REQUEST FOR STATEMENTS OF QUALIFICATIONS TO PROVIDE
PROFESSIONAL ENGINEERING SERVICES FOR THE
JVWTP BASINS 1-2 SEISMIC AND CAPACITY UPGRADES

APPENDICIES INDEX

APPENDIX A
Carollo Engineers Supplement No 2- Updated JVWTP Hydraulic Profile

APPENDIX B
Brown and Caldwell Engineers-Jordan Valley Water Treatment Plant
Sedimentation Basins 3-6 Upgrade Project

APPENDIX C
January 2022 BRIC Grant Application
(not selected for funding, will be resubmitted 2023)

RACEWAYS

HH23 — MANHOLE (MH), HANDHOLE (HH), PULLBOX (PB)

JB1 00 — JUNCTION BOX. OPTIONAL IDENTIFIER

TB-1301 — TERMINAL BOX. OPTIONAL IDENTIFIER

PBD-1 00-1,3,5 — HOME RUN EXPOSED - SEE PANELBOARD, SWITCHBOARD, OR MCC SCHEDULE FOR CIRCUIT INFORMATION

EXAMPLE: HOME TO PANELBOARD PBD-1 00, CIRCUITS 1, 3, AND 5

PBD-1 00-1,3,5 — HOME RUN CONCEALED - SEE PANELBOARD, SWITCHBOARD, OR MCC SCHEDULE FOR CIRCUIT INFORMATION.

EXAMPLE: HOME TO PANELBOARD PBD-1 00, CIRCUITS 1, 3, AND 5

CABLE TRAY MODIFIERS:

CTS - 24VDC OR LESS

CTC - 120V CONTROL CONDUCTORS

CTP - 600V POWER CONDUCTORS

CABLE 4/0 AND LARGER SHALL NOT BE STACKED VERTICALLY

WHEN TWO TRAY MODIFIERS IDENTIFY A SINGLE TRAY, THE CONTRACTOR MAY USE DIVIDER OR INSTALL SEPARATE TRAYS (CTC/CTS)

CABLE TRAY WITH COVER MODIFIER, AS ABOVE

P-00000 — RACEWAY IDENTIFIER

RACEWAY EXPOSED

MODIFIERS FOR RACEWAY TYPE:

H - POWER (ABOVE 600V)

P - POWER

C - CONTROL

S - SIGNAL

D - DATA

F - FIBER OPTIC

PC - POWER AND CONTROL

X - SPARE

RACEWAY CONCEALED

RACEWAY TURNED TOWARD THE THE VIEWER

RACEWAY TURNED DOWN

CONDUIT CAPPED

DB 05P1100 — DUCT BANK IDENTIFIER (OPTIONAL)

DB — DUCT BANK, DIRECT BURIED

CDB — DUCT BANK, CONCRETE ENCASED

RC — RC — DUCTBANK, REINFORCED CONCRETE ENCASED

OH — OVERHEAD POWER LINE

DISTRIBUTION EQUIPMENT

APPROXIMATE SHAPE AND SCALE REPRESENTED WHERE POSSIBLE. HOWEVER, EXACT SIZE AND NUMBER OF SECTIONS IS ESTIMATED

FLOOR-STANDING DISTRIBUTION ASSEMBLY, SUCH AS A SWITCHBOARD, TRANSFORMER, OR MOTOR CONTROL CENTER

MCC-001 — EQUIPMENT DESIGNATION (EXAMPLE)

WALL-MOUNTED DISTRIBUTION ASSEMBLY, SUCH AS PANELBOARD, MOTOR STARTER PANEL, OR TERMINAL CABINET

LCP-0001 — EQUIPMENT DESIGNATION (EXAMPLE)

LIGHTING

FIXTURE IDENTIFIER:

5 XX 2/40 R PC 8'-6"

- NUMBER OF FIXTURES (SHOWN ONLY WHEN REQUIRED FOR CLARITY)
- FIXTURE TYPE. TYPE APPLIES TO ALL FIXTURES OF THE SAME SHAPE WITHIN A ROOM OR AREA.
- MOUNTING:
  - L POLE
  - G GROUND
  - P PENDANT
  - R RECESSED
  - S SURFACE
  - W WALL
- MOUNTING HEIGHT, FLOOR TO BOTTOM OF FIXTURE UON.
  AHAP AS HIGH AS POSSIBLE.
  AD ABOVE DOOR.
- NUMBER OF LAMPS/LAMP WATTAGE
- CONTROL: PHOTOCELL, SWITCH, CONTACTOR

LIGHTING FIXTURE SHAPES AND SCALE ARE REPRESENTED WHERE POSSIBLE. THE EXAMPLES SHOWN BELOW ARE TYPICAL APPLICATIONS

RECESSED LIGHTING FIXTURE

SUSPENDED PENDANT MOUNTED FIXTURE

SURFACE MOUNTED FIXTURE

NS — EMERGENCY LIGHTING FIXTURES, FIXTURES WITH EMERGENCY BALLASTS, AND FIXTURES IDENTIFIED WITH AN NS SHALL BE PROVIDED WITH NON-SWITCHED POWER SOURCE

E — LIGHTING FIXTURE WITH EMERGENCY BATTERY PACK

LIGHT FIXTURE

WALL MOUNTED FIXTURE

DIRECTIONAL LIGHT

POLE MOUNTED AREA LIGHT

EMERGENCY LIGHTING UNIT SELF CONTAINED

LIGHTING CONTINUED

EXIT LIGHTS:

SURFACE ON CEILING

WALL MOUNTED

WITH DIRECTIONAL ARROWS

3a — CIRCUIT IDENTIFIER: WHEN SHOWN ADJACENT TO FIXTURE IDENTIFIES CIRCUIT NUMBER AND SWITCH. EXAMPLE: CIRCUIT 3, CONTROLLED BY SWITCH a

PC — PHOTO CELL

OS — OCCUPANCY SENSOR

WIRING DEVICES

SWITCHES:

UNLESS OTHERWISE NOTED, ALL SWITCHES ARE WALL MOUNTED

$ — TOGGLE SWITCH, SINGLE POLE

$$ — GANGED SWITCHES IN COMMON BOX WITH COMMON WALL PLATE

$a 3 — SUPERSCRIPT INDICATES CIRCUIT CONTROLLED: a, , ,ETC. MAY BE COMBINED WITH CIRCUIT NUMBER. EXAMPLE: 1a, 4 , ETC

SUBSCRIPT MODIFIER INDICATES:

- 2 DOUBLE POLE
- 3 THREE WAY
- 4 FOUR WAY
- KEY OPERATED
- MC MOMENTARY CONTACT, THREE POSITION
- MS MANUAL (MOTOR) STARTER OR SWITCH WITH OVERLOADS
- R RHEOSTAT (DIMMER, SPEED CONTROL)
- OS OCCUPANCY SWITCH

D — DIMMER

RECEPTACLES:

WP — DUPLEX RECEPTACLE

RECEPTACLE MODIFIERS:
WP WEATHER PROOF
GFI GROUND FAULT CIRCUIT INTERRUPTER

HAZARDOUS AREA; EXPLOSION PROOF

EXPLOSION PROOF, CLASS 1, DEAD FRONT, 45 ANGLE, TWO GANG

RECESSED FLOOR RECEPTACLE - ANY RECEPTACLE INSIDE A SQUARE

SURFACE FLOOR RECEPTACLE - ANY RECEPTACLE INSIDE A TRIANGLE

GANGED RECEPTACLES--IN COMMON BOX, WITH COMMON WALL PLATE

C — RECEPTACLE, CLOCK HANGER

RECEPTACLE, DUPLEX ON EMERGENCY

EQUIPMENT OR SPECIAL PURPOSE CONNECTION

GROUNDING

GROUND ROD

GROUND ROD WITH GROUND WELL

GROUND CONNECTION, COMPRESSION TYPE, EXOTHERMIC. SEE SPECIFIC

GROUNDING CONDUCTOR

GROUND CONNECTION

GROUND CONNECTION TO STRUCTURAL REINFORCEMENT

O — LIGHTNING ROD/AIR TERMINAL

MOTORS AND EQUIPMENT

MOTOR STARTER, INDIVIDUAL. NOT LOCATED IN AN MCC OR SIMILAR GROUP ASSEMBLY

COMBINATION MOTOR STARTER. NOT LOCATED IN AN MCC OR SIMILAR GROUP ASSEMBLY

DISCONNECT SWITCH, NON-FUSED
EXAMPLE: 60 AMP

F — DISCONNECT SWITCH, FUSED
EXAMPLE: 100 AMP, 2P, 80 AMP FUSES

M — MOTOR

SV — SOLENOID VALVE

H — HEATER

T — THERMOSTAT

WH — WATER HEATER

FIELD INSTRUMENT

LOCAL CONTROL STATION

LCP-0001 — EQUIPMENT DESIGNATION

CONTROL PANEL, VFD, RVSS, APPROXIMATE SHAPE AND SCALE.

AREA IDENTIFICATION

C1-D1 — HAZARDOUS AREA CLASSIFICATION

C1-D2 — HAZARDOUS AREA CLASSIFICATION

TELEPHONE COMMUNICATION SYSTEMS

UNLESS OTHERWISE NOTED, TELEPHONE OUTLETS SHALL BE MOUNTED AT SAME HEIGHT AS THE RECEPTACLES.

A — EXTERNAL LINE OR PLANT PHONE SYSTEM OUTLET

OPTIONAL MODIFIERS:

- A ATTENDANT S CONSOLE
- F FUTURE INSTRUMENT
- J JACK, PLUG-IN TYPE
- W WALL INSTRUMENT

BELL

D — OUTLET, DATA COMMUNICATION

SECURITY CAMERA

SPEAKER

H — AUDIBLE HORN

B — STROBE LIGHT (BLUE SHOWN)

CS — ELECTRONIC CARD SWIPE

SD — SMOKE DETECTOR

R — RATE-OF-RISE DETECTOR

CIRCUIT IDENTIFICATION

MODIFIER — EQUIPMENT NUMBER — SUFFIX

X XXXXXXX -A

NOTE:

MODIFIERS FOR CABLE TYPE INCLUDE:
H - POWER (ABOVE 600V)
P - POWER
C - CONTROL
S - SIGNAL
D - DATA
F - FIBER OPTIC
PC - POWER AND CONTROL
X - SPARE

SUFFIX:
A - LETTER TO CREATE UNIQUE ID

EXAMPLE 1: P101-1: 3 2/0, 6G, 2"C	FOR CIRCUIT P101: THREE NO. 2/0 CONDUCTORS, ONE NO. 6 AWG GROUND WIRE IN A 2" CONDUIT
EXAMPLE 2: SES-2: 2 3 1/0, 6G, 1 1/2"C	FOR SES-2: TWO PARALLEL RUNS OF THREE NO. 1/0 CONDUCTORS, ONE NO. 6 AWG GROUND IN 1 1/2" CONDUIT
EXAMPLE 3: C111: 2-1 PR 16S, 1"C	FOR CONTROL CIRCUIT: TWO SIGNAL CABLES OF 16 AWG TWISTED SHIELDED PAIR IN 1" C.
EXAMPLE 4: VND, 1"C	VENDOR CABLE, 1"C (CONDUIT BY CONTRACTOR) TYP

GENERAL NOTES:

1. SYMBOLS AND ABBREVIATION DRAWINGS ARE GENERAL IN NATURE. SOME SYMBOLS SHOWN HEREON MAY NOT BE USED ON THE CONTRACT DRAWINGS
2. SYMBOLS ARE ARRANGED ON SPECIFIC DRAWINGS AND IN CATEGORIES FOR CONVENIENCE ONLY; SYMBOLS MAY BE USED ON ANY OF THE CONTRACT DRAWINGS
3. IDENTIFICATIONS (ID), SIZES, RATINGS, LOCATIONS AND SIMILAR INFORMATION SHOWN ASSOCIATED WITH SYMBOLS ARE OPTIONAL; EXAMPLES OF SUCH INFORMATION ARE SHOWN WITH SOME SYMBOLS FOR CLARITY

Brown AND Caldwell

STATE OF UTAH — PROFESSIONAL ENGINEER — No. 125355-2202 — DAVID IDDO STAR — 6/2/22

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS		
REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	N. ANDERSON
DRAWN:	B. PENALBA
CHECKED:	J. HIMEBAUGH
CHECKED:	D. STAR
APPROVED:	D. STAR
FILENAME	E-00-001.dwg
BC PROJECT NUMBER	157012
CLIENT PROJECT NUMBER	4277

ELECTRICAL

STANDARD DETAILS, SYMBOLS AND ABBREVIATIONS - 1

DRAWING NUMBER
E-00-001

SHEET NUMBER 26 OF 48

Path: C:\BCPW\D186825 FILENAME: E-00-001.DWG PLOT DATE: 6/2/2022 4:42 PM CAD USER: NATE ANDERSON

CONTROL DIAGRAM SYMBOLS

GENERAL

- CONDUCTORS CONNECTED
- CONDUCTORS NOT CONNECTED
- TERMINAL POINT FOR EXTERNAL CONNECTIONS
- EXISTING EQUIPMENT (SCREENED)

INDICATING LIGHTS

- DIRECT CONNECTION
- PUSH TO TEST. TEST VOLTAGE TERMINAL SHOWN

LENS COLOR: (L LENS COLOR)
- A AMBER
- B BLUE
- G GREEN
- R RED
- W WHITE

PUSHBUTTONS

- HS-XXXX — PUSHBUTTON, MOMENTARY CONTACT, NORMALLY OPEN
- HS-XXXX — PUSHBUTTON, MOMENTARY CONTACT, NORMALLY CLOSED
- HS-XXXX — PUSHBUTTON WITH MUSHROOM HEAD, EMERGENCY STOP

SELECTOR SWITCHES

- HS-XXXXX (1, 2 / XO) — 2 POSITION MAINTAINED CONTACT
  X CONTACTS CLOSED
  O CONTACTS OPEN
- HS-XXXXX (1, 2 / XO, OX) — 2 POSITION SPRING RETURNED TO RIGHT
  O CONTACTS OPENED
  X CONTACTS CLOSED
- HS-XXXXX (3, 1, 2 / OXO, OX) — 3 POSITION MAINTAINED CONTACT
  X CONTACTS CLOSED
  O CONTACTS OPENED

CONTROL RELAYS

- CR 1 FUNCTION — OPERATION COIL: CR CONTROL RELAY
- L U 8 LR — MECHANICALLY LATCHED RELAY WITH UNLATCHED COIL
- CR1 CR2 / LINE 30 LINE 30 — OUTPUT CONTACTS. LINE NUMBER OF RELAY COIL SHOWN (OPTIONAL)
- OL — OVERLOAD RELAY

OPERATING COIL FUNCTIONS:
- L LATCH
- U UNLATCH
- TR TIMER RELAY
- LR LATCH RELAY

INPUT SWITCHES

NORMALLY OPEN	NORMALLY CLOSED	INITIATING VARIABLE
SS	SS	SPEED
TS	TS	TEMPERATURE
WS	WS	SHEAR OR TORQUE
ZS	ZS	POSITION (LIMIT)
FS	FS	FLOW
LS	LS	LEVEL
PS	PS	PRESSURE

TIMING RELAYS

TR 1 SEC / MIN — OPERATING COIL

FUNCTION:
ON OR OFF DELAY
RANGE: SEC / MIN
SET: SEC / MIN

NORMALLY OPEN		NORMALLY CLOSED		
TR3 LINE 50	OR TR3 TC	TR3 LINE 50	OR TR3 TO	DELAY ON COIL ENERGIZATION (ON DELAY)
TR3 LINE 50	OR TR3 TC	TR3 LINE 50	OR TR3 TO	DELAY ON COIL DE-ENERGIZATION (ON DELAY)

LINE ID OF LINE OR RUNG NUMBER
(LINE OR RUNG NUMBER 50 SHOWN)

CONTACTORS

- ID — OPERATING COIL:
  C CONTACTOR, LIGHTING, OR GENERAL USE
  F FAST OR FORWARD
  M MAIN OR LINE
  1M FIRST MAIN OR WYE
  2M SECOND MAIN OR DELTA
  R RUN OR REVERSE
  S SLOW OR START
  IC ISOLATION CONTROL
- ID / SIZE X — MAIN CONTACTS:
  MAIN CONTACTS AIR BREAK, NEMA SIZE OPTIONAL
  MODIFIERS:
  FVR FULL VOLTAGE REVERSING
  RVS REDUCED VOLTAGE STARTER
  RVSS REDUCED VOLTAGE SOLID STATE STARTER
  RVAT REDUCED VOLTAGE AUTOTRANSFORMER STARTER
  2S2W TWO SPEED, TWO WINDING STARTER
- M / SIZE 1 — VACUUM CONTACTOR, NEMA SIZE OPTIONAL

MISCELLANEOUS

- FU 30 / 30A — FUSE WITH SIZE AND OPTIONAL IDENTIFICATION
- FU 30, 30A — FUSE WITH BLOWN FUSE INDICATOR
- 480 VAC / 250VA — CONTROL TRANSFORMER PRIMARY AND SECONDARY SIZE AS SHOWN OR AS SPECIFIED
- 250/5 / 3 — CURRENT TRANSFORMER PRIMARY/SECONDARY TURNS RATIO SHOWN (OPTIONAL)
- 250 OHM RES — RESISTOR
- RECTIFIER
- SURGE OR ARC SUPPRESSION
- 55 KVAR — CAPACITOR
- CONNECTOR
- XX — INCOMING LINE POWER SUPPLY
- DRAWOUT MECHANISM
- CV-1000 — SOLENOID VALVE:
  DEVICE ID CV-1000 SHOWN
- BUS DUCT
- GROUND CONNECTION
- POTENTIOMETER
- H — METER W/ ALPHA IDENTIFIER:
  A AMMETER
  H ELAPSED TIME
  V VOLTMETER
- BATTERY
- CABLE ID — SHIELDED CABLE
- LOCATED IN FIELD
- AC TERMINAL BLOCK
- DC TERMINAL BLOCK
- DO — PLC I/O POINTS
  DI DIGITAL INPUT
  DO DIGITAL OUTPUT
  AI ANALOG INPUT
  AO ANALOG OUTPUT

ONE LINE DIAGRAM SYMBOLS

- TRIP FRAME / 52 — POWER CIRCUIT BREAKER (AIR, OIL, OR GAS)
  FRAME AND TRIP SETTING AND OPTIONAL I.D. SHOWN
- 3P, 100 AT 100 AF, LSIG — CIRCUIT BREAKER W/ ADJUSTABLE ELECTRONIC TRIP OVER BREAKER FRAME SIZE.
  SOLID STATE TRIP FEATURES SHOWN:
  L LONG DELAY
  S SHORT DELAY
  I INSTANTANEOUS
  G GROUND FAULT
- 100 AT 100 AF, LSIG, 3P
- AMPS MCP — CIRCUIT BREAKER
  MCP MOTOR CIRCUIT PROTECTOR
  3P 3 POLE THERMAL MAGNETIC TRIP
- MCP, 3P
- AMPS
- 3P
- 30A 3P CLF — FUSED SWITCH:
  FUSE RATING AND POLES SHOWN
  MODIFIERS:
  CLF CURRENT LIMITING FUSE
  DE DUAL ELEMENT
  F CLASS F
  E E RATED
- FU 30 / 30A — FUSE:
  100A CLASS F SHOWN
- ATS 100A, 3P — POWER TRANSFER SWITCH:
  DESIGNATION, AMP RATING, AND CONFIGURATION SHOWN
  ATS AUTOMATIC TRANSFER SWITCH
  MTS MANUAL TRANSFER SWITCH
  SUSE SUITABLE FOR USE AS SERVICE ENTRANCE
- 1 FVR — AIR BREAK CONTACTOR, FVNR U.O.N. NEMA SIZE 1 INDICATED
  FVR FULL VOLTAGE, REVERSING STARTER
  2S2W TWO SPEED, TWO WINDING STARTER
- METERING (ANSI / IEEE FUNCTIONS SPECIFIED)
  POWER MONITOR (PM)
  POWER QUALITY MONITOR (HARMONIC ANALYSIS) (PQM)
  MOTOR MONITOR AND PROTECTION RELAY (MPR)
  FEEDER PROTECTION RELAY (FPR)
- 5 KVA — PACKAGED EQUIPMENT OR NON-MOTOR LOAD.
  KVA, KW, AMPS, AS NOTED.
- XX HP, AMPS, OR, VFD — VARIABLE FREQUENCY DRIVE (VFD)
  NORMAL DUTY UON
  HP IS INDICATED IF DIFFERENT THAN DRIVEN LOAD HP
  AMPS RATED CONTINUOUS AMPS
- RVSS — REDUCED VOLTAGE SOLID STATE STARTER
- SPD — SURGE PROTECTION DEVICE
- 64 N 3 — ANSI C37.2 DEVICE QUANTITIES SHOWN

