

ELECTRICAL ABBREVIATIONS

A	AMMETER, AMPERE	KVA	KILOVOLT AMPERES
AC	ALTERNATING CURRENT	KW	KILOWATTS
AFF	ABOVE FINISHED FLOOR	LT	LIQUID-TIGHT
AFG	ABOVE FINISHED GRADE	MISC	MISCELLANEOUS
AMP	AMPERE	MS	MOTOR STARTER
ATS	AUTOMATIC TRANSFER SWITCH	MT,MTD	MOUNT, MOUNTED
AUTO	AUTOMATIC	N	NEUTRAL, NORMAL
AUX	AUXILIARY	NA	NON-AUTOMATIC
AWG	AMERICAN WIRE GAGE	NC	NORMALLY CLOSED
BAT	BATTERY	NEC	NATIONAL ELECTRIC CODE
BC	BARE COPPER	NEMA	NATIONAL ELECTRICAL
BRKR	BREAKER		MANUFACTURERS ASSOC
C	CONDUIT, CONTACTOR, CONDUCTOR,	NO	NORMALLY OPEN
CB	CIRCUIT BREAKER	NTS	NOT TO SCALE
CKT	CIRCUIT	OL	OVERLOAD RELAY
CPT	CONTROL POWER TRANSFORMER	PB	PULL BOX
CT	CURRENT TRANSFORMER, CABLE TRAY	PC	PHOTOCELL
DC	DIRECT CURRENT	PH	PHASE
DIV	DIVISION	PNL	PANEL
DPDT	DOUBLE-POLE DOUBLE-THROW	PVC	POLYVINYL CHLORIDE
DPST	DOUBLE-POLE SINGLE-THROW	PWR	POWER
DS	DISCONNECT SWITCH	RGS	RIGID GALVANIZED STEEL
ETM	ELAPSED TIME METER	RCPT	RECEPTACLE
ETR	EXISTING TO REMAIN	RTU	REMOTE TELEMETRY UNIT
EXP	EXPLOSION-PROOF	SA	SURGE ARRESTER
FDR	FEEDER	SH	SPACE HEATER
F,FU	FUSE	SPD	SURGE PROTECTION DEVICE
FLEX	FLEXIBLE CONDUIT	SS	STAINLESS STEEL
FREQ	FREQUENCY	SW	SWITCH
GALV	GALVANIZED	T	THERMOSTAT, THERMISTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TD	TEMPERATURE DETECTOR, TIME DELAY
G,GND	GROUND	TDR	TIME DELAY RELAY
HH	HANDHOLE	TEMP	TEMPERATURE
HP	HORSEPOWER	UNO	UNLESS NOTED OTHERWISE
HZ	HERTZ	UPS	UNINTERRUPTIBLE POWER
I & C	INSTRUMENTATION AND CONTROL		SUPPLY
ISR	INTRINSICALLY SAFE RELAY	V	VOLTAGE, VOLTS
J,JB	JUNCTION BOX	W	WATT
K	KEY INTERLOCK	WP	WEATHERPROOF
KA	KILOAMPERES	XFMR	TRANSFORMER
KV	KILOVOLT		

