

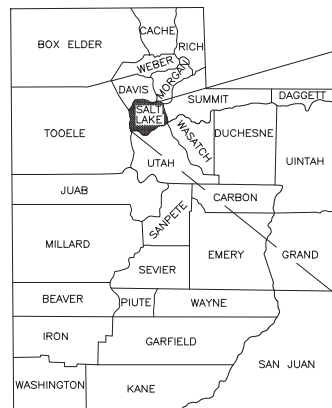


JORDAN VALLEY WATER
CONSERVANCY DISTRICT

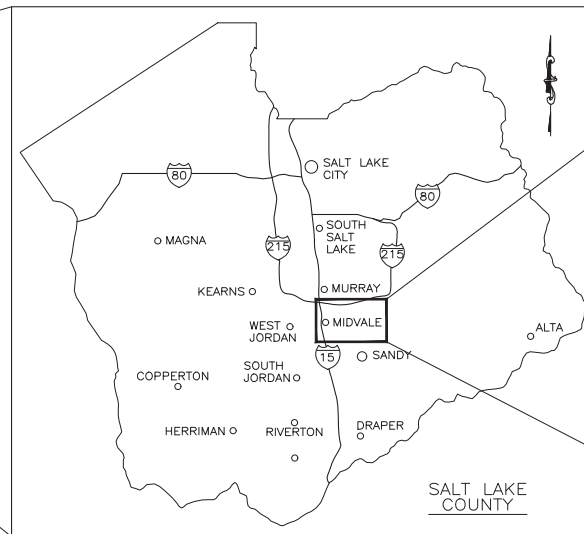
WELL PUMP STATION CONSTRUCTION

700 EAST (7618 SOUTH 700 EAST, SANDY CITY)
1000 EAST (7750 SOUTH 1000 EAST, MIDVALE CITY)

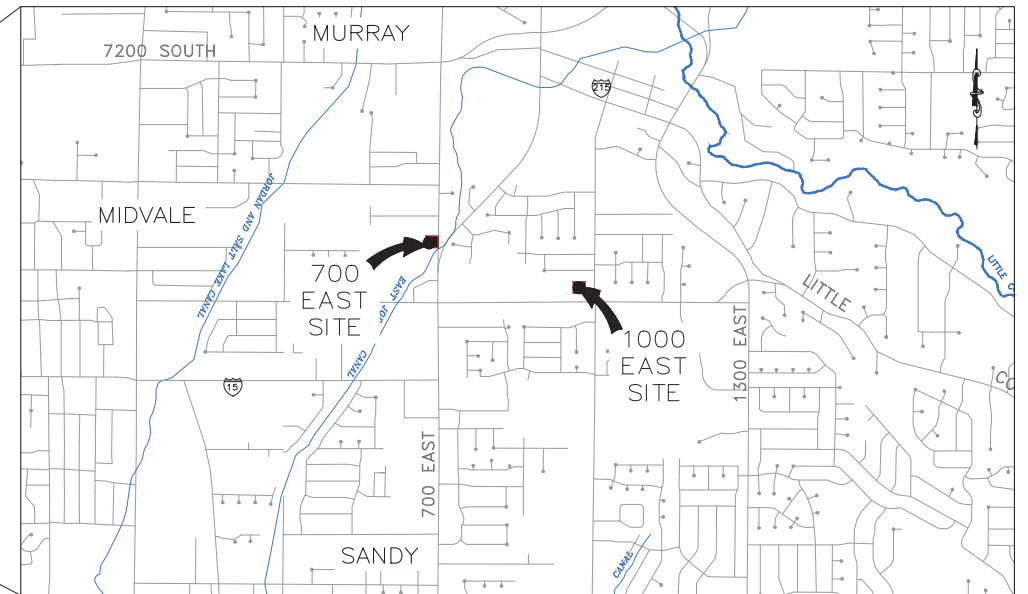
PROJECT NO. 4280



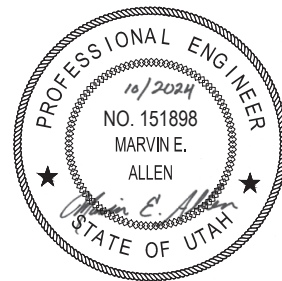
STATE OF UTAH



VICINITY MAP



LOCATION MAP



HANSEN, ALLEN & LUCE DESIGN TEAM

- MARVIN E. ALLEN, P.E. – PROJECT MANAGER
- VERN G. CONDER, P.E. – PROJECT ENGINEER
- ROBERT C. CONDER, S.E., P.E. – STRUCTURAL (CONDER ENGINEERING)
- KEITH B. HEGERHORST, P.E. – ELECTRICAL (HPE, INC. ELECTRICAL ENGINEERS)
- TAYLOR GROBERG, P.E. – HVAC
- ERIC LYMAN – LANDSCAPE ARCHITECT/IRRIGATION (E.A. LYMAN LANDSCAPE ARCHITECT)