- 600 W, G, 60 H, 480V, 3P, 4W — GENERATOR WITH WINDING CONFIGURATION VOLTAGE, POWER, FREQUENCY SHOWN.
  POWER FACTOR OPTIONAL
- 500 — MOTOR, HORSE POWER SHOWN
- 55 KVAR — POWER FACTOR CORRECTIONS CAPACITOR KVAR RATING SHOWN
- POTHEAD
- STRESS CONE
- PORTABLE CABLE
- CABLE BUS
- BUS CONDUCTOR
- CABLE CONDUCTOR
- SURGE ARRESTOR
- LIGHTNING ARRESTOR
- TEST DEVICE
- 200A — DISCONNECT OR ISOLATING SWITCH
  200 AMP SHOWN
- 480 VAC, 30KVA, 5 Z, 208/120V — POWER TRANSFORMER, VOLTAGES, SIZE, AND IMPEDANCE SHOWN
- 1.5 KVA, 480 VAC, 2.5 Z, 480 VAC — ISOLATION TRANSFORMER, VOLTAGES, SIZE, AND IMPEDANCE SHOWN
- 3, 480VAC - 120VAC — POTENTIAL TRANSFORMER, PT QUANTITY SHOWN (3) AND VOLTAGES SHOWN
- 250/5, 3 — CURRENT TRANSFORMER, CT QUANTITY AND 250:5 TURNS RATIO SHOWN

WINDING CONFIGURATIONS:
- DELTA
- WYE (GROUNDED)
- K — KIRK KEY INTERLOCK
- 50 AMP / 30 SEC, GDR — NEUTRAL GROUNDING RESISTOR.
  AMPS/TIME RATING SHOWN
- 1 — SMART MOTOR STARTER, NEMA SIZE 1

Brown AND Caldwell

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

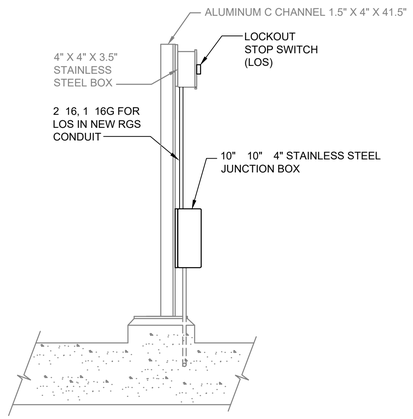
DESIGNED:	N. ANDERSON
DRAWN:	B. PENALBA
CHECKED:	J. HIMEBAUGH
CHECKED:	D. STAR
APPROVED:	D. STAR
FILENAME	E-00-002.dwg
BC PROJECT NUMBER	157012
CLIENT PROJECT NUMBER	4277

ELECTRICAL

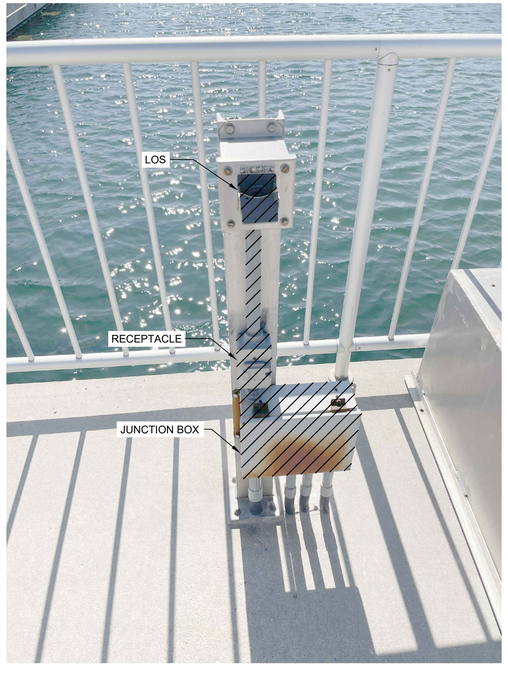
STANDARD DETAILS, SYMBOLS AND ABBREVIATIONS - 2

DRAWING NUMBER
E-00-002

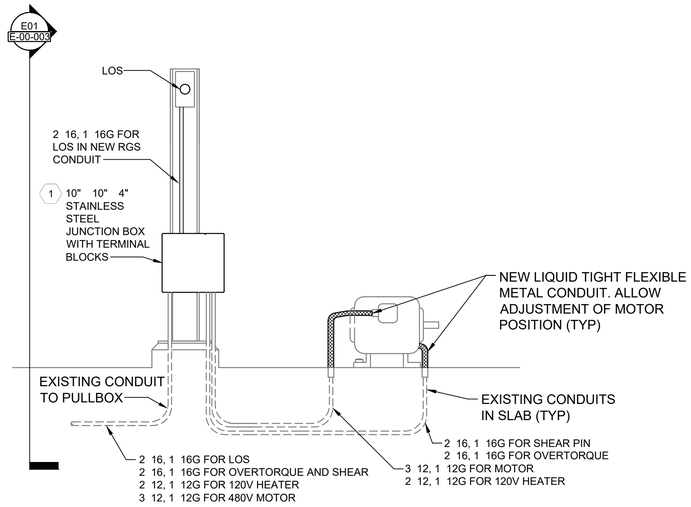
SHEET NUMBER 27 OF 48



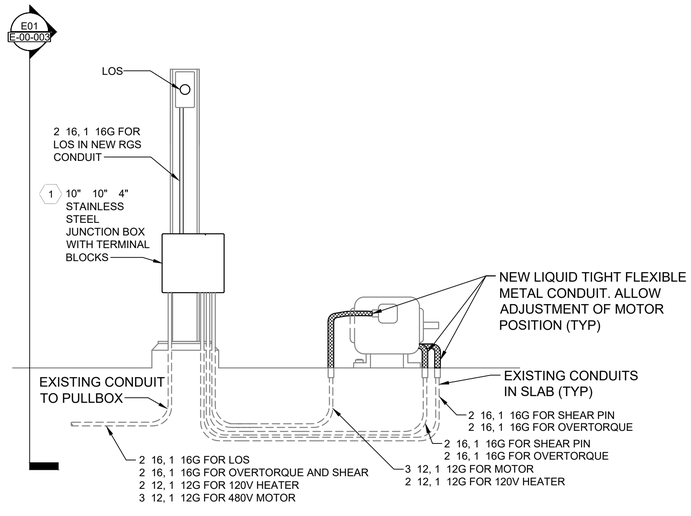
EQUIPMENT SUPPORTS
INSTRUMENT/CONTROL STAND - ALUM
DETAIL E01



DEMOLISH EQUIPMENT SUPPORTS
INSTRUMENT/CONTROL STAND - ALUM
DETAIL ED01



LOS SWITCH AND
POWER INSTALLATION
DETAIL E02



LOS SWITCH AND
POWER INSTALLATION
DETAIL E03

KEY NOTES

1. PROVIDE TERMINAL BLOCKS TO COMBINE SHEAR AND OVERTORQUE SWITCHES INTO SINGLE CONTROL CIRCUIT BACK TO THE MCC BUCKET. SEE SHEET E-01-005 FOR SCHEMATIC.

Brown AND Caldwell

BID SET

JORDAN VALLEY WATER
CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

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LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-00-003.dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

ELECTRICAL

STANDARD ELECTRICAL DETAILS

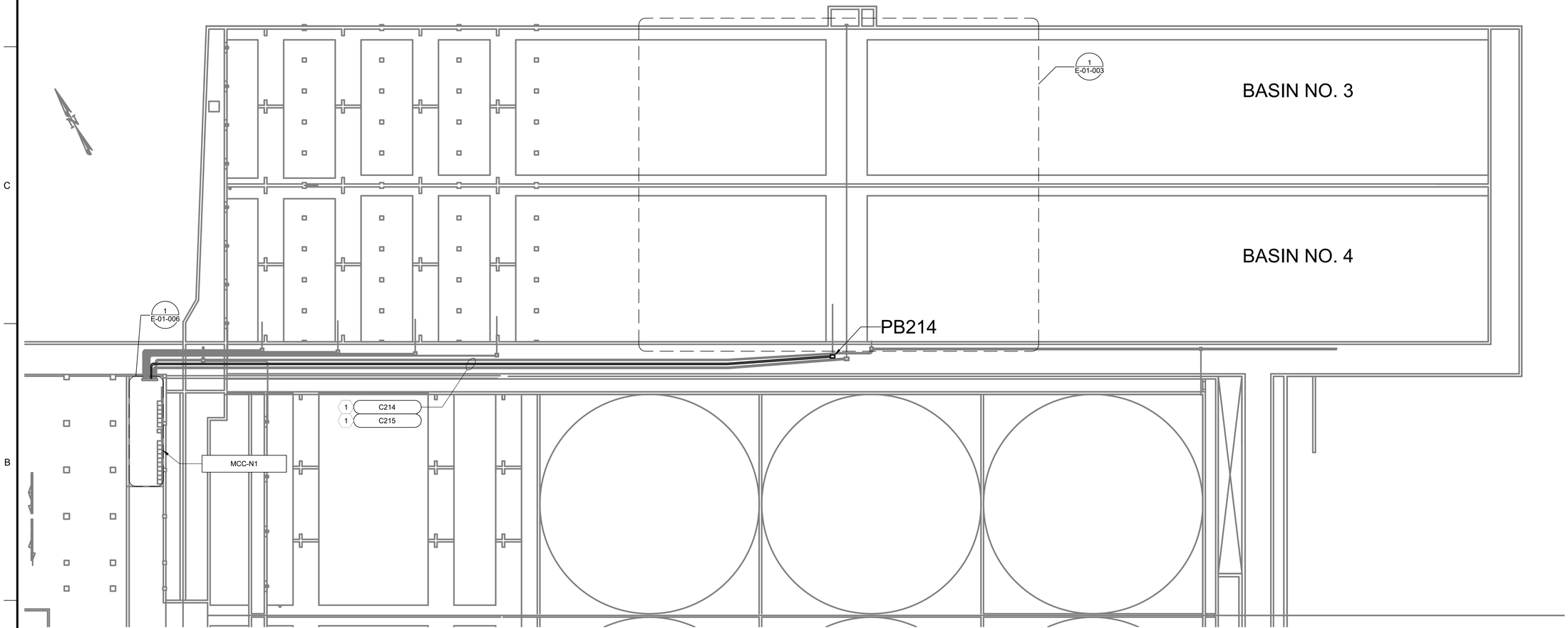
DRAWING NUMBER
E-00-003

28 SHEET NUMBER OF 48

Path: C:\BGPWD\186825 FILENAME: E-00-003.DWG PLOT DATE: 6/15/2022 10:41 AM CAD USER: NATE ANDERSON

KEY NOTES

1. ROUTE NEW POWER AND CONTROL CABLES IN THE EXISTING CONCRETE-ENCASED CONDUIT.



SEDIMENTATION BASINS 3 AND 4 POWER PLAN

SCALE: 1" 20 -0"

0 20 40

SCALE IN FEET

Brown AND Caldwell

OREGON PROFESSIONAL ENGINEER
No. 123551PE 2007
DAVID IDDO STAR
6/2/22
STATE OF UTAH

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-001.dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

ELECTRICAL

SEDIMENTATION BASINS 3 AND 4 POWER AND CONTROL PLAN

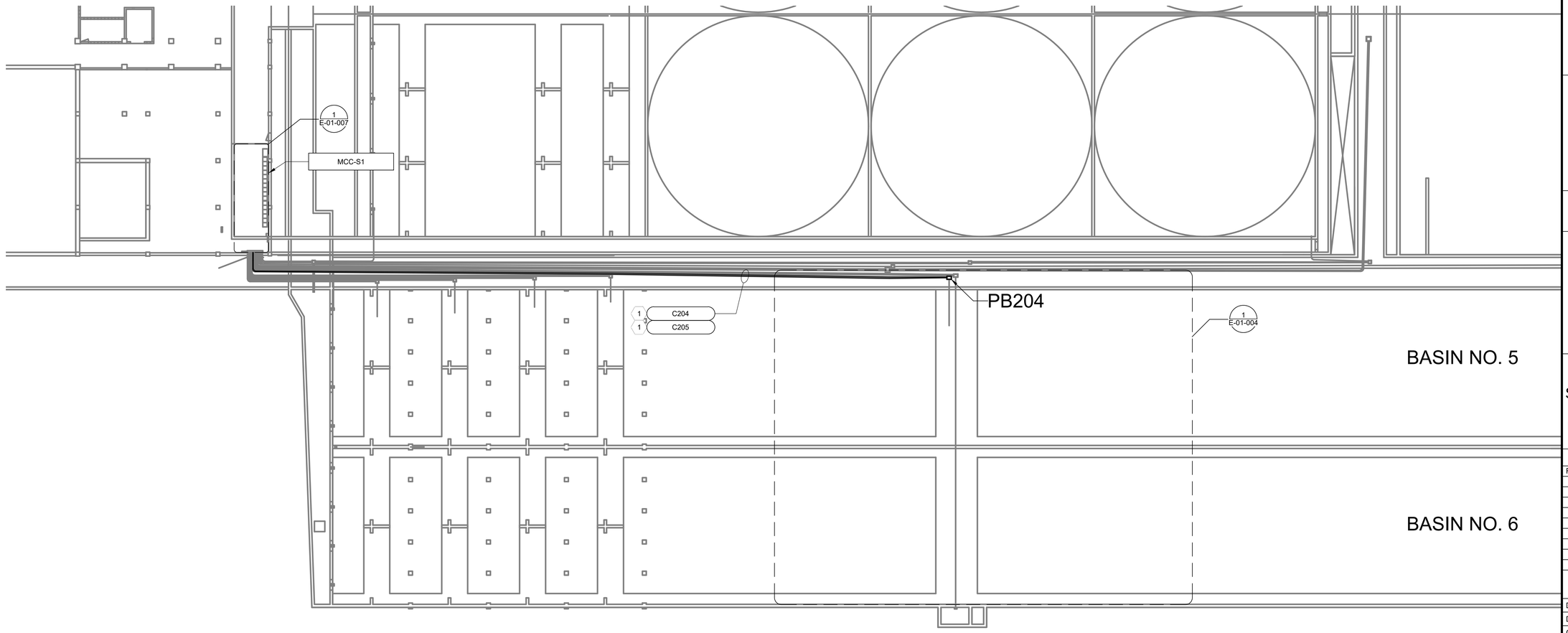
DRAWING NUMBER
E-01-001

29 SHEET NUMBER OF 48

Path: C:\BCPWD\186825 FILENAME: E-01-001.DWG PLOT DATE: 6/2/2022 5:10 PM CAD USER: NATE ANDERSON

KEY NOTES

1. ROUTE NEW POWER CABLES IN A SINGLE EXISTING CONCRETE-ENCASED CONDUIT.



SEDIMENTATION BASINS 5 AND 6 POWER PLAN

SCALE: 1" 20 -0"

0 20 40

SCALE IN FEET

Brown AND Caldwell

OREGON PROFESSIONAL ENGINEER
No. 12535PE-2007
DAVID IDDO STAR
6/2/22
STATE OF UTAH

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-002.dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

ELECTRICAL

SEDIMENTATION BASINS 5 AND 6 POWER AND CONTROL PLAN

DRAWING NUMBER
E-01-002

SHEET NUMBER 30 OF 48

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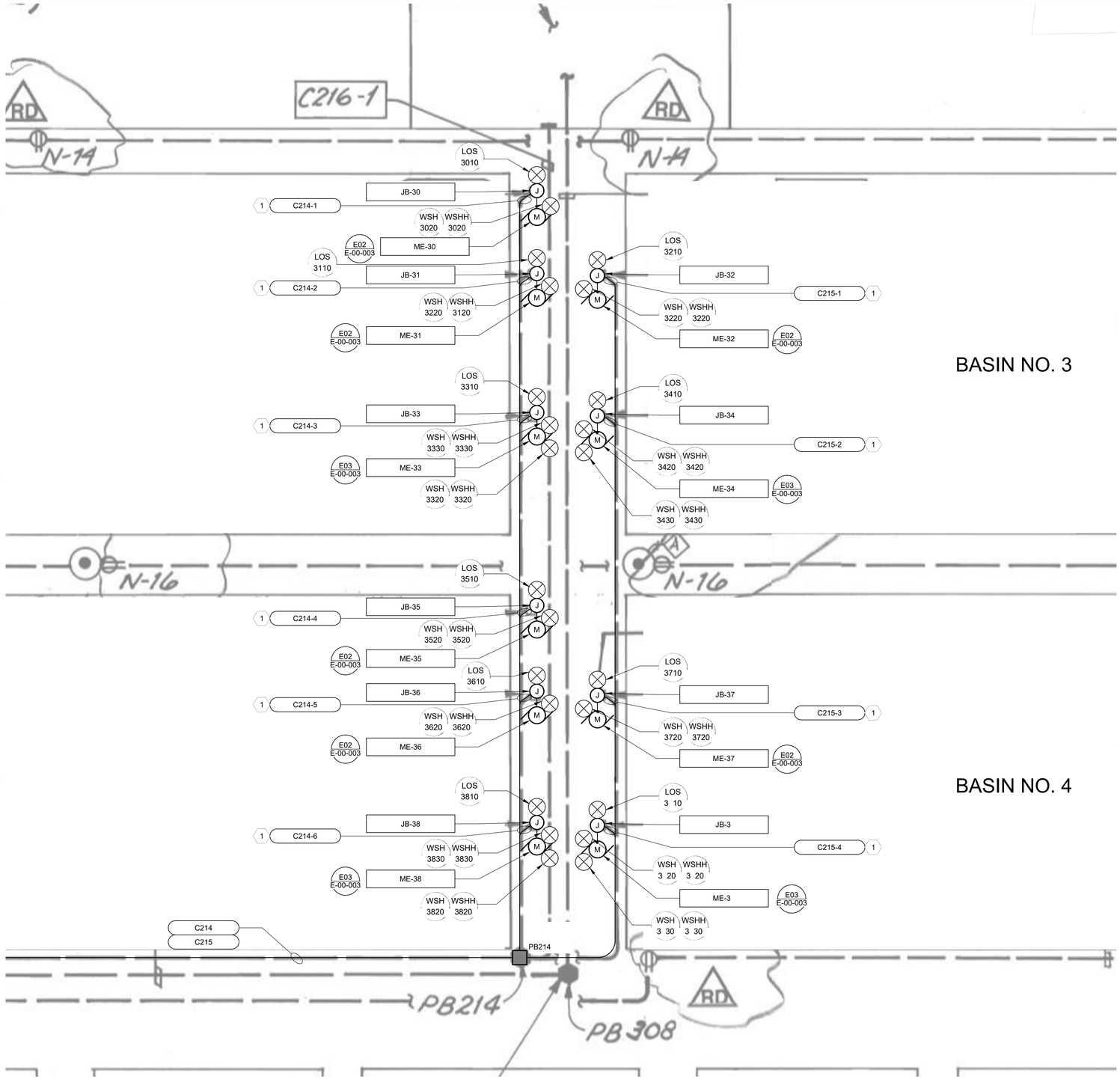

1 E-01-003 SCALE: 1/8" 1 -0"

SEDIMENTATION BASINS 3 AND 4 ENLARGED PLAN

KEY NOTES

1. ROUTE NEW POWER AND CONTROL CABLES IN THE EXISTING CONCRETE-ENCASED CONDUIT.

Brown AND Caldwell

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
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APPROVED: D. STAR

FILENAME
E-01-003.dwg

BC PROJECT NUMBER
157012

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ELECTRICAL

SEDIMENTATION BASINS 3 AND 4 ENLARGED PLAN

DRAWING NUMBER
E-01-003

SHEET NUMBER 31 OF 48

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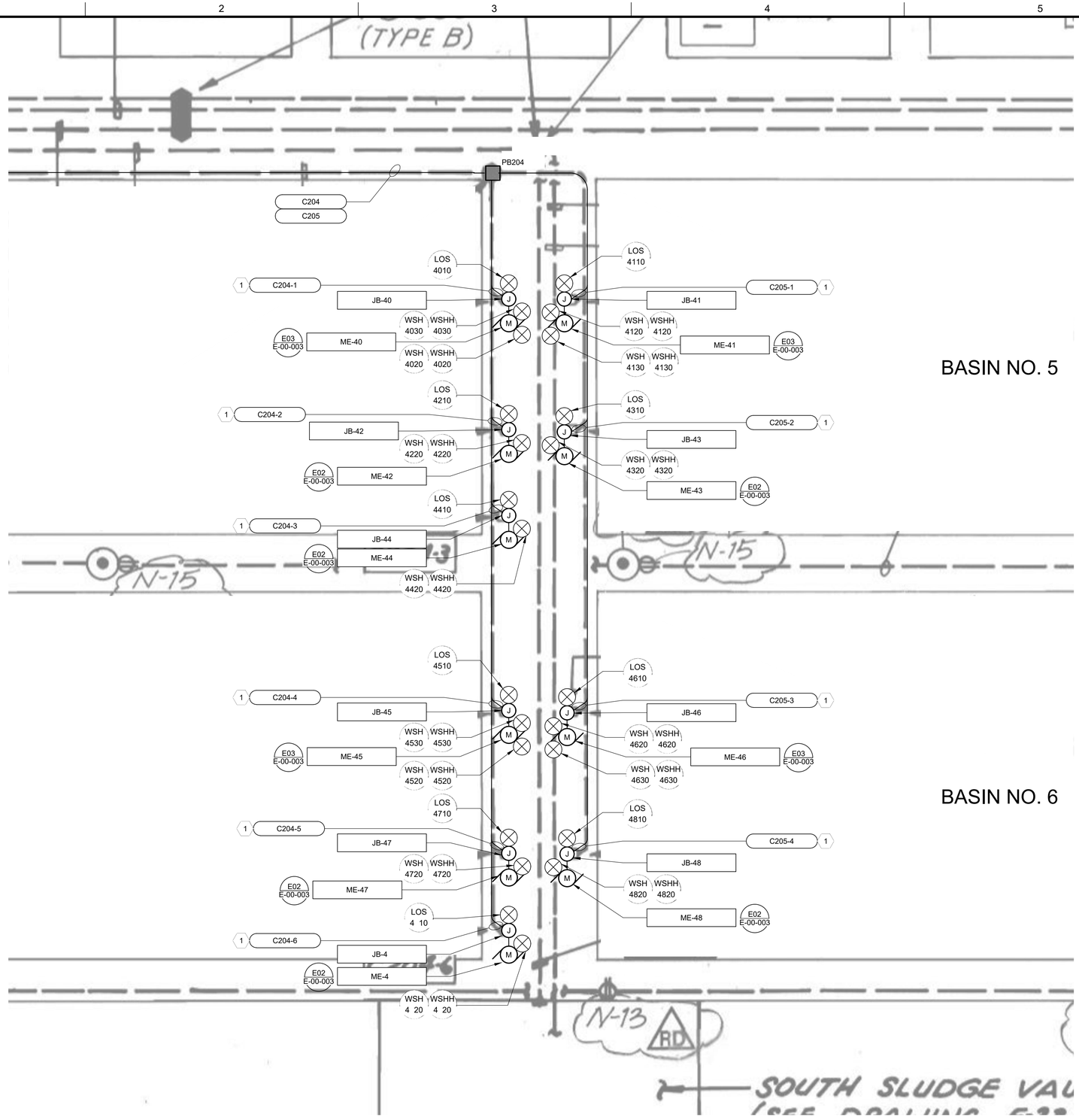