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
X	INDICATES ELECT. CKT. #
S	TOGGLE SWITCH, 1-POLE, 20 AMP, 120 VOLT (3 INDICATES 3-WAY, 4 INDICATES 4-WAY)
⊙	JUNCTION BOX
⊕	DUPLEX RECEPTACLE, 3 WIRE GROUNDING, NEMA 5-20R, 20 AMP, 125 VOLT
Ⓜ	MOTOR, HORSEPOWER INDICATED
□ ^{PB}	IN GROUND PULL BOX, SEE NOTE 11 & 13
□ ^{HH1}	NEW HANDHOLE (NUMBER INDICATED), SEE NOTE 12
⊙	GROUND ROD, 5/8"x10'-0" COPPER CLAD
○	CONDUIT UP (MULTIPLE OR SINGLE)
●	CONDUIT DOWN (MULTIPLE OR SINGLE)
---	CONDUIT, EXPOSED
---	CONDUIT IN FLOOR OR UNDERGROUND
---	OVERHEAD ELECTRIC LINE, 3-PHASE
①	CONDUIT RUN
~ P101	CIRCUIT REFERENCE, SEE WIRING SCHEDULES
"X"	ON SYMBOL INDICATES REMOVAL
Ⓜ	LOCAL CONTROL STATION HAND-OFF-AUTOMATIC IN NEMA 4X SS ENCL.
Ⓜ	SAFETY SWITCH NEMA 4X STAINLESS STEEL 3 POLE UNLESS OTHERWISE NOTED WITH 2 FORM "C" AUX CONTACTS
ETM	ELAPSED TIME METER
Ⓜ	CIRCUIT BREAKER
Ⓜ	FUSE
□	TERMINAL
Ⓜ	CONTROL POWER TRANSFORMER
Ⓜ	INDICATING LIGHT, R=RED, G=GREEN, A=AMBER
Ⓜ	GROUND CONNECTION
OL'S	THERMAL OVERLOADS
P	PHASE MONITOR RELAY CONTACT
Ⓜ	PUSHBUTTON SWITCH
Ⓜ	N.C.T.O. CONTACT
Ⓜ	N.O.T.C. CONTACT
Ⓜ	NORMALLY OPEN INSTANTANEOUS CONTACT
Ⓜ	NORMALLY CLOSED INSTANTANEOUS CONTACT
TD	TIME DELAY RELAY (0-180 SEC)
---	FIELD/INTERCONNECTION WIRING
---	LOCAL/INTERNAL WIRING
Ⓜ	MOTOR CIRCUIT PROTECTOR (MCP) OR CIRCUIT BREAKER (TRIP AMPS INDICATED) 3 POLE UNLESS OTHERWISE INDICATED
Ⓜ	CURRENT TRANSFORMER
Ⓜ	POWER TRANSFORMER
Ⓜ	COMBINATION MOTOR STARTER WITH MCP FVR = FULL VOLTAGE REVERSING FVNR = FULL VOLTAGE NON-REVERSING SSRV = SOLID STATE REDUCED VOLTAGE VFD = VARIABLE FREQUENCY DRIVE
CPT	CONTROL POWER TRANSFORMER
CP	CONTROL PANEL
0-0	ON - OFF
---	EQUIPMENT OUTLINE

ELECTRICAL NOTES

- COORDINATE THE INSTALLATION WITH POWER COMPANY PRIOR TO BEGINNING WORK. CONTACT THE POWER COMPANY AND SUBMIT ANY FORMS NECESSARY FOR WORK REQUIRED UNDER THIS CONTRACT.
- ALL WORK SHALL CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC). GROUND ALL ELECTRICAL EQUIPMENT AND ENCLOSURES IN ACCORDANCE WITH THE NEC.
- THE EXISTING UTILITIES ARE SHOWN BASED ON BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL DETERMINE ACTUAL LOCATIONS OF EXISTING UTILITIES AND TAKE NECESSARY CARE TO AVOID DAMAGE TO THOSE UTILITIES. THE CONTRACTOR SHALL REPLACE ALL CIRCUITS AND REPAIR PIPING DAMAGED AS A RESULT OF CONTRACTOR OPERATIONS AT NO ADDITIONAL COST TO THE OWNER.
- COORDINATE CONDUIT RUNS WITH FACILITIES AND PIPING RUNS. PROVIDE 6" CLEAR AT PIPE CROSSINGS.
- THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF ALL SYSTEMS INCLUDING ROUTING OF HOME RUNS AS SPECIFIED.
- INSTRUMENTATION AND CONTROL CIRCUITS IN CONDUITS SHALL BE SEPARATED BY 6" MINIMUM WHERE RUNNING IN PARALLEL WITH POWER CIRCUIT CONDUITS.
- ALL MOUNTING HARDWARE, ANCHORS, CHANNEL, PLATES, BRACKETS, FLOAT SUSPENSION CABLES, CABLE HANGERS AND ENCLOSURES SHALL BE STAINLESS STEEL UNLESS OTHERWISE INDICATED.
- ALL LOW VOLTAGE CIRCUITS SHALL BE PROVIDED WITH A GREEN GROUNDING CONDUCTOR, SIZED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRIC CODE (NEC).
- IN GENERAL, LIGHT LINES INDICATE EXISTING OR WORK OF OTHER TRADES, BOLD LINES INDICATE NEW ELECTRICAL WORK
- THE CONTRACTOR SHALL TEST AND RE-VERIFY SIGNAL AND CONNECTIVITY OF RELOCATED ANTENNA SYSTEM TO ENSURE IT MAINTAINS AT A MINIMUM THE SAME CAPABILITIES AS IN ITS ORIGINAL LOCATION.
- A REMOTE TELEMETRY SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

