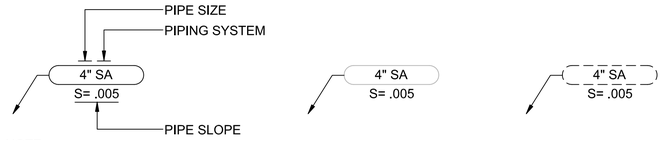
EQUIPMENT PREFIXES

ABBREVIATION	DEFINITION
A	
ACC	AREA CONTROL CENTER
AHU	AIR HANDLING UNIT
ACU	AIR CONDITIONING UNIT
AHF	ACTIVE HARMONIC FILTER
B	
B	BLOWER
BAT	BATTERY
BCH	BATTERY CHARGER
BLR	BOILER
BKR	BREAKER
BP	BACKFLOW PREVENTER
BSN	BAR SCREEN
BU	BLENDING UNIT
BUCK	MCC BUCKET
C	
C	CRANE
CAF	COMBUSTION AIR FAN
CAL	CALIBRATION CHAMBER
CC	COOLING COIL
CDU	CONDENSING UNIT
CFR	CHEMICAL FEEDER
CHR	CHILLER
COF	COOLING AIR FAN
COM	COMMINUTOR
CON	CONVEYOR
CP	COMPRESSOR
CPNL	CONTROL PANEL
CPR	POWER FACTOR CORRECTION CAPACITOR
CPT	CONTROLLER POWER TRANSFORMER
CR	CONTACTOR
CSN	COMMINUTING SCREEN
CSTN	CONTROL STATION
CTF	CENTRIFUGE
CTS	CATHODIC PROTECTION TEST STATION
CV	CONTROL VALVE (MODULATING, POWER ACTIVATED)
CYL	CYLINDER
D	
DCP	DC POWER SUPPLY
DE	DENSITY METER
DPR	DAMPER
DS	DISCONNECT SWITCH
DT	DRIP TRAP
DU	DRIVE UNIT
DX	DIRECT EXPANSION COIL
E	
EG	ENGINE ALTERNATIVE UNIT
ELC	ETHERNET LINK CONTROLLER
ETH	ETHERNET SWITCH
F	
FA	FIRE ALARM
FB	FIRE (ALARM) BELL
FD	FIRE DAMPER
FE	FLOW METER, FLOW ELEMENT
FG	FLAP GATE
FH	FIRE HYDRANT
FLC	FLOCCULATOR
FLP	FLUID POWER UNIT
FLTA	FILTER, AIR
FLTM	FILTER, NOT AIR
FMX	FLASH MIXER
FN	FAN
FOP	FIBER OPTIC PANEL
FP	FILTER PRESS
FPR	FAULT PROTECTION RELAY
FRS	FREEZESTAT
FS	FLOW SWITCH
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FT	FLOW TRANSMITTER
G	
G	POWER ACTUATED GATE
GDR	GRINDER
GEN	GENERATOR
GRV	GRAVITY RELIEF VENT
H	
H	HOIST
HC	HEATING COIL
HDM	HUMIDIFIER
HEX	HEAT EXCHANGER
HH	HANDHOLE (ELECT)
HMD	HUMIDIFIER
HP	HEAT PUMP
HS	HAND SWITCH
HTR	HEATER
I	
IR	INLET RELIEF
J	
JB	JUNCTION BOX
L	
LI	LEVEL INDICATOR
LS	LEVEL SWITCH
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LV	LOUVER
M	
M	MOTOR
MC	MAGNETIC CLUTCH
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MEE	MISCELLANEOUS ELECTRICAL EQUIPMENT
MH	MANHOLE (ELECTRICAL)
MME	MISCELLANEOUS MECHANICAL EQUIPMENT
MOP	MOTOR OPERATOR
MPR	MOTOR PROTECTION RELAY
MW	MONITOR WELL
MX	MIXER
N	
NGR	NEUTRAL GROUND RELAY
O	
OCU	ODOR CONTROL UNIT
ORF	ORFICE, PIPING
ORT	ODOR REMOVAL TOWER
P	
P	PUMP
PB	PULL BOX (ELECT)
PDM	POWER DATA MONITOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
PMH	PROCESS MANHOLE
PNL	ELECTRICAL BREAKER PANEL
POP	PNEUMATIC OPERATOR
PRV	PRESSURE RELIEF VALVE
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PSV	POP SAFETY VALVE
PTR	PRINTER
PVU	PANELVIEW DISPLAY
R	
RCK	RACK, COMPUTER EQUIPMENT
RG	ROLLER GATE
RVSS	REDUCED VOLTAGE SOLID STATE (SOFT START)
S	
S	SILENCER
SBR	SCRUBBER
SCRN	SCREEN
SD	SMOKE DETECTOR
SDM	SWITCHGEAR DATA MONITOR
SEP	SEPARATOR
SG	SLUICE GATE (MANUAL)
SI	SPEED INDICATOR
SLG	SLIDE GATE (MANUAL)
SMX	SLURRY MIXER
SOL	SMART OVERLOAD
SPD	SURGE PROTECTION DEVICE
SR	SPEED REDUCER
SS	SPEED SELECTOR SWITCH
STN	STRAINER
STP	STEAM TRAP
SV	SOLENOID VALVE
SW	SWITCH
SWR	SWITCHGEAR
SPD	SURGE PROTECTION DEVICE
SOL	SMART OVERLOAD
SYP	SECURITY POINT
T	
T	TANK
TB	TERMINAL BOX (ELECT)
TBN	TURBINE
TCP	TEMPERATURE CONTROL POINT
TFR	TRANSFORMER
TPR	TRANSFORMER PROTECTIVE RELAY
TS	TEMPERATURE SWITCH
TSH	TEMPERATURE SWITCH HIGH
TSL	TEMPERATURE SWITCH LOW
TST	THERMOSTAT
U	
UH	UNIT HEATER
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	
V	VALVE (OPEN/CLOSE, ACTIVATED)
POWER	VENTILATION AIR FILTER
VAF	VARIABLE FREQUENCY CONTROLLER
VFC	VARIABLE FREQUENCY DRIVE
VFD	VACUUM FILTER
VFT	VACUUM PUMP
VP	VACUUM SYSTEM
VS	VARIABLE SPEED COUPLING (ECC)
VSC	VARIABLE VOLUME BOX
VV	
W	
WHR	WASHER
WKS	WORKSTATION
WW	WIREWAY
X	
XSW	TRANSFER SWITCH
Z	
ZS	POSITION SWITCH

GENERAL NOTES

1. NOT ALL PIPING SYSTEMS SHOWN ARE USED IN THIS DESIGN.

PIPING DESIGNATIONS



NOTE:
1. SEE PIPING SYSTEM SPECIFICATIONS FOR PIPING MATERIALS LIST, VALVES, AND FITTINGS.
2. ALL LEADERS ARE 30 OR 60 ANGLES AND SHALL BE CONSISTENT THROUGHOUT THE DRAWING SET.

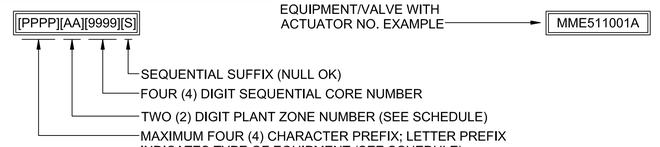
AUTO-NUMBERING SYNTAX SUMMARY

THE FOLLOWING AUTO-NUMBERED SYNTAX FORMAT IS PROVIDED BY THE DISTRICT. CONSULTANTS AND CONTRACTORS ARE TO PROVIDE THE DISTRICT A MASTER EQUIPMENT LIST FOR THE REQUIRED NUMBERS. THE ACTUAL NUMBERS WILL BE GENERATED BY THE DISTRICT FROM ITS DISTRICT DATABASE.

SYNTAX AND EXAMPLES LEGEND

[AA]	TWO (2) DIGIT PLANT ZONE NUMBER	**51** - ZONE 51
[99]	TWO (2) DIGIT SEQUENTIAL	**12**
[9999]	FOUR (4) DIGIT SEQUENTIAL	**0123**
[S]	ONE (1) CHARACTER SUFFIX	**A** - AUXILIARY E/I "A"
[SS]	TWO (2) CHARACTER SUFFIX	**AE** - AUXILIARY E/I "AE"
[PPPP]	FOUR (3) CHARACTER I/E PREFIX	**AHU** - AIR HANDLING UNIT
[DDDDD]	FIVE (5) CHARACTER PIPE SERVICE	**RAS** - RETURN ACTIVATED SLUDGE
[EEEE]	FOUR (4) CHARACTER ELECTRICAL PREFIX	**BKR** - BREAKER **MCC** MOTOR CONTROL CENTER
[L]	ONE (1) CHARACTER ELECTRICAL SWR LEG	**G** - LEG 'G'
[LL]	TWO (2) CHARACTER ELECTRICAL SWR TIE	**GH** - TIE 'GH'
[ABCDEFGHIJKL]	TWELVE (12) CHARACTER TEXT STRING	**ABCDEFGHIJKL**
[-]	DASH	**-**
[CRS]	MCC BUCKET (**C**OL, **R**OW, **S**IDE)	**3MR** - COLUMN 3, ROW M, RIGHT SIDE
[ZZZZ]	MAXIMUM FOUR (4) DIGIT CHARACTER SUFFIX (PCCS)	SEE SUFFIX TABLE

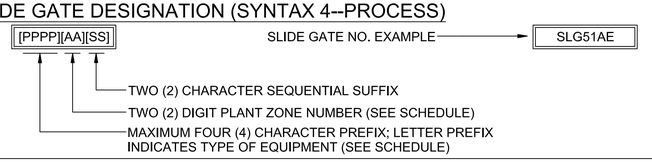
EQUIPMENT AND VALVE WITH ACTUATORS DESIGNATIONS (SYNTAX 2--EQUIPMENT AND INSTRUMENT)



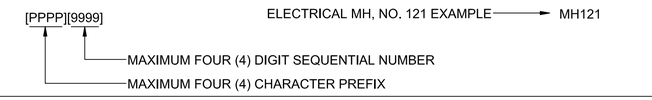
SYNTAX 2 NOTE -- SUFFIXING LOGIC
1. NULL MEANS THAT AT THE TIME OF CREATION ONLY ONE SOLE PIECE OF EQUIPMENT OR INSTRUMENTATION WAS EXPECTED TO BE REQUIRED DURING THE LIFE-CYCLE. OTHERWISE, START WITH THE NEXT ALPHA SUFFIX AND CONTINUE.

SYNTAX 2 BUSINESS RULES -- INTERFACE WITH PLC/PCCS
1. PLC ID NUMBERS SHALL MATCH PCCS ID NUMBERS.
2. ANY PRE-EXISTING OR PRE-DETERMINED PCCS NUMBERS SHALL BE USED UNCHANGED.
3. ALL PLC/PCCS NUMBERS ARE SPECIFIED BY THE DESIGNER (WITH APPROVAL OF CES STAFF) AND USED VERBATIM IN THE PCCS. THE DESIGNER SHALL SPECIFY ONLY THE SUFFIXES.

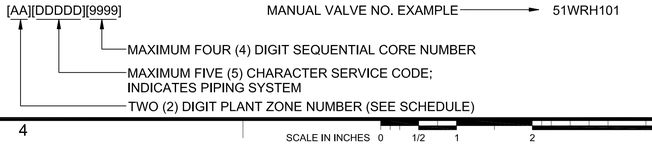
SLIDE GATE DESIGNATION (SYNTAX 4--PROCESS)



(SYNTAX 5--SIMPLE SEQUENTIAL)



MANUAL VALVE DESIGNATIONS (SYNTAX 6--PIPE SERVICE)



EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED	MILAD KHORASANI, PE
DRAWN	REZA SAFAVI
CHECKED	MILAD KHORASANI, PE
APPROVED	GERARDO AGUIRRE, PE
FILENAME	
DESIGNER PROJECT NUMBER	-
CONTRACT NUMBER	RFB 8515
CONTRACT SEQUENCE NUMBER	-
DISCIPLINE	GENERAL

PIPING, VALVE, AND EQUIPMENT PREFIXES

DRAWING NUMBER **GI004**

7 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

GENERAL NOTES

1. ALL CONTRACTORS AND CONSTRUCTION DELIVERIES SHALL ACCESS SITE THROUGH DWIGHT ROAD SECURITY FACILITY.

EchoWater Facility Engineering Design

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DESIGNED
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REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

DISCIPLINE
GENERAL

CONSTRUCTION ACCESS

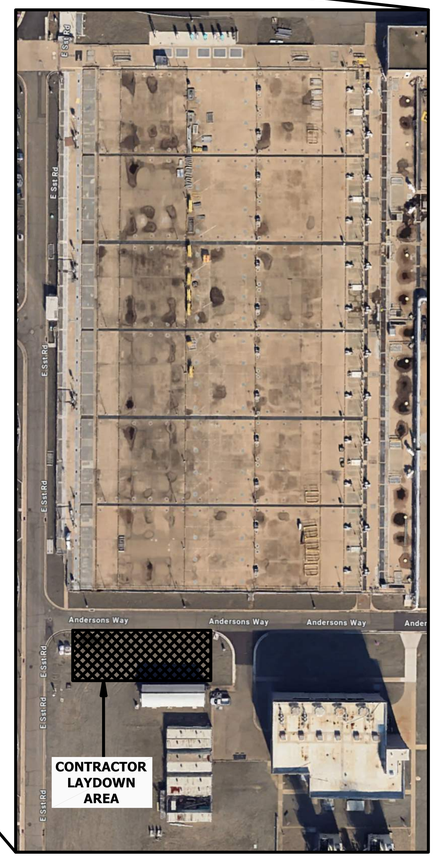
DRAWING NUMBER
GC001

8 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

GENERAL NOTES

1. CONTRACTOR SHALL SUPPLY CONSTRUCTION OFFICE TRAILER AS REQUIRED FOR THE PROJECT.



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EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

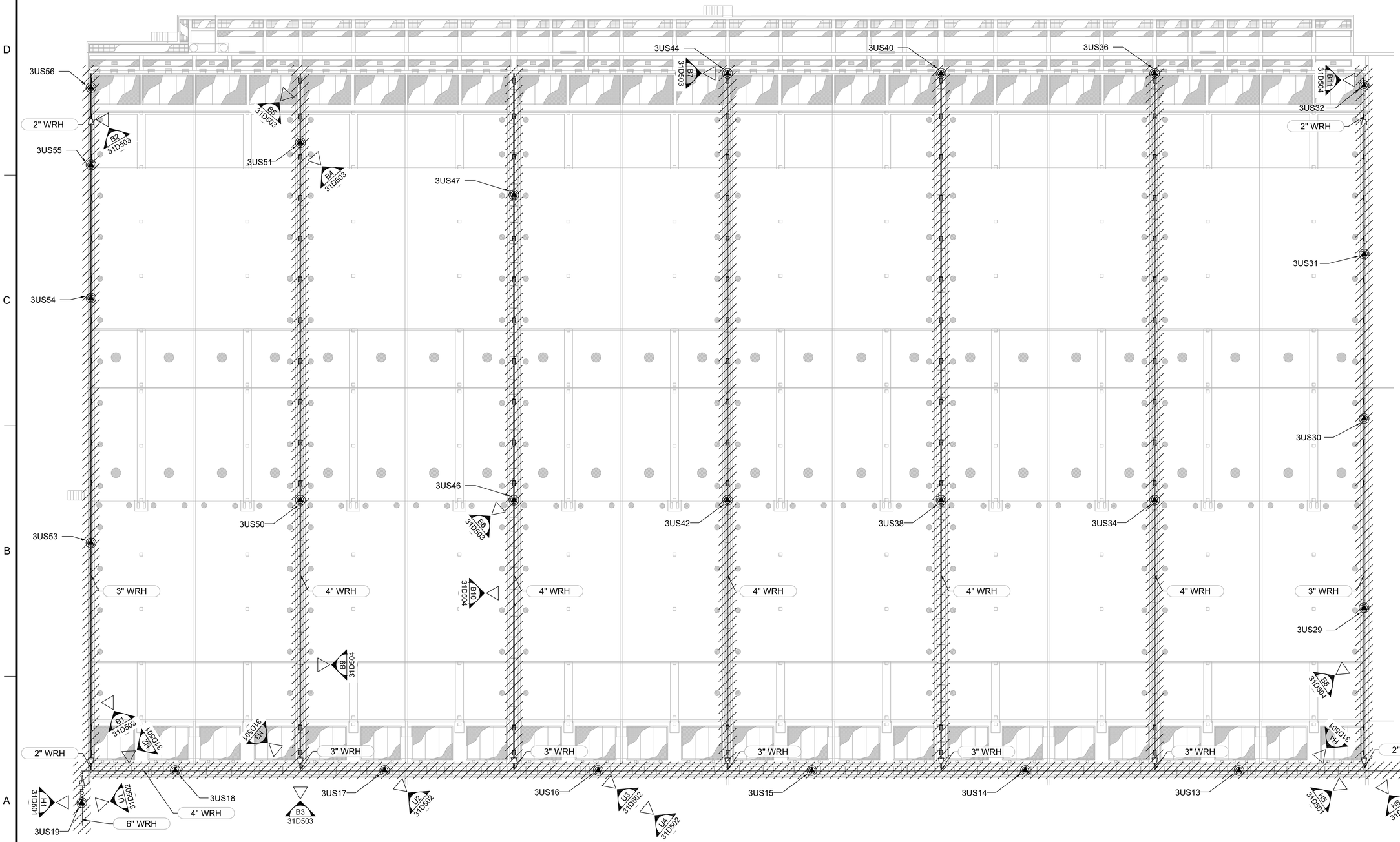
DISCIPLINE
GENERAL

CONTRACTOR LAYDOWN AREA

DRAWING NUMBER
GC002

9 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



PRIMARY DECK - DEMOLITION PLAN - EXISTING HIGH PRESSURE RECLAIMED WATER (WRH) PIPING LAYOUT - KEY PLAN

Scale: 1" = 18'-0"

EchoWater Facility Engineering Design

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SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