1 E-01-004 SCALE: 1/8" 1 -0"

SEDIMENTATION BASINS 5 AND 6 ENLARGED PLAN

KEY NOTES

1. ROUTE NEW POWER AND CONTROL CABLES IN THE EXISTING CONCRETE-ENCASED CONDUIT.

Brown AND Caldwell

OREGON PROFESSIONAL ENGINEER
No. 123551PE-2007
DAVID IDDO STAR
6/2/22
STATE OF UTAH

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED:	N. ANDERSON
DRAWN:	B. PENALBA
CHECKED:	J. HIMEBAUGH
CHECKED:	D. STAR
APPROVED:	D. STAR
FILENAME	E-01-004.dwg
BC PROJECT NUMBER	157012
CLIENT PROJECT NUMBER	4277

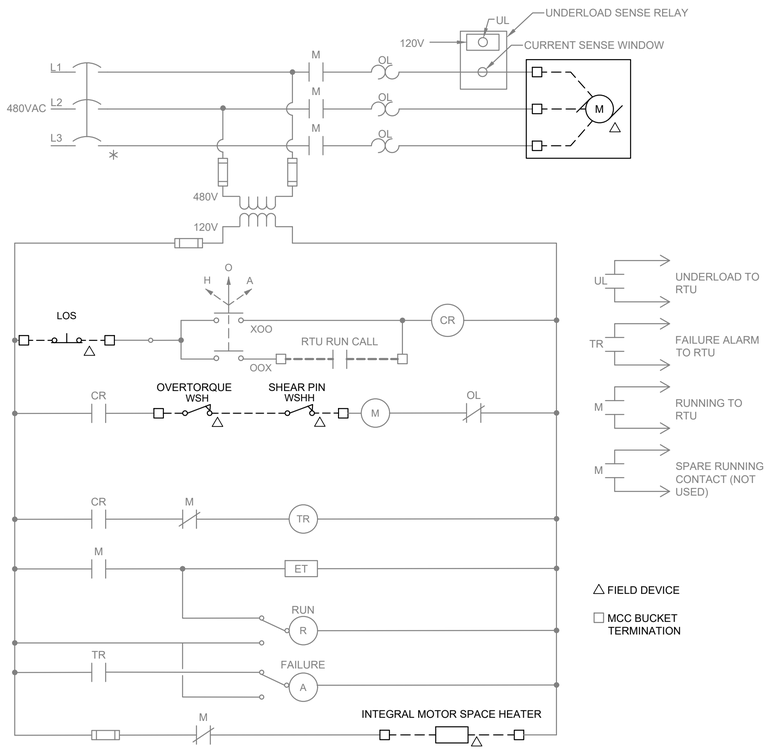
ELECTRICAL

SEDIMENTATION BASINS 5 AND 6 ENLARGED PLAN

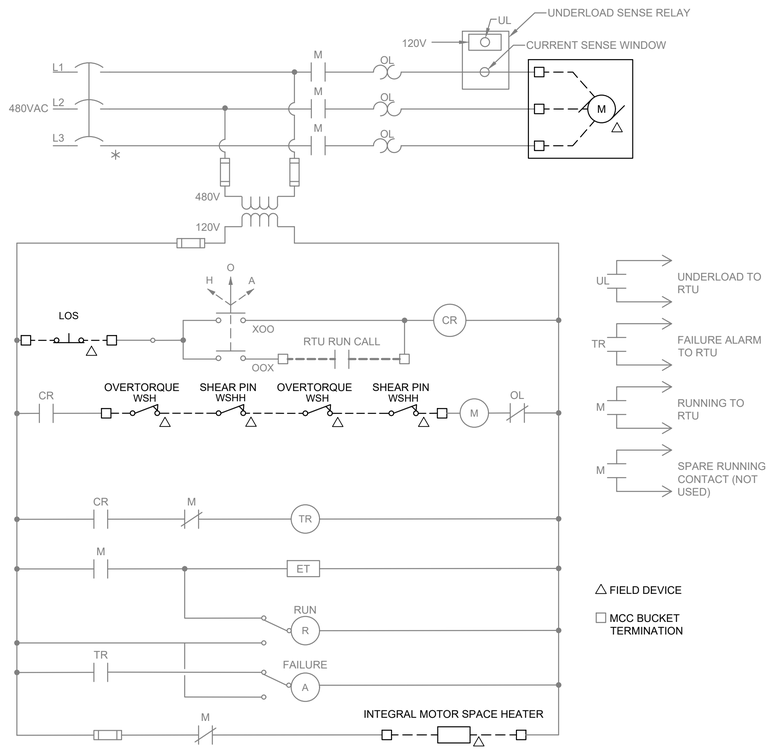
DRAWING NUMBER
E-01-004

32 SHEET NUMBER OF 48

Path: C:\BCPWD\166825 FILENAME: E-01-004.DWG PLOT DATE: 6/15/2022 10:43 AM CAD USER: NATE ANDERSON



MOTOR CONTROL SCHEMATIC 1
NTS



MOTOR CONTROL SCHEMATIC 2
NTS

MOTOR TAG	EQUIPMENT NAME	P ID
ME-30	SLUDGE COLLECTOR 2330	I-01-001
ME-31	SLUDGE COLLECTOR 2331	I-01-001
ME-32	SLUDGE COLLECTOR 2332	I-01-001
ME-35	SLUDGE COLLECTOR 2335	I-01-002
ME-36	SLUDGE COLLECTOR 2336	I-01-002
ME-37	SLUDGE COLLECTOR 2337	I-01-002
ME-42	SLUDGE COLLECTOR 2342	I-01-003
ME-43	SLUDGE COLLECTOR 2343	I-01-003
ME-44	SLUDGE COLLECTOR 2344	I-01-003
ME-47	SLUDGE COLLECTOR 2347	I-01-004
ME-48	SLUDGE COLLECTOR 2348	I-01-004
ME-4	SLUDGE COLLECTOR 234	I-01-004

MOTOR TAG	EQUIPMENT NAME	P ID
ME-33	SLUDGE COLLECTOR 2333	I-01-001
ME-34	SLUDGE COLLECTOR 2334	I-01-001
ME-38	SLUDGE COLLECTOR 2338	I-01-002
ME-3	SLUDGE COLLECTOR 233	I-01-002
ME-40	SLUDGE COLLECTOR 2340	I-01-003
ME-41	SLUDGE COLLECTOR 2341	I-01-003
ME-45	SLUDGE COLLECTOR 2345	I-01-004
ME-46	SLUDGE COLLECTOR 2346	I-01-004

ABBREVIATIONS:
LOS LOCK OUT STOP
HOA HAND-OFF-AUTO
UL UNDERLOAD
OL OVERLOAD
TR TIME RELAY

Brown AND Caldwell

DAVID IDDO STAR
No. 12353515-2202
PROFESSIONAL ENGINEER
STATE OF UTAH
6/2/22

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-005.dwg
BC PROJECT NUMBER
157012
CLIENT PROJECT NUMBER
4277

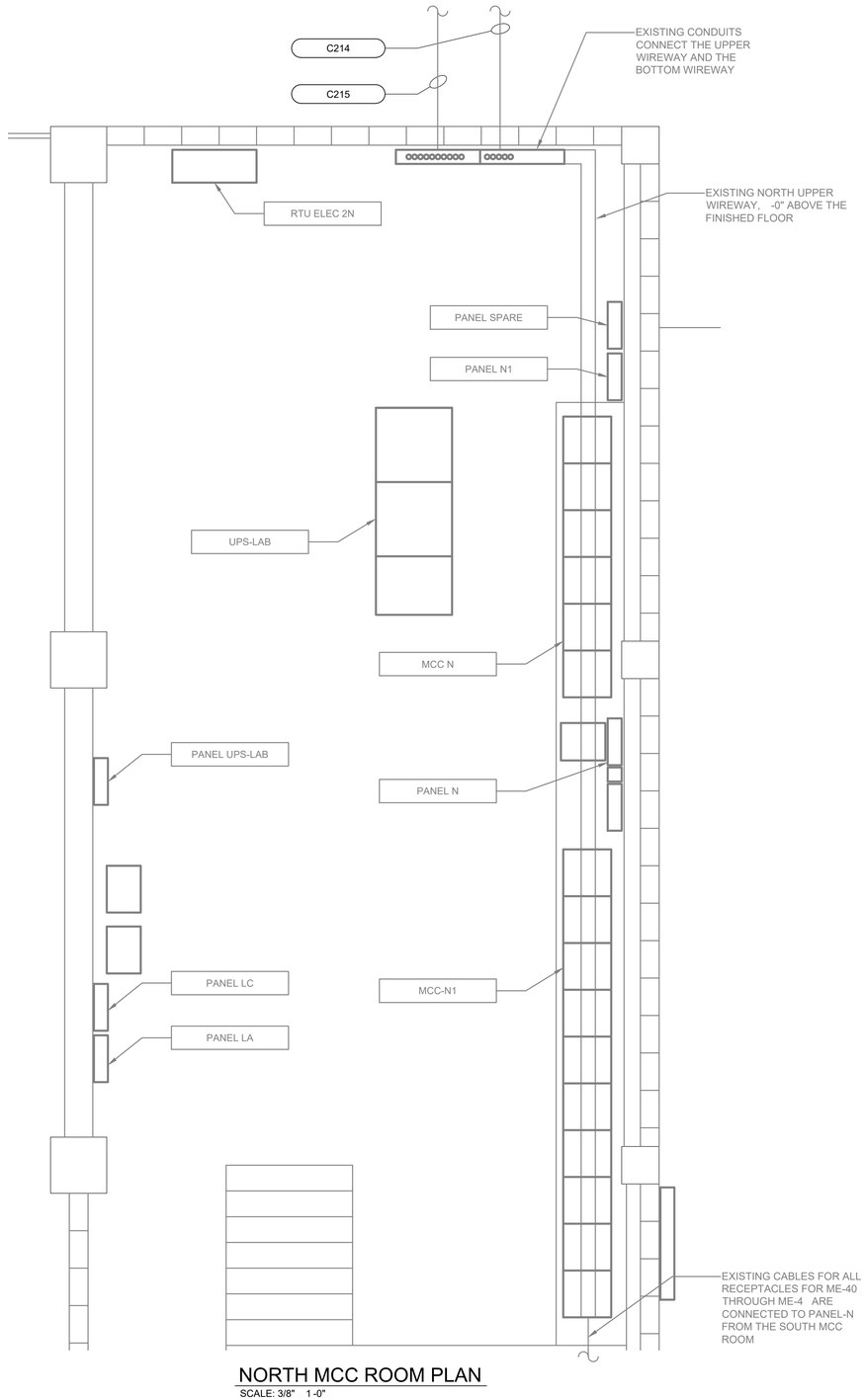
ELECTRICAL

PANEL, CONDUIT AND CONDUCTOR SCHEDULE

DRAWING NUMBER
E-01-005

33 SHEET NUMBER OF 48

Path: C:\BCPWD\166825 FILENAME: E-01-005.DWG PLOT DATE: 6/15/2022 10:44 AM CAD USER: NATE ANDERSON



NORTH MCC ROOM PLAN
SCALE: 3/8" 1 -0"

0 2.66 5.33
SCALE IN FEET

Brown AND Caldwell

BID SET

JORDAN VALLEY WATER
CONSERVANCY DISTRICT

JVWTP SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-006.dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

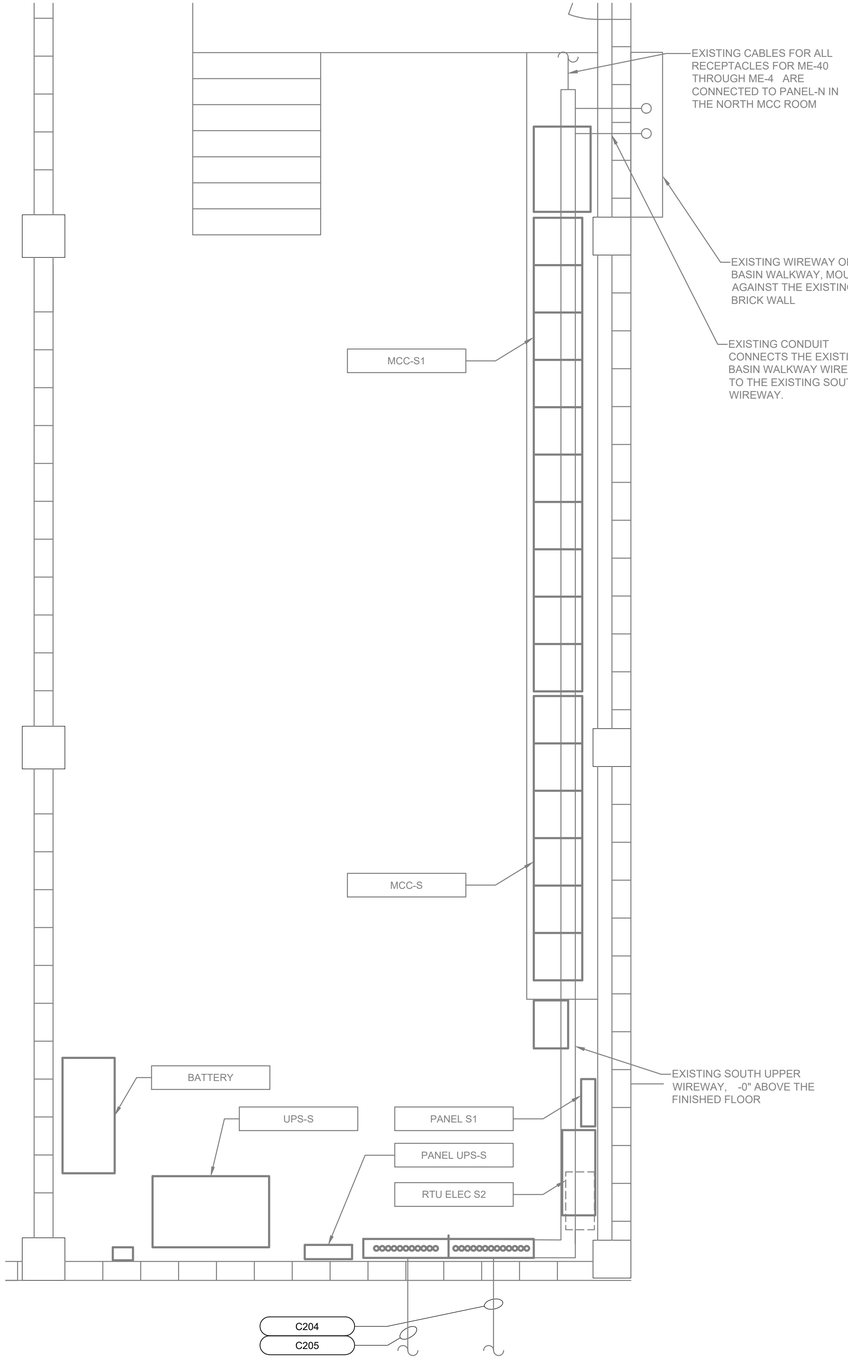
ELECTRICAL

NORTH MCC ROOM PLAN

DRAWING NUMBER
E-01-006

SHEET NUMBER 34 OF 48

Path: C:\BCPW\D186825 FILENAME: E-01-006.DWG PLOT DATE: 6/15/2022 10:44 AM CAD USER: NATE ANDERSON



SOUTH MCC ROOM PLAN

SCALE: 3/8" 1 -0"

0 2.66 5.33

SCALE IN FEET

Brown AND Caldwell

OREGON PROFESSIONAL ENGINEER No. 12535LIC 2007 DAVID IDDO STAR 6/2/22 STATE OF UTAH

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-007.dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

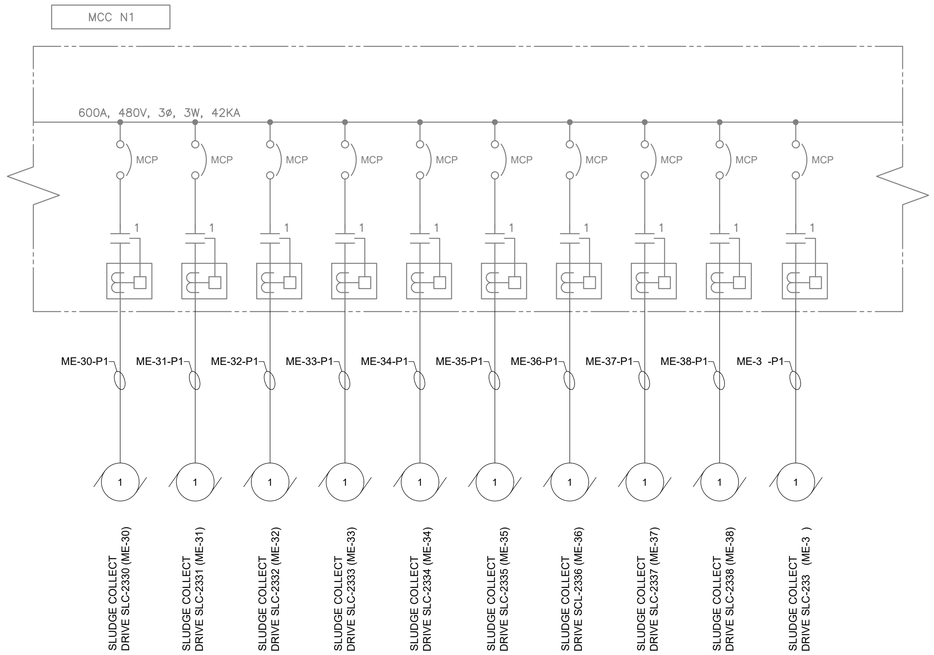
ELECTRICAL

SOUTH MCC ROOM PLAN

DRAWING NUMBER
E-01-007

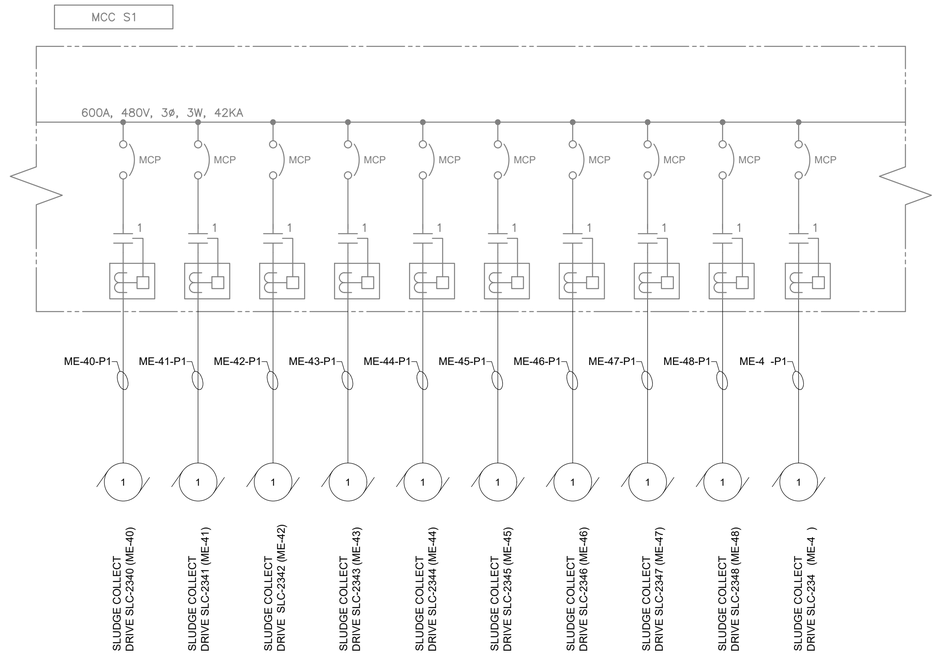
SHEET NUMBER 35 OF 48

Path: C:\BCPWD186825 FILENAME: E-01-007.DWG PLOT DATE: 6/3/2022 8:44 AM CAD USER: NATE ANDERSON



MOTOR CONTROL CENTER - N1

NTS



MOTOR CONTROL CENTER - S1

NTS

SOURCE LINE TERMINATION	FLOCCULATION MIXER 2220 (MX-20)	FLOCCULATION MIXER 2224 (MX-24)	FLOCCULATION MIXER 2228 (MX-28)	SLUDGE COLLECTOR 2330 (ME-30)	SLUDGE COLLECTOR 2334 (ME-34)	SLUDGE COLLECTOR 2338 (ME-38)	SPACE	NORTH RAPID MIX PUMP	SPACE
							SPACE		SPACE
	FLOCCULATION MIXER 2222 (MX-22)	FLOCCULATION MIXER 2226 (MX-26)	FLOCCULATION MIXER 2270 (MX-70)	SLUDGE COLLECTOR 2331 (ME-31)	SLUDGE COLLECTOR 2335 (ME-35)	SLUDGE COLLECTOR 233 (ME-3)	PANEL PP-FEEDER		SPACE
FLOCCULATION MIXER 2244 (MX-44)	FLOCCULATION MIXER 2245 (MX-45)	FLOCCULATION MIXER 2252 (MX-52)	FLOCCULATION MIXER 2253 (MX-53)	SLUDGE COLLECTOR 2332 (ME-32)	SLUDGE COLLECTOR 2336 (ME-36)	SPACE	SPACE	SPACE	SPACE
						UPS-LAB FEEDER	SPACE		SPACE
FLOCCULATION MIXER 2248 (MX-48)	FLOCCULATION MIXER 2240 (MX-40)	FLOCCULATION MIXER 2256 (MX-56)	FLOCCULATION MIXER 2257 (MX-57)	SLUDGE COLLECTOR 2333 (ME-33)	SLUDGE COLLECTOR 2337 (ME-37)	PANEL LA TRANSFORMER FEEDER	SPACE	SPACE	SPACE