The remote telemetry system shall be a complete and functioning system with hardware and software design and details provided by the Contractor as a construction submittal for prior approval by the District. At a minimum, both the weir site and the pump station site will have the following main components:

- Campbell Scientific CR1000X Data Logger
- Campbell Scientific Model CH200 12v Charging Regulator
- Duracell DURDC12-35J 12v, 35ah Sealed Rechargeable Battery
- Campbell Scientific Model 29796 120vac to 24 VDC Wall Charger
- Sierra Wireless Airlink RV50 Cellular Modem, Antenna, and Coax Cable.

The equipment shall be mounted to the electrical equipment racks at each site and shall be placed NEMA 4X Stainless Steel, lockable enclosure. The RTU supplier shall coordinate with the District to integrate the new system into the Districts existing SCADA System. The pumping station flow meter shall be reported through the SCADA System.

THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS. FOR ADDITIONAL ABBREVIATIONS OF OTHER DIVISIONS, SEE OTHER LEGENDS.

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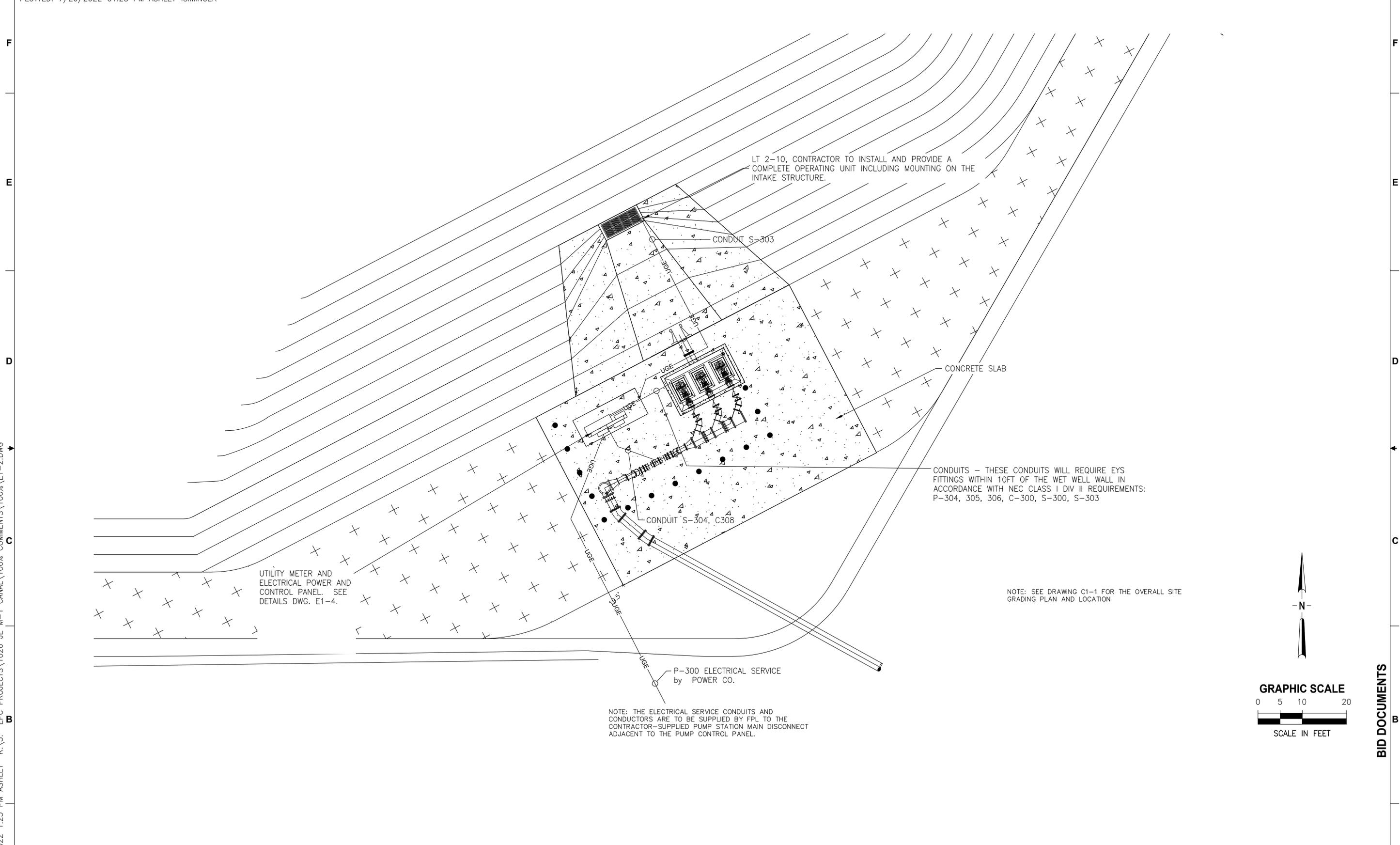
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**CRANE CREEK
M-1 CANAL FLOW RESTORATION
VOLUME 2**

ELECTRICAL LEGEND

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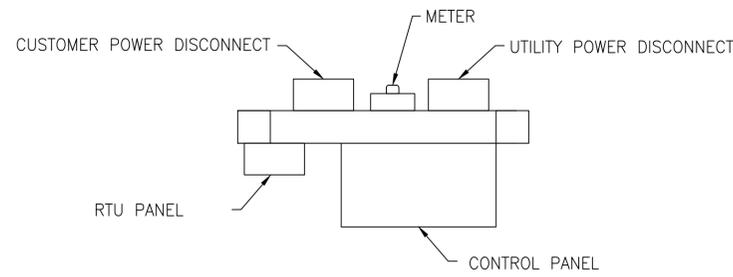
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**CRANE CREEK
 M-1 CANAL FLOW RESTORATION
 VOLUME 2**