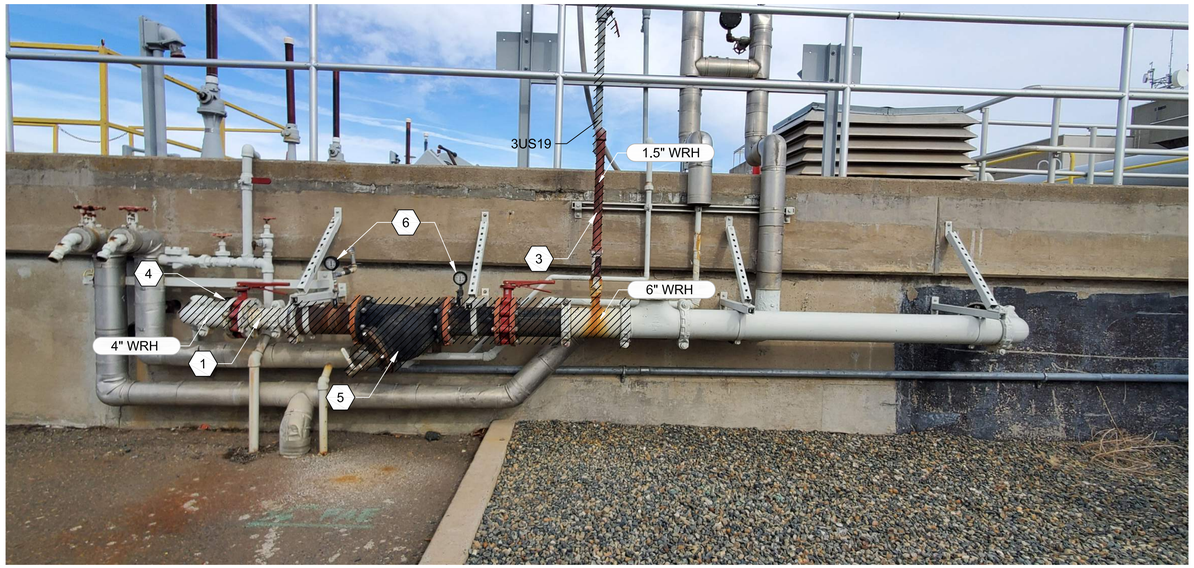
DISCIPLINE
DEMOLITION

DEMOLITION PLAN

DRAWING NUMBER
31D101

10 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



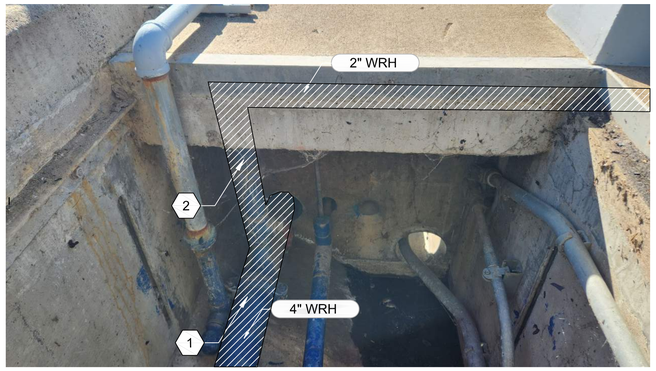
H1 PHOTO
31D101 WRH MAIN HEADER AT SOUTHEAST OF THE PRIMARY TANKS

GENERAL NOTES

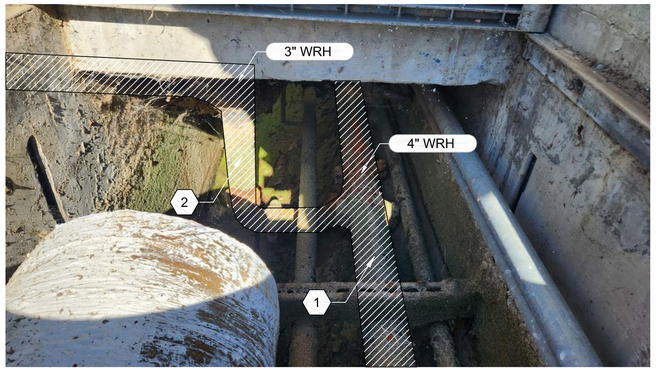
1. FIELD VERIFY LOCATION AND SIZE OF EXISTING PIPING BEFORE STARTING DEMOLITION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING THE PIPING DEMOLITION WITHOUT DISRUPTING ADJACENT PIPING, ELECTRICAL CONDUITS, OR OTHER UTILITIES.
3. SEE SPECIFICATION 01 14 00 – WORK RESTRICTIONS FOR CONSTRUCTION SEQUENCE, REQUIREMENTS, AND CONSTRAINTS. COORDINATE THE SEQUENCE OF DEMOLITION WORK WITH THE DISTRICT TO MINIMIZE DOWNTIME OF SRW AND WRH AT PRIMARY TANKS FOR EACH BATTERY DURING CONSTRUCTION.
4. UNLESS OTHERWISE SHOWN OR INDICATED ON THE DEMOLITION DRAWINGS, ALL EXISTING PIPE SUPPORTS AND SEISMIC BRACING SHALL BE RESTORED AND MAINTAINED FOR REUSE WITH THE NEW PIPING.

SHEET KEY NOTES

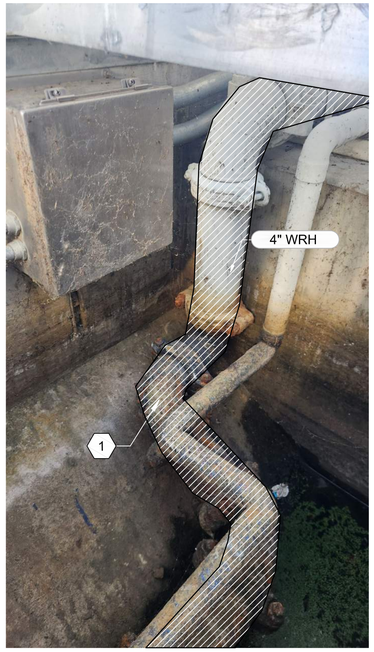
1. DEMO THE EXISTING 4" WRH MAIN HEADER PIPE, STARTING IMMEDIATELY AFTER THE 6" STRAIGHT TEE LOCATED SOUTH OF THE PRIMARY DECK WALL AND ENDING JUST BEFORE IT PENETRATES THE CENTRAL TUNNEL WALL ON THE NORTH SIDE OF THE PRIMARY DECK.
2. DEMO ALL SEVEN WRH BRANCHES LOCATED BETWEEN THE PRIMARY TANKS THAT FEED THE SRW PIPING AT COLUMNS 1, 5, 9&10, 14, 18&19, 23, AND 27&28, AS SHOWN IN THE DEMOLITION PLAN.
3. DEMO ALL UTILITY STATIONS ALONG THE MAIN 4" HEADER (3US13/14/15/16/17/18/19). REUSE THE EXISTING PIPE SUPPORTS TO BRACE THE NEW PIPING. ALL HOSES AND HOSE RACKS ARE EXCLUDED FROM THE DEMOLITION SCOPE.
4. REMOVE AND REPLACE THE EXISTING LINK-SEAL FOR THE WRH MAIN HEADER PIPE AT DESIGNATED LOCATIONS. REFER TO DIVISION 40 05 03 FOR GUIDANCE ON LINK-SEAL SELECTION.
5. REMOVE AND REPLACE THE EXISTING Y-TYPE STRAINER WITH A DRAIN VALVE ON THE WRH MAIN HEADER PIPING LOCATED SOUTHEAST OF THE PRIMARY TANKS. REFER TO DIVISION 40 05 03 FOR GUIDANCE ON STRAINER SELECTION.
6. CAREFULLY REMOVE AND RETURN EXISTING PRESSURE GAUGES TO THE DISTRICT STAFF.
7. DEMO THE EXISTING 4" WRH PIPING UP TO THE COUPLING JOINT AS SHOWN IN DETAIL H6. ACCESS TO THIS AREA REQUIRES A CONFINED SPACE ENTRY PERMIT.



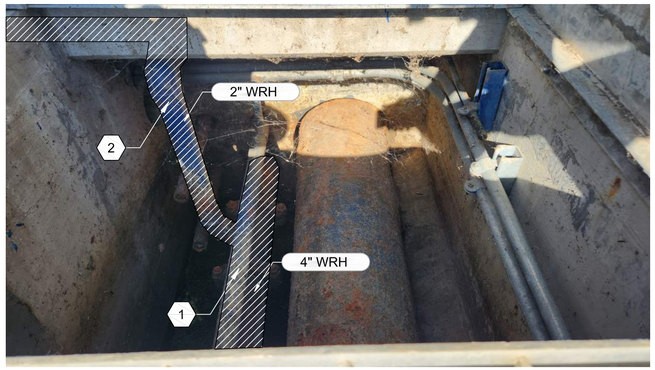
H2 PHOTO
31D101 COLUMN 1 - WRH MAIN HEADER BRANCH CONNECTION TO TANK 1



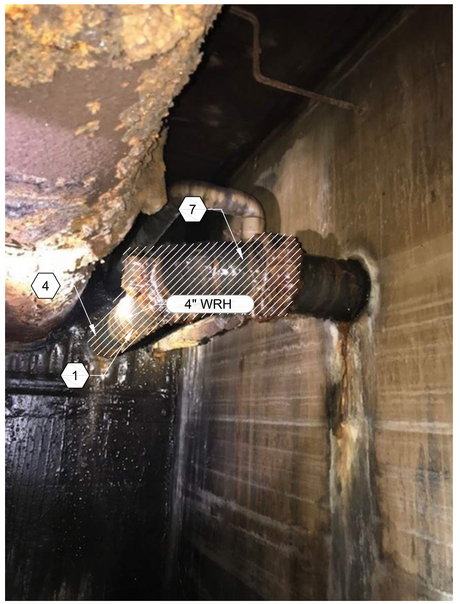
H3 PHOTO
31D101 COLUMN 5 - WRH MAIN HEADER BRANCH CONNECTION TO TANKS 2 AND 3. (TYPICAL TO COLUMNS 9&10, 14, 18&19, AND 23)



H4 PHOTO
31D101 COLUMN 26 - WRH MAIN HEADER



H5 PHOTO
31D101 COLUMN 27&28 - WRH MAIN HEADER BRANCH CONNECTION TO TANK 12



H6 PHOTO
31D101 WRH MAIN HEADER AT NORTH SIDE OF PRIMARY TANKS

EchoWater Facility Engineering Design

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EXP. 3-31-2027
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MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE DEMOLITION

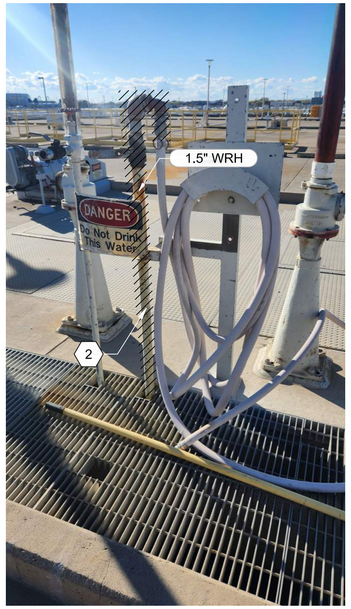
DEMOLITION DETAILS 1

DRAWING NUMBER - **31D501**

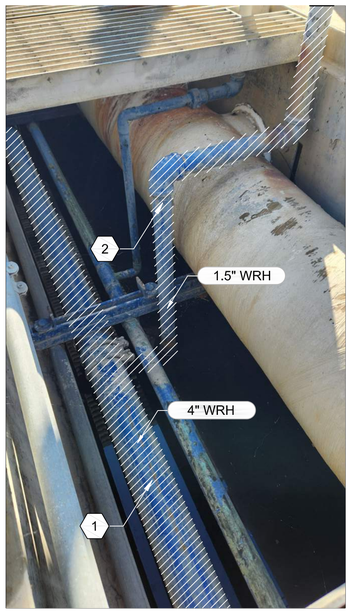
11 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

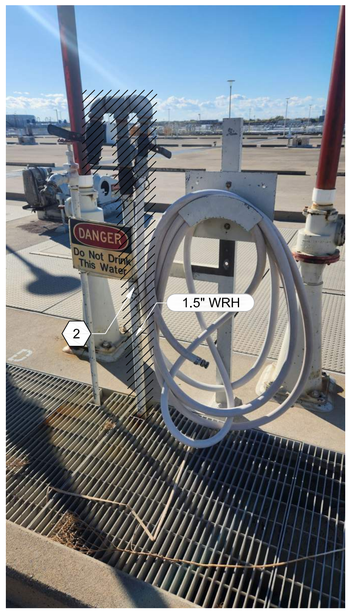
U1 PHOTO
31D101 3US19 - MAIN HEADER UTILITY STATION



U2 PHOTO
31D101 3US17 - MAIN HEADER UTILITY STATION. (TYPICAL TO 3US13 AND 3US18)



U3 PHOTO
31D101 WRH CONNECTION BETWEEN THE MAIN HEADER AND 3US16. (TYPICAL TO 3US13, 3US14, 3US15, 3US17, AND 3US18)



U4 PHOTO
31D101 3US16 - MAIN HEADER UTILITY STATION. (TYPICAL FOR 3US14, AND 3US15)

GENERAL NOTES

1. FIELD VERIFY LOCATION AND SIZE OF EXISTING PIPING BEFORE STARTING DEMOLITION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING THE PIPING DEMOLITION WITHOUT DISRUPTING ADJACENT PIPING, ELECTRICAL CONDUITS, OR OTHER UTILITIES.
3. SEE SPECIFICATION 01 14 00 – WORK RESTRICTIONS FOR CONSTRUCTION SEQUENCE, REQUIREMENTS, AND CONSTRAINTS. COORDINATE THE SEQUENCE OF DEMOLITION WORK WITH THE DISTRICT TO MINIMIZE DOWNTIME OF SRW AND WRH AT PRIMARY TANKS FOR EACH BATTERY DURING CONSTRUCTION.
4. UNLESS OTHERWISE SHOWN OR INDICATED ON THE DEMOLITION DRAWINGS, ALL EXISTING PIPE SUPPORTS AND SEISMIC BRACING SHALL BE RESTORED AND MAINTAINED FOR REUSE WITH THE NEW PIPING.

SHEET KEY NOTES

1. DEMO THE EXISTING 4" WRH MAIN HEADER PIPE, STARTING IMMEDIATELY AFTER THE 6" STRAIGHT TEE LOCATED SOUTH OF THE PRIMARY DECK WALL AND ENDING JUST BEFORE IT PENETRATES THE CENTRAL TUNNEL WALL ON THE NORTH SIDE OF THE PRIMARY DECK.
2. DEMO ALL UTILITY STATIONS ALONG THE MAIN 4" HEADER (3US13/14/15/16/17/18/19). REUSE THE EXISTING PIPE SUPPORTS TO BRACE THE NEW PIPING. ALL HOSES AND HOSE RACKS ARE EXCLUDED FROM THE DEMOLITION SCOPE.

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
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M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

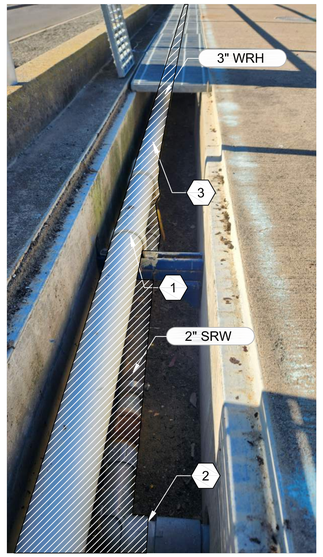
DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE DEMOLITION

DEMOLITION DETAILS 2

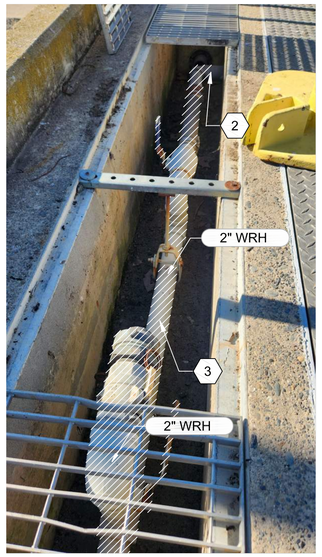
DRAWING NUMBER **31D502**

12 OF 30

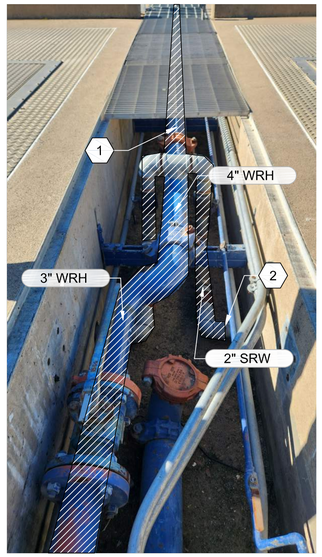
SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



B1 PHOTO
31D101 WRH PIPING AT EAST SIDE OF COLUMN1 - SRW CONNECTION TO TANK 1

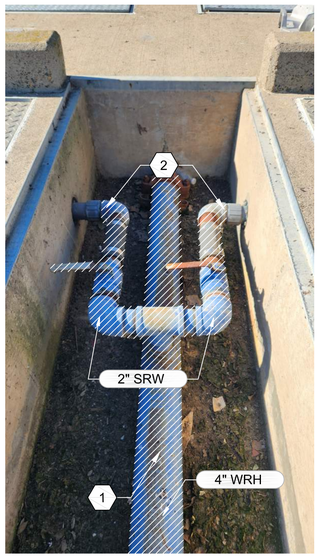


B2 PHOTO
31D101 WRH PIPING AT WEST SIDE OF COLUMN 1. (TYPICAL TO COLUMN 27&28)



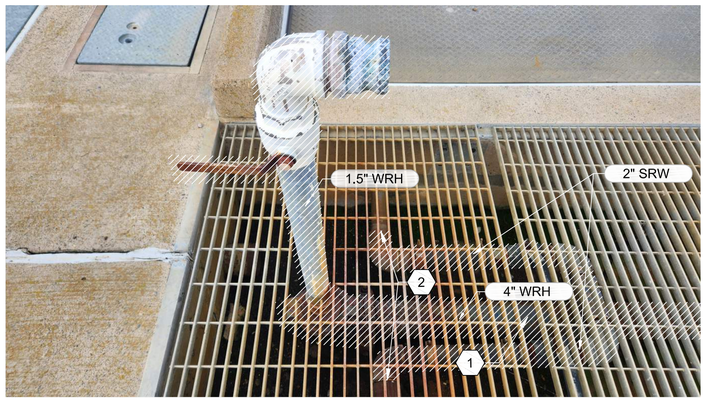
B3 PHOTO
31D101 WRH PIPING AT EAST SIDE OF COLUMN 5 (TYPICAL TO COLUMNS 9&10, 14, 18&19, AND 23)

B4 PHOTO
31D101 WRH PIPING AT COLUMN 5 - UTILITY STATION. (TYPICAL TO COLUMNS 9&10, 14, 18&19, 23)



B5 PHOTO
31D101 WRH PIPING AT COLUMN 5 - SRW CONNECTION TO TANKS 2 AND 3. (TYPICAL TO SRW CONNECTIONS AT COLUMNS 9&10, 14, 18&19, AND 23)

B6 PHOTO
31D101 3US45 - UTILITY STATION PIPING AT COLUMN 9&10 DETAILS. (TYPICAL FOR COLUMNS 5, 14, 18&19, AND 23)



B7 PHOTO
31D101 3US44 - UTILITY STATION PIPING AT COLUMN 14 DETAILS. (TYPICAL TO COLUMNS 18&19 AND 23)

GENERAL NOTES

1. FIELD VERIFY LOCATION AND SIZE OF EXISTING PIPING BEFORE STARTING DEMOLITION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING THE PIPING DEMOLITION WITHOUT DISRUPTING ADJACENT PIPING, ELECTRICAL CONDUITS, OR OTHER UTILITIES.
3. SEE SPECIFICATION 01 14 00 – WORK RESTRICTIONS FOR CONSTRUCTION SEQUENCE, REQUIREMENTS, AND CONSTRAINTS. COORDINATE THE SEQUENCE OF DEMOLITION WORK WITH THE DISTRICT TO MINIMIZE DOWNTIME OF SRW AND WRH AT PRIMARY TANKS FOR EACH BATTERY DURING CONSTRUCTION.
4. UNLESS OTHERWISE SHOWN OR INDICATED ON THE DEMOLITION DRAWINGS, ALL EXISTING PIPE SUPPORTS AND SEISMIC BRACING SHALL BE RESTORED AND MAINTAINED FOR REUSE WITH THE NEW PIPING.