MOTOR CONTROL CENTER - N1 ELEVATION

NTS

SOURCE LINE TERMINATION AND MAIN BREAKER	FLOCCULATION MIXER 2232 (MX-32)	FLOCCULATION MIXER 2236 (MX-36)	FLOCCULATION MIXER 2240 (MX-40)	SLUDGE COLLECTOR 2340 (ME-40)	SLUDGE COLLECTOR 2344 (ME-44)	SLUDGE COLLECTOR 2348 (ME-48)	STORAGE TENT	SOUTH RAPID MIX PUMP	SPACE
							SPARE		SPACE
	FLOCCULATION MIXER 2234 (MX-34)	FLOCCULATION MIXER 2238 (MX-38)	FLOCCULATION MIXER 2242 (MX-42)	SLUDGE COLLECTOR 2341 (ME-41)	SLUDGE COLLECTOR 2345 (ME-45)	SLUDGE COLLECTOR 234 (ME-4)	PANEL S1 XFMR FEEDER / PILOT PLANT PANEL XFMR FEEDER		SPACE
FLOCCULATION MIXER 2260 (MX-60)	FLOCCULATION MIXER 2261 (MX-61)	FLOCCULATION MIXER 2268 (MX-68)	FLOCCULATION MIXER 226 (MX-6)	SLUDGE COLLECTOR 2342 (ME-42)	SLUDGE COLLECTOR 2346 (ME-46)	SPARE	UPS-S1 RECTIFIER	SPACE	SPACE
						SPARE	SPACE		SPACE
FLOCCULATION MIXER 2264 (MX-64)	FLOCCULATION MIXER 2265 (MX-65)	FLOCCULATION MIXER 2272 (MX-72)	FLOCCULATION MIXER 2273 (MX-73)	SLUDGE COLLECTOR 2343 (ME-43)	SLUDGE COLLECTOR 2347 (ME-47)	SPARE	SPACE	SPACE	SPACE

MOTOR CONTROL CENTER - S1 ELEVATION

NTS

Brown AND Caldwell

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: B. PENALBA
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR
FILENAME E-01-008.dwg
BC PROJECT NUMBER 157012
CLIENT PROJECT NUMBER 4277

ELECTRICAL

ONE-LINE DIAGRAM

DRAWING NUMBER
E-01-008

SHEET NUMBER 36 OF 48

Path: C:\BCPW\D186825 FILENAME: E-01-008.DWG PLOT DATE: 6/2/2022 6:30 PM CAD USER: NATE ANDERSON

CABLE SCHEDULE

CABLE	DRAWING	COUNT/AWG	TYPE	FROM	TO	VIA						REMARKS
ME-30-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-30	NORTH WIREWAY	C214	PB-214	C214-1	JB-30		480V POWER
ME-30-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-30	NORTH WIREWAY	C214	PB-214	C214-1	JB-30		120V HEATER
ME-30-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-30	MCC-N1		JB-30	C214-1	PB-214	C214	NORTH WIREWAY	LOCK OUT STOP
ME-30-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-30	MCC-N1		JB-30	C214-1	PB-214	C214	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-31-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-31	NORTH WIREWAY	C214	PB-214	C214-2	JB-31		480V POWER
ME-31-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-31	NORTH WIREWAY	C214	PB-214	C214-2	JB-31		120V HEATER
ME-31-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-31	MCC-N1		JB-31	C214-2	PB-214	C214	NORTH WIREWAY	LOCK OUT STOP
ME-31-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-31	MCC-N1		JB-31	C214-2	PB-214	C214	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-32-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-32	NORTH WIREWAY	C215	PB-214	C215-1	JB-32		480V POWER
ME-32-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-32	NORTH WIREWAY	C215	PB-214	C215-1	JB-32		120V HEATER
ME-32-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-32	MCC-N1		JB-32	C215-1	PB-214	C215	NORTH WIREWAY	LOCK OUT STOP
ME-32-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-32	MCC-N1		JB-32	C215-1	PB-214	C215	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-33-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-33	NORTH WIREWAY	C214	PB-214	C214-3	JB-33		480V POWER
ME-33-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-33	NORTH WIREWAY	C214	PB-214	C214-3	JB-33		120V HEATER
ME-33-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-33	MCC-N1		JB-33	C214-3	PB-214	C214	NORTH WIREWAY	LOCK OUT STOP
ME-33-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-33	MCC-N1		JB-33	C214-3	PB-214	C214	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-34-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-34	NORTH WIREWAY	C215	PB-214	C215-2	JB-34		480V POWER
ME-34-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-34	NORTH WIREWAY	C215	PB-214	C215-2	JB-34		120V HEATER
ME-34-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-34	MCC-N1		JB-34	C215-2	PB-214	C215	NORTH WIREWAY	LOCK OUT STOP
ME-34-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-34	MCC-N1		JB-34	C215-2	PB-214	C215	NORTH WIREWAY	SHEAR AND OVERTORQUE

Brown AND Caldwell

OREM PROFESSIONAL ENGINEER
No. 125355-2202
DAVID IDDO STAR
6/2/22
STATE OF UTAH

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: N. ANDERSON
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-00 .dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

ELECTRICAL

CABLE SCHEDULE 1

DRAWING NUMBER
E-01-00

37 SHEET NUMBER OF 48

Path: C:\BCPWD\166825 FILENAME: E-01-00 .DWG PLOT DATE: 6/2/2022 6:32 PM CAD USER: NATE ANDERSON

CABLE SCHEDULE

CABLE	DRAWING	COUNT/AWG	TYPE	FROM	TO	VIA						REMARKS
ME-35-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-35	NORTH WIREWAY	C214	PB-214	C214-4	JB-35		480V POWER
ME-35-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-35	NORTH WIREWAY	C214	PB-214	C214-4	JB-35		120V HEATER
ME-35-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-35	MCC-N1		JB-35	C214-4	PB-214	C214	NORTH WIREWAY	LOCK OUT STOP
ME-35-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-35	MCC-N1		JB-35	C214-4	PB-214	C214	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-36-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-36	NORTH WIREWAY	C214	PB-214	C214-5	JB-36		480V POWER
ME-36-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-36	NORTH WIREWAY	C214	PB-214	C214-5	JB-36		120V HEATER
ME-36-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-36	MCC-N1		JB-36	C214-5	PB-214	C214	NORTH WIREWAY	LOCK OUT STOP
ME-36-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-36	MCC-N1		JB-36	C214-5	PB-214	C214	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-37-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-37	NORTH WIREWAY	C215	PB-214	C215-3	JB-37		480V POWER
ME-37-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-37	NORTH WIREWAY	C215	PB-214	C215-3	JB-37		120V HEATER
ME-37-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-37	MCC-N1		JB-37	C215-3	PB-214	C215	NORTH WIREWAY	LOCK OUT STOP
ME-37-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-37	MCC-N1		JB-37	C215-3	PB-214	C215	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-38-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-38	NORTH WIREWAY	C214	PB-214	C214-6	JB-38		480V POWER
ME-38-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-38	NORTH WIREWAY	C214	PB-214	C214-6	JB-38		120V HEATER
ME-38-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-38	MCC-N1		JB-38	C214-6	PB-214	C214	NORTH WIREWAY	LOCK OUT STOP
ME-38-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-38	MCC-N1		JB-38	C214-6	PB-214	C214	NORTH WIREWAY	SHEAR AND OVERTORQUE
ME-39-P1	E-01-006 E-01-001 E-01-003	3#12, 1#12G	XHHW	MCC-N1	ME-39	NORTH WIREWAY	C215	PB-214	C215-4	JB-39		480V POWER
ME-39-P2	E-01-006 E-01-001 E-01-003	2#12, 1#12G	XHHW	MCC-N1	ME-39	NORTH WIREWAY	C215	PB-214	C215-4	JB-39		120V HEATER
ME-39-C1	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-39	MCC-N1		JB-39	C215-4	PB-214	C215	NORTH WIREWAY	LOCK OUT STOP
ME-39-C2	E-01-003 E-01-001 E-01-006	2#16, 1#16G	XHHW	ME-39	MCC-N1		JB-39	C215-4	PB-214	C215	NORTH WIREWAY	SHEAR AND OVERTORQUE

Brown AND Caldwell

DAVID IDDO STAR
No. 12353515-2202
6/2/22
STATE OF UTAH
REGISTERED PROFESSIONAL ENGINEER

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: N. ANDERSON
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-010.dwg
BC PROJECT NUMBER
157012
CLIENT PROJECT NUMBER
4277

ELECTRICAL

CABLE SCHEDULE 2

DRAWING NUMBER
E-01-010

38 SHEET NUMBER OF 48

Path: C:\BCPWD\186825 FILENAME: E-01-010.DWG PLOT DATE: 6/2/2022 6:33 PM CAD USER: NATE ANDERSON

CABLE SCHEDULE

CABLE	DRAWING	COUNT/AWG	TYPE	FROM	TO	VIA						REMARKS
ME-40-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-40	SOUTH WIREWAY	C204	PB-204	C204-1	JB-40		480V POWER
ME-40-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-40	SOUTH WIREWAY	C204	PB-204	C204-1	JB-40		120V HEATER
ME-40-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-40	MCC-S1		JB-40	C204-1	PB-204	C204	SOUTH WIREWAY	LOCK OUT STOP
ME-40-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-40	MCC-S1		JB-40	C204-1	PB-204	C204	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-41-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-41	SOUTH WIREWAY	C205	PB-204	C205-1	JB-41		480V POWER
ME-41-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-41	SOUTH WIREWAY	C205	PB-204	C205-1	JB-41		120V HEATER
ME-41-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-41	MCC-S1		JB-41	C205-1	PB-204	C205	SOUTH WIREWAY	LOCK OUT STOP
ME-41-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-41	MCC-S1		JB-45	C205-1	PB-204	C205	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-42-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-42	SOUTH WIREWAY	C204	PB-204	C204-2	JB-42		480V POWER
ME-42-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-42	SOUTH WIREWAY	C204	PB-204	C204-2	JB-42		120V HEATER
ME-42-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-42	MCC-S1		JB-42	C204-2	PB-204	C204	SOUTH WIREWAY	LOCK OUT STOP
ME-42-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-42	MCC-S1		JB-42	C204-2	PB-204	C204	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-43-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-43	SOUTH WIREWAY	C205	PB-204	C205-2	JB-43		480V POWER
ME-43-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-43	SOUTH WIREWAY	C205	PB-204	C205-2	JB-43		120V HEATER
ME-43-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-43	MCC-S1		JB-43	C205-2	PB-204	C205	SOUTH WIREWAY	LOCK OUT STOP
ME-43-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-43	MCC-S1		JB-43	C205-2	PB-204	C205	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-44-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-44	SOUTH WIREWAY	C204	PB-204	C204-3	JB-44		480V POWER
ME-44-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-44	SOUTH WIREWAY	C204	PB-204	C204-3	JB-44		120V HEATER
ME-44-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-44	MCC-S1		JB-44	C204-3	PB-204	C204	SOUTH WIREWAY	LOCK OUT STOP
ME-44-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-44	MCC-S1		JB-44	C204-3	PB-204	C204	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-45-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-45	SOUTH WIREWAY	C204	PB-204	C204-4	JB-45		480V POWER
ME-45-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-45	SOUTH WIREWAY	C204	PB-204	C204-4	JB-45		120V HEATER
ME-45-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-45	MCC-S1		JB-45	C204-4	PB-204	C204	SOUTH WIREWAY	LOCK OUT STOP
ME-45-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-45	MCC-S1		JB-45	C204-4	PB-204	C204	SOUTH WIREWAY	SHEAR AND OVERTORQUE

Brown AND Caldwell

OREGON PROFESSIONAL ENGINEER
No. 123551PE 2007
DAVID IDDO STAR
6/2/22
STATE OF UTAH

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: N. ANDERSON
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-011.dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

ELECTRICAL

CABLE SCHEDULE 3

DRAWING NUMBER
E-01-011

SHEET NUMBER 39 OF 48

Path: C:\BCPW\D186825 FILENAME: E-01-011.DWG PLOT DATE: 6/2/2022 6:34 PM CAD USER: NATE ANDERSON

CABLE SCHEDULE

CABLE	DRAWING	COUNT/AWG	TYPE	FROM	TO	VIA						REMARKS
ME-46-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-46	SOUTH WIREWAY	C205	PB-204	C205-3	JB-46		480V POWER
ME-46-P1	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-46	SOUTH WIREWAY	C205	PB-204	C205-3	JB-46		120V HEATER
ME-46-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-46	MCC-S1		JB-46	C205-3	PB-204	C205	SOUTH WIREWAY	LOCK OUT STOP
ME-46-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-46	MCC-S1		JB-46	C205-3	PB-204	C205	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-47-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-47	SOUTH WIREWAY	C204	PB-204	C204-5	JB-47		480V POWER
ME-47-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-47	SOUTH WIREWAY	C204	PB-204	C204-5	JB-47		120V HEATER
ME-47-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-47	MCC-S1		JB-47	C204-5	PB-204	C204	SOUTH WIREWAY	LOCK OUT STOP
ME-47-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-47	MCC-S1		JB-47	C204-5	PB-204	C204	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-48-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-48	SOUTH WIREWAY	C205	PB-204	C205-4	JB-48		480V POWER
ME-48-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-48	SOUTH WIREWAY	C205	PB-204	C205-4	JB-48		120V HEATER
ME-48-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-48	MCC-S1		JB-48	C205-4	PB-204	C205	SOUTH WIREWAY	LOCK OUT STOP
ME-48-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-48	MCC-S1		JB-48	C205-4	PB-204	C205	SOUTH WIREWAY	SHEAR AND OVERTORQUE
ME-49-P1	E-01-007 E-01-002 E-01-004	3#12, 1#12G	XHHW	MCC-S1	ME-49	SOUTH WIREWAY	C204	PB-204	C204-6	JB-49		480V POWER
ME-49-P2	E-01-007 E-01-002 E-01-004	2#12, 1#12G	XHHW	MCC-S1	ME-49	SOUTH WIREWAY	C204	PB-204	C204-6	JB-49		120V HEATER
ME-49-C1	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-49	MCC-S1		JB-49	C204-6	PB-204	C204	SOUTH WIREWAY	LOCK OUT STOP
ME-49-C2	E-01-004 E-01-002 E-01-007	2#16, 1#16G	XHHW	ME-49	MCC-S1		JB-49	C204-6	PB-204	C204	SOUTH WIREWAY	SHEAR AND OVERTORQUE

Brown AND Caldwell

LICENSED PROFESSIONAL ENGINEER
No. 12353510-2202
DAVID IDDO STAR
6/2/22
STATE OF UTAH

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: N. ANDERSON
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-012.dwg

BC PROJECT NUMBER
157012

CLIENT PROJECT NUMBER
4277

ELECTRICAL

CABLE SCHEDULE 4

DRAWING NUMBER
E-01-012

40 SHEET NUMBER OF 48

Path: C:\BCPWD\186825 FILENAME: E-01-012.DWG PLOT DATE: 6/2/2022 6:36 PM CAD USER: NATE ANDERSON

CONDUIT SCHEDULE						
CONDUIT	SIZE	FROM	TO	CABLE		REMARKS
NORTH WIREWAY	WIRE WAY	C214 C215	MCC-N1 PANEL N	ME-30-P1 ME-30-P2 ME-30-C1 ME-30-C2 ME-31-P1 ME-31-P2 ME-31-C1 ME-31-C2 ME-32-P1 ME-32-P2 ME-32-C1 ME-32-C2 ME-33-P1 ME-33-P2 ME-33-C1 ME-33-C2 ME-34-P1 ME-34-P2 ME-34-C1 ME-34-C2	ME-35-P1 ME-35-P2 ME-35-C1 ME-35-C2 ME-36-P1 ME-36-P2 ME-36-C1 ME-36-C2 ME-37-P1 ME-37-P2 ME-37-C1 ME-37-C2 ME-38-P1 ME-38-P2 ME-38-C1 ME-38-C2 ME-39-P1 ME-39-P2 ME-39-C1 ME-39-C2	480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C214	2"	NORTH WIREWAY	PB-214	ME-30-P1 ME-30-P2 ME-30-C1 ME-30-C2 ME-31-P1 ME-31-P2 ME-31-C1 ME-31-C2 ME-32-P1 ME-32-P2 ME-32-C1 ME-32-C2	ME-33-P1 ME-33-P2 ME-33-C1 ME-33-C2 ME-34-P1 ME-34-P2 ME-34-C1 ME-34-C2	BASIN 3. 480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C214-1	1"	PB-214	JB-30	ME-30-P1 ME-30-P2 ME-30-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C214-2	1"	PB-214	JB-31	ME-31-P1 ME-31-P2 ME-31-C1 ME-31-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C214-3	1"	PB-214	JB-33	ME-33-P1 ME-33-P2 ME-33-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C214-4	1"	PB-214	JB-35	ME-35-P1 ME-35-P2 ME-35-C1 ME-35-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C214-5	1"	PB-214	JB-36	ME-36-P1 ME-36-P2 ME-36-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C214-6	1"	PB-214	JB-38	ME-38-P1 ME-38-P2 ME-38-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C215	2"	NORTH WIREWAY	PB-214	ME-35-P1 ME-35-P2 ME-35-C1 ME-35-C2 ME-36-P1 ME-36-P2 ME-36-C1 ME-36-C2	ME-37-P1 ME-37-P2 ME-37-C1 ME-37-C2 ME-38-P1 ME-38-P2 ME-38-C1 ME-38-C2 ME-39-P1 ME-39-P2 ME-39-C1 ME-39-C2	BASIN 4. 480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C215-1	1"	PB-214	JB-32	ME-32-P1 ME-32-P2 ME-32-C1 ME-32-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C215-2	1"	PB-214	JB-34	ME-34-P1 ME-34-P2 ME-34-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C215-3	1"	PB-214	JB-37	ME-37-P1 ME-37-P2 ME-37-C1 ME-37-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C215-4	1"	PB-214	JB-39	ME-39-P1 ME-39-P2 ME-39-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE

CONDUIT SCHEDULE						
CONDUIT	SIZE	FROM	TO	CABLE		REMARKS
SOUTH WIREWAY	WIRE WAY	C204 C205	MCC-S1 PANEL S	ME-40-P1 ME-40-P2 ME-40-C1 ME-40-C2 ME-41-P1 ME-41-P2 ME-41-C1 ME-41-C2 ME-42-P1 ME-42-P2 ME-42-C1 ME-42-C2 ME-43-P1 ME-43-P2 ME-43-C1 ME-43-C2 ME-44-P1 ME-44-P2 ME-44-C1 ME-44-C2	ME-45-P1 ME-45-P2 ME-45-C1 ME-45-C2 ME-46-P1 ME-46-P2 ME-46-C1 ME-46-C2 ME-47-P1 ME-47-P2 ME-47-C1 ME-47-C2 ME-48-P1 ME-48-P2 ME-48-C1 ME-48-C2 ME-49-P1 ME-49-P2 ME-49-C1 ME-49-C2	480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C204	2"	SOUTH WIREWAY	PB-204	ME-40-P1 ME-40-P2 ME-40-C1 ME-40-C2 ME-41-P1 ME-41-P2 ME-41-C1 ME-41-C2 ME-42-P1 ME-42-P2 ME-42-C1 ME-42-C2	ME-43-P1 ME-43-P2 ME-43-C1 ME-43-C2 ME-44-P1 ME-44-P2 ME-44-C1 ME-44-C2	BASIN 5. 480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C204-1	1"	PB-204	JB-40	ME-40-P1 ME-40-P2 ME-40-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C204-2	1"	PB-204	JB-42	ME-42-P1 ME-42-P2 ME-42-C1 ME-42-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C204-3	1"	PB-204	JB-44	ME-44-P1 ME-44-P2 ME-44-C1 ME-44-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C204-4	1"	PB-204	JB-45	ME-45-P1 ME-45-P2 ME-45-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C204-5	1"	PB-204	JB-47	ME-47-P1 ME-47-P2 ME-47-C1 ME-47-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C204-6	1"	PB-204	JB-49	ME-49-P1 ME-49-P2 ME-49-C1 ME-49-C2		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C205	2"	SOUTH WIREWAY	PB-204	ME-45-P1 ME-45-P2 ME-45-C1 ME-45-C2 ME-46-P1 ME-46-P2 ME-46-C1 ME-46-C2 ME-47-P1 ME-47-P2 ME-47-C1 ME-47-C2	ME-48-P1 ME-48-P2 ME-48-C1 ME-48-C2 ME-49-P1 ME-49-P2 ME-49-C1 ME-49-C2	BASIN 6. 480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C205-1	1"	PB-204	JB-41	ME-41-P1 ME-41-P2 ME-41-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C205-2	1"	PB-204	JB-43	ME-43-P1 ME-43-P2 ME-43-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C205-3	1"	PB-204	JB-46	ME-46-P1 ME-46-P2 ME-46-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE
C205-4	1"	PB-204	JB-48	ME-48-P1 ME-48-P2 ME-48-C1		480V POWER, 120V HEATER, LOS, SHEAR AND OVERTORQUE