PUMP STATION ELECTRICAL SITE PLAN

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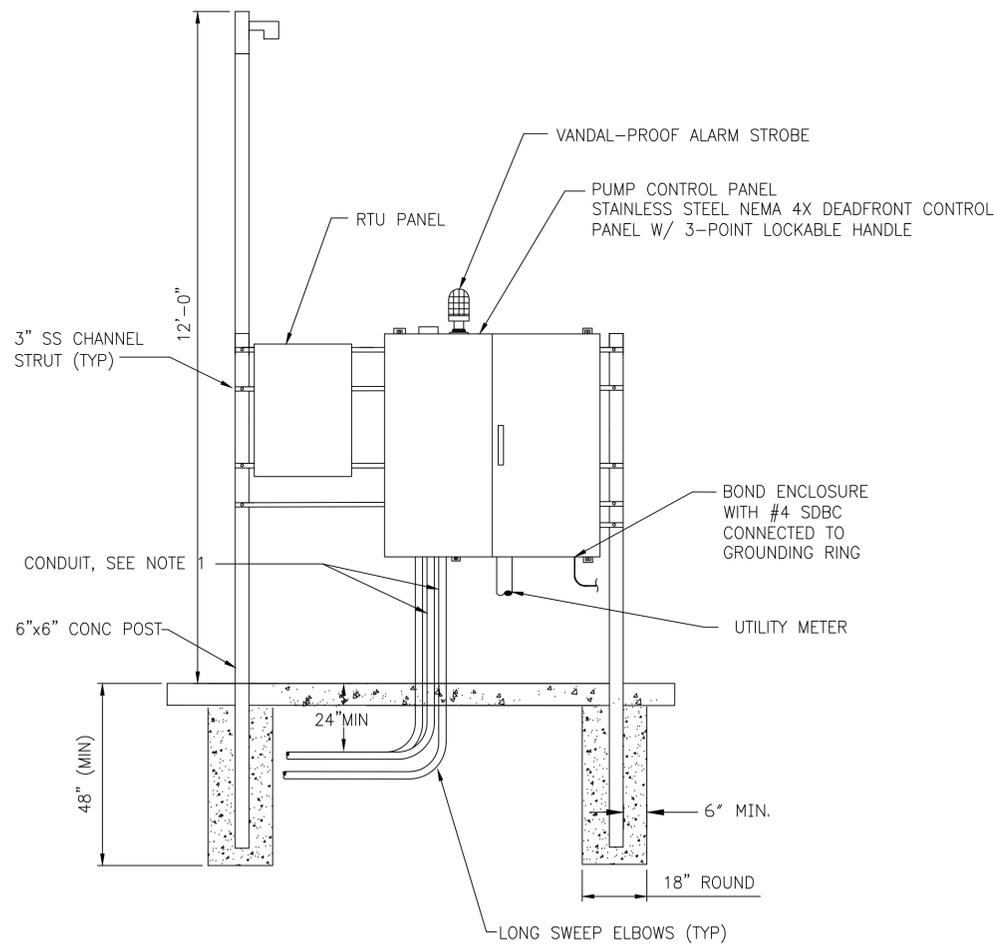