SHEET KEY NOTES

1. DEMO ALL SEVEN WRH BRANCHES LOCATED BETWEEN THE PRIMARY TANKS THAT FEED THE SRW PIPING AT COLUMNS 1, 5, 9&10, 14, 18&19, 23, AND 27&28, AS SHOWN IN THE DEMOLITION PLAN.
2. EXTEND THE DEMOLITION OF THE SRW PIPING CONNECTIONS UP TO AND INCLUDING THE ELBOW, STOP BEFORE THE EXISTING PVC PIPE THAT PENETRATES THE TANK WALL.
3. WHITE PAINT ON THE EXISTING 2" AND 3" WRH PIPES AT COLUMNS 1 , AND 27-28 WAS COATED WITH A LEAD BASED PAINT. LEAD ABATEMENT WORK SHALL BE PERFORMED BY A CERTIFIED/LICENSED ABATEMENT CONTRACTOR IF TRIGGER TASKS ARE REQUIRED (CUTTING, GRINDING, ETC). CONTRACTOR STAFF PERFORMING ANY CUTTING OR GRINDING OF THESE PIPES ARE REQUIRED TO WEAR APPROPRIATE RESPIRATORY PROTECTION TO PROTECT AGAINST HAZARDOUS SUBSTANCES INCLUDING FUMES. COORDINATE REMOVAL WITH THE DISTRICT.

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER MILAD R. KHORASANI M 40283 EXP. 3-31-2027 MECHANICAL STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE DEMOLITION

DEMOLITION DETAILS 3

DRAWING NUMBER **31D503**

13 OF 30

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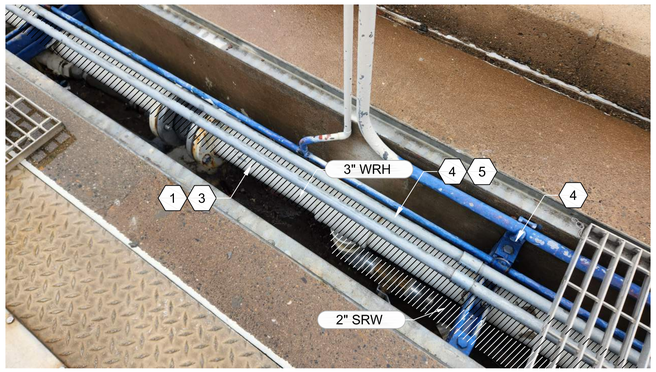
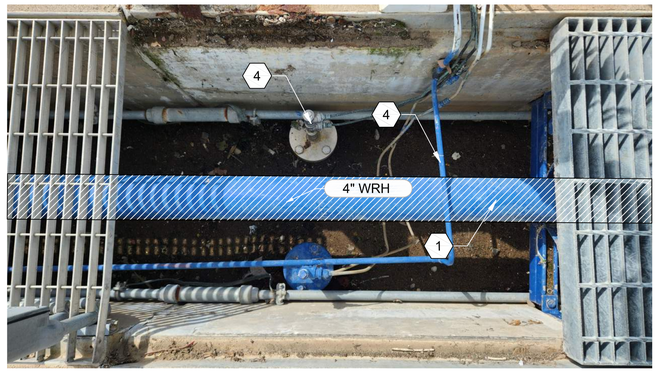
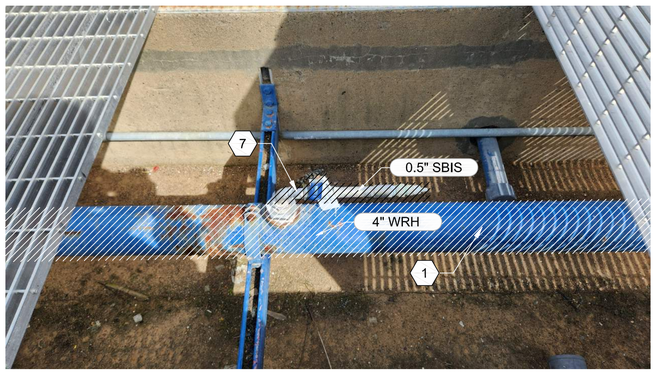


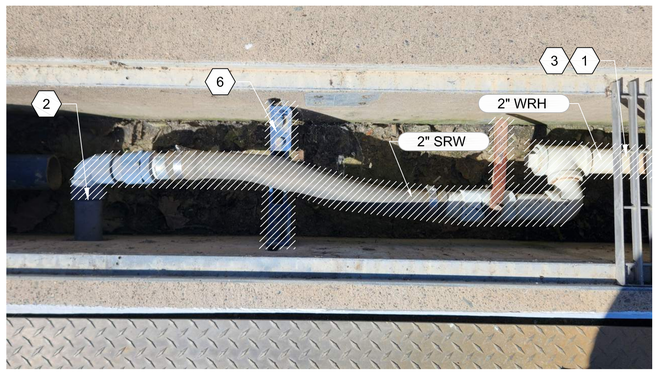
B8 PHOTO
31D101 WRH PIPING AT EAST SIDE OF COLUMN 27&28



B9 PHOTO
31D101 WRH PIPING AT EAST SIDE OF COLUMN 5 (TYPICAL TO COLUMNS 1, 9&10, 14,18&19, 23, AND 27&28)



B10 PHOTO
31D101 SODIUM BISULFITE (SBIS) INJECTION PORT AT WRH BRANCH PIPING FOR COLUMN 9&10 (TYPICAL TO COLUMNS 1, 5, 14, 18&9, 23, AND 27&28)



B11 PHOTO
31D101 WRH PIPING AT WEST SIDE OF COLUMN 27&28

GENERAL NOTES

1. FIELD VERIFY LOCATION AND SIZE OF EXISTING PIPING BEFORE STARTING DEMOLITION.
2. CONTRACTOR IS RESPONSIBLE FOR PERFORMING THE PIPING DEMOLITION WITHOUT DISRUPTING ADJACENT PIPING, ELECTRICAL CONDUITS, OR OTHER UTILITIES.
3. SEE SPECIFICATION 01 14 00 – WORK RESTRICTIONS FOR CONSTRUCTION SEQUENCE, REQUIREMENTS, AND CONSTRAINTS. COORDINATE THE SEQUENCE OF DEMOLITION WORK WITH THE DISTRICT TO MINIMIZE DOWNTIME OF SRW AND WRH AT PRIMARY TANKS FOR EACH BATTERY DURING CONSTRUCTION.
4. UNLESS OTHERWISE SHOWN OR INDICATED ON THE DEMOLITION DRAWINGS, ALL EXISTING PIPE SUPPORTS AND SEISMIC BRACING SHALL BE RESTORED AND MAINTAINED FOR REUSE WITH THE NEW PIPING.

SHEET KEY NOTES

1. DEMO ALL SEVEN WRH BRANCHES (BOTH 3" AND 4") LOCATED BETWEEN THE PRIMARY TANKS THAT FEED THE SRW PIPING AT COLUMNS 1, 5, 9&10, 14, 18&19, 23, AND 27&28, AS SHOWN IN THE DEMOLITION PLAN.
2. EXTEND THE DEMOLITION OF THE SRW PIPING CONNECTIONS UP TO AND INCLUDING THE ELBOW, STOP BEFORE THE EXISTING PVC PIPE THAT PENETRATES THE TANK WALL.
3. WHITE PAINT ON THE EXISTING 2" AND 3" WRH PIPES AT COLUMNS 1 , AND 27-28 WAS COATED WITH A LEAD BASED PAINT. LEAD ABATEMENT WORK SHALL BE PERFORMED BY A CERTIFIED/LICENSED ABATEMENT CONTRACTOR IF TRIGGER TASKS ARE REQUIRED (CUTTING, GRINDING, ETC). CONTRACTOR STAFF PERFORMING ANY CUTTING OR GRINDING OF THESE PIPES ARE REQUIRED TO WEAR APPROPRIATE RESPIRATORY PROTECTION TO PROTECT AGAINST HAZARDOUS SUBSTANCES INCLUDING FUMES. COORDINATE REMOVAL WITH THE DISTRICT.
4. THERE ARE MISCELLANEOUS TUBING, ELECTRICAL CONDUITS, AND ABANDONED PIPING ADJACENT TO THE EXISTING WRH PIPING ON THE EAST SIDE OF ALL SEVEN WRH BRANCHES. CONTRACTOR IS RESPONSIBLE FOR DEMOLISHING THE WRH PIPING WITHOUT DISTURBING ANY ADJACENT COMPONENTS.
5. COORDINATE THE TEMPORARY RELOCATION OF ELECTRICAL CONDUITS AT THE EAST SIDE OF TANK 12 WITH DISTRICT.
6. DEMO THIS UNISTRUT LOCATED WEST SIDE OF THE WRH PIPING AT COLUMN 27&28
7. CAREFULLY DEMO THE EXISTING STAINLESS STEEL SODIUM BISULFITE (SBIS) INJECTION PIPING AND RETURN THE SPOOL (FROM ELBOW TO INJECTION PORT) TO DISTRICT STAFF.

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
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EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

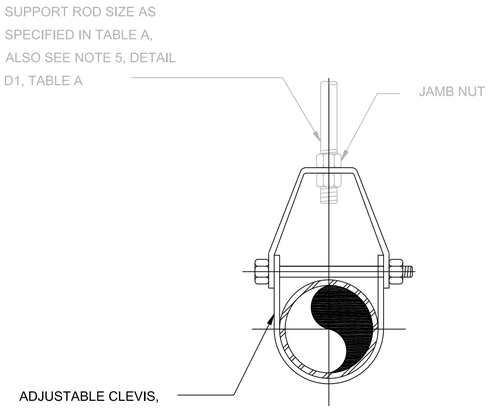
DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE DEMOLITION

DEMOLITION DETAILS 4

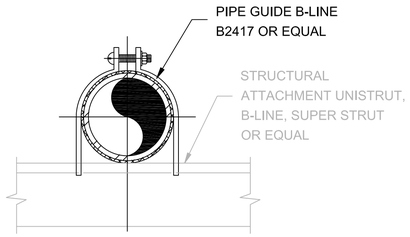
DRAWING NUMBER **31D504**

14 OF 30

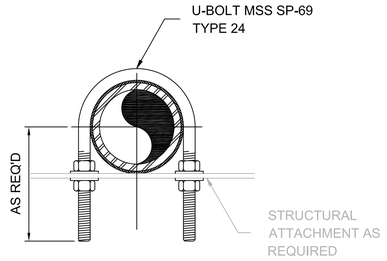
SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



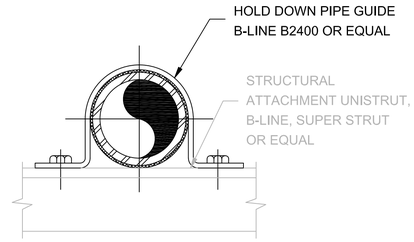
D3 TYPE 1 PIPE HANGER
1/2" THROUGH 12" PIPE



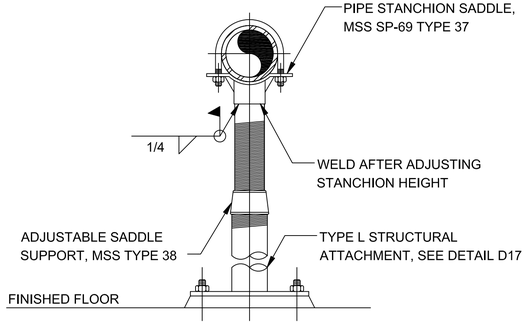
D6 TYPE G1 PIPE GUIDE
1/2" THROUGH 4" PIPE



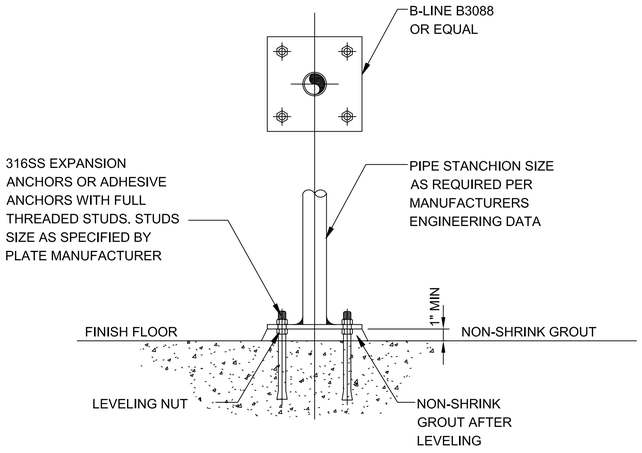
D7 TYPE 7 PIPE HANGER
1/2" THROUGH 2" PIPE



D13 TYPE 13 PIPE STRAP/HANGER
3/8" THROUGH 6" PIPE



D12 TYPE 12 PIPE SUPPORT
4" THROUGH 12" PIPE



NOTE:
1. SPACING SHALL BE AS REQUIRED OR INDICATED BUT ON THE DRAWINGS. SHALL NOT EXCEED THOSE SPANS SHOWN IN DETAIL D1, TABLE A.

D17 TYPE L STRUCTURAL ATTACHMENT

TABLE A

NOMINAL PIPE SIZE	TYPE 1 PIPE HANGER		MAXIMUM PIPE SPAN (FEET)			
	ROD SIZES (INCHES)	DESIGN LOAD (POUNDS)	STEEL	COPPER	PLASTIC SEE NOTE 3	CAST IRON SEE NOTE 4
1/2	3/8	610	5	5	CONTINUOUS	--
3/4	3/8	610	5	5	5	--
1	3/8	610	5	5	5	--
1-1/4	3/8	610	5	5	5	--
1-1/2	3/8	610	5	5	5	--
2	3/8	610	10	5	5	12 FEET FOR PRESSURE PIPE 10 FEET FOR SOIL PIPE
2-1/2	3/8	1130	11	10	5	
3	1/2	1130	12	20	5	
3-1/2	1/2	1130	--	--	--	
4	5/8	1430	14	20	5	
5	5/8	1430	--	--	--	
6	3/4	1940	17	20	5	
8	7/8	2000	19	20	5	
10	--	--	22	--	5	
12	--	--	23	--	10	

NOTES:
1. DESIGN WEIGHT SHALL BE TWICE THE WEIGHT OF THE PIPE FULL OF WATER. HANGER SYSTEMS SHALL BE DESIGNED USING THIS DESIGN WEIGHT.
2. ROD SIZES AND DESIGN LOADS BASED ON LOAD CALCULATIONS FOR B-LINE HANGERS. THE TOTAL DESIGN LOAD SHALL NOT EXCEED THE MAXIMUM LOADS SHOWN IN THE TABLE ABOVE.
3. SPAN SHOWN IS FOR SCHEDULE 80 PVC PIPE AT 100ºF. SPANS FOR OTHER PLASTICS, OTHER PVC PIPE SCHEDULES AND PIPE AT HIGHER TEMPERATURES SHALL BE SHORTENED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S RECOMMENDATIONS. "CONTINUOUS" MEANS PIPE SHALL BE IN MODULAR STRUT OR SIMILAR CHANNEL.
4. AS PER LATEST ADOPTED EDITION OF THE UNIFORM PLUMBING CODE.
5. PROJECT WORK WILL LARGELY RE-USE EXISTING UNISTRUT SUPPORTS, BRACKETS AND CLAMPS. DRAWINGS ARE SHOWN FOR REFERENCE ONLY. IDENTIFY THE NEED FOR NEW PIPE SUPPORTS TO THE DISTRICT AND WORK WILL BE PAID ON A T&M BASIS.