PROGRESS PRINT
DATE: 6.27.2024
Not to be used for construction.
Hansen, Allen, & Luce, Inc.
Consultants/Engineers

GENERAL DRAWING SYMBOLS	
①	REFERENCE NOTE <small>THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT</small>
Ⓛ	DEMOLITION NOTE
△	REVISION NOTE
①	IDENTIFICATION NOTE
Ⓝ	PHOTO REFERENCE
ⓍⓍ	EQUIPMENT REFERENCE
ⓍⓍⓍ	WIRE SIZE REFERENCE
PHOTO ⓍⓍ	PHOTO REFERENCE
Ⓜ	SECTION/ELEVATION REFERENCE
ⓍⓍⓍ-ⓍⓍⓍ	EQUIPMENT ID TAG

SECURITY SYMBOLS	
MS	SECURITY MOTION SENSOR <small>THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT</small>
□	SECURITY CAMERA (FIXED)
PTZ	SECURITY CAMERA (PAN-TILT-ZOOM)
IL	SECURITY ILLUMINATOR
□	CONTROL STATION

GENERAL LINEWORK	
—	NEW FACILITIES <small>THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT</small>
---	EXISTING FACILITIES TO REMAIN
////	EXISTING FACILITIES TO BE REMOVED
----	EQUIPMENT OR PACKAGE BOUNDARY

LIGHT SWITCHES	
Ⓢ	SINGLE POLE SWITCH
ⓈⓈ	GANGED SWITCHES IN COMMON BOX WITH COMMON COVER PLATE
ⓈⓈ	SWITCH SUPERScript MODIFIER, LOWER CASE LETTER INDICATES CIRCUIT CONTROLLER -- a,b,c ETC. MAY BE COMBINED WITH CIRCUIT NUMBER. EXAMPLE: 1g, 3b
ⓈⓈ	SWITCH SUBSCRIPT MODIFIER, UPPER CASE LETTER OR NUMBER: 2 = DOUBLE POLE 3 = THREE WAY 4 = FOUR WAY K = KEY OPERATED M = HORSEPOWER RATED MANUAL STARTER MC = MOMENTARY CONTACT, THREE POSITION MS = MANUAL (STARTER) OR SWITCH S = SURFACE F = FLUSH
□	CONTROL STATION
Ⓟ	PHOTOELECTRIC CONTROL UNIT
<small>THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT</small>	

SCHEMATIC SWITCHES		
NORMALLY OPEN (NO)	NORMALLY CLOSED (NC)	THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT
		MOMENTARY PUSHBUTTON
		MAINTAINED POSITION MUSHROOM HEAD PUSHBUTTON
		LEVEL OR FLOAT
		LEVEL OR FLOAT
		TEMPERATURE
		TEMPERATURE
		FLOW
		FLOW
		TIME
		TIME
		FORCE OR TORQUE
		PRESSURE
		SELECTOR SWITCH, TWO POSITION MAINTAINED CONTACT WITH OFF-OFF LEGEND
		SELECTOR SWITCH, TWO POSITION SPRING RETURN TO RIGHT WITH JOG-RUN LEGEND
		SELECTOR SWITCH, THREE POSITION MAINTAINED CONTACT WITH HAND-OFF-AUTO LEGEND

EQUIPMENT GROUNDING CONDUCTORS		
FUSE OR CB SIZE	SIZE (COPPER)	
15	14	
20	12	
30	10	
40	10	
60	10	
100	8	
200	6	
300	4	
400	3	
500	2	
600	1	
800	1/0	
1000	2/0	
1200	3/0	
1600	4/0	
2000	250	
2500	350	