Brown AND Caldwell

BID SET

JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

REV	DATE	DESCRIPTION

LINE IS 2 INCHES AT FULL SIZE

DESIGNED: N. ANDERSON
DRAWN: N. ANDERSON
CHECKED: J. HIMEBAUGH
CHECKED: D. STAR
APPROVED: D. STAR

FILENAME
E-01-013.dwg
BC PROJECT NUMBER
157012
CLIENT PROJECT NUMBER
4277

ELECTRICAL

CONDUIT SCHEDULE 1

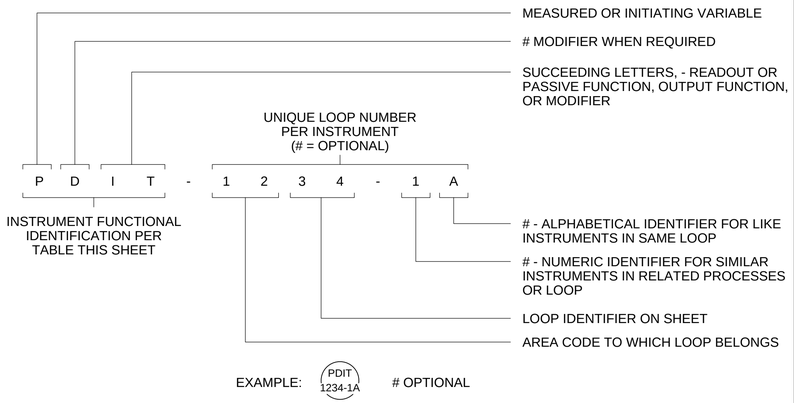
DRAWING NUMBER
E-01-013

SHEET NUMBER 41 OF 48

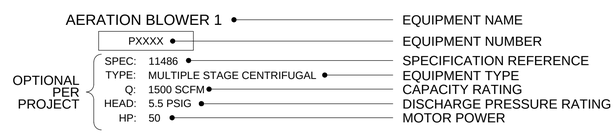
FUNCTIONAL IDENTIFICATION

VARIABLE	MEASURED OR INITIATING VARIABLE DESCRIPTION	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION				
C	CONDUCTIVITY			CONTROL	CLOSE
D	DENSITY, SPECIFIC GRAVITY	DIFFERENTIAL			DEVIATION
E	VOLTAGE, SOLENOID		PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO			
G	FIRE, SMOKE		GLASS		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE, HUMIDITY, MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	EQUIPMENT STATUS				
O	DISSOLVED OXYGEN		ORIFICE		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE, TORQUE		WELL, PROBE		
X	UNCLASSIFIED	X AXIS			
Y	EVENT, STATE OR PRESENCE	Y AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

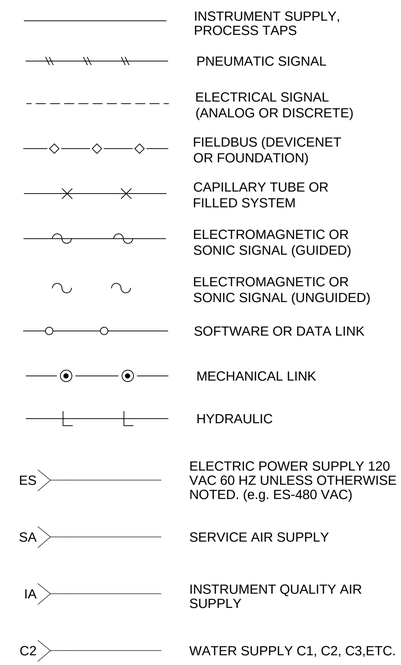
INSTRUMENT TAG AND LOOP IDENTIFICATION



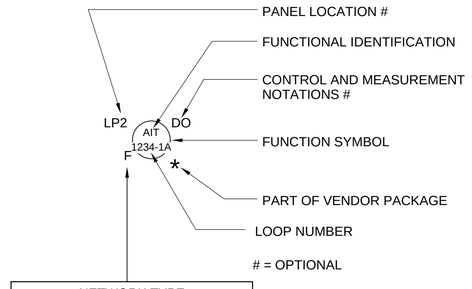
EQUIPMENT IDENTIFICATION SYSTEM



INSTRUMENT SIGNAL LINES



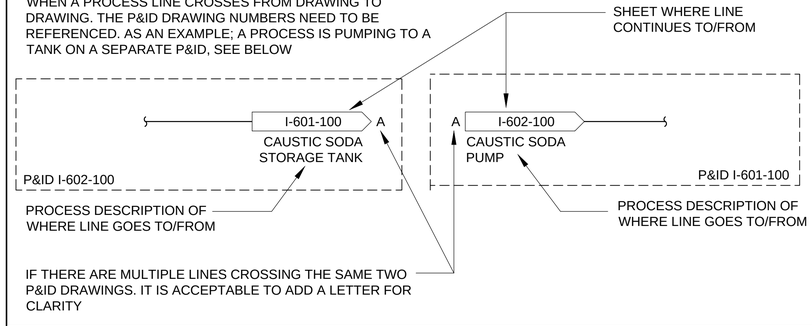
TYPICAL INSTRUMENT IDENTIFICATION



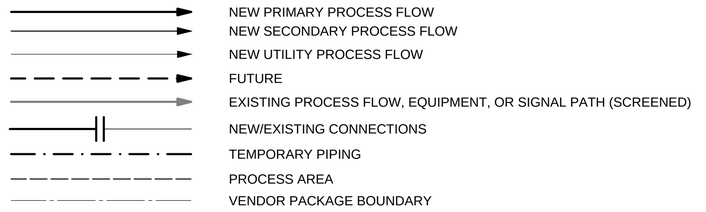
NETWORK TYPE	
F	FOUNDATION FIELDBUS
D	DEVICENET
E	ETHERNET
P	PROFIBUS
PN	PROFINET
M-RTU	MODBUS RTU
M-TCP	MODBUS TCP
CIP	CONTROL INDUSTRIAL PROTOCOL
E-SNMP	SIMPLE NETWORK MANAGEMENT PROTOCOL

PROCESS AND SIGNAL CROSS REFERENCE SYSTEM

WHEN A PROCESS LINE CROSSES FROM DRAWING TO DRAWING. THE P&ID DRAWING NUMBERS NEED TO BE REFERENCED. AS AN EXAMPLE; A PROCESS IS PUMPING TO A TANK ON A SEPARATE P&ID, SEE BELOW



PROCESS LINES



CONTROL AND MEASUREMENT NOTATIONS

ACK	ACKNOWLEDGE
AM	AUTO/MAN
BYP	BYPASS
CL	CLOSE
CL2	CHLORINE
CMAT	COMPUTER/MANUAL/AUTO/TRACKING
COMB	COMBUSTIBLE GAS
CP	CONTROL POWER
COND	CONDUCTIVITY
DEC	DECREASE
DO	DISSOLVED OXYGEN
ESP	EMERGENCY STOP
FWD	FORWARD
F/R	FORWARD/REVERSE
F/S	FAST/SLOW
HLOA	HIGH/LOW/OFF/AUTO
HOA	HAND/OFF/AUTO
HOAL	HAND/OFF/AUTO/LOCAL
HOR	HAND/OFF/REMOTE
INC	INCREASE
JOA	JOG/OFF/AUTO
LL	LEAD/LAG
LOR	LOCAL/OFF/REMOTE
LOS	LOCKOUT STOP
L/R	LOCAL/REMOTE
M/A LS	MAN/AUTO LOADING STATION
OCA	OPEN/CLOSE/AUTO
OCP	PURGE VALVE OP/CL/PC
OL	OVERLOAD
OP	OPEN
OSC/LP	OPEN/STOP/CLOSE WITH LOCAL/REMOTE SELECT
PA	PAUSE
PAL	LOW PRESSURE
PB	PUSH BUTTON
pH	pH
POT	POTENTIOMETER
RDY	READY
REV	REVERSE
RNG	RUNNING
ROF	REVERSE/OFF/FORWARD
RST	RESET
SO2	SULFUR DIOXIDE
SP	STOP
ST	START
TCP	TEST/CLOSE/PC
T/S	TEST/NORMAL/SILENCE
TBL	TROUBLE

GENERAL NOTES:

1. THIS DRAWING IS GENERAL IN NATURE. SOME SYMBOLS AND IDENTIFICATIONS SHOWN HEREON MAY NOT BE USED ON THE CONTRACT DRAWINGS.
2. SYMBOLS ARE ARRANGED ON SPECIFIC DRAWINGS AND IN CATEGORIES FOR CONVENIENCE ONLY; SYMBOLS MAY BE USED ON ANY OF THE CONTRACT DRAWINGS.

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JORDAN VALLEY WATER CONSERVANCY DISTRICT

JVWTP
SOLIDS COLLECTION EQUIPMENT UPGRADE PROJECT

REVISIONS

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DESIGNED: D. MACKAY
DRAWN: A. LAPIERRE
CHECKED: J. HIMEBAUGH
CHECKED:
APPROVED: D. MACKAY
FILENAME I-00-001.dwg
BC PROJECT NUMBER 157012
CLIENT PROJECT NUMBER 4277

INSTRUMENTATION

LEGEND AND SYMBOLS - 1

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MISCELLANEOUS SYMBOLS

- MCC (MOTOR CONTROL/STARTER)
- PURGE OR FLUSHING DEVICE
- RESET FOR LATCH-TYPE OPERATOR
- SEAL WATER CONTROL UNIT
- INTERLOCKING OR CONTROL FUNCTION
- INTRINSIC SAFETY BARRIER
- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- CAMERA (CCTV)
- VFD — VARIABLE FREQUENCY DRIVE
- VSD — VARIABLE SPEED DRIVE

ACTUATORS/MOTORS/POWER

- ASD — ADJUSTABLE SPEED DRIVE (MECHANICAL)
- ROTARY PISTON ACTUATORS, VALVE OR GATE
- LINEAR PISTON ACTUATORS, VALVE OR GATE
- SOLENOID ACTUATOR, VALVE
- MANUAL OR HAND ACTUATOR, VALVE OR GATE (OR BLANK)
- MOTOR (ACTUATOR, VALVE , GATE OR EQUIPMENT)
- ENGINE
- EJECTOR, PNEUMATIC
- GENERATOR

PRIMARY ELEMENT SYMBOLS

- ORIFICE PLATE
- VENTURI OR FLOW TUBE
- NOZZLE FLOW
- PITOT TUBE
- PROPELLER OR TURBINE METER
- FLUME
- WEIR
- VARIABLE AREA FLOW INDICATOR (ROTAMETER) — OR — FI
- DIAPHRAGM SEAL
- IN-LINE ANNULAR SEAL
- MAGNETIC FLOWMETER
- SONIC FLOWMETER (DOPPLER OR TRANSIT TIME)
- POSITIVE DISPLACEMENT METER
- THERMAL FLOW ELEMENT
- VORTEX FLOW ELEMENT
- CORIOLIS FLOW ELEMENT
- FLOAT LEVEL ELEMENT
- ULTRASONIC LEVEL ELEMENT
- BUBBLER LEVEL TUBE
- SUBMERSIBLE LEVEL TRANSMITTER
- HYDROSTATIC LEVEL PROBE
- RADAR OR ULTRASONIC LEVEL ELEMENT
- ANNUBAR, PITOT TUBE
- AVERAGING PITOT TUBE

VALVES

NORMALLY OPEN		NORMALLY CLOSED
	GATE VALVE	
	PLUG VALVE	
	BALL VALVE	
	GLOBE VALVE	
	NEEDLE VALVE	
	KNIFE GATE VALVE	
	DIAPHRAGM VALVE	
	BUTTERFLY VALVE	
	ANGLE VALVE	
	THREE WAY VALVE	
	FOUR WAY VALVE	
	FLOAT VALVE	
	PINCH VALVE	
	BALANCING COCK	
	THERMOSTATICALLY CONTROLLED VALVE	

- DOUBLE LEAF CHECK VALVE
- CHECK VALVE
- BALL CHECK VALVE
- PUMP DISCHARGE VALVE
- GAUGE OR ROOT VALVE
- PRESSURE AND VACUUM RELIEF VALVE
- VACUUM RELIEF VALVE
- PRESSURE RELIEF VALVE
- IN-LINE SPRING LOADED RELIEF VALVE
- PRESSURE REGULATING VALVE (SELF-CONTAINED)
- BACK PRESSURE REGULATING VALVE (SELF-CONTAINED)
- FUSIBLE LINK

- SOLENOID VALVE
- DIAPHRAGM OPERATED VALVE
- PRESSURE BALANCE OPERATED VALVE
- MOTOR OPERATED VALVE
- MOTOR OPERATED VALVE, MODULATING

NOTE: USE VALVE BODY SYMBOL TO MATCH TYPE OF VALVE.

- PISTON OPERATED VALVE
- TELESCOPING VALVE
- MUD VALVE
- ANTI SIPHON VALVE
- LIFT CHECK VALVE
- BRAIDED FLEX CONNECTOR

FUNCTION SYMBOLS

- SHARED DISPLAY, PROCESS CONTROL SYSTEM
- SOFTWARE FUNCTIONALITY
- FIELD OR PANEL DEVICE

LOCATION AND ACCESSIBILITY MODIFIERS FOR FUNCTION SYMBOLS

- STAND ALONE DEVICE, OPERATOR ACCESSIBLE
- LOCATED ON FRONT OF PANEL OR CONSOLE, OPERATOR ACCESSIBLE
- LOCATED IN REAR OF PANEL OR CONSOLE, OPERATOR INACCESSIBLE

INSTRUMENTATION SYMBOLS

- INTEGRAL INSTRUMENT — PRIMARY ELEMENT SYMBOL
- CLOSE COUPLED INSTRUMENT — PRIMARY ELEMENT SYMBOL
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL
- MULTI VARIABLE INSTRUMENT
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL — FLANGE OR ELEMENT TAPS
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL — PIPE TAPS
- SEPARATE OR REMOTE MOUNTED INSTRUMENT — PRIMARY ELEMENT SYMBOL — COMBINATION TAPS
- SINGLE VARIABLE INSTRUMENT

SLIDE AND SLUICE GATES

NORMALLY OPEN		NORMALLY CLOSED
	FLAP GATE	
NO	BUTTERFLY GATE	NC
	STOP GATE	
	SLIDE GATE	
	SLUICE GATE	

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INSTRUMENTATION

STANDARD DETAILS, SYMBOLS, ABBREVIATIONS - 1

DRAWING NUMBER
I-00-002

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PIPING SYSTEMS

ABBREVIATION	SERVICE
A	AERATION AIR
AA	AGITATION AIR
AFE	AIR FLOTATION EFFLUENT
AL	ALUM
AW	APPLIED WATER
B	BRINE
BA	BACKWASH AIR
BC	BIOFILTER CIRCULATION
BCTL	BOILER CHEMICAL TREATMENT, LOW PRESSURE
BCTM	BOILER CHEMICAL TREATMENT, MEDIUM PRESSURE
BDL	BOILER BLOWDOWN, LOW PRESSURE
BDM	BOILER BLOWDOWN, MEDIUM PRESSURE
BFE	BIOFILTER EFFLUENT
BFL	BIOFILTER FEEDWATER, LOW PRESSURE
BFM	BIOFILTER FEEDWATER, MEDIUM PRESSURE
BW	BACKWASH WATER
CCW	CONDENSER COOLING WATER
CD	CHEMICAL DRAIN
CEN	CENTRATE
CF	CENTRIFUGE FEED
CL	CONDENSATE, LOW PRESSURE
CLG	CHLORINE GAS
CLL	CHLORINE LIQUID
CLS	CHLORINE SOLUTION
CLV	CHLORINE VACUUM
CM	CONDENSATE, MEDIUM PRESSURE
CS	CIRCULATING SLUDGE
CSO	CAUSTIC SODA
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	DRAIN
DIW	DEIONIZED WATER
DS	DIGESTED SLUDGE
DSF	DIESEL FUEL
DSS	SCREENED DIGESTED SLUDGE
DW	DISTILLED WATER
EE	ENGINE EXHAUST
ES	EQUALIZED SLUDGE
F	FLOAT
FA	FOUL AIR
FC	FERRIC CHLORIDE
FLT	FILTRATE
FS	FLOTATION SLUDGE
FW	FILTERED WATER
GAS	GASOLINE
GAV	GAS VAPOR RETURN
GC	GAS CIRCULATION
GR	GRIT
HOH	HIGH PRESSURE HYDRAULIC OIL
HRR	HEAT RESERVOIR RETURN
HRS	HEAT RESERVOIR SUPPLY
HRW	RECIRCULATING POTABLE HOT WATER
HSG	HIGH PRESSURE SLUDGE GAS
HW	POTABLE HOT WATER
HWR	LOW TEMPERATURE HEATING RETURN
HWS	LOW TEMPERATURE HEATING SUPPLY
IA	INSTRUMENT AIR
JWR	JACKET WATER RETURN
JWS	JACKET WATER SUPPLY
LOR	LUBE OIL RETURN
LOS	LUBE OIL SUPPLY
LOW	LUBE OIL WASTE
LSG	LOW PRESSURE SLUDGE GAS
MG	MIXED GAS
ML	MIXED LIQUOR
MS	MIXED SLUDGE
MSG	MEDIUM PRESSURE SLUDGE GAS
MTWR	MEDIUM TEMPERATURE HEATING RETURN
MTWS	MEDIUM TEMPERATURE HEATING SUPPLY
NG	NATURAL GAS
OF	OVERFLOW
OLP	OXYGEN LOW PRESSURE
PD	PUMPED DRAINAGE
PE	PRIMARY EFFLUENT
POL	POLYMER
PS	PRIMARY SLUDGE
PSC	PRIMARY SCUM
RAS	RETURN ACTIVATED SLUDGE
RS	RAW SEWAGE
RW	RAW WATER
RWP	RAINWATER PIPE
RWR	RECLAIMED WATER
SA	SERVICE AIR
SCR	STEAM CLEAN RINSE
SCR	STEAM CLEAN RINSE
SCS	STEAM CLEAN SUPPLY
SD	SANITARY DRAIN
SDG	SULFUR DIOXIDE GAS
SDL	SULFUR DIOXIDE LIQUID
SDS	SULFUR DIOXIDE SOLUTION
SDV	SULPHUR DIOXIDE VACUUM
SE	SECONDARY EFFLUENT
SEP	SEPTAGE
SN	SUPERNATANT
SS	SECONDARY SLUDGE
SSC	SECONDARY SCUM
STA	STARTING AIR
STD	STORM DRAIN
STML	STEAM, LOW PRESSURE
STMM	STEAM, MEDIUM PRESSURE
TD	TANK DRAIN
TE	THICKENER EFFLUENT
THS	THICKENED SLUDGE
TO	THICKENER OVERFLOW
TS	TRANSFER SLUDGE
TSC	THICKENED SCUM
TWAS	THICKENED WASTE ACTIVATED SLUDGE
V	VENT
VA	VACUUM
VC	CHEMICAL VENT
VP	PETROLEUM VENT
VSL	STEAM VENT, LOW PRESSURE
VSM	STEAM VENT, MEDIUM PRESSURE
WAS	WASTE ACTIVATED SLUDGE
WML	WASTE MIXED LIQUOR
1W	POTABLE WATER (CITY WATER)
1WS	POTABLE SOFT WATER
2W	NONPOTABLE CITY WATER
2WHP	NO. 2 WATER HIGH PRESSURE
2WL	LANDSCAPE IRRIGATION
2WS	SOFTENED NONPOTABLE CITY WATER
3W	NO.3 WATER (SECONDARY EFFLUENT)
3WHP	NO. 3 WATER HIGH PRESSURE
3WLC	NO. 3 WATER LOW PRESSURE CHLORINATED
3WLP	NO. 3 WATER LOW PRESSURE
3WS	NO. 3 SPRAY WATER