D1 TABLE 'A' (PIPE HANGERS)

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
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M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

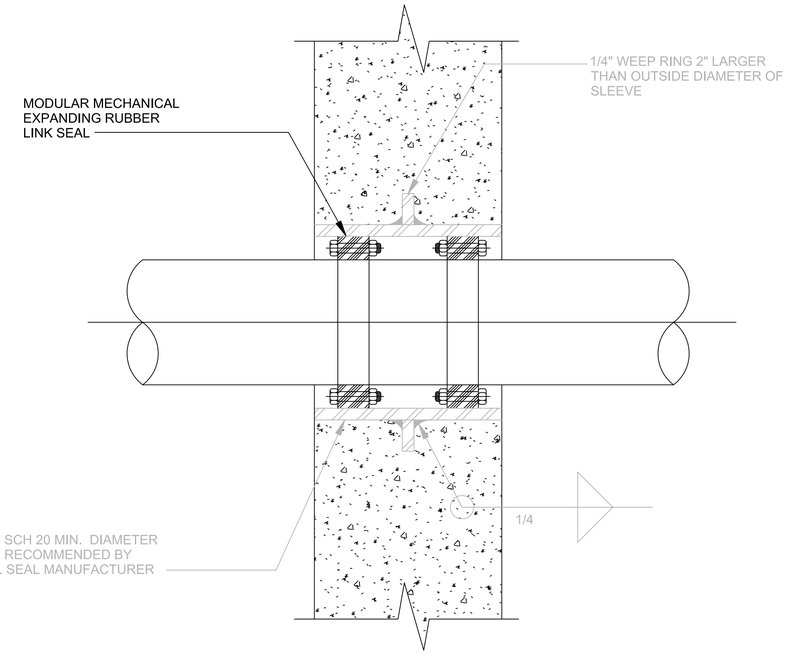
DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE PROCESS MECHANICAL

STANDARD DETAILS 1

DRAWING NUMBER **D-001**

15 OF 30

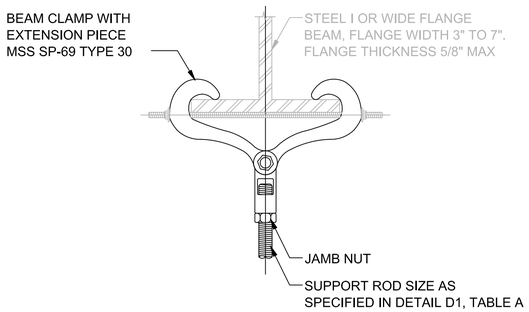
SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



D18 TYPE A PIPE PENETRATION

NOTES:

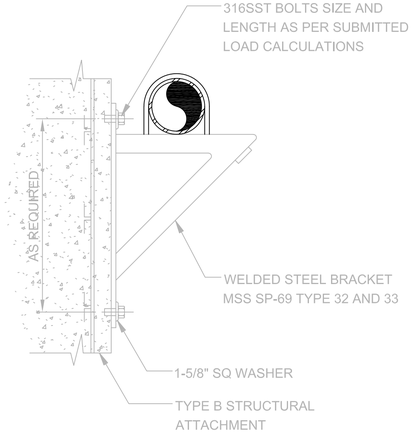
1. ALL STEEL SLEEVES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
2. SEAL FLANGES SHALL BE FACED AND DRILLED TO 150 POUND STANDARD, EACH JOINT SHALL BE GASKETED UNLESS OTHERWISE SPECIFIED.
3. WHERE SPECIFIED, CAST IRON FLANGES MAY BE INSTALLED FLUSH WITH WALL AND TAPPED FOR STUDS.
4. RESTRAINED FLEXIBLE COUPLINGS FOR STEEL PIPE SHALL BE DESIGNED FOR 150 PSI LINE PRESSURE IN ACCORDANCE WITH AWWA MANUAL MII FIGURES 19.15 AND 19.16. TABLE 19.7 SHALL BE UTILIZED.
5. WHERE NO REFERENCE TO PIPE SUPPORT SYSTEM IS GIVEN ON THE DRAWINGS, THE CONTRACTOR SHALL USE AN APPROPRIATE SYSTEM.
6. HANGERS AND SUPPORTS, RODS, NUTS, BOLTS AND WASHERS SHALL BE OF MATERIAL SPECIFIED IN SPECIFICATION SECTION 40 05 07 – 2.01.
7. MAXIMUM DESIGN WEIGHTS AND LOADS SHALL BE AS SHOWN IN TABLE A UNLESS OTHERWISE SPECIFIED IN THE DETAILS.
8. UNLESS OTHERWISE SPECIFIED, TRAPEZE AND PIPE RACK COMPONENTS SHALL HAVE A MINIMUM STEEL THICKNESS OF 12 GAGE WITH A MAXIMUM DEFLECTION OF 1/240 OF THE SPAN. MINIMUM CHANNEL COMPONENT SIZE SHALL BE 1-5/8" SQUARE AS MANUFACTURED BY SUPER STRUT, ELCEN OR EQUAL.
9. SECURE ALL NUTS WITH THREAD LOCKING COMPOUND.



MAXIMUM ALLOWABLE LOAD	
ROD SIZE	LOAD, LBS
3/8"	610
1/2"	1130
5/8" - 7/8"	1365

NOTE:
1. SPACING SHALL BE AS REQUIRED, BUT SHALL NOT EXCEED THOSE SPANS SHOWN IN DETAIL D1, TABLE A.

D37 TYPE C STRUCTURAL ATTACHMENT



MAXIMUM ALLOWABLE LOAD	
MSS TYPE	LOAD, LBS
32	1500
33	3000

BRACKET MAY BE INSTALLED AS SHOWN OR INVERTED, AND USED WITH VARIOUS HANGER, ROLLER, GUIDE AND CLAMP ASSEMBLIES.

D44 TYPE M STRUCTURAL ATTACHMENT

EchoWater Facility Engineering Design

SUB CONSULTANT

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EXP. 3-31-2027
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MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

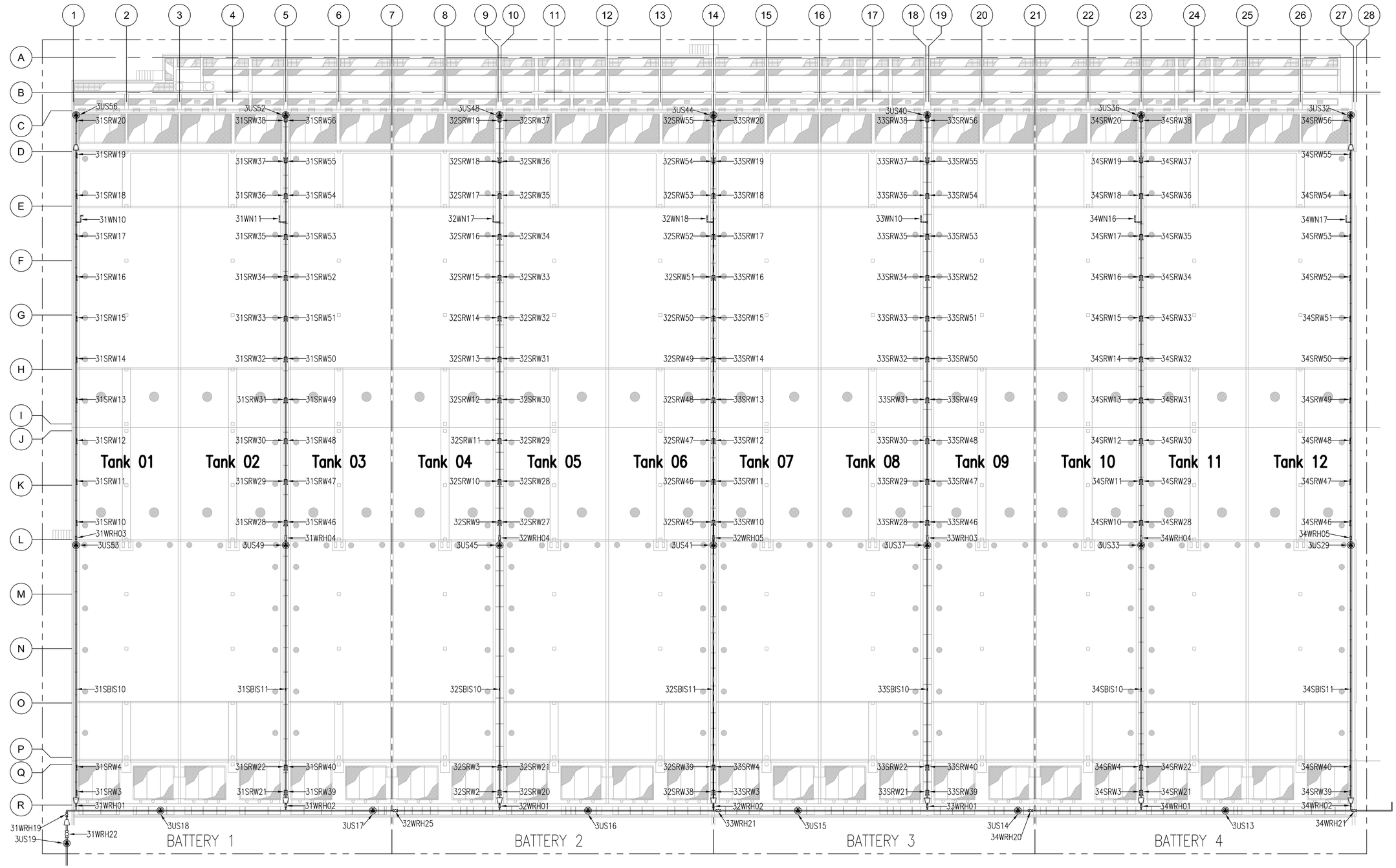
DISCIPLINE
PROCESS MECHANICAL

STANDARD DETAILS 2

DRAWING NUMBER
D-002

16 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



PRIMARY DECK - PROCESS MECHANICAL - NEW HIGH PRESSURE RECLAIMED WATER (WRH) PIPING PLAN

Scale: 1" = 18'-0"

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
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M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

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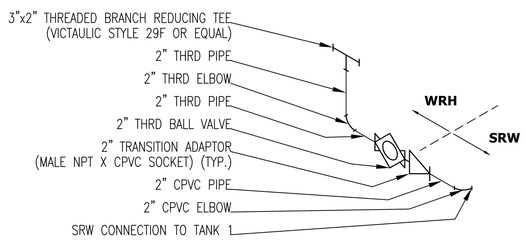
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE PROCESS MECHANICAL

PRIMARY DECK WRH PIPING PLAN

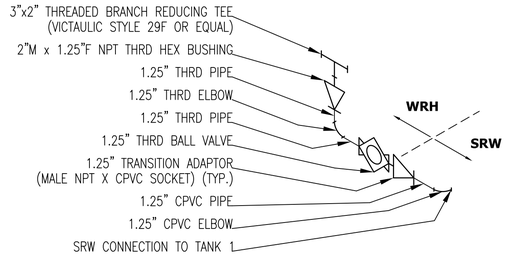
DRAWING NUMBER **31DP101**

17 OF 30

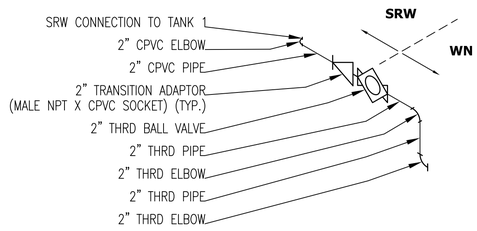
SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



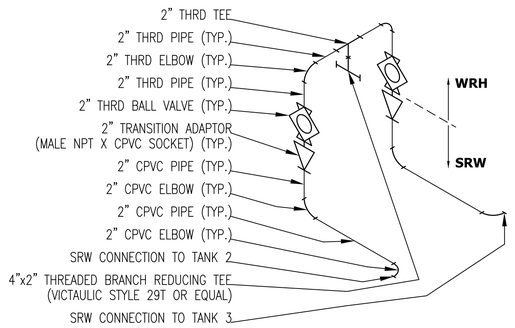
P1 COLUMN 1 - SRW CONNECTION TO TANK 1
(TYPICAL FOR COLUMN 27&28)



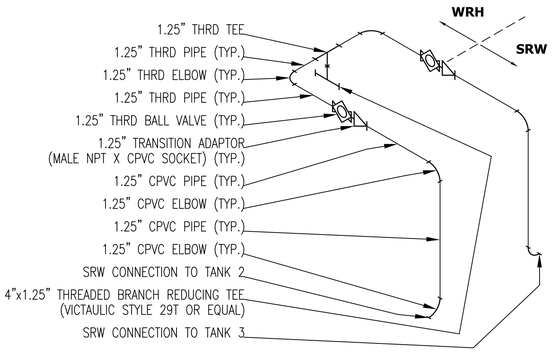
P2 COLUMN 1 - SECOND SRW CONNECTION TO TANK 1



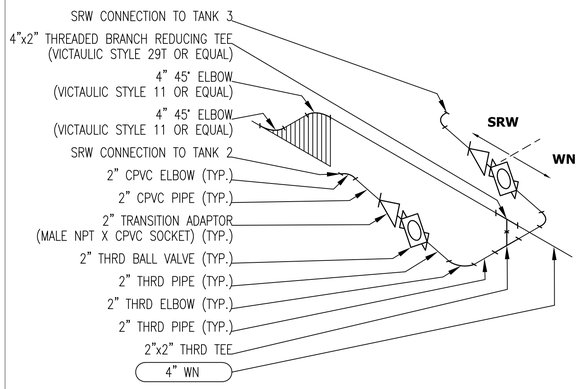
P3 COLUMN 1 - LAST SRW CONNECTION TO TANK 1



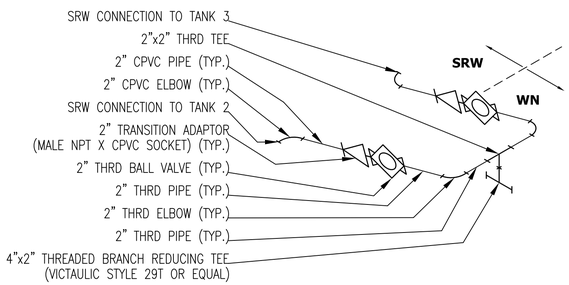
P4 COLUMN 5 - FIRST SRW CONNECTION TO TANKS 2 AND 3
(TYPICAL FOR COLUMNS 9&10, 14, 18&19, AND 23)



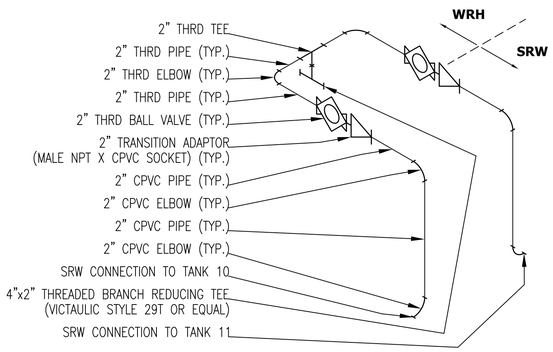
P5 COLUMN 5 - SECOND SRW CONNECTION TO TANKS 2 AND 3
(TYPICAL FOR COLUMNS 9&10, 14, AND 18&19)



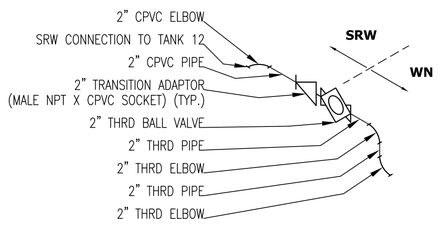
P6 COLUMN 5 - 12TH SRW CONNECTION TO TANKS 2 AND 3
(TYPICAL FOR COLUMNS 9&10, 14, 18&19, AND 23)



P7 COLUMN 5 - LAST SRW CONNECTION TO TANKS 2 AND 3
(TYPICAL FOR COLUMNS 9&10, 14, 18&19, AND 23)



P8 COLUMN 23 - SECOND SRW CONNECTION TO TANKS 10 AND 11



P9 COLUMN 27&28 - LAST SRW CONNECTION TO TANK 12

GENERAL NOTES

1. PIPING DETAILS ARE NOT SCALED.
2. THE CONTRACTOR IS EXPECTED TO STANDARDIZE ALL WRH TO SRW PIPING SPOOLS TO ENSURE THEY ARE AS CONSISTENT AND INTERCHANGEABLE AS POSSIBLE ACROSS ALL TANKS, AS SHOWN IN THE PIPING DRAWINGS.
3. REFER TO DIVISION 40 05 03 FOR THE SELECTION OF PIPING AND VALVE MATERIALS.
4. CONTRACTOR SHALL FIELD ROUTE AND INSTALL NEW PIPING AS SHOWN IN THE DETAIL DRAWINGS, ENSURING THAT THE EXISTING SRW PIPING CONNECTED TO THE PRIMARY TANKS IS NOT SUBJECTED TO TENSION OR STRESS.
5. PIPING DETAILS MAY NOT NECESSARILY ILLUSTRATE THE DIRECTION, ORIENTATION, OR ADDITIONAL FITTINGS THAT SOME PIPE SPOOLS MIGHT REQUIRE. THE CONTRACTOR SHALL USE THE PIPING DRAWINGS ALONG WITH THE DETAILED DRAWINGS TO FABRICATE AND INSTALL NEW PIPING SPOOLS.
6. FLEXIBLE COUPLINGS FOR PIPE-TO-FITTING JOINTS ARE NOT SHOWN FOR CLARITY.