CONDUIT/CONDUCTOR SCHEDULE					
THHN, THWN, THWN-2					
AMP RATING	DRAWING ID TAG.	CONDUCTOR QTY.*	CONDUCTOR SIZE	MIN. CONDUIT SIZE	CONDUIT SIZE EXCEPTIONS
20**	212	2		3/4"	
20+	312	3	#12	3/4"	
	412	4		3/4"	
30**	20	2		3/4"	
30+	30	3	#10	3/4"	
	40	4		3/4"	
40**	28	2		3/4"	
50+	38	3	#8	3/4"	
	48	4		3/4"	
55**	26	2		3/4"	
65+	36	3	#6	3/4"	
	46	4		3/4"	1"(C9)
70**	24	2		3/4"	1"(C2,C9)
85+	34	3	#4	1"	3/4"(C4),1-1/4"(C9)
	44	4		1"	1-1/4"(C9)
95**	22	2		1"	
115+	32	3	#2	1"	1-1/4"(C9)
	42	4		1-1/4"	
110**	21	2		1-1/4"	1"(C3,C4)
130+	31	3	#1	1-1/4"	1"(C3)
	41	4		1-1/4"	1-1/2"(C2,C9,C10)
	210	2		1-1/4"	
150	310	3	1/0	1-1/4"	1-1/2"(C3,C9)
	410	4		1-1/2"	2"(C9)
	220	2		1-1/4"	1-1/2"(C3,C4,C9)
175	320	3	2/0	1-1/2"	
	420	4		2"	
200	230	2		1-1/2"	1-1/4"(C4)
	330	3	3/0	1-1/2"	2"(C3,C9)
	430	4		2"	
230	240	2		1-1/2"	2"(C3)
	340	3	4/0	2"	
	440	4		2"	2-1/2"(C9)
255	225	2		2"	1-1/2"(C4)
	325	3	250 KCMIL	2"	2-1/2"(C1,C8)
	425	4		2-1/2"	2"(C4)
310	235	2		2"	2-1/2"(C9)
	335	3	350 KCMIL	2-1/2"	2"(C4)
	435	4		3"	2-1/2"(C1,C4)
380	250	2		2-1/2"	2"(C4)
	350	3	500 KCMIL	3"	2-1/2"(C1,C4)
	450	4		3"	3-1/2"(C9)
475	275	2		3"	
	375	3	750 KCMIL	3-1/2"	3"(C1,C7,C8)
	475	4		4"	3-1/2"(C1,C4,C8)

* CONDUCTOR QUANTITY DOES NOT INCLUDE GROUNDING CONDUCTORS. SEE EQUIPMENT GROUNDING CONDUCTORS FOR WIRE SIZES.

WHERE: C1 = ELECTRICAL METALLIC TUBING *** = 60°C RATING
 C2 = ELECTRICAL NON-METALLIC TUBING "+" = 75°C RATING
 C3 = FLEXIBLE STEEL CONDUIT
 C4 = INTERMEDIATE METALLIC CONDUIT
 C7 = LIQUIDTIGHT FLEXIBLE METAL CONDUIT
 C8 = RIGID METALLIC CONDUIT
 C9 = PVC SCHEDULE 80 CONDUIT
 C10 = PVC SCHEDULE 40 CONDUIT
 *** = RATED AMPACITY AT 60°C
 "+" = RATED AMPACITY AT 75°C
 USE 60°C CONDUCTOR RATING WHEN TERMINATION RATINGS ARE NOT PUBLISHED

GROUNDING ELECTRODE CONDUCTOR SERVICE ENTRANCE OR SEPARATELY DERIVED SYSTEM	
COPPER CONDUCTOR	WIRE SIZE
#2 OR SMALLER	#8
1 OR 1/0	#6
2/0 OR 3/0	#4
>3/0 THRU 350 KCMIL	#2
>350 KCMIL THRU 600 KCMIL	1/0