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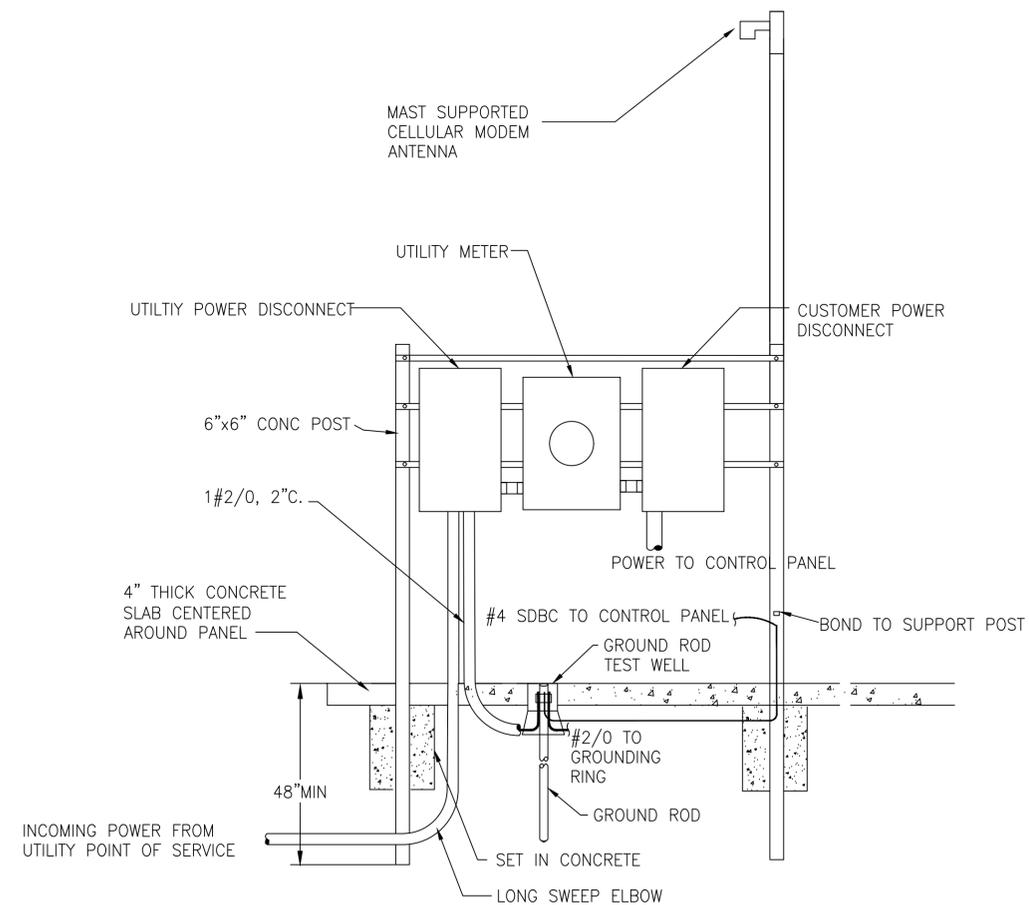
PLAN VIEW