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
Civil
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

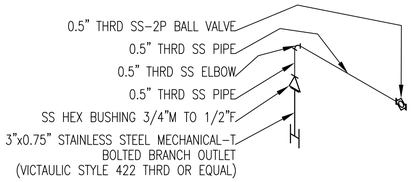
DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE PROCESS MECHANICAL

PIPING SECTIONS AND DETAILS 1

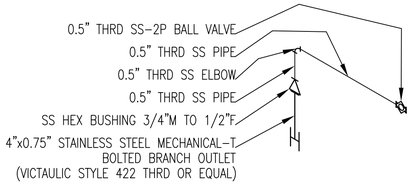
DRAWING NUMBER **31DP501**

18 OF 30

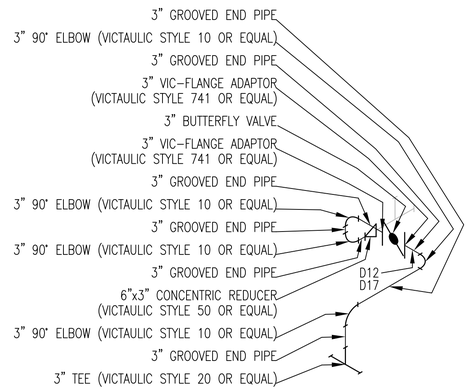
SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



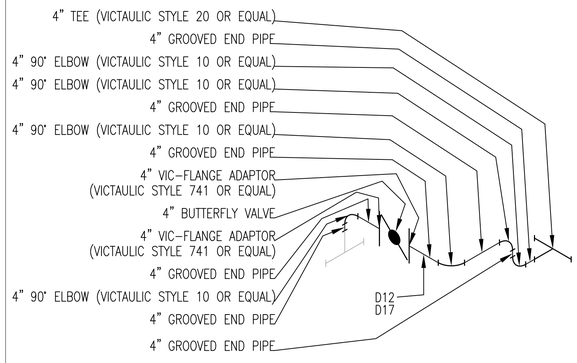
P10 COLUMN 1 - SODIUM BISULFITE (SBIS) CONNECTION (TYP. FOR COLUMN 27&28)



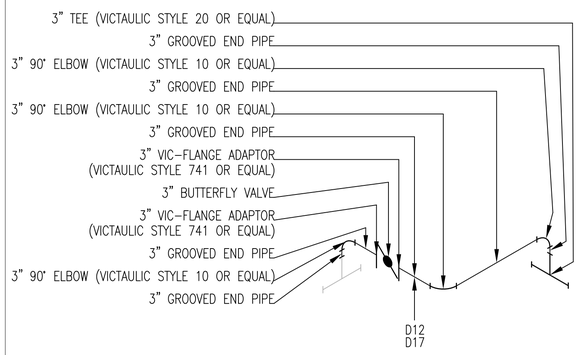
P11 COLUMN 5 - SODIUM BISULFITE (SBIS) CONNECTION (TYPICAL FOR COLUMNS 9&10, 14, 18&19, AND 23)



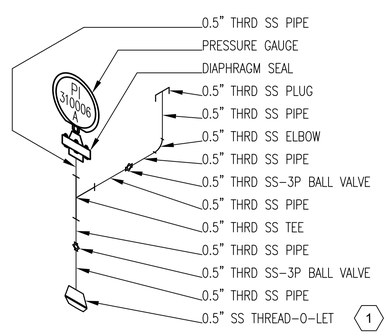
P12 COLUMN 1 - WN TIE-IN



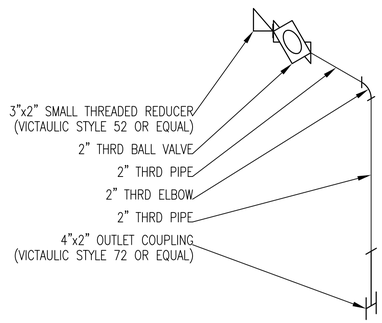
P13 COLUMN 5 - WN TIE-IN (TYPICAL FOR COLUMNS 9&10, 14, 18&19, AND 23)



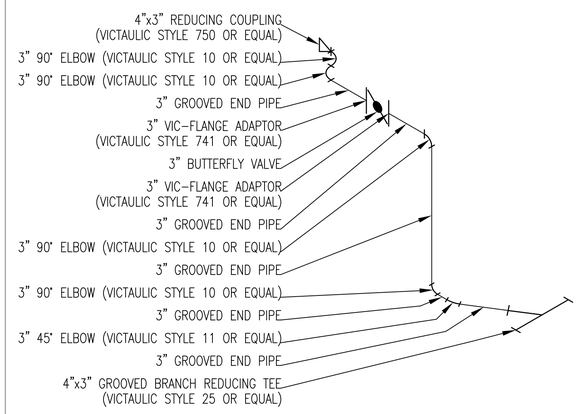
P14 COLUMN 27&28 - WN TIE-IN



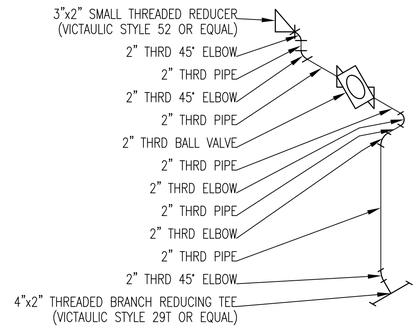
P15 MAIN HEADER PRESSURE GAUGES



P16 COLUMN 1 - MAIN HEADER CONNECTION TO WRH BRANCH PIPING AT TANK 1



P17 COLUMN 5 - MAIN HEADER CONNECTION TO WRH BRANCH PIPING AT TANKS 2 AND 3 (TYP. FOR COLUMNS 9&10, 14, 18&19, AND 23)



P18 COLUMN 27&28 - MAIN HEADER CONNECTION TO WRH BRANCH PIPING AT TANK 12

GENERAL NOTES

1. PIPING DETAILS ARE NOT SCALED.
2. THE CONTRACTOR IS EXPECTED TO STANDARDIZE ALL WRH TO SRW PIPING SPOOLS TO ENSURE THEY ARE AS CONSISTENT AND INTERCHANGEABLE AS POSSIBLE ACROSS ALL TANKS, AS SHOWN IN THE PIPING DRAWINGS.
3. REFER TO DIVISION 40 05 03 FOR THE SELECTION OF PIPING AND VALVE MATERIALS.
4. CONTRACTOR SHALL FIELD ROUTE AND INSTALL NEW PIPING AS SHOWN IN THE DETAIL DRAWINGS, ENSURING THAT THE EXISTING SRW PIPING CONNECTED TO THE PRIMARY TANKS IS NOT SUBJECTED TO TENSION OR STRESS.
5. PIPING DETAILS MAY NOT NECESSARILY ILLUSTRATE THE DIRECTION, ORIENTATION, OR ADDITIONAL FITTINGS THAT SOME PIPE SPOOLS MIGHT REQUIRE. THE CONTRACTOR SHALL USE THE PIPING DRAWINGS ALONG WITH THE DETAILED DRAWINGS TO FABRICATE AND INSTALL NEW PIPING SPOOLS.
6. ALL FASTENERS FOR FLANGED CONNECTIONS SHALL BE STAINLESS STEEL.
7. REFER TO DIVISION 40 70 00 FOR GUIDANCE ON THE SELECTION OF PRESSURE GAUGES.
8. REFER TO DIVISION 40 70 00 FOR GUIDANCE ON THE SELECTION OF DIAPHRAGM SEAL.
9. FLEXIBLE COUPLINGS FOR PIPE-TO-FITTING JOINTS ARE NOT SHOWN FOR CLARITY.

SHEET KEY NOTES

1. FULL PENETRATION (TIG WELDING) IS REQUIRED FOR WELDING THE THREAD-O-LET TO THE PIPE. USE PROPER FILLER MATERIAL (TIG RODS) SUITABLE FOR WELDING STAINLESS STEEL TO CARBON STEEL.

EchoWater Facility Engineering Design

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Mechanical
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SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

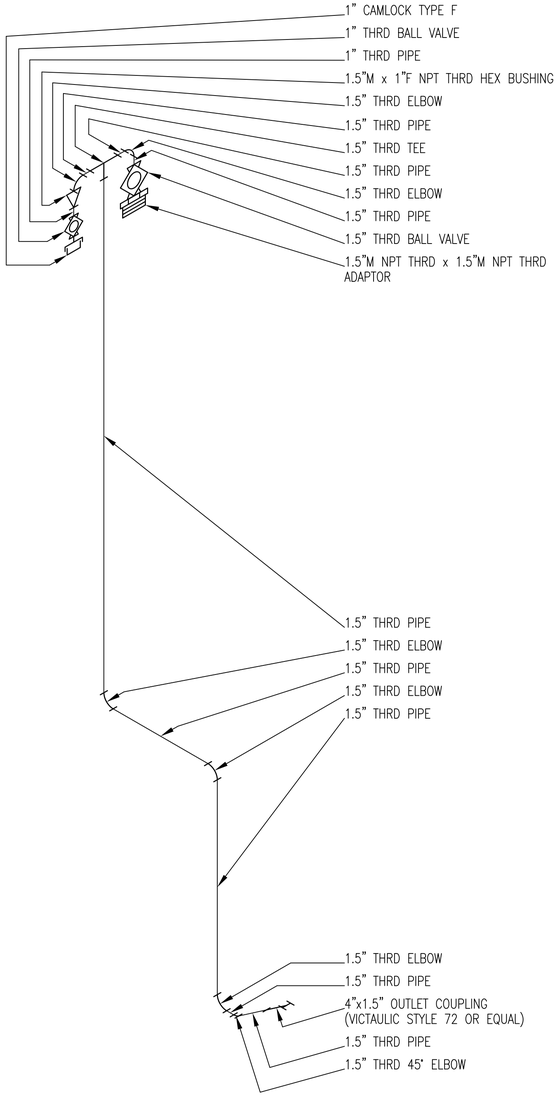
DESIGNED: MILAD KHORASANI, PE
DRAWN: REZA SAFAVI
CHECKED: MILAD KHORASANI, PE
APPROVED: GERARDO AGUIRRE, PE
FILENAME:
DESIGNER PROJECT NUMBER: -
CONTRACT NUMBER: RFB 8515
CONTRACT SEQUENCE NUMBER: -
DISCIPLINE: PROCESS MECHANICAL

PIPING SECTIONS AND DETAILS 2

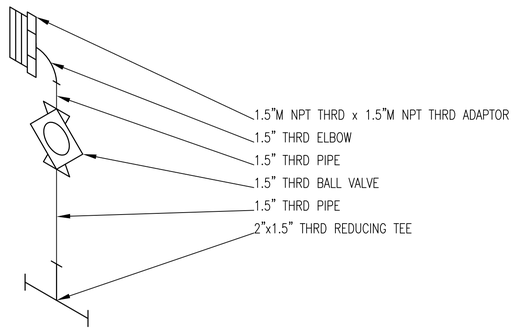
DRAWING NUMBER: **31DP502**

19 OF 30

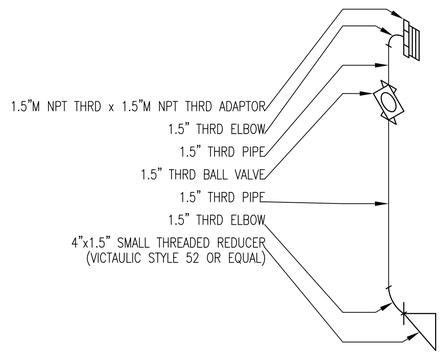
SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



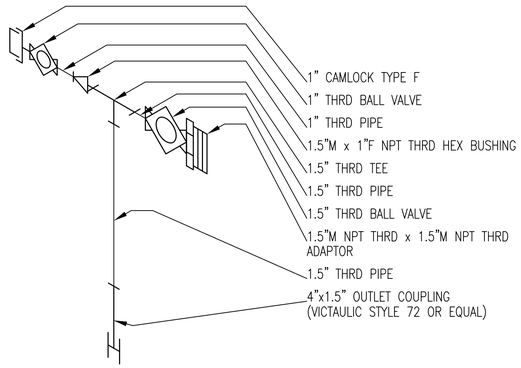
P22 MAIN HEADER UTILITY STATION (TYP. FOR 3US13,14,15,16,17,18,19)



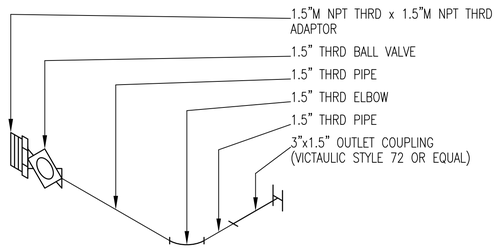
P19 COLUMN 1 - SECOND UTILITY STATION (3US56)
(TYP. FOR COLUMN 27&28)



P21 COLUMN 5 - SECOND UTILITY STATION (3US52)
(TYPICAL FOR COLUMNS 9&10, 14, 18&19, AND 23)



P20 COLUMN 5 - FIRST UTILITY STATION (3US49)
(TYPICAL FOR COLUMNS 9&10, 14, 18&19, AND 23)



P23 COLUMN 27&28 - FIRST UTILITY STATION (3US29)
(TYPICAL FOR COLUMN 1)

GENERAL NOTES

1. PIPING DETAILS ARE NOT SCALED.
2. THE CONTRACTOR IS EXPECTED TO STANDARDIZE ALL WRH TO SRW PIPING SPOOLS TO ENSURE THEY ARE AS CONSISTENT AND INTERCHANGEABLE AS POSSIBLE ACROSS ALL TANKS, AS SHOWN IN THE PIPING DRAWINGS.
3. REFER TO DIVISION 40 05 03 FOR THE SELECTION OF PIPING AND VALVE MATERIALS.
4. THE CONNECTION OF UTILITY STATIONS TO THE MAIN WRH PIPE HEADER MAY NOT BE IDENTICAL FOR ALL UTILITY STATIONS. THE CONTRACTOR SHALL FIELD-ROUTE AND FOLLOW PIPING DRAWINGS TO FABRICATE SPOOL PIECES FOR THE NEW UTILITY STATIONS.
5. PIPING DETAILS MAY NOT NECESSARILY ILLUSTRATE THE DIRECTION, ORIENTATION, OR ADDITIONAL FITTINGS THAT SOME PIPE SPOOLS MIGHT REQUIRE. THE CONTRACTOR SHALL USE THE PIPING DRAWINGS ALONG WITH THE DETAILED DRAWINGS TO FABRICATE AND INSTALL NEW PIPING SPOOLS.

EchoWater Facility Engineering Design

SUB CONSULTANT

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EXP. 3-31-2027
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STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

DISCIPLINE
PROCESS MECHANICAL

PIPING SECTIONS AND DETAILS 3

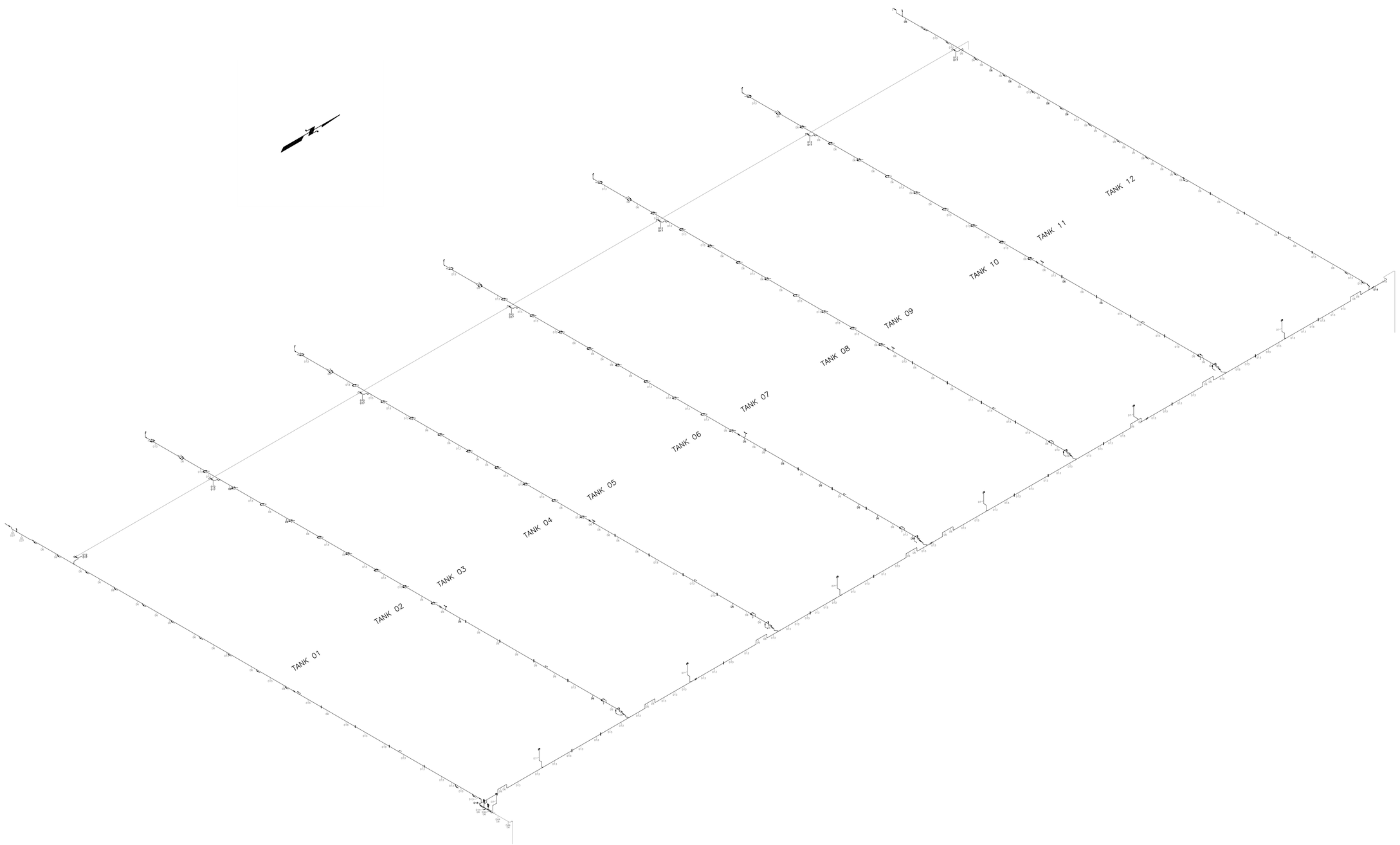
DRAWING NUMBER
31DP503

20 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

GENERAL NOTES

1. ISOMETRIC DRAWING IS FOR REFERENCE ONLY AND IS NOT DRAWN TO SCALE.



PRIMARY DECK - PROCESS MECHANICAL - NEW HIGH PRESSURE RECLAIMED WATER (WRH) PIPING ISOMETRIC LAYOUT

EchoWater Facility
Engineering Design

SUB CONSULTANT

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MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