- GENERAL NOTES:**
- VERIFY ALL EQUIPMENT DIMENSIONS AND LOCATIONS BEFORE BEGINNING ROUGH-IN. CONSULT ALL APPLICABLE CONTRACT DRAWINGS AND SHOP DRAWINGS TO ENSURE NEC CODE CLEARANCE REQUIRED AROUND ALL ELECTRICAL EQUIPMENT.
 - CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS (VOLTAGE, PHASE, CONNECTION REQUIREMENTS, ETC.) OF EQUIPMENT FURNISHED BEFORE BEGINNING ROUGH-IN.
 - SEE APPLICABLE SHOP DRAWINGS FOR ROUGH-IN LOCATION OF ALL EQUIPMENT, WIRING DEVICES, ETC.
 - THE ELECTRICAL CONTRACTOR SHALL NOTIFY AND COOPERATE WITH THE MECHANICAL CONTRACTOR SUCH THAT NO PIPING, OR EQUIPMENT FOREIGN TO THE OPERATION OF THE ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE INSTALLED IN, ENTER OR PASS THROUGH ELECTRICAL ROOMS OR SPACES; OR ABOVE OR BELOW ELECTRICAL EQUIPMENT IN THE OTHER AREAS.
 - ALL PENETRATIONS OF FLOORS, WALLS AND CEILINGS SHALL BE SEALED WITH APPROVED MATERIAL.
 - FOR PACKAGE EQUIPMENT PROVIDED ON THE PROJECT, SOME CONDUITS AND WIRES ARE SHOWN ON THE DRAWINGS, BUT IT IS EXPECTED THAT SOME ADDITIONAL CONDUITS AND WIRES MAY BE REQUIRED BY EQUIPMENT MANUFACTURERS TO COMPLETE INSTALLATION. IT IS INCUMBENT UPON THE GENERAL CONTRACTOR TO COORDINATE THIS REQUIREMENT WITH HIS SUBCONTRACTORS TO MAKE SURE THAT EQUIPMENT SUPPLIER PROVIDED ALL NECESSARY ELECTRICAL INFORMATION TO ELECTRICAL SUBCONTRACTOR FOR INCLUSION WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.
 - IF OTHER THAN FIRST NAMED EQUIPMENT IS USED, IT SHALL BE CAREFULLY CHECKED FOR ELECTRICAL REQUIREMENTS AND CONTROL REQUIREMENTS OF ALTERNATE EQUIPMENT. SHOULD CHANGES OR ADDITIONS OCCUR IN ELECTRICAL WORK, OR THE WORK OF OTHER CONTRACTORS BE REVISED BY THE ALTERNATE EQUIPMENT, THE COST OF ALL CHANGES SHALL BE BORNE BY THE ELECTRICAL CONTRACTOR.

H.P.F. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 ©2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

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E2.6	DETAILS, SHT. 6
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E7.4	MODEL ENERGY CODE, SHT. 2

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE ENGINEERS
 No. 86-171214-2202
 KEITH B. HEGERHORST
 9/17/24
 STATE OF UTAH
 LICENSED PROFESSIONAL ENGINEER

DESIGNED	KBH	3					
DRAFTED	GDS	2					
CHECKED	KBH	1					
PROJECT ENGINEER	DATE	JUNE 2023	NO.	DATE			

SCALE: NONE
JORDAN VALLEY WATER CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 LEGEND, SHT. 1
 SHEET E1.1
 127.24.400

CONDUIT AND RACEWAYS

	RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR OR CONCEALED IN WALL OR BEHIND STRUCTURE OR EQUIPMENT OR CONDUIT Routed BELOW GRADE.
	RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL BELOW CEILING, EXPOSED
	FLEX CONDUIT
	HOMERUN: DESIGNATIONS INDICATE A ONE-LINE DIAGRAM OR PANELBOARD SCHEDULE REFERENCE
	RACEWAY OR WIRING SYSTEM TURNED TOWARD THE VIEWER (UP ON PLAN DRAWINGS)
	RACEWAY OR WIRING SYSTEM TURNED AWAY FROM THE VIEWER (DOWN ON PLAN DRAWINGS)
	RACEWAY OR WIRING SYSTEM CHANGE IN ELEVATION OR DISTANCE FROM VIEWER
	CONDUIT STUB AND CAP
	JUNCTION BOX
	JUNCTION BOX, WALL MOUNTED

PLAN SYMBOLS

EQUIPMENT	DESCRIPTION
	CIRCUIT DISTRIBUTION PANELBOARD SURFACE MOUNTED DOOR DESIGNATES FRONT OF PANEL "A" DESIGNATES PANEL A
	CIRCUIT DISTRIBUTION PANELBOARD RECESSED DOOR DESIGNATES FRONT OF PANEL "A" DESIGNATES PANEL A
	POWER DISTRIBUTION PANELBOARD SURFACE OR FLOOR MOUNTED DOORS DESIGNATE FRONT OF PANEL MDP DESIGNATES MAIN DISTRIBUTION PANEL
	CONTROL PANEL ENCLOSURE
	HVAC EQUIPMENT
	UNIT HEATER, WALL MOUNTED
	UNIT HEATER, WALL MOUNTED
	CONDENSING UNIT, PAD MOUNTED, SIDE DISCHARGE
	CONDENSING UNIT, PAD MOUNTED, UP FLOW
	ROOFTOP MOUNTED EQUIPMENT