EQUIPMENT PREFIXES

A	AERATOR	EB	ENGINE BLOWER MODULE	MOP	MOTOR OPERATOR	TFR	TRANSFORMER
ACC	AIR CONDITION COIL	EG	ENGINE GENERATOR MODULE	MSP	MOTOR STARTER PANEL	TM	TIMER
ACU	AIR CONDITIONING UNIT	EPR	EVAPORATOR	MUX	MULTIPLEXER	TRS	TRANSFER SWITCH
AD	AIR DRYER			MX	MIXER		
AF	AIR FILTER	F	FAN	MZ	MULTIZONE UNIT	UH	UNIT HEATER
AHC	AIR HANDLING UNIT W/COIL	FLC	FLOCCULATOR			US	UTILITY STATION
AHU	AIR HANDLING UNIT	FLT	FILTER	ORT	ODOR REMOVAL TOWER		
ASC	ADJUSTABLE SPEED CONTROL	FP	FILTER PRESS			VEN	VENTILATOR
ASD	ADJUSTABLE SPEED DRIVE	FPU	FLUID POWER UNIT	P	PUMP	VP	VACUUM PUMP
ATS	AUTOMATIC TRANSFER SWITCH	FUR	FURNACE	PBD	PANELBOARD, ELECTRICAL LIGHTING AND BRANCH CIRCUIT	WH	WATER HEATER
B	BLOWER	GEN	GENERATOR			WHR	WASHER
BFP	BELT FILTER PRESS	GDR	GRINDER	PC	PROCESS OR PERSONAL COMPUTER	WSR	WATER SOFTENER UNIT
BLR	BOILER	GT	GATE				
BNR	BURNER			PEJ	PNEUMATIC EJECTOR		
BP	BACKFLOW PREVENTER	H	HOIST	PLC	PROGAMMABLE LOGIC CONTROLLER		
BSN	BAR SCREEN	HEX	HEAT EXCHANGER				
		HOP	HYDRAULIC OPERATOR	PNL	PANEL		
C	COIL	HP	HEAT PUMP	POP	PNEUMATIC OPERATOR		
CDR	CONDENSOR	HPU	HYDRAULIC POWER UNIT	PVL	PRESSURE VESSEL		
CFR	CHEMICAL FEEDER	HTR	HEATER				
CHR	CHILLER	HTT	HEAT TRACER TAPE	REC	RECEIVER		
COL	COLLECTOR	HV	HAND OPERATED VALVE				
COM	COMMINUTOR			SCN	SCREEN (BAR, ETC.)		
CON	CONVEYOR	INJ	INJECTOR	SCR	SCRUBBER		
CP	COMPRESSOR			SEP	SEPARATOR		
CRN	CRANE	LOS	LOCK OUT STOP (SWITCH)	SLR	SILENCER		
CTF	CENTRIFUGE	LVR	LOUVER	SMP	SAMPLER		
CV	CONTROL VALVE			SS	SAND SEPARATOR		
CYL	CYLINDER	M	MOTOR	ST	STEAM TRAP		
		MCC	MOTOR CONTROL CENTER	SUB	SUBSTATION		
DIS	DISTRIBUTOR	MEE	MISCELLANEOUS ELECTRICAL EQUIPMENT	SWBD	SWITCHBOARD		
DPR	DAMPER			SWGR	SWITCHGEAR		
DS	DISCONNECT SWITCH	MIE	MISCELLANEOUS INSTRUMENTATION EQUIPMENT	T	TANK		
DU	DRIVE UNIT			TBN	TURBINE		
		MME	MISCELLANEOUS MECHANICAL EQUIPMENT	TCV	TEMPERATURE CONTROL VALVE		
E	ENGINE						

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CHECKED:
APPROVED: D. MACKAY

FILENAME
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BC PROJECT NUMBER
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4277

INSTRUMENTATION

ABBREVIATIONS

DRAWING NUMBER
I-00-003

SHEET NUMBER 44 OF 48

RTU ELEC 2N

	FAIL	RUNNING	CALL TO RUN	UNDER LOAD
	YA 3310	YI 3310	YS 3310	YR 3310
	YA 3110	YI 3110	YS 3110	YR 3110
	YA 3010	YI 3010	YS 3010	YR 3010
	YA 3410	YI 3410	YS 3410	YR 3410
	YR 3210	YA 3210	YI 3210	YS 3210

MCC-N1

M

HS 3110 LOS — LP3101

HS 3010 LOS — LP3001

HS 3210 LOS — LP3201

WSH 3120 — WSHH 3120 — M — ME-31

M — ME-30

WSH 3020 — WSHH 3020

WSH 3220 — WSHH 3220 — M — ME-32

HS 3310 LOS — LP3301

HS 3410 LOS — LP3401

WSH 3320 — WSHH 3320 — M — WSH 3330 — WSHH 3330 — ME-33

WSH 3420 — WSHH 3420 — M — WSH 3430 — WSHH 3430 — ME-34

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INSTRUMENTATION

SEDIMENTATION BASINS 3

DRAWING NUMBER
I-01-001

SHEET NUMBER 45 OF 48

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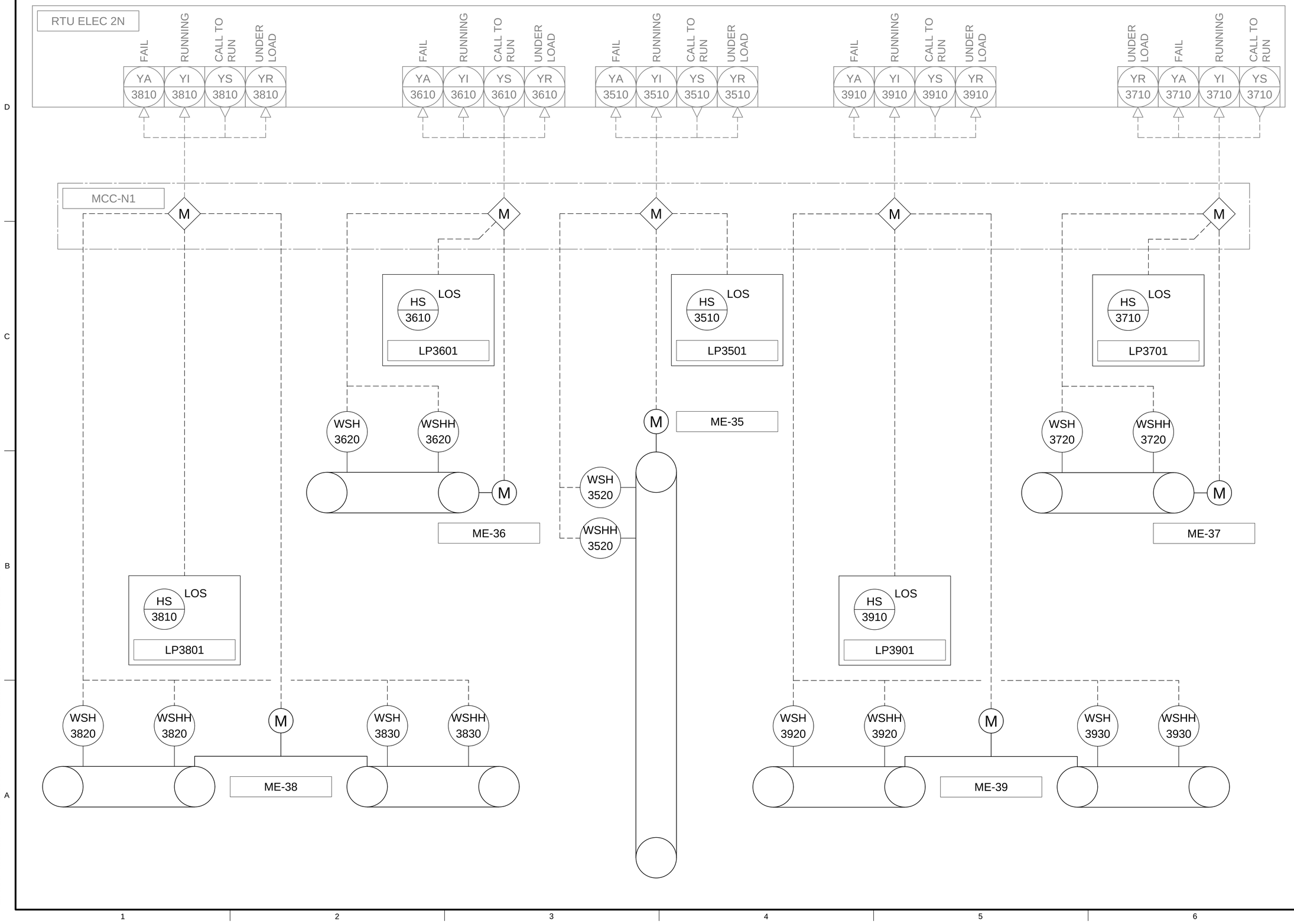

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INSTRUMENTATION

SEDIMENTATION BASIN 4

DRAWING NUMBER
I-01-002

SHEET NUMBER 46 OF 48

RTU ELEC 2S

FAIL	RUNNING	CALL TO RUN	UNDER LOAD
YA 4010	YI 4010	YS 4010	YR 4010
YA 4210	YI 4210	YS 4210	YR 4210
YA 4410	YI 4410	YS 4410	YR 4410
YA 4110	YI 4110	YS 4110	YR 4110
UNDER LOAD	FAIL	RUNNING	CALL TO RUN
YR 4310	YA 4310	YI 4310	YS 4310

MCC-S1

M

HS 4210 LOS — LP4201

HS 4410 LOS — LP4401

HS 4310 LOS — LP4301

HS 4010 LOS — LP4001

HS 4110 LOS — LP4101

WSH 4220 / WSHH 4220 — M — ME-42

WSH 4420 / WSHH 4420

M — ME-44

WSH 4320 / WSHH 4320 — M — ME-43

WSH 4020 / WSHH 4020 — M — WSH 4030 / WSHH 4030 — ME-40

WSH 4120 / WSHH 4120 — M — WSH 4130 / WSHH 4130 — ME-41

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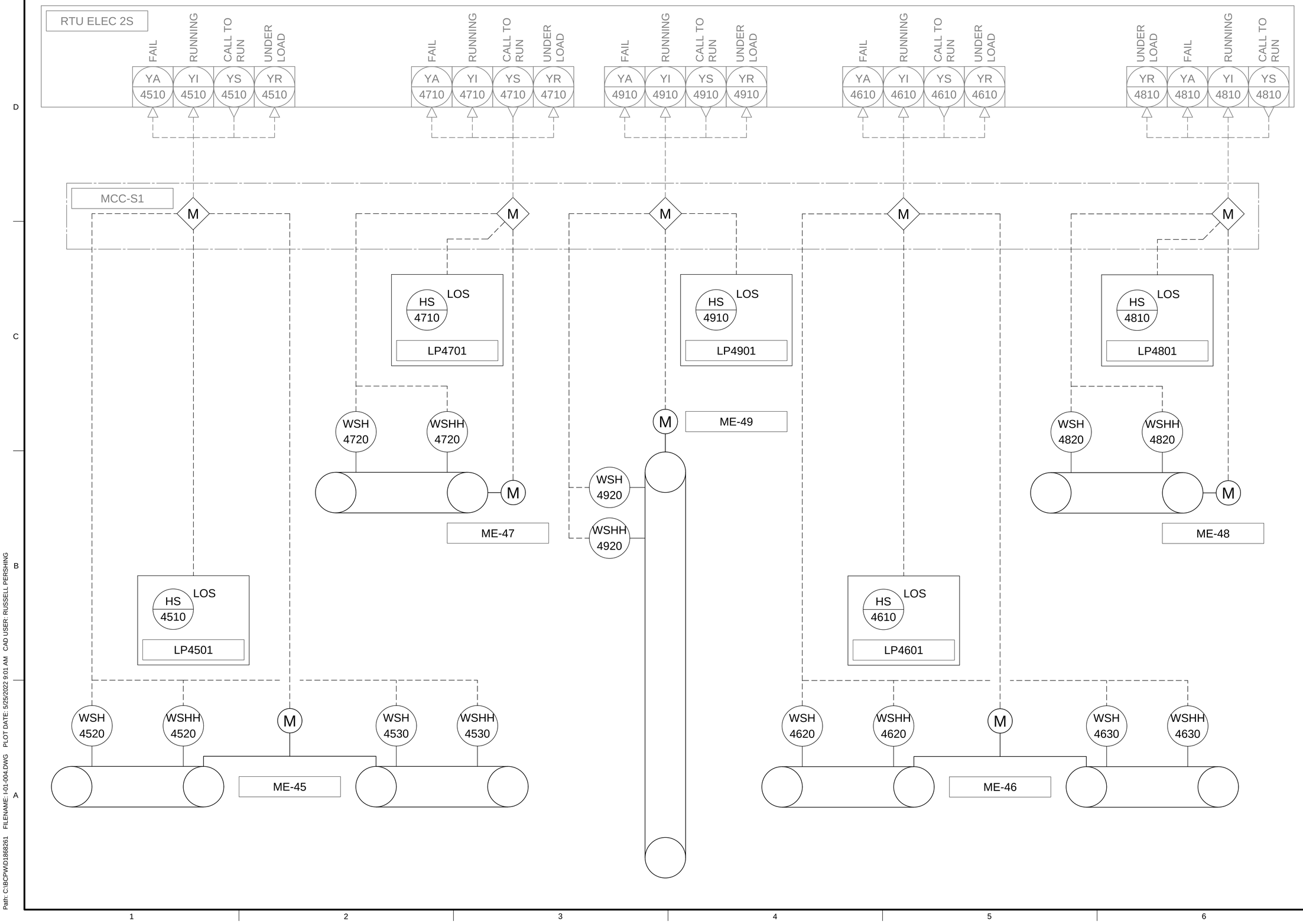
INSTRUMENTATION

SEDIMENTATION BASINS 5

DRAWING NUMBER
I-01-003

SHEET NUMBER 47 OF 48



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INSTRUMENTATION

SEDIMENTATION BASIN 6

DRAWING NUMBER
I-01-004

48 SHEET NUMBER OF 48

APPENDIX C
January 2022 BRIC Grant Application
(not selected for funding, will be resubmitted 2023)

Scope of Work Narrative

JANUARY 13, 2022

JVWTP FEMA BRIC Grant Application

JORDAN VALLEY WATER
CONSERVANCY DISTRICT

This scope of work narrative is provided in support of the Jordan Valley Water Conservancy District's 2021 Building Resilient Infrastructure and Communities (BRIC) phased project grant application for the "Jordan Valley Water Treatment Plant Sedimentation Basins Earthquake, Drought, and Wildfire Resiliency Upgrade" project.

Utility and Project Background

Jordan Valley Water Conservancy District (JVWCD) was created in 1951 under the Water Conservancy Act as a regional water supply agency. JVWCD primarily delivers water on a wholesale basis to its 17 wholesale member agencies that in turn, serve more than 750,000 people. JVWCD also operates a retail distribution system in limited areas of Salt Lake County with approximately 9,200 total retail connections. JVWCD provides deliveries of approximately 100,000 acre feet (AF) of high-quality drinking water to its wholesale and retail customers each year (See Figure 1 for historical and projected JVWCD water deliveries).

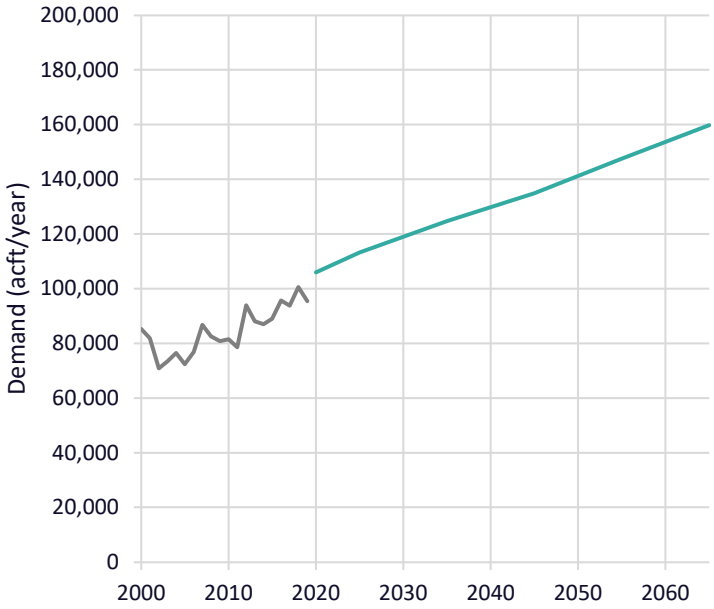


Figure 1: Historical and Projected JVWCD Water Deliveries

Some JVWCD member agencies rely 100 percent upon JVWCD water supplies while others use JVWCD supplies to supplement their own supplies (primarily groundwater or secondary irrigation water). In total, JVWCD supplies are used to satisfy the majority of all municipal and industrial (M&I) demands within its service area–JVWCD supplies approximately 65 percent while its member agencies self-supply 35 percent. **In the future, JVWCD supplies will become an even bigger component of the overall M&I need as JVWCD supplies are estimated to rise to 70 percent by 2030.**

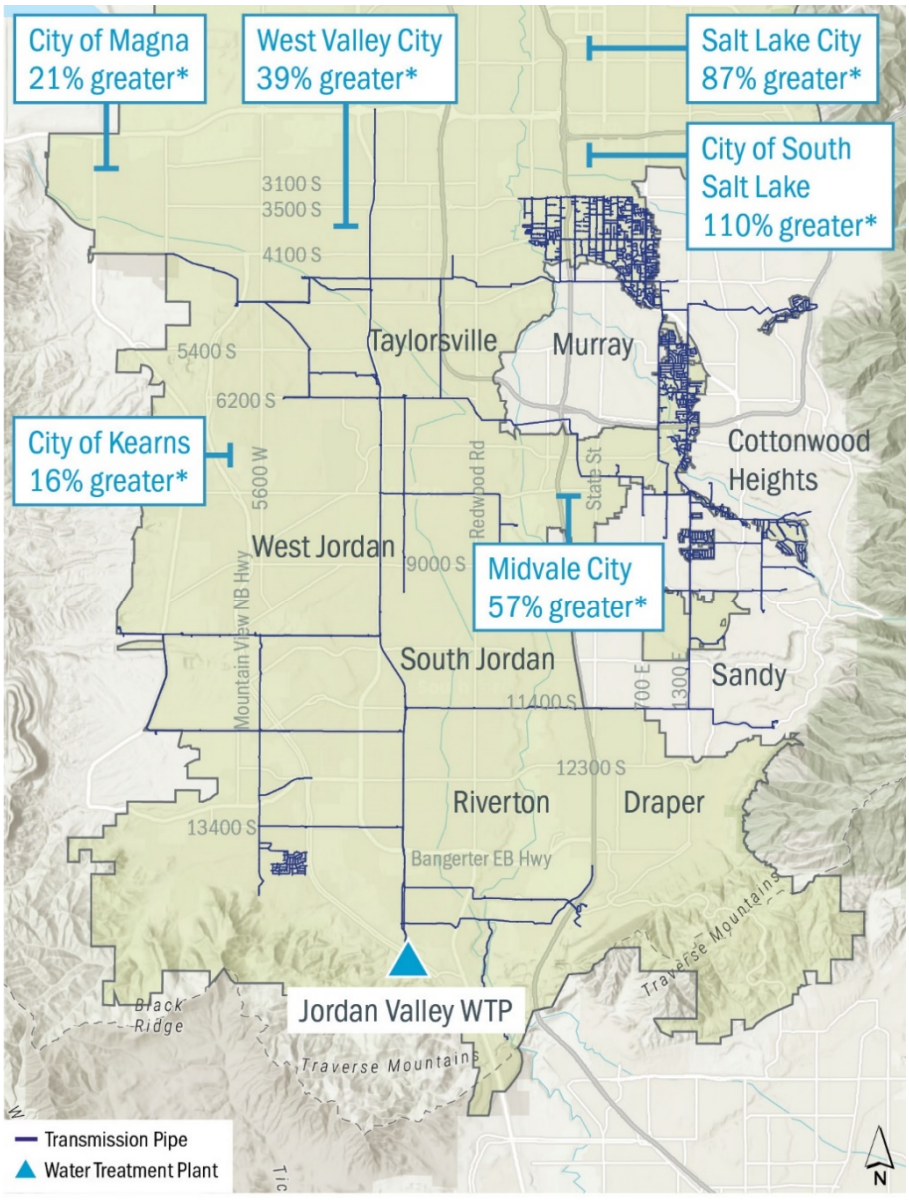
The proposed Jordan Valley Water Treatment Plant Sedimentation Basins Earthquake, Drought, and Wildfire Resiliency Upgrade project (JVWTP Resiliency Upgrade Project) will address critical deficiencies identified in JVWTP, which treats most of the water supplied by JVWCD.

JVWTP is co-owned by Metropolitan Water District of Salt Lake and Sandy (MWDSLS). As a two-sevenths owner of the plant, MWDSLS uses its share of JVWTP capacity to deliver water to Salt Lake City. Currently, MWDSLS does not heavily utilize JVWTP supplies (water treated at JVWTP serves less than 5 percent of Salt Lake City water demand). However, MWDSLS plans to fully utilize its approximate 50 million gallons per day (mgd) ownership interest in the plant within the next 20 years to support the growing population of Salt Lake City.

JVWCD Service Area and Supply

Salt Lake County is the most populous county in Utah and is home to the state capital, Salt Lake City. The JVWCD service area boundaries include approximately 60 percent of the developable land area in Salt Lake County and a small portion of neighboring Utah County. The current population served by JVWCD is approximately 750,000–nearly a quarter of the state's population–and is expected to exceed 820,000 by 2030.