DISCIPLINE
PROCESS MECHANICAL

PRIMARY DECK WRH PIPING ISOMETRIC LAYOUT

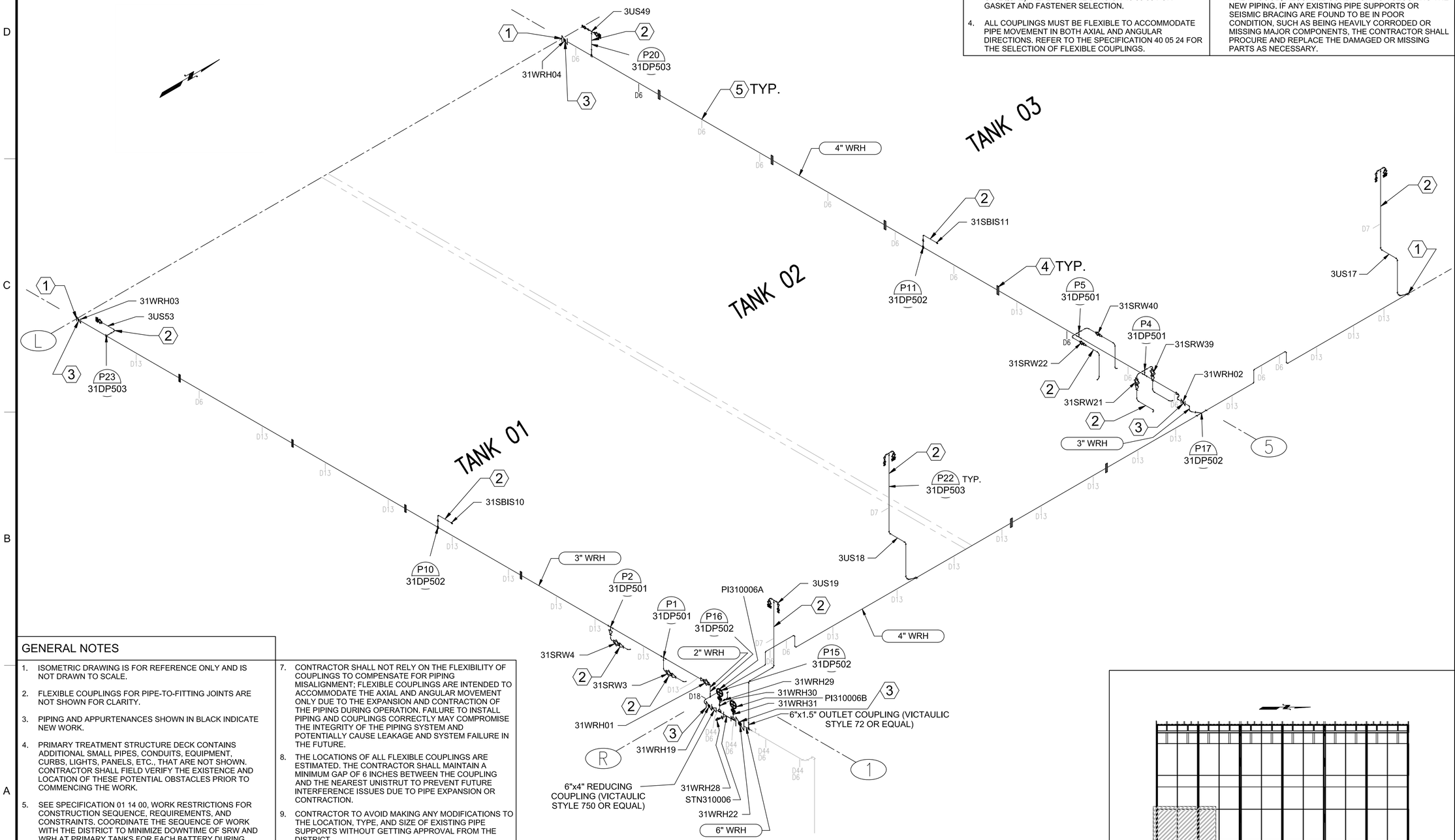
DRAWING NUMBER
31DP901

21 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

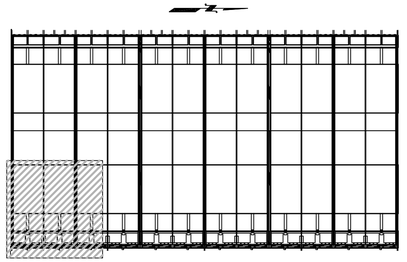
SHEET KEY NOTES

1. SEE SHEET 31DP903, AND 32DP902 FOR CONTINUATION.
2. SEE PAGE 31DP501, 31DP502, AND 31DP503 FOR PIPING DETAILS.
3. ALL BUTTERFLY VALVES SHALL BE FURNISHED WITH GROOVED-END FLANGE ADAPTERS (VICTAULIC STYLE 741 OR EQUAL). REFER TO THE DIVISION 40 05 03 FOR GASKET AND FASTENER SELECTION.
4. ALL COUPLINGS MUST BE FLEXIBLE TO ACCOMMODATE PIPE MOVEMENT IN BOTH AXIAL AND ANGULAR DIRECTIONS. REFER TO THE SPECIFICATION 40 05 24 FOR THE SELECTION OF FLEXIBLE COUPLINGS.
5. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, RESTORE AND MAINTAIN ALL EXISTING PIPE SUPPORTS AND SEISMIC BRACING TO PROPERLY SECURE THE NEW PIPING. INSPECT THE CONDITION OF ALL PIPE SUPPORTS AND SEISMIC BRACING TO ENSURE THEIR STABILITY AND INTEGRITY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL EXISTING SUPPORTS AND BRACING ARE IN GOOD, REUSABLE CONDITION FOR SECURING THE NEW PIPING. IF ANY EXISTING PIPE SUPPORTS OR SEISMIC BRACING ARE FOUND TO BE IN POOR CONDITION, SUCH AS BEING HEAVILY CORRODED OR MISSING MAJOR COMPONENTS, THE CONTRACTOR SHALL PROCURE AND REPLACE THE DAMAGED OR MISSING PARTS AS NECESSARY.



GENERAL NOTES

1. ISOMETRIC DRAWING IS FOR REFERENCE ONLY AND IS NOT DRAWN TO SCALE.
2. FLEXIBLE COUPLINGS FOR PIPE-TO-FITTING JOINTS ARE NOT SHOWN FOR CLARITY.
3. PIPING AND APPURTENANCES SHOWN IN BLACK INDICATE NEW WORK.
4. PRIMARY TREATMENT STRUCTURE DECK CONTAINS ADDITIONAL SMALL PIPES, CONDUITS, EQUIPMENT, CURBS, LIGHTS, PANELS, ETC., THAT ARE NOT SHOWN. CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE AND LOCATION OF THESE POTENTIAL OBSTACLES PRIOR TO COMMENCING THE WORK.
5. SEE SPECIFICATION 01 14 00, WORK RESTRICTIONS FOR CONSTRUCTION SEQUENCE, REQUIREMENTS, AND CONSTRAINTS. COORDINATE THE SEQUENCE OF WORK WITH THE DISTRICT TO MINIMIZE DOWNTIME OF SRW AND WRH AT PRIMARY TANKS FOR EACH BATTERY DURING CONSTRUCTION.
6. CONTRACTOR SHALL FOLLOW THE EXISTING WRH AND SRW PIPING ROUTES WHEN INSTALLING NEW LINES. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, ANY DEVIATION FROM THE EXISTING ROUTES SHALL BE APPROVED BY THE SACSEWER ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
7. CONTRACTOR SHALL NOT RELY ON THE FLEXIBILITY OF COUPLINGS TO COMPENSATE FOR PIPING MISALIGNMENT; FLEXIBLE COUPLINGS ARE INTENDED TO ACCOMMODATE THE AXIAL AND ANGULAR MOVEMENT ONLY DUE TO THE EXPANSION AND CONTRACTION OF THE PIPING DURING OPERATION. FAILURE TO INSTALL PIPING AND COUPLINGS CORRECTLY MAY COMPROMISE THE INTEGRITY OF THE PIPING SYSTEM AND POTENTIALLY CAUSE LEAKAGE AND SYSTEM FAILURE IN THE FUTURE.
8. THE LOCATIONS OF ALL FLEXIBLE COUPLINGS ARE ESTIMATED. THE CONTRACTOR SHALL MAINTAIN A MINIMUM GAP OF 6 INCHES BETWEEN THE COUPLING AND THE NEAREST UNISTRUT TO PREVENT FUTURE INTERFERENCE ISSUES DUE TO PIPE EXPANSION OR CONTRACTION.
9. CONTRACTOR TO AVOID MAKING ANY MODIFICATIONS TO THE LOCATION, TYPE, AND SIZE OF EXISTING PIPE SUPPORTS WITHOUT GETTING APPROVAL FROM THE DISTRICT.
10. REFER TO SPECIFICATION 09 06 90 FOR THE SELECTION OF APPROPRIATE COATING MATERIALS FOR ALL PIPING SYSTEMS.



KEY PLAN

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

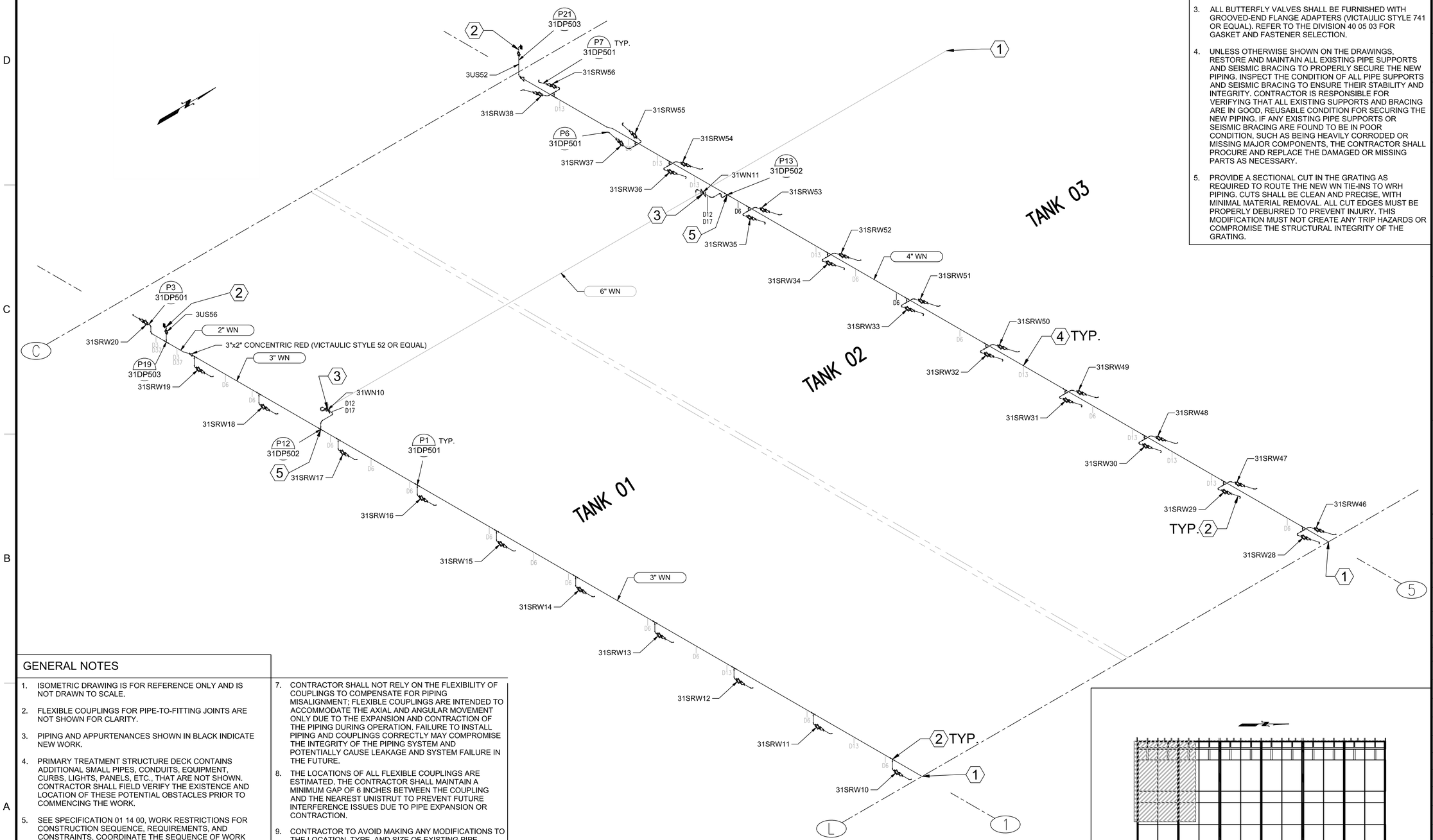
ISSUE BLOCK

DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE PROCESS MECHANICAL

PRIMARY DECK WRH PIPING - BATTERY 1 - EAST SIDE - ISOMETRIC LAYOUT

DRAWING NUMBER **31DP902**

22 OF 30

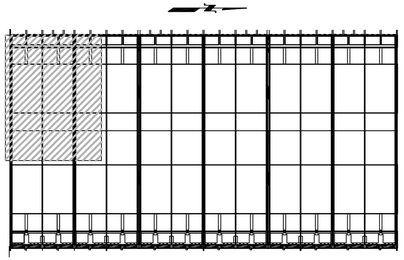


SHEET KEY NOTES

1. SEE SHEET 31DP902, AND 32DP903 FOR CONTINUATION.
2. SEE PAGE 31DP501, 31DP502, AND 31DP503 FOR PIPING DETAILS.
3. ALL BUTTERFLY VALVES SHALL BE FURNISHED WITH GROOVED-END FLANGE ADAPTERS (VICTAULIC STYLE 741 OR EQUAL). REFER TO THE DIVISION 40 05 03 FOR GASKET AND FASTENER SELECTION.
4. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, RESTORE AND MAINTAIN ALL EXISTING PIPE SUPPORTS AND SEISMIC BRACING TO PROPERLY SECURE THE NEW PIPING. INSPECT THE CONDITION OF ALL PIPE SUPPORTS AND SEISMIC BRACING TO ENSURE THEIR STABILITY AND INTEGRITY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL EXISTING SUPPORTS AND BRACING ARE IN GOOD, REUSABLE CONDITION FOR SECURING THE NEW PIPING. IF ANY EXISTING PIPE SUPPORTS OR SEISMIC BRACING ARE FOUND TO BE IN POOR CONDITION, SUCH AS BEING HEAVILY CORRODED OR MISSING MAJOR COMPONENTS, THE CONTRACTOR SHALL PROCURE AND REPLACE THE DAMAGED OR MISSING PARTS AS NECESSARY.
5. PROVIDE A SECTIONAL CUT IN THE GRATING AS REQUIRED TO ROUTE THE NEW WN TIE-INS TO WRH PIPING. CUTS SHALL BE CLEAN AND PRECISE, WITH MINIMAL MATERIAL REMOVAL. ALL CUT EDGES MUST BE PROPERLY DEBURRED TO PREVENT INJURY. THIS MODIFICATION MUST NOT CREATE ANY TRIP HAZARDS OR COMPROMISE THE STRUCTURAL INTEGRITY OF THE GRATING.

GENERAL NOTES

1. ISOMETRIC DRAWING IS FOR REFERENCE ONLY AND IS NOT DRAWN TO SCALE.
2. FLEXIBLE COUPLINGS FOR PIPE-TO-FITTING JOINTS ARE NOT SHOWN FOR CLARITY.
3. PIPING AND APPURTENANCES SHOWN IN BLACK INDICATE NEW WORK.
4. PRIMARY TREATMENT STRUCTURE DECK CONTAINS ADDITIONAL SMALL PIPES, CONDUITS, EQUIPMENT, CURBS, LIGHTS, PANELS, ETC., THAT ARE NOT SHOWN. CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE AND LOCATION OF THESE POTENTIAL OBSTACLES PRIOR TO COMMENCING THE WORK.
5. SEE SPECIFICATION 01 14 00, WORK RESTRICTIONS FOR CONSTRUCTION SEQUENCE, REQUIREMENTS, AND CONSTRAINTS. COORDINATE THE SEQUENCE OF WORK WITH THE DISTRICT TO MINIMIZE DOWNTIME OF SRW AND WRH AT PRIMARY TANKS FOR EACH BATTERY DURING CONSTRUCTION.
6. CONTRACTOR SHALL FOLLOW THE EXISTING WRH AND SRW PIPING ROUTES WHEN INSTALLING NEW LINES. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, ANY DEVIATION FROM THE EXISTING ROUTES SHALL BE APPROVED BY THE SACSEWER ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
7. CONTRACTOR SHALL NOT RELY ON THE FLEXIBILITY OF COUPLINGS TO COMPENSATE FOR PIPING MISALIGNMENT; FLEXIBLE COUPLINGS ARE INTENDED TO ACCOMMODATE THE AXIAL AND ANGULAR MOVEMENT ONLY DUE TO THE EXPANSION AND CONTRACTION OF THE PIPING DURING OPERATION. FAILURE TO INSTALL PIPING AND COUPLINGS CORRECTLY MAY COMPROMISE THE INTEGRITY OF THE PIPING SYSTEM AND POTENTIALLY CAUSE LEAKAGE AND SYSTEM FAILURE IN THE FUTURE.
8. THE LOCATIONS OF ALL FLEXIBLE COUPLINGS ARE ESTIMATED. THE CONTRACTOR SHALL MAINTAIN A MINIMUM GAP OF 6 INCHES BETWEEN THE COUPLING AND THE NEAREST UNISTRUT TO PREVENT FUTURE INTERFERENCE ISSUES DUE TO PIPE EXPANSION OR CONTRACTION.
9. CONTRACTOR TO AVOID MAKING ANY MODIFICATIONS TO THE LOCATION, TYPE, AND SIZE OF EXISTING PIPE SUPPORTS WITHOUT GETTING APPROVAL FROM THE DISTRICT.
10. REFER TO SPECIFICATION 09 06 90 FOR THE SELECTION OF APPROPRIATE COATING MATERIALS FOR ALL PIPING SYSTEMS.