POWER ONE-LINE SYMBOLS

	UTILITY METERING CURRENT TRANSFORMER
	POWER FEED
	DELTA WYE
	ANTENNA
	CONNECTION POINT
	UTILITY METERING SOCKET
	TRANSFER SWITCH ATS: AUTOMATIC TRANSFER SWITCH MTS: MANUAL TRANSFER SWITCH
	VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER
	FUSED DISCONNECT SWITCH
	NON-FUSED DISCONNECT SWITCH
	KEY INTERLOCK
	MOTOR (HP SHOWN)
	GENERATOR
	CONDUCTOR WITH CALLOUT REFERENCE (SEE CONDUIT/CONDUCTOR SCHEDULE)
	POWER FACTOR CAPACITOR
	CIRCUIT BREAKER
	UTILITY METERING SOCKET WITH CIRCUIT BREAKER
	MOTOR STARTER
	SURGE PROTECTOR
	TRANSFORMER
	FUSED SWITCH
	FUSE IN HOLDER
	SECURITY KEYPAD CONTROL STATION
	EQUIPMENT GROUND CONNECTION
	LUG
	CURRENT TRANSFORMER
	RTD
	VACUUM CONTACTOR

WIRING DEVICES

	20 AMP RATED RECEPTACLE SINGLE STROKE = SINGLE DOUBLE STROKE = DUPLEX
	RECEPTACLE MODIFIERS: X-X = CIRCUIT NUMBER AF = ARK FAULT CIRCUIT INTERRUPTER S = SURFACE MOUNTED IG = ISOLATED GROUND
	GFCI RECEPTACLE
	480 VOLT RECEPTACLE
	SPECIAL RECEPTACLE (SEE DRAWINGS)
	RECESSED FLOOR RECEPTACLE - ANY RECEPTACLE INSIDE SQUARE
	GANGED RECEPTACLES IN COMMON BOX WITH COMMON COVER PLATE - GFCI
	GANGED RECEPTACLES IN COMMON BOX WITH COMMON COVER PLATE
	THERMOSTAT

CONTROL ONE-LINE SYMBOLS

	ENCLOSURE OR CONTROL PANEL
	HOME RUN TO POWER PANEL "A" CIRCUIT "B"
	LIGHT A: AMBER LENS G: GREEN LENS R: RED LENS W: WHITE LENS
	COMBINATION MOTOR STARTER F: FUSED BLANK: CIRCUIT BREAKER
	EQUIPMENT IDENTIFICATION TAG
	ELECTRICAL CONNECTION POINT
	SINGLE RECEPTACLE
	GROUND CONNECTION
	WIRE SIZE CALLOUT REFER TO CONDUIT/CONDUCTOR SCHEDULE
	DISTRIBUTION PANEL BOARD

MOTOR AND EQUIPMENT

	MOTOR
	FRACTIONAL HORSEPOWER MOTOR
	MOTOR STARTER, INDIVIDUAL, NOT LOCATED IN A MOTOR CONTROL CENTER (MCC) OR SIMILAR GROUP ASSEMBLY
	COMBINATION MOTOR STARTER ASSEMBLY, NOT LOCATED IN AN MCC OR SIMILAR ASSEMBLY
	MAGNETIC CONTACTOR ASSEMBLY, NOT LOCATED IN AN MCC OR SIMILAR ASSEMBLY
	DISCONNECT, NON-FUSED, 3 POLE, 100A RATED
	FUSED DISCONNECT SWITCH
	FIELD CONNECTION OR ELECTRICAL TERMINATION AT A FIELD DEVICE
	EQUIPMENT DESIGNATION