Notably, the southern end of Salt Lake County and the northern end of Utah County–areas served by JVWCD–have become known as the Silicon Slopes because of the influx of tech companies, mimicking the early growth of Silicon Valley in California. Approximately 20 data centers have recently been constructed in the region providing critical services for national security and the country's economy.



There are several disadvantaged communities within the area served by JVWTP. In fact, data from the United States 2020 Census indicates that the communities identified in the Figure 2 have a significantly higher population living in poverty then Utah's statewide average.

JVWCD has a diverse supply portfolio that includes three water treatment plants, 31 high quality groundwater wells, and a large groundwater service connection from Central Utah Water Conservancy District (CUWCD). Even with such supply diversity, JVWTP–with its capacity of 180 mgd–accounts for nearly three quarters of JVWCD's total reliable supply capacity of 250 mgd.

**Greater than the state average of 8.9% of the population living in poverty.*

Figure 2. JVWCD and MWDSLS service area community residents in poverty compared to state average

Asset Description–JVWTP

JVWTP is the largest drinking water treatment plant in the state of Utah and has been providing water to communities within Salt Lake County since 1974. JVWTP is located at 15305 South 3200 West in Herriman, Utah, in the southwest end of Salt Lake County and at the base of the Oquirrh Mountain Range foothills. JVWCD has purchased land to the east and west of the plant to maintain a buffer from adjacent developments. The plant is bordered on the north by an existing residential neighborhood and on the south by a major arterial highway called the Mountain View Corridor (planned to eventually be developed into an interstate highway).

JVWTP receives its source water through more than 17 miles of aqueducts that convey water from mountain rivers and reservoirs at the mouth of Provo Canyon (southeast of JVWTP in Utah County). JVWTP then discharges finished water to an 18-mile aqueduct which conveys water to the north for distribution to JVWCD customers.

Figure 3 is an aerial view of the critical facilities at the plant, including 6 flocculation/sedimentation basins. Basins 1 & 2 are the heart of the plant, and all flow passes through Basin 1 & 2 structures twice: 1) coagulated water (red) is distributed to Basins 3-6 from the flow-split channel at the upstream side of Basins 1 & 2; 2) flocculated water (yellow) settles in Basins 3-6; and 3) settled water (light blue) travels to the Filter Building through common settled water channels that form the north boundary of Basin 1 and south boundary of Basin 2.

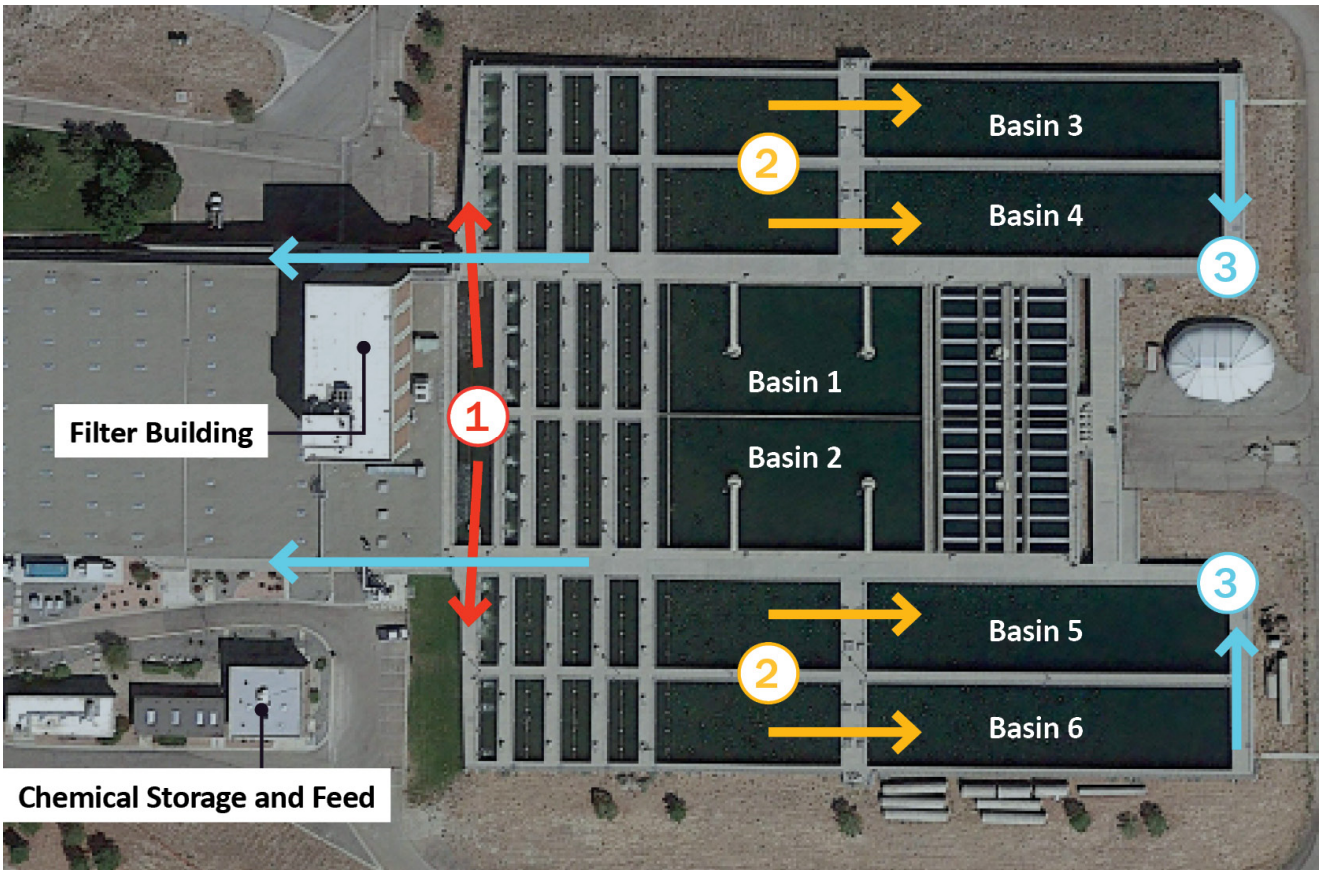


Figure 3. JVWTP Site Plan.

Improvement History

JVWTP was designed in 1971, constructed from 1971-1974, then expanded in 1987. The original construction included two flocculation/sedimentation basins (basins 1 & 2) with circular clarifier mechanisms for solids removal. The expansion included adding four flocculation/sedimentation basins–basins 3 & 4 on the north side of basin 1 & 2, and basins 5 & 6 on the south side of basins 1 & 2 (see Figure 3). Each basin has a capacity of 30 mgd.

JVWCD Hazard Mitigation Plan and Other Relevant Planning Efforts

Several planning efforts contributed to the development of the proposed JVWTP Resiliency Upgrade Project, including:

- 2021 JVWCD Hazard Mitigation Plan (HMP)
- 2021 JVWCD Drought Contingency Plan
- 2021 JVWCD Demand, Supply, and Conveyance Master Plan
- 2018 JVWCD Climate Change: A Management Plan

The recently completed HMP identified a significant risk of impairment to JVWTP from earthquake, drought, and wildfire hazards. The plan identified an upgrade project for the two oldest sedimentation basins (basins 1 & 2) to mitigate these risks. Further, the Plan was developed with comprehensive outreach to community stakeholders, which is described later along with the project description.

The JVWCD *2018 Climate Change: A Management Plan* report helped quantify the drought hazard requiring mitigation. Finally, the JVWCD *2021 Drought Contingency Plan* and *2021 Demand, Supply, and Conveyance Master Plan* reports also verify the criticality of the project to meet JVWCD's level of service requirements and system resiliency goals.

Narrative Introduction

The scope of work (SOW) for this project, described in this narrative, meets Technical and Qualitative Criteria for the 2021 BRIC grant funding summarized in Table 5 at the end of this narrative. The following is a description of the asset deficiencies and risks, the impact of the hazard occurrence, the selected mitigation project, and tasks to implement the project. Finally, a summary is provided detailing how the plan satisfies the applicable technical and qualitative criteria for the 2021 BRIC grant funding.

Asset Hazard Deficiencies and Risks

Earthquake, wildfire, and drought hazards expose three primary deficiencies in JVWTP, as described below.

Risk 1: Loss of treatment capability due to earthquake

In the face of an earthquake, JVWTP is at risk of losing its ability to treat water–and consequently its ability to supply water to customers– due to the high likelihood of equipment failure from ground shaking.

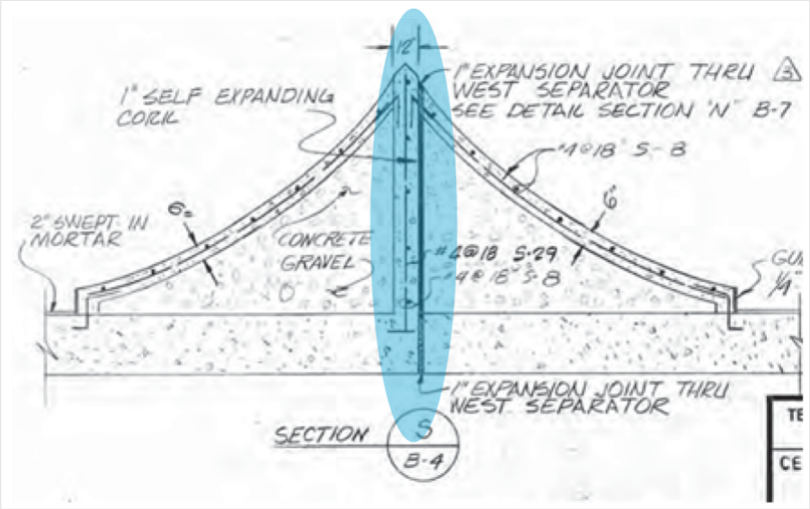


Figure 4. Unreinforced Expansion Joint, Drawing 10-B-5 from 1971 Drawings

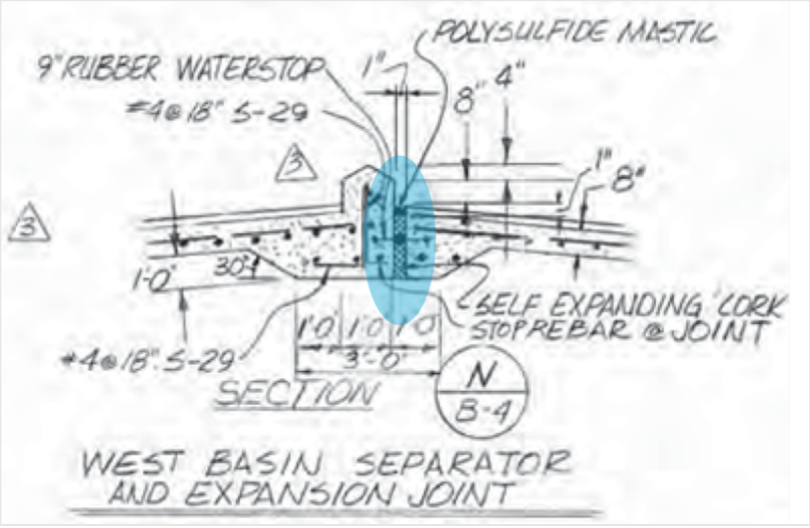


Figure 5. Unreinforced Expansion Joint, Drawing 10-B-7 from 1971 Drawings

JVWTP's sedimentation basins 1 & 2 each have three circular mechanisms over sloped concrete floors; unreinforced expansion joints exist in each section of the sloped floors. These unreinforced expansion joints create, in effect, floating slabs that are susceptible to differential settlement from ground shaking (see Figures 4 and 5).

A seismic event with ground shaking that leads to differential settlement will create leaks in basins 1 & 2 and knock their circular mechanisms out of level. Since the circular mechanisms must be plumb at the center column for the rake arm to travel efficiently through a full revolution, the basins are prevented from removing solids if these mechanisms are knocked out of level. If this happened, the basins would need to be taken offline for several years while they are rebuilt. The initial damage state would take JVWTP offline completely–while the channel to which all the basins discharge their water is repaired and isolated–before the outer basins (3, 4, 5, and 6) could be brought back online.

Risk 2: Inability to treat poor water quality amidst wildfire, drought, and earthquake events

JVWTP is also currently limited in ability to treat degraded water quality (e.g., elevated turbidity, algae, algal toxins) that could occur in the watershed due to seismic activity, wildfire, and drought. Feedwater for the JVWTP originates from the Provo River, flowing through two diversion points from the river. As a result, JVWTP is directly affected by river water quality.

Seismic activity, wildfire, and drought present water quality hazards within the geologically active, steep-sloped Provo River canyon. Events such as landslides associated with seismic events, avalanches common after deep snowstorms, or rainstorms occurring after a wildfire dump high amounts of sediment into the river. The steep side walls of the Provo River watershed result in significant debris/sediment flows to the diversion points after such events. When this debris and ash is transported via the diversions to JVWTP, sediment loads exceed the capacity of the current flocculation and sedimentation process. Because basins 1 and 2 are so shallow, they are not configured to remove the higher sediment levels. This means that JVWTP must run at a reduced flow rate to give the treatment process more time to treat the poor water quality. Consequently, total water supply to the community is reduced at potentially critical times when water service is most needed.

Drought has the potential to impact water quality in two ways. First, it increases the likelihood of wildfires in the watershed. Second, lower water levels in reservoirs, lakes, and rivers combined with warmer water temperatures often result in large algal blooms. Algae can create a higher particulate load to be removed during the treatment process while also producing toxins that are a threat to public health.

Risk 3: Inadequate supply capacity to mitigate climate change and other future conditions

The JVWCD service area covers the semi-arid Salt Lake Valley in greater Salt Lake County. JVWCD's primary sources of surface water and groundwater depend on winter season precipitation (snowpack) which is highly variable from one year to the next. Although this high variability is part of the natural climate conditions typical for the region, the extremes have been amplified by climate change in the form of exceptional drought conditions over the last several years and a future forecast of persistent drought. The National Integrated Drought Information System (NIDIS) provides historical and predicted drought conditions at https://www.drought.gov/states/utah. As shown in Figure 6, NIDIS reports that Salt Lake County has been in drought for the majority of the last ten years.

Further, JVWCD's internal report *2018 Climate Change: A Management Plan* found that drought severity and frequency is likely to increase with climate change. **In a dry year, JVWCD could see surface water sources yield nearly half of typical-year yields.**

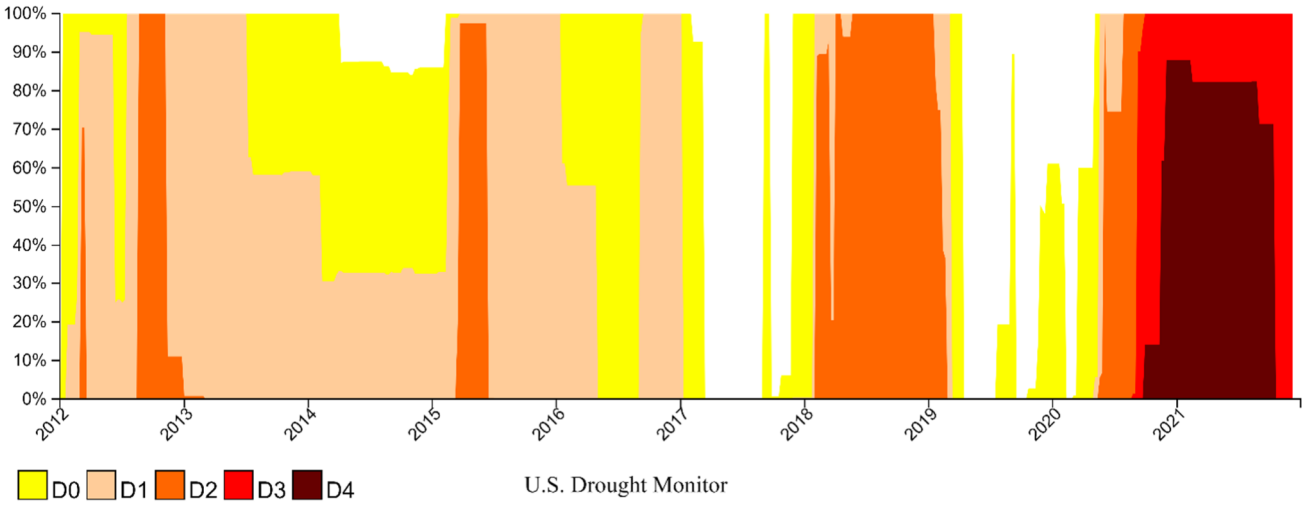


Figure 6. NIDIS Historical Drought Conditions for Salt Lake County

To consistently deliver reliable water supplies every year, JVWCD must develop and operate its supplies in ways which are in harmony with the natural hydrologic cycle. To do this, JVWCD practices conjunctive use: maximizing surface water during wet years and resting the aquifer by maximizing groundwater in dry years to stretch shrinking reservoirs. JVWTP treats both stored surface water (Deer Creek and Jordanelle reservoirs) and direct runoff surface water. Direct runoff surface water is primarily only available during the spring runoff season (approximately April through June). It is critical that JVWTP reliably treat surface water when it is available, even under poor water quality conditions that may result from drought or wildfire events. Doing this enables the ratio of surface water-to-groundwater utilization to be compatible and sustainable with the natural hydrologic system.

However, as described above, JVWTP's shallow sedimentation basins 1 & 2 present a substantial vulnerability from drought and wildfire. Plant records show that basin performance degrades substantially under high sediment loads dramatically reducing the plant's ability to produce its rated capacity (JVWCD, 2017 plant data). To mitigate this reduction of surface water supplies which ultimately reduce JVWTP's capacity, JVWCD will pump more groundwater until basins 1 & 2 are repaired. However, **such an overreliance on groundwater will have long-term negative consequences that disrupt JVWCD's nature-based approach of conjunctive management of their water resources.** This disruption will further increase JVWCD's vulnerability to future droughts, climate change, and population growth.

Completing the upgrade to maintain capacity during poor water quality events, such as those caused by drought and wildfire, enables JVWCD to maximize treatment when surface water is available to fully leverage the nature-based approach of conjunctive management.

Greatest potential impacts

As determined in the 2021 JVWCD HMP, water service would be severely impaired following an earthquake and during poor water quality events caused by drought and wildfire. The impaired water service results in local economic damages, local health and safety threats, and national security and economic threats.

Direct Impacts

A benefit-cost analysis (BCA) was performed using FEMA's BCA version 6.0 tool to quantify these impacts. The BCA narrative accompanying this application provides a detailed description of the analysis. **The BCA estimates that, of the 750,000 people in the JVWCD service area, 368,000 would be left without water service while JVWTP was offline for modifications to isolate basins 1 and 2 from the process and get the plant running without them immediately following an earthquake.** After JVWTP is brought back into service, it would be operated at a reduced capacity for two years until basins 1&2 could be reconstructed. The BCA also estimates that JVWTP production capacity reductions from poor water quality events triggered by drought and/or wildfire impact water service to 123,000 people. The BCA narrative accompanying this application provides a detailed explanation of the impacts associated with all three hazard deficiencies.

Cascading Impacts

If JVWTP were offline immediately after an earthquake, then consequently limited in net production for an additional two summers as described above, significant resulting impacts would be felt across the community affecting multiple sectors and critical services.

Threats to Community Lifelines. JVWTP capacity is a critical component of the Community's Food, Water, and Shelter lifeline, providing water to fight fires and treat the injured at hospitals throughout the valley. As a result, losing water service after an earthquake results in significant local health and safety threats. **JVWTP capacity is critical to recovery efforts after natural disasters.**

National Security. Potential national security and economic threats are a result of potentially losing water service to several data centers which have been recently constructed in JVWCD's service area. **These data centers provide critical services for national security and the country's economy, and they rely on JVWCD water supplies to maintain operations.** Of particular significance is the U.S. National Security Agency's (NSA) data center to which JVWCD supplies millions of gallons per day of cooling water to feed the cooling towers required to keep the facility running. JVWTP downtime could result in downtime at the data center with serious security implications for the country.

Figure 7. Data centers continue to grow in the region

Selected Mitigation Project

The 2021 JVWCD HMP identified six specific mitigation actions including this JVWTP Resiliency Upgrade Project. Selection of the mitigation measure proposed in this application included consideration of several basins 1 & 2 improvement alternatives to address deficiencies as listed in Table 1.

Table 1. Alternatives Considered to Address Deficiencies

ALTERNATIVE	RESULTING DECISION
No Action	This was not considered as a viable option because it would not address seismic, drought, or wildfire vulnerabilities. The response time to replace basins 1 & 2 under emergency conditions would be prolonged and require extensive water restrictions. The cost would be dramatically higher than if constructed under a planned and coordinated effort.
Alternative 1: Retrofit with carbon-fiber overlay to tie the slabs together across the unreinforced expansion joints to reduce/eliminate differential settlement.	The original design with an 8-inch slab and #4 reinforcement bars at 18-inches on center does not provide enough structural mass or strength for a simple retrofit option like a carbon-fiber overlay to tie the adjacent slabs together.
Alternative 2: Fill the conical bottoms and install a 'topping slab' to bridge the unreinforced expansion joints.	The fill and topping slab would address the seismic deficiency to earthquake hazards but would do nothing for the wildfire and drought hazards. The basins are shallow with only 10 feet of water depth. The topping slab would reduce water depth, increase velocity through the basin, and significantly impair the settling of particles. This alternative would reduce the capacity of the basins and do nothing to treat poor water quality from drought or wildfires.
Alternative 3: Remove the basin floor and excavate to deepen the basins before installing a new mat foundation and sister walls.	**This alternative was selected as the optimal alternative to address all three deficiencies.** Deepening the basins makes it possible to improve settling to handle the increased solids load from drought and wildfire. The new double-mat foundation placed at a lower elevation would be designed to current seismic code to mitigate the earthquake deficiency.