KEY PLAN

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

DISCIPLINE
PROCESS MECHANICAL

PRIMARY DECK WRH PIPING - BATTERY 1 - WEST SIDE - ISOMETRIC LAYOUT

DRAWING NUMBER
31DP903

23 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

SHEET KEY NOTES

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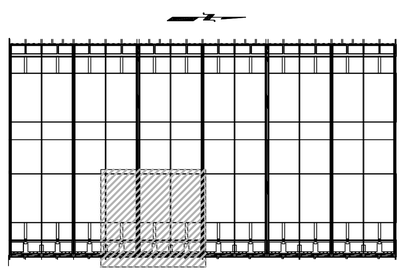
KEY PLAN



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EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER MILAD R. KHORASANI M 40283 EXP. 3-31-2027 MECHANICAL STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

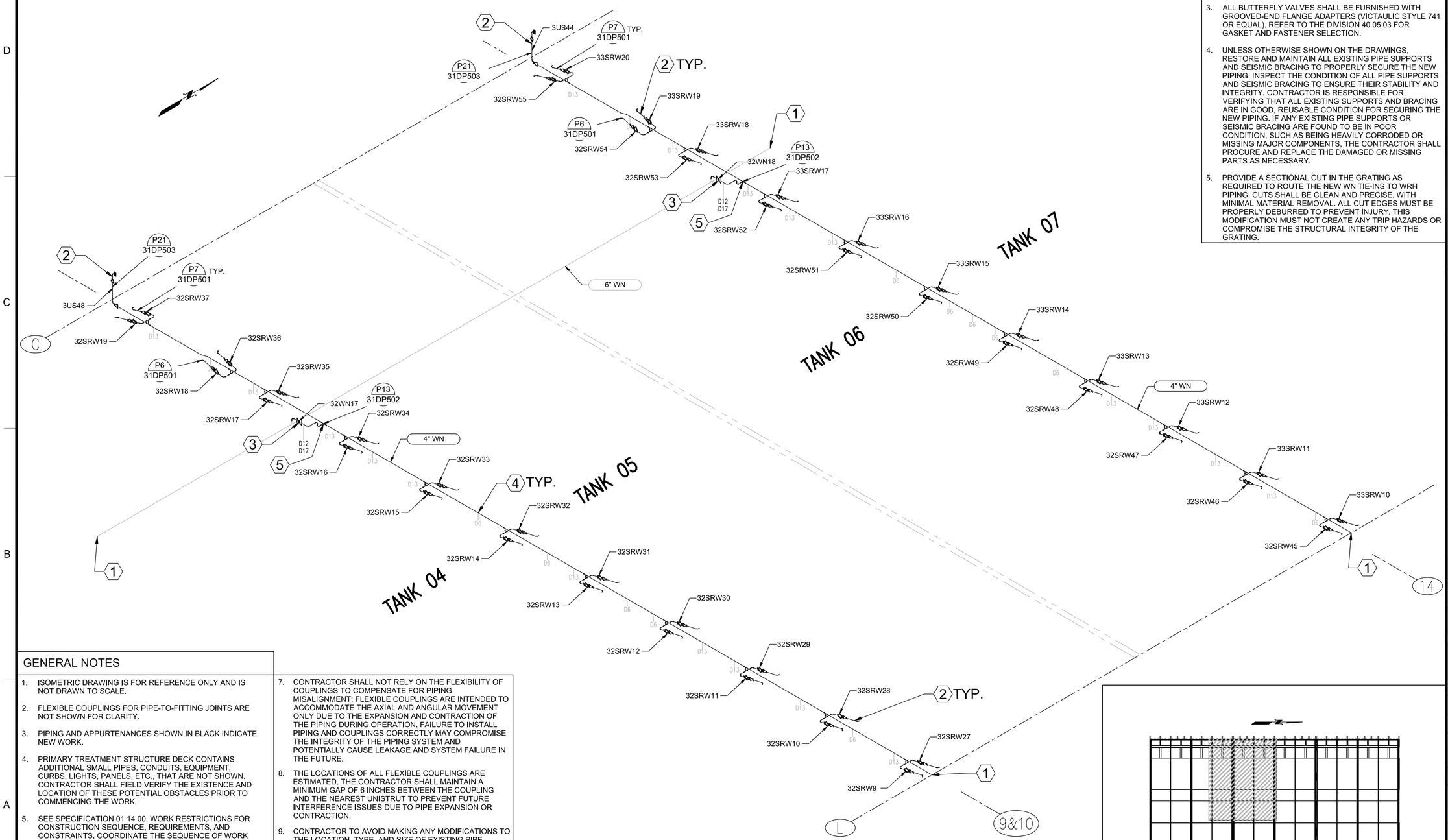
ISSUE BLOCK

DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE PROCESS MECHANICAL

PRIMARY DECK WRH PIPING - BATTERY 2 - EAST SIDE - ISOMETRIC LAYOUT

DRAWING NUMBER **32DP902**

24 OF 30



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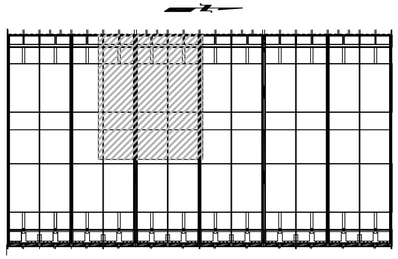

KEY PLAN

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED: MILAD KHORASANI, PE
DRAWN: REZA SAFAVI
CHECKED: MILAD KHORASANI, PE
APPROVED: GERARDO AGUIRRE, PE
FILENAME:
DESIGNER PROJECT NUMBER: -
CONTRACT NUMBER: RFB 8515
CONTRACT SEQUENCE NUMBER: -
DISCIPLINE: PROCESS MECHANICAL

PRIMARY DECK WRH PIPING - BATTERY 2 - WEST SIDE - ISOMETRIC LAYOUT

DRAWING NUMBER: **32DP903**

25 OF 30

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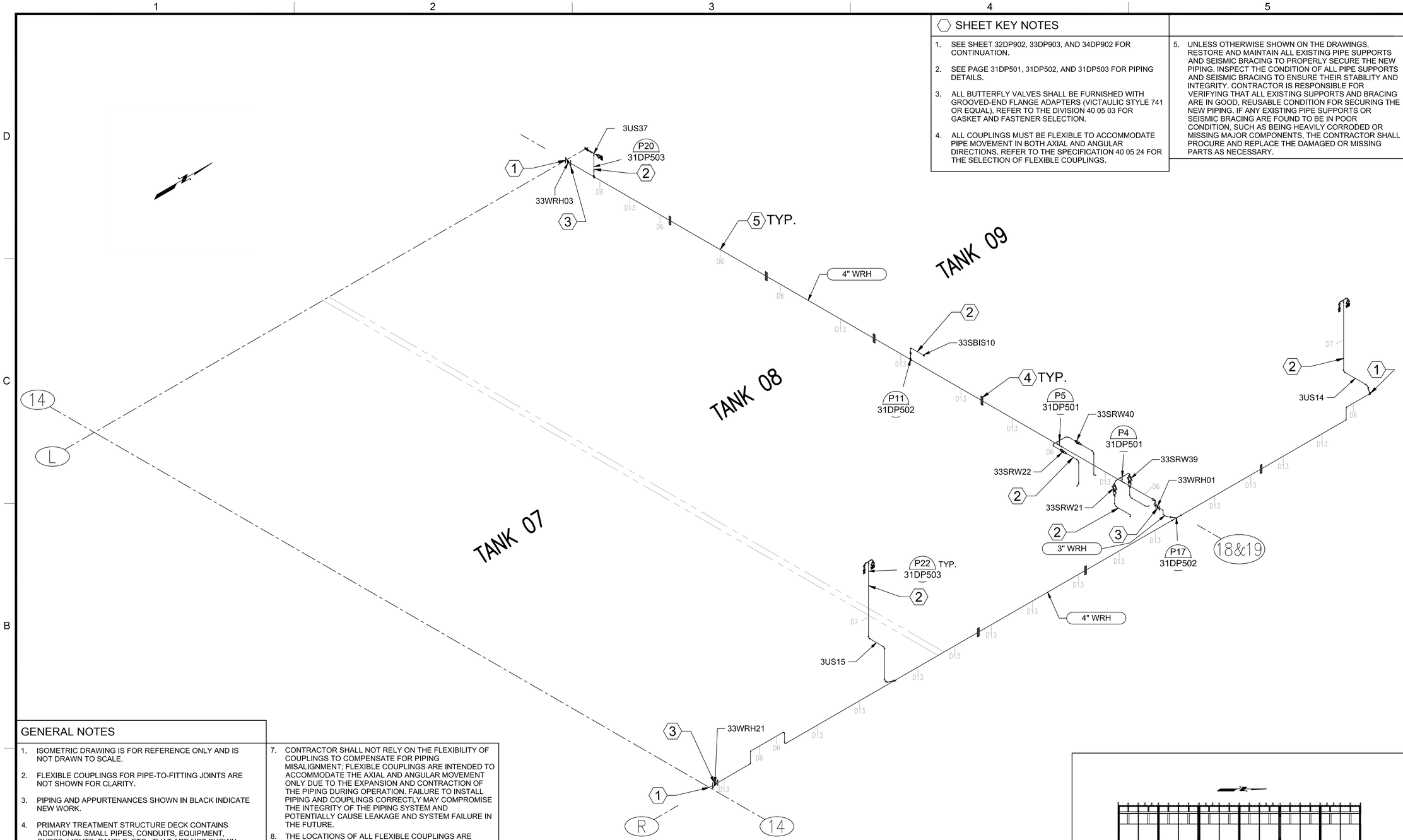

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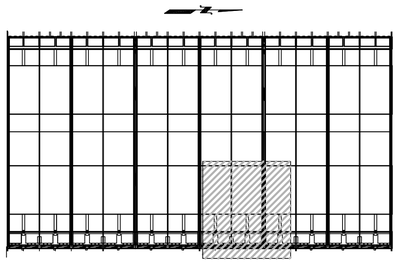

KEY PLAN

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EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

ISSUE BLOCK

DESIGNED
MILAD KHORASANI, PE

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GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
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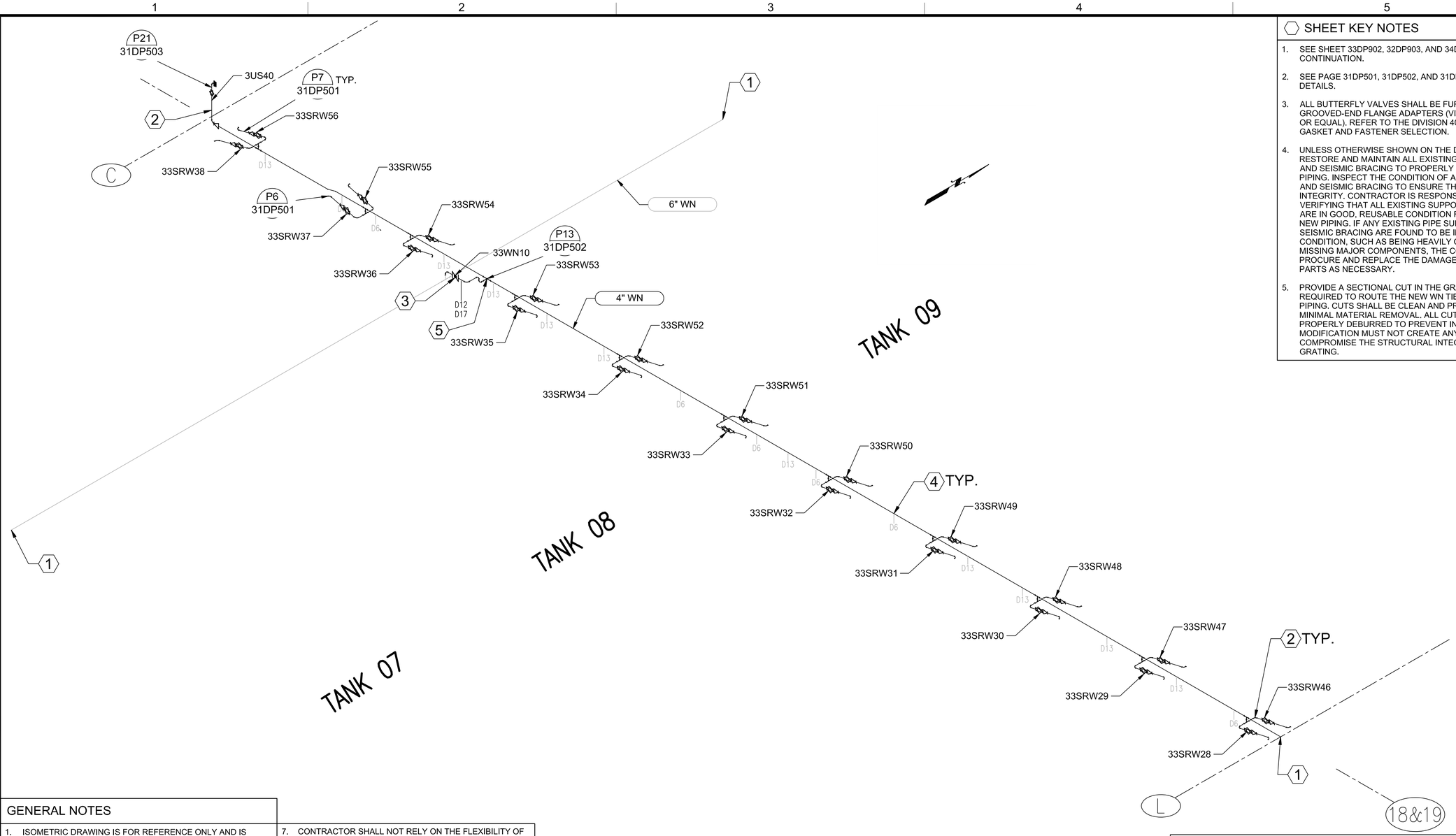
DISCIPLINE
PROCESS MECHANICAL

PRIMARY DECK WRH PIPING - BATTERY 3 - EAST SIDE - ISOMETRIC LAYOUT

DRAWING NUMBER
33DP902

26 OF 30



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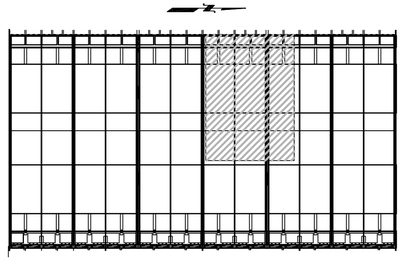

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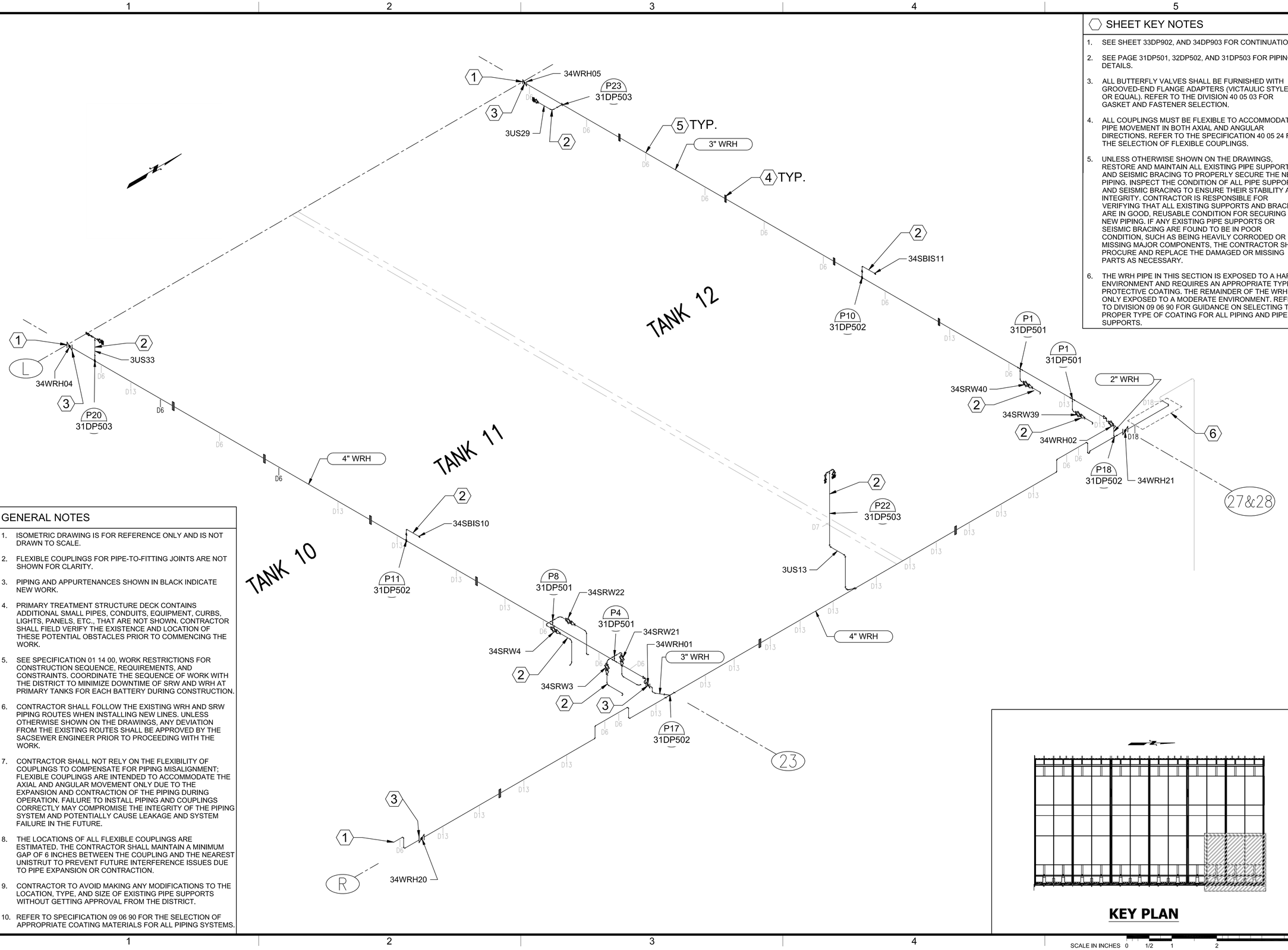

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6. THE WRH PIPE IN THIS SECTION IS EXPOSED TO A HARSH ENVIRONMENT AND REQUIRES AN APPROPRIATE TYPE OF PROTECTIVE COATING. THE REMAINDER OF THE WRH IS ONLY EXPOSED TO A MODERATE ENVIRONMENT. REFER TO DIVISION 09 06 90 FOR GUIDANCE ON SELECTING THE PROPER TYPE OF COATING FOR ALL PIPING AND PIPE SUPPORTS.