LIGHTING SYMBOLS

	DESIGNATES FIXTURE NUMBER - REFER TO FIXTURE SCHEDULE
	DESIGNATES EMERGENCY FIXTURE
	FLUORESCENT FIXTURES 1X2 FIXTURE 1X4 FIXTURE 18"X4" FIXTURE 1X8 FIXTURE 2X2 FIXTURE 2X4 FIXTURE 4X4 FIXTURE 4 FOOT STRIP 8 FOOT STRIP
	INCANDESCENT FIXTURES PENDANT MOUNTED 1X4 WALL MOUNTED FIXTURE 2 FOOT WALL MOUNTED FIXTURE 4 FOOT WALL MOUNTED FIXTURE
	EXIT LIGHTS SURFACE MOUNTED PENDANT MOUNTED WALL MOUNTED RECESSED CANISTER FIXTURE RECESSED DIRECTIONAL OR WALL WASH FIXTURE
	POLE MOUNTED FIXTURES QUADRANTS INDICATE FACES ILLUMINATED SINGLE POLE MOUNTED FIXTURE. REFER TO FIXTURE SCHEDULE FOR POLE AND FIXTURE REQUIREMENTS DUAL POLE MOUNTED FIXTURE. REFER TO FIXTURE SCHEDULE FOR POLE AND FIXTURE REQUIREMENTS. TRIPLEX POLE MOUNTED FIXTURES. REFER TO FIXTURE SCHEDULE FOR POLE AND FIXTURE REQUIREMENTS. QUAD POLE MOUNTED FIXTURES. REFER TO FIXTURE SCHEDULE FOR POLE AND FIXTURE REQUIREMENTS.
	EXTERIOR FIXTURES WALL PAK FIXTURE WARNING LIGHT

SCHEMATIC/CONTROL DIAGRAM SYMBOLS

	CONDUCTOR
	CONDUCTOR (OUTSIDE EQUIPMENT, ENCLOSURE OR CONTROLLER)
	ELECTRICAL CONNECTION OR NODE
	NO CONNECTION OR NODE
	NORMALLY CLOSED (NC) CONTACTS
	NORMALLY OPEN (NO) CONTACTS
	FUSE HOLDER AND FUSE
	FUSE TERMINAL FUSE NUMBER: F5 FUSE RATING: 5 AMPS
	FUSED SWITCH
	CONTACTOR (GANG OPERATED), NUMBER OF CONTACTS SHOWN. 30 = 30 AMP RATED
	MOTOR OVERLOAD MOTOR OVERLOAD MODIFIERS: BLANK = SOLID STATE ELECTRONIC BI = BI-METALLIC
	SOLENOID VALVE
	SOLENOID VALVE
	CONTROL RELAY X = RELAY NUMBER
	PILOT LIGHT LEGEND PLATE: ON MODIFIERS: A: AMBER LENS B: BLUE LENS G: GREEN LENS R: RED LENS W: WHITE LENS
	PILOT LIGHT - PUSH-TO-TEST
	USER DEFINED TERMINAL
	USER DEFINED TERMINAL
	MOTOR

GROUNDING SYSTEM SYMBOLS

	GROUND ROD
	GROUNDING CONNECTION WELDED
	GROUNDING CONNECTION BOLTED
	GROUNDING CONDUCTOR
	LIGHTNING ROD
	LIGHTNING CONDUCTOR

FILE NAME:
FILE DATE:



DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO.

NO.	DATE	REVISIONS	BY	APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
ELECTRICAL
LEGEND, SHT. 2

FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER		FIX VA	LAMP	LUMENS	KELVIN	MOUNTING	NOTES:
		NAME	CATALOG NO.						
F1	4' LED ENCLOSED INDUSTRIAL, FIBERGLASS HOUSING, DAMP LOCATION, MVOLT	METALUX	4VT2-LDS-6-DR-W-UV-L840-CD1-LW-U	50.6	LED	6000	4000	SURFACE	
F2	LED WALL MOUNTED FULL CUT OFF MINI AREA WALL PACK FOR WET LOCATIONS WITH PHOTO CONTROL	COOPER	AXCS1A-GRF-W -PC1	13.5	LED	1806	4000	WALL	1)
F3	2' LED ENCLOSED INDUSTRIAL, FIBERGLASS HOUSING, WET LOCATION, UNIVERSAL VOLTAGE	METALUX	2VT2 LDS 3 DR UNV L840 WL SSL	22	LED	3000	4000	SURFACE	