NOTES:

1. PUMP MOTOR CONDUIT SHALL BE SIZED TO MAX 40% CONDUIT FILL. MINIMUM CONDUIT SIZE SHALL BE 2 1/2". ABOVE GROUND CONDUITS SHALL BE PVC COATED RIGID GALVANIZED STEEL DOWN TO BELOW THE FIRST ELBOW BELOW GRADE. UNDERGROUND CONDUITS BETWEEN THE JUNCTION BOX AND WETWELL SHALL BE SCHEDULE 80 PVC ENCASED WITH A MINIMUM OF 2" OF CONCRETE. REFER TO NEC 501.10(A)(1)(a) AND THE EXCEPTION FOR THE INSTALLATION OF THESE CONDUITS. ANALOG SIGNAL CONDUITS SHALL BE PVC COATED RIGID GALVANIZED STEEL ABOVE AND BELOW GRADE. ALL OTHER UNDERGROUND CONDUITS SHALL BE SCHEDULE 80 PVC. TYPE EYS EXPLOSION PROOF FITTINGS SHALL BE INSTALLED WITHIN 10 FEET OF THE BOUNDARY TO CLASS I DIV. II LOCATIONS INCLUDING THE PUMP WET WELL.
2. INSTALL AN ELECTRICAL GROUNDING SYSTEM IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AS WELL AS LOCAL CODES AND ORDINANCES. INSTALL AN UNDERGROUND PERIMETER CABLE GROUNDING SYSTEM WITH CONNECTIONS TO AT LEAST WET WELL COVER, VALVE VAULT COVER, CONTROL PANELS, GENERATOR, UTILITY COMPANY TRANSFORMER, AUTOMATIC TRANSFER SWITCH, AND ANTENNA MANUAL DISCONNECT SWITCH, AND METAL FENCE.
3. THE STATION NAME, PCU I.D. NUMBER, AND ADDRESS SHALL BE AFFIXED TO THE FRONT OF THE METER CABINET.
4. ALL MOUNTING HARDWARE & BRACKETS SHALL BE 316 STAINLESS STEEL.
5. COAT PORTIONS OF ALUMINUM IN CONTACT WITH CONCRETE WITH COAL TAR EPOXY.



FRONT VIEW



REAR VIEW

ELECTRICAL SERVICE AND CONTROL PANEL DETAIL 1

NTS

E1-2

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**CRANE CREEK
 M-1 CANAL FLOW RESTORATION
 VOLUME 2**

PUMP STATION ELECTRICAL DETAILS

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