By selecting Alternative 3, JVWCD will successfully reduce all three identified risks to JVWTP, improving the plant's overall resilience to drought, wildfire, and earthquake. This solution reduces risk and improves resilience for the larger community, mitigating local economic damages and decreasing risk of cascading impacts such as health and safety threats, along with national security and economic threats.

Work Tasks

JVWCD identified the following scope of work to implement the proposed JVWTP Resiliency Upgrade Project. The scope of work has been divided into the following three phases. The predesign phases is scheduled for completion prior to the grant award, while Phases I and II would be completed after the grant is awarded.

Pre-award: Predesign (July 2022 – October 2022)

Attachment 2 to this application includes figures of the conceptual design for the selected Mitigation Project, Alternative 3. Starting in July 2022, predesign will define the design criteria and general layout of new equipment, piping, and structures for Alternative 3. The proposed conceptual design will be refined to a 30% design as part of the predesign effort. Because JVWTP capacity is a critical supply to the community during peak water use season, construction activities will be sequenced carefully to avoid disruptions during peak seasons. Predesign efforts will include documentation of plant shutdown constraints and associated construction sequencing. Historical water quality records will also be reviewed to determine the treatment criteria needed to address the water quality risks from wildfire, drought, and earthquake events. In addition to the vulnerability assessments performed in the HMP and other previous studies, predesign efforts will be guided by the following.

Performance based criteria. Current seismic code requires that structural design accommodates the controlling conditions of two potential seismic events; $\geq$ 6.0 magnitude earthquake (475-year recurrence interval) or >6.75 magnitude earthquake (2,475-year recurrence interval). Predesign will include the level of service evaluations and structural analyses to determine which seismic conditions result in the controlling design requirements for any structural modifications. The HMP determined that the project site is not in a floodplain, so floodplain management will not be necessary.

JVWCD does their water supply planning to meet system demands during stream flow yields for a 50-yr recurrence interval, 3-yr duration drought. This project will allow them to maintain that level of service in the event of wildfire or other negative water quality impacts from drought.

Technical Data. Design will be done in accordance with the building codes adopted by State of Utah, Salt Lake County, and Herriman City (presented in Table 2).

Table 2. Design Elements in Accordance with Relevant Building Codes*

DESIGN	CODE
Building/Structures	International Building Code (IBC) 2018 and ASCE 7-16
Reinforced concrete	ACI 350-06 and ACI 350.3-06 for Concrete Liquid Containing Structures, ACI 318-14 for all other reinforced concrete
Structural steel	AISC 360-16 and AISC 341-16
Aluminum	Aluminum Design Manual, Latest Edition
Welding	AWS Welding Codes, Latest Edition
Occupational health and safety requirements	OSHA and DOSH
Seismic rehabilitation of existing buildings	ASCE-SEI 41-06

Note: When conflicting requirements occur, the most stringent requirements will govern the design

Table 3 list the technical data that will need to be gathered during predesign and the methodology for doing so.

Table 3. Additional Technical Data Needs

DATA NEED	DATA GATHERING EFFORT
Soil conditions at the site	Geotechnical investigation
Fluid dynamic impacts on settling	Jar tests and/or pilot studies
Inlet channel hydraulic flow split characteristics	Computational Fluid Dynamics (CFD) modeling

Predesign Deliverable. The results of the predesign will be documented in a Basis of Design Report including 30% design drawings and a list of remaining assumptions.

Phase I: Design (October 2022 – July 2023)

The design phase will progress 30% design to a final design package for construction bidding by implementing the necessary engineering studies for predesign and final design, updating the preliminary BCA provided with this application, and (if necessary) performing an Environmental Planning and Historic Preservation (EHP) review. Design milestones include 60%, 90%, and 100% completion with review periods between each stage. Based on the conceptual design of Alternative 3, it is anticipated that final design will include drawings and specifications for the following elements of basins 1 & 2:

1. Replacement of under-slab unrestrained cast-iron soil pipe with seismically resilient piping
2. Replacement of the basins' shallow, conically sloped bottoms with deeper flat bottoms
3. Installation of sister walls around the perimeter, including divider walls and a cover
4. Installation of dowelled connection between flocculation and sedimentation
5. Replacement of the circular clarifier mechanisms with telescoping hose-less collectors used for solids removal

Comprehensive design will be performed to confirm the constructed facility meets the objectives of mitigating the ground shaking hazard and improving process resilience against water quality degradation from drought and fires.

Design Deliverables. The following deliverables will be provided as part of final design:

- 60% complete design package submittal for review
- 90% complete design package submittal for review
- 100% complete design package submittal for bidding

The review process for each deliverable will include City of Herriman and Utah Division of Drinking Water representatives to secure all necessary building permits and an operating permit.

BCA Update

As more detailed cost estimates become available throughout the design process the BCA will be updated to include the most accurate cost information. Opportunities to refine risk information and mitigation effectiveness will also be sought for during design. The BCA update will serve as a Go/No Go review to verify that the benefits of the project justify the cost. The updated BCA will be provided for consideration in the Phase II approval process.

EHP Review

The JVWTP Resiliency Upgrade Project is believed to qualify for a Categorical Exclusion (CATEX) from the National Environmental Policy Act (NEPA) review process because, as demonstrated in the conceptual drawings included in Attachment 2, the work will only be disturbing grounds where there are existing facilities (see Attachment 4, Limits of Disturbance in EHP Section of application). If predesign or final design efforts identify the need to expand construction activities beyond the footprint of previous construction work, then an EHP will be performed and submitted according to NEPA requirements.

Phase II: Construction Process (July 2023 – September 2025)

The construction process will begin with selection of a construction contractor and then proceed into construction.

Design-Bid (July 2023 – August 2023)

Upon completion of design, JVWCD will procure services of a qualified firm to construct basin 1 & 2 improvements. Procurement will include a competitive bidding process with interested firms, review of the bids, and selection of the qualified firm. JVWCD will then negotiate the contract prior to issuing notice to proceed construction. The Design Bid will be the first full post-award work task.

Construction (October 2023 – September 2025)

Based on the proposed conceptual design, the construction sequencing will include the following:

1. **Demolition**
   - Install bulkheads to isolate basins 1 & 2 and maintain plant flows to basins 3-6
   - Demolish and remove circular clarifier mechanisms, supports, effluent launders, basin floor slab, and under-slab cast iron piping
2. **Civil**
   - Excavate to specified depth for the new deeper subgrade
   - Install under-slab pipe
3. **Structural**
   - Construct new floor slab
   - Construct new perimeter sister walls and interior divider walls
   - Construct the cover
4. **Mechanical**
   - Install plate settlers and hose-less solids collectors
5. **Electrical and Instrumentation**
   - Install electrical equipment, conduit, wiring, and instrumentation for the upgraded basins

Implementation Plan

JVWCD will contract with a consulting engineering firm (Consultant) to provide a holistic approach to this JVWTP Resiliency Upgrade Project. JVWCD's engineering department will manage the contract and supervise project implementation and will dedicate 3 staff members and additional support staff to the successful completion of the project**.** JVWCD plans to have one Senior Engineer spend an average of 20 percent of his time on this project, beginning with start of final design and finishing when construction is complete. In addition, JVWCD will have the Engineering Department Manager spend 5 percent of their time and the JVWCD Chief Engineer spend 2.5 percent of their time supporting this project for the duration of the project. For JVWCD, a staff of five engineers (supplemented by several support staff) typically manages 30-40 active projects at any given time. JVWCD has managed capital projects as large as $75M and has the resources and knowledge to successfully manage this project.

The Consultant will provide design services to resolve existing process limitations and structural deficiencies, mitigate natural hazards, and anticipate future needs. The Consultant will also support the construction process from bidding through final completion and startup. The combined JVWCD and Consultant project team will design and administer the construction contract to upgrade the two original sedimentation basins.

Potential Challenges and Proposed Solutions

The extensive outreach efforts described in the next section along with JVWCD's experience completing similar projects identified the following challenges and obstacles to this project and the associated innovative implementation solutions to address those challenges.

Table 4. Innovative Implementation Solutions to Potential Obstacles and Challenges

CHALLENGE/OBSTACLE	SOLUTION
Financing 100 percent of the project would result in rate increases that would be unacceptable to JVWCD and MWDSLS customers	FEMA BRIC grant funds reduce the financial burden to fit JVWCD's financial plans and proposed rate increases.
Disruption to normal operations during construction of project improvements	Modifications are currently being made to equipment in the other four sedimentation basins (which do not normally operate in the winter) to prevent ice buildup on the equipment and accommodate temporary wintertime operations with extra operations & maintenance staff attention. Shutdowns of basins 1 & 2 will be avoided in the summer as much as possible, but when necessary JVWCD will compensate for lost capacity through temporary heavy utilization of wells, non-optimized operation of other sedimentation basins, and temporary back-up treatment arrangements with MWDSLS.

CHALLENGE/OBSTACLE	SOLUTION
Construction supply chain issues and shortage of materials	In recent construction projects, JVWCD has successfully pre-purchased equipment with abnormally long delivery times prior to completion of final design. Similar strategies will be used to complete the project as fast as possible.
Shortage of construction laborers due to amount of construction in Utah	JVWCD maintains strong relationships with contractors in the region and will provide advanced notice of the pending opportunities to qualified construction firms at several milestones in the design process. Some of these notices could include opportunities for contractors to comment on constructability as well, allowing them to understand the project labor requirements more fully and plan accordingly.
Delays due to the COVID-19 pandemic delays	JVWCD has established a COVID-19 operations protocol that manages employee and partner health and safety to accommodate risk levels communicated by the U.S. Center for Disease Control. Through the extensive use of web conferencing, JVWCD staff has been able to implement this protocol and maintain day-to-day functions without significant impacts to productivity or service. These protocol and tools will be used to advance design regardless of COVID-19 risk levels and to protect JVWCD employees and contractors during construction.

Leveraging Partners

As mentioned, JVWCD operates and maintains the JVWTP in partnership with MWDSLS. JVWCD and MWDSLS jointly own the JVWTP (JVWCD owns five-sevenths and MWDSLS owns two-sevenths). In accordance with an operations and maintenance agreement, JVWCD is the lead operating agency and MWDSLS reimburses two-sevenths of the capital, operations, and maintenance costs. This multi-agency partnership provides for efficient delivery of high-quality drinking water to a total combined population of approximately 1,225,000 (JVWCD = 750,000 and MWDSLS = 475,000).

In addition to the partnership with MWDSLS, the proposed project also involves the non-funding participation of the Central Utah Water Conservancy District (CUWCD). An operation, maintenance, and capital improvement oversight committee (the Jordan Aqueduct Management Committee) was established in 1986 to oversee the jointly owned JVWTP and the associated raw water and finished water aqueduct systems. The Jordan Aqueduct Management Committee includes representatives from JVWCD, MWDSLS, and CUWCD that review and approve projects and budgets. The project proposed here was approved in March 2021 in the 2021 Jordan Aqueduct Management Committee Ten-Year Capital Improvements Plan.

As a regional water supply agency, JVWCD also acts in partnership with its 17 member agencies including wholesale member cities (i.e., Bluffdale City, Draper City, Herriman City, Midvale City, Riverton City, City of South Jordan, City of South Salt Lake, City of West Jordan) **and improvement districts/other agencies** (i.e., Granger-Hunter Improvement District, Hexcel Corporation, Kearns Improvement District, Magna Improvement District, Taylorsville-Bennion Improvement District, Utah Department of Corrections, WaterPro, White City Water Improvement District, Willow Creek Country

Club). The JVWCD governing board consists of nine trustees which represent individual cities or geographic areas within the JVWCD service area. These trustees–representing their constituent cities or areas–review and approve operation, maintenance, and capital improvement plans, projects, and budgets. The proposed project is included in the JVWCD Ten-Year Capital Projects Plan which was approved by the JVWCD Board on June 9, 2021. Each of the member cities and improvement districts/other agencies will participate financially in the project through the payment of water delivery charges which will reimburse JVWCD's portion of the project costs.

2021 JVWCD HMP Outreach Activities

The 2021 JVWCD HMP was developed using an outreach strategy that involved a series of four stakeholder meetings over the course of the planning process to solicit stakeholder and public input.

Several sections of the HMP are linked to stakeholder and public involvement that will be promoted during the implementation of this JVWTP Resiliency Upgrade Project. The primary sections associated with stakeholder and public involvement are *Section 1.2: Stakeholder Involvement* (supplemented by Appendix B: Stakeholder Participation Documentation) and *Section 5: Plan Maintenance*.

HMP Section 1.2: Stakeholder Involvement. This section summarizes stakeholder involvement conducted throughout the planning process. Four stakeholder meetings were held during the four phases of the planning process. 36 organizations were invited to participate in the meetings; 32 of those stakeholders participated in one or more of the workshops (i.e., all 17 JVWCD member agencies, two cities with residents that are JVWCD retail customers, four county/regional agencies, four state agencies, three federal agencies, the local power company, and the local gas company–see Table 1.3 in the HMP for the full listing of stakeholder participation). Stakeholder participation during the planning process included utilizing questionnaires/surveys to solicit input on applicable topics such as hazard identification, previous hazard occurrences, risk assessment, mitigation strategies, etc. Information obtained from the questionnaires and surveys was used to help develop several sections of the HMP, including *Section 2: Hazard Identification, Section 3: Risk Assessment*, and *Section 4: Mitigation Strategy*. Appendix B of the HMP provides detailed documentation of the stakeholder participation.

HMP Section 5: Plan Maintenance. This section outlines continued stakeholder and public involvement during the five-year period following the Plan's approval by FEMA. JVWCD will apply the plan maintenance measures to the JVWTP Resiliency Upgrade Project during both design and construction phases to provide project briefings and solicit stakeholder/public input on this critical water infrastructure mitigation project.

Further, this JVWTP Resiliency Upgrade Project will also meet the 2021 goals outlined in *Section 4.3: Mitigation Goals*–which are aligned with the 2019 Salt Lake County HMP–requiring participation from several JVWCD member agencies and retail customers which receive up to 100 percent of their culinary water supply from JVWCD (e.g., Bluffdale, Draper, Herriman, Midvale, Riverton, Salt Lake City, South Jordan, South Salt Lake, Taylorsville, West Jordan, etc.).

Summary

The proposed JVWTP Resiliency Upgrade Project includes critical improvements to establish the earthquake, wildfire, and drought hazards resilience required to maintain essential water service to the growing community of 750,000 people served by JVWCD. Table 5 summarizes how the proposed SOW satisfies the Technical and Qualitative Criteria for 2021 BRIC Grant Funding.

Table 5. Project Fulfillment of 2021 BRIC Grant Funding Technical and Qualitative Criteria

TECHNICAL CRITERIA		
CRITERION #	**CRITERION NAME**	**APPLICABILITY OF PROPOSED SOW**
1	Infrastructure Project	The proposed upgrades to the JVWTP sedimentation basins 1 & 2 would improve structural integrity required for JVWTP to continue supplying clean water after an earthquake to 750,000 people at the time that they need it most. Upgrades to this critical water infrastructure will also improve resilience against water quality degradation from drought and wildfires in the watershed while mitigating drought water shortages through enhancing conjunctive use capabilities.
2	Mitigates Risk to One or More Lifelines	JVWTP capacity is a critical component of the Community's Food, Water, Shelter lifeline. Communities cannot function without a reliable water supply. JVWTP provides more than half of the peak day water supply for 750,000 residents and the commercial, industrial, and institutional facilities that drive the community's economy and provide essential community services. For example, in the face of an earthquake, JVWCD's water supply is essential to replenish storage tanks that provide water for firefighting and hospitals.
3	Incorporates Nature-Based Solutions	Completion of this project will enable JVWCD to effectively manage its surface and groundwater resources in ways that are in harmony with the natural hydrologic conditions in the region. This will support the long-term sustainability and resilience of JVWCD water supplies in part through nature-based solutions such as conjunctive use of groundwater and surface water resources.
4	Applicant has Mandatory Tribal-, Territory-, or State-Wide Building Code Adoption Requirement	Herriman City is the primary Authority Having Jurisdiction (AHJ) and will drive code used to design the upgrade. The building/structures will be designed to International Building Code (IBC) 2018 and American Society of Civil Engineers (ASCE) 7-16. Retrofit considerations will be designed to ASCE/SEI 41-06. Reinforced concrete will be designed to American Concrete Institute (ACI) 350-06 for Concrete Liquid-Containing Structures. All local and national codes for health and safety will be followed.
5	Subapplicant has Building Code Effectiveness Grading Schedule Rating of 1 to 5	As a Utah local district, JVWCD is not a building code regulatory agency. The project location falls under the jurisdiction of Herriman City. Herriman City has adopted building codes which match the State of Utah adopted codes. JVWCD will request Herriman City to get a building code effectiveness grading during Phase I of the project.

TECHNICAL CRITERIA (CONT.)		
CRITERION #	**CRITERION NAME**	**APPLICABILITY OF PROPOSED SOW**
6	Application generated from a previous qualifying award	If advanced to the national competition for Phase II selection, the project would meet this criterion from the Phase I award.
7	A Non-Federal Cost Share of at Least 30 percent	JVWCD is supplying a full 30 percent of this project's cost, as described in the Budget and Cost Share Section of the FEMA GO application.
8	Designation as an Economically Disadvantaged Rural Community	JVWCD does not have this designation.
QUALITATIVE CRITERIA		
CRITERION #	**CRITERION NAME**	**APPLICABILITY OF PROPOSED SOW**
1	Risk Reduction/ Resiliency Effectiveness	The loss of service risks associated with ground shaking from earthquakes will be mitigated by replacing the sloped floors under each circular mechanism with a new double-mat foundation placed at a lower elevation and designed to current seismic code. Deepening basins 1 & 2 in this way will also improve settling performance to handle poor water events that can be caused by drought, wildfire, and/or earthquake (e.g., landslides). This will help JVWTP maintain capacity under adverse treatment conditions to mitigate drought water shortages.
2	Climate Change and Other Future Conditions	JVWCD's *2018 Climate Change: A Management Plan* found that drought severity and frequency is likely to increase with climate change and JVWCD could see their surface water sources yield nearly half of typical-year yields in a dry year. In addition, population is expected to increase by nearly 10 percent by 2030 putting further strain on the system. Upgrades to basins 1 & 2 will increase reliability to treat surface water when it is available, even under poor water quality conditions that may result from drought or wildfire events. This maximizes the amount of groundwater that can be kept in reserve for times of drought.
3	Implementation Measures	JVWCD will contract with an engineering design firm to provide a holistic approach to water infrastructure improvements and upgrades that resolve existing conditions, mitigate known hazards, and anticipate future growth and needs. The engineer will also manage the construction process from bidding through completion. JVWCD's engineering department will manage the contract and supervise project implementation. The combined JVWCD and consultant project team will design and administer the construction contract to upgrade basins 1 & 2. Construction will be carefully sequenced to minimize impacts to JVWTP production capacity during peak demand season.

QUALITATIVE CRITERIA (CONT.)		
CRITERION #	**CRITERION NAME**	**APPLICABILITY OF PROPOSED SOW**
4	Population Impacted	As described above, the upgrades will mitigate the loss of water service for up to 368,000 people after an earthquake. As illustrated in Figure 2, a significant portion of the impacted population resides in disadvantaged communities. The project will minimize local economic impacts as well as cascading impacts to public health (maintaining supply to hospitals), public safety (maintaining firefighting supply), and national security and economy (maintaining cooling water supply to data centers).
5	Outreach Activities	The 2021 JVWCD HMP was developed using an outreach strategy that involved a series of four stakeholder meetings over the course of the planning process to solicit stakeholder and public input. The JVWCD 2018 Climate Change: A Management Plan; 2021 Drought Contingency Plan; and 2021 Demand, Supply, and Conveyance Study reports also verify the criticality of the project. Moreover, JVWCD received Letters of Support for this JVWTP Resiliency Upgrade Project from 10 of its member agencies and MWDSLS as a partner agency. The letters are provided in the Evaluation Section of the FEMA GO application for this grant. During the HMP, surveys were conducted to get input from stakeholders on their experience with natural hazards, mitigation ideas, percentages of water provided by JVWCD, water storage capabilities, etc. No negative comments were received to the JVWTP Resiliency Upgrade Project.
6	Leveraging Partners	That Jordan Aqueduct Management Committee, including JVWCD, MWDSLS, and CUWCD, have reviewed and approved the proposed project. As a regional water supply agency, JVWCD also acts in partnership with its 17 member agencies and neighboring improvement districts which have also reviewed and approved the proposed project. As previously mentioned, official letters of support from 10 of this organizations are attached to this application. JVWCD is currently working with each of the member agencies to develop drought response actions and has engaged them in the development of 15 additional drought mitigation measures scheduled for implementation over the next ten years. This project was identified as one of those mitigation measures and the other 14 will improve the overall drought resiliency in parallel with this project.