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MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

MARK	DATE	DESCRIPTION

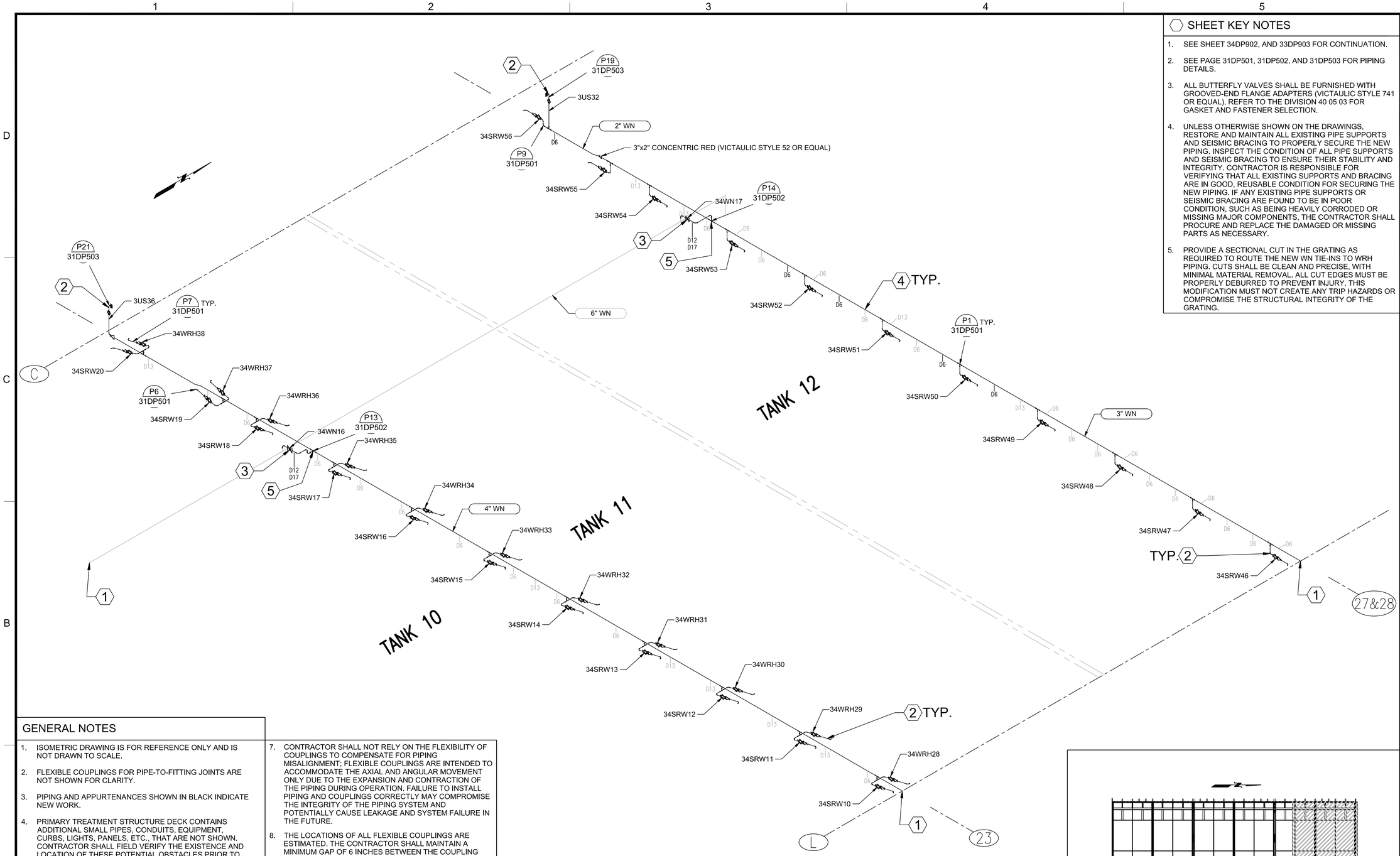
ISSUE BLOCK

DESIGNED MILAD KHORASANI, PE
DRAWN REZA SAFAVI
CHECKED MILAD KHORASANI, PE
APPROVED GERARDO AGUIRRE, PE
FILENAME
DESIGNER PROJECT NUMBER -
CONTRACT NUMBER RFB 8515
CONTRACT SEQUENCE NUMBER -
DISCIPLINE PROCESS MECHANICAL

PRIMARY DECK WRH PIPING - BATTERY 4 - EAST SIDE - ISOMETRIC LAYOUT

DRAWING NUMBER **34DP902**

28 OF 30

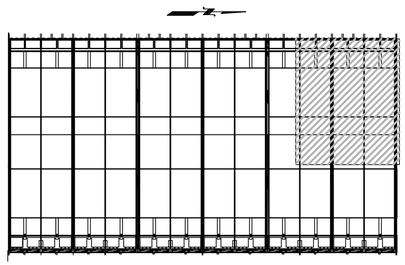


SHEET KEY NOTES

1. SEE SHEET 34DP902, AND 33DP903 FOR CONTINUATION.
2. SEE PAGE 31DP501, 31DP502, AND 31DP503 FOR PIPING DETAILS.
3. ALL BUTTERFLY VALVES SHALL BE FURNISHED WITH GROOVED-END FLANGE ADAPTERS (VICTAULIC STYLE 741 OR EQUAL). REFER TO THE DIVISION 40 05 03 FOR GASKET AND FASTENER SELECTION.
4. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, RESTORE AND MAINTAIN ALL EXISTING PIPE SUPPORTS AND SEISMIC BRACING TO PROPERLY SECURE THE NEW PIPING. INSPECT THE CONDITION OF ALL PIPE SUPPORTS AND SEISMIC BRACING TO ENSURE THEIR STABILITY AND INTEGRITY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL EXISTING SUPPORTS AND BRACING ARE IN GOOD, REUSABLE CONDITION FOR SECURING THE NEW PIPING. IF ANY EXISTING PIPE SUPPORTS OR SEISMIC BRACING ARE FOUND TO BE IN POOR CONDITION, SUCH AS BEING HEAVILY CORRODED OR MISSING MAJOR COMPONENTS, THE CONTRACTOR SHALL PROCURE AND REPLACE THE DAMAGED OR MISSING PARTS AS NECESSARY.
5. PROVIDE A SECTIONAL CUT IN THE GRATING AS REQUIRED TO ROUTE THE NEW WN TIE-INS TO WRH PIPING. CUTS SHALL BE CLEAN AND PRECISE, WITH MINIMAL MATERIAL REMOVAL. ALL CUT EDGES MUST BE PROPERLY DEBURRED TO PREVENT INJURY. THIS MODIFICATION MUST NOT CREATE ANY TRIP HAZARDS OR COMPROMISE THE STRUCTURAL INTEGRITY OF THE GRATING.

GENERAL NOTES

1. ISOMETRIC DRAWING IS FOR REFERENCE ONLY AND IS NOT DRAWN TO SCALE.
2. FLEXIBLE COUPLINGS FOR PIPE-TO-FITTING JOINTS ARE NOT SHOWN FOR CLARITY.
3. PIPING AND APPURTENANCES SHOWN IN BLACK INDICATE NEW WORK.
4. PRIMARY TREATMENT STRUCTURE DECK CONTAINS ADDITIONAL SMALL PIPES, CONDUITS, EQUIPMENT, CURBS, LIGHTS, PANELS, ETC., THAT ARE NOT SHOWN. CONTRACTOR SHALL FIELD VERIFY THE EXISTENCE AND LOCATION OF THESE POTENTIAL OBSTACLES PRIOR TO COMMENCING THE WORK.
5. SEE SPECIFICATION 01 14 00, WORK RESTRICTIONS FOR CONSTRUCTION SEQUENCE, REQUIREMENTS, AND CONSTRAINTS. COORDINATE THE SEQUENCE OF WORK WITH THE DISTRICT TO MINIMIZE DOWNTIME OF SRW AND WRH AT PRIMARY TANKS FOR EACH BATTERY DURING CONSTRUCTION.
6. CONTRACTOR SHALL FOLLOW THE EXISTING WRH AND SRW PIPING ROUTES WHEN INSTALLING NEW LINES. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, ANY DEVIATION FROM THE EXISTING ROUTES SHALL BE APPROVED BY THE SACSEWER ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
7. CONTRACTOR SHALL NOT RELY ON THE FLEXIBILITY OF COUPLINGS TO COMPENSATE FOR PIPING MISALIGNMENT; FLEXIBLE COUPLINGS ARE INTENDED TO ACCOMMODATE THE AXIAL AND ANGULAR MOVEMENT ONLY DUE TO THE EXPANSION AND CONTRACTION OF THE PIPING DURING OPERATION. FAILURE TO INSTALL PIPING AND COUPLINGS CORRECTLY MAY COMPROMISE THE INTEGRITY OF THE PIPING SYSTEM AND POTENTIALLY CAUSE LEAKAGE AND SYSTEM FAILURE IN THE FUTURE.
8. THE LOCATIONS OF ALL FLEXIBLE COUPLINGS ARE ESTIMATED. THE CONTRACTOR SHALL MAINTAIN A MINIMUM GAP OF 6 INCHES BETWEEN THE COUPLING AND THE NEAREST UNISTRUT TO PREVENT FUTURE INTERFERENCE ISSUES DUE TO PIPE EXPANSION OR CONTRACTION.
9. CONTRACTOR TO AVOID MAKING ANY MODIFICATIONS TO THE LOCATION, TYPE, AND SIZE OF EXISTING PIPE SUPPORTS WITHOUT GETTING APPROVAL FROM THE DISTRICT.
10. REFER TO SPECIFICATION 09 06 90 FOR THE SELECTION OF APPROPRIATE COATING MATERIALS FOR ALL PIPING SYSTEMS.



KEY PLAN

EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

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DRAWN
REZA SAFAVI

CHECKED
MILAD KHORASANI, PE

APPROVED
GERARDO AGUIRRE, PE

FILENAME

DESIGNER PROJECT NUMBER
-

CONTRACT NUMBER
RFB 8515

CONTRACT SEQUENCE NUMBER
-

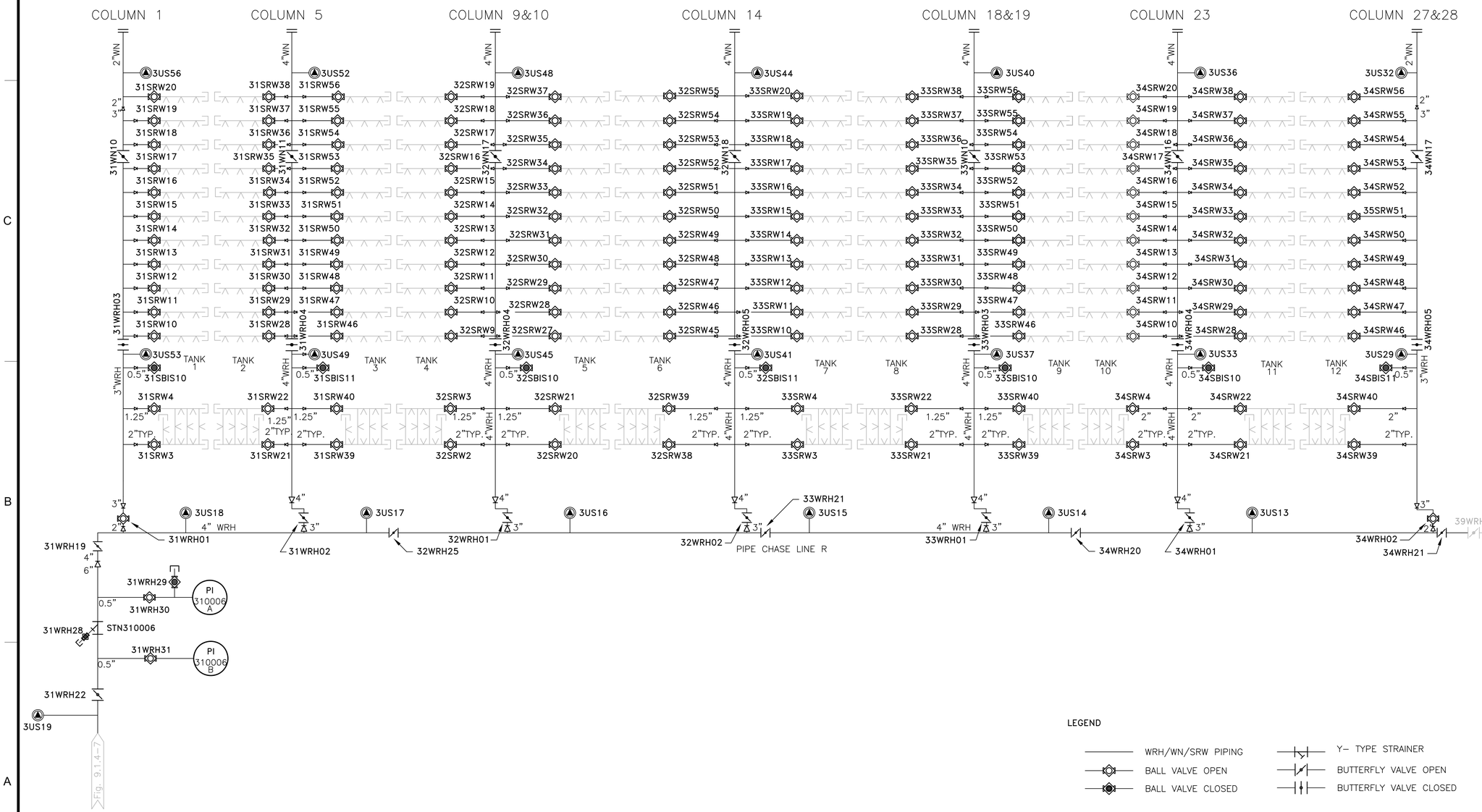
DISCIPLINE
PROCESS MECHANICAL

PRIMARY DECK WRH PIPING - BATTERY 4 - WEST SIDE - ISOMETRIC LAYOUT

DRAWING NUMBER
34DP903

29 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)



EchoWater Facility Engineering Design

SUB CONSULTANT

REGISTERED PROFESSIONAL ENGINEER
MILAD R. KHORASANI
M 40283
EXP. 3-31-2027
MECHANICAL
STATE OF CALIFORNIA

SACRAMENTO AREA SEWER DISTRICT

EchoWater Resource Recovery Facility

PRIMARY DECK WRH PIPING REPLACEMENT PROJECT

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-

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RFB 8515

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-

DISCIPLINE
INSTRUMENTATION & CONTROLS

P&ID - PRIMARY DECK WRH PIPING

DRAWING NUMBER
31X-601

30 OF 30

SCALE IN INCHES 0 1/2 1 2 4 (IF SCALE BAR IS NOT 4", SCALE ACCORDINGLY)

SHEET NOTES:

1. LOAD LIMITS ON THIS SHEET WERE PROVIDED BY SASD.
2. DISTRIBUTED LIVE LOAD ON PRIMARY SEDIMENTATION STRUCTURE DECK SHALL NOT EXCEED 40 PSF UNLESS NOTED OTHERWISE.

9-TON MAX GVW
15,000 LBS. MAX AXLE LOAD
8,500 LBS. MAX POINT LOAD (OUTRIGGER)

LIMIT: 9 TONS

NO VEHICLE ACCESS
(CARTS ONLY)

RESTRICTED MVU ACCESS

10-TON MAX GVW
16,000 LBS. MAX AXLE LOAD
8,800 LBS. MAX POINT LOAD (OUTRIGGER)

NO VEHICLE ACCESS
(CARTS ONLY)

45-TON MAX GVW
72,000 LBS. MAX AXLE LOAD
44,500 LBS. MAX POINT LOAD (OUTRIGGER)
150 PSF MAX DISTRIBUTED LOAD

LIMIT: 45 TONS

NO VEHICLE ACCESS
(CARTS ONLY)

LIMIT: 10 TONS

10-TON MAX GVW
16,000 LBS. MAX AXLE LOAD
8,800 LBS. MAX POINT LOAD (OUTRIGGER)
150 MAX DISTRIBUTED LOAD

NO VEHICLE ACCESS
(CARTS ONLY)

NO VEHICLE ACCESS
(CARTS ONLY)

RAMP
DOWN

LIMIT: 11 TONS

LIMIT: 35 TONS

35-TON MAX GVW
56,000 LBS. MAX AXLE LOAD
32,000 LBS. MAX POINT LOAD (OUTRIGGER)

11-TON MAX GVW
17,600 LBS. MAX AXLE LOAD
9,900 LBS. MAX POINT LOAD (OUTRIGGER)
150 PSF MAX DISTRIBUTED LOAD

N

1 LOAD LIMITS
SCALE: 1/16" = 1'-0"

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS

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Philadelphia | Princeton | San Francisco | Seattle | South Florida | Washington, D.C.

REGISTERED PROFESSIONAL ENGINEER
JEFFREY M. RAUTENBERG
No. S 6441
Exp. 9/30/2025
STRUCTURAL
STATE OF CALIFORNIA

Consultants

SACRAMENTO AREA **SEWER** DISTRICT

Project

RFB #8451
PRIMARY DECK
REHABILITATION PROJECT
PHASE 4

8521 LAGUNA STATION RD
ELK GROVE, CA 95758

Client

SACRAMENTO AREA SEWER DISTRICT

8521 LAGUNA STATION RD
ELK GROVE, CA 95758

Mark	Date	Description
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----	05/22/2024	100% BID DRAWING SET

0 1/2" 1" 2"
THIS SHEET PLOTS FULL SIZE AT 36x48 (INCHES)

Project No.	2016.0533.4
Date	May 22, 2024
Drawn	JMR
Checked	JAP
Scale	As Noted

PRIMARY DECK LOAD LIMITS

Sheet Title

Sheet No. **S-003**

S/N: 10107209