NOTES: 1) BUILT-IN PHOTOCELL

700 E & 1000 E JWVCD WELL ENCLOSURES

700 E WELL ENCLOSURE	1000 E WELL ENCLOSURE	DESCRIPTION	MANUFACTURER	CATALOG NO.	DIMENSIONS (HxWxD, in)	INTERNAL PANEL	NOTES
CP-1		MAIN CONTROL PANEL/RTU	HOFFMAN	A36H30DL3PT	36x30x12	A36P30	1), 3)
CP-2		CCTV ENCLOSURE	CHATTSWORTH	11900-X36	36x24x24	-	1), 2), 3), 4)
CP-3		SECURITY ENCLOSURE	HOFFMAN	A36H30DL3PT	36x30x12	A36P30	1), 3)
	CP-4	FLUORIDE CONTROL PANEL	HOFFMAN	CSD363012	36x30x12	CP3630	5), 6)
CP-5		SMALL MOTOR CONTROL PANEL	HOFFMAN	CSD202010	20x20x10	CP2020	5), 6)
	CP-5	SMALL MOTOR CONTROL PANEL	HOFFMAN	CSD242410	24x24x10	CP2424	5), 6)
CP-6		CHLORINATION CONTROL PANEL	HOFFMAN	A36H3012	36x30x12	A3630	3), 5), 6)
	CP-7	VENTILATION CONTROL PANEL	HOFFMAN	CSD202010	20x20x10	CP2020	5), 6)
EE-1		SURGE VAULT EL. ENCL.	HOFFMAN	CSD20168	20x16x8	CP2016	5), 6)

- NOTES: 1) INSTALL TOP OF ENCLOSURE +76" ABOVE FINISHED FLOOR.
 2) NO EQUAL ACCEPTED.
 3) INTERNAL COMPONENTS BY JWVCD.
 4) ENCLOSURE REQUIRES A MIN. OF 44" CLEAR SPACE ON THE LEFT SIDE TO OPEN PROPERLY.
 5) ENCLOSURE BY CONTRACTOR.
 6) COMPONENTS BY CONTRACTOR

NOTES: 1. IN GENERAL, ABBREVIATIONS USED IN ELECTRICAL DRAWINGS ARE IN ACCORDANCE WITH ANSI Y1.1-1972. ABBREVIATIONS ON THIS SHEET ARE IN ADDITION, OR ARE AMENDMENTS TO ANSI Y1.1-1972 AND ABBREVIATIONS DEFINED ON OTHER DRAWINGS. IN CASE OF CONFLICT THESE ABBREVIATIONS SHALL TAKE PRECEDENCE.
 2. THE FOLLOWING ABBREVIATIONS ARE NOT TO BE CONFUSED WITH EQUIPMENT NUMBERING PREFIXES LISTED ON DRAWING G3 OR OTHER CONTRACT DOCUMENTS.

ABBREVIATIONS

A	AMPERES, AMMETER	LS	LEVEL SWITCH
AC	ALTERNATING CURRENT	LTG	LIGHTING
ACC	AREA CONTROL CENTER	LV	LOW VOLTAGE (GENERALLY BELOW 600V)
AF	AMPERE FRAME	M	MOTOR, MOTOR CONTACTOR
AFD	ADJUSTABLE FREQUENCY DRIVE	MA	MILLIAMPERE
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AHAP	AS HIGH AS POSSIBLE	MBS	MANUAL BYPASS SWITCH
AIC	AMPERES INTERRUPTING CAPACITY	MCC	MOTOR CONTROL CENTER
AL	ALUMINUM	MCM	THOUSAND CIRCULAR MILLS
AR	ALARM RELAY	MCP	MAIN CONTROL PANEL
ARV	AUTO TRANSFORMER REDUCED VOLTAGE STARTER	MCR	MAGNETIC CIRCUIT PROTECTOR
AS	ASYMMETRICAL	MFR	MANUFACTURER
ASYM	ASYMMETRICAL	MH	MANHOLE
AT	AMPERE TRIP	MIC	MICROPHONE
ATS	AUTOMATIC TRANSFER SWITCH	MIN	MINIMUM
AUTO	AUTOMATIC	MIS	MANAGEMENT INFORMATION SYSTEM
AUX	AUXILIARY	MISC	MISCELLANEOUS
AW	AMERICAN WIRE GAUGE	MOV	MOTOR OPERATED VALVE
AWG	AUDIO VISUAL	MR	MOTOR CONTACTOR RELAY
AV	BARE COPPER CONDUCTOR	MSB	MAIN SWITCHBOARD
BC	BREAKER	MTD	MOUNTED
BKR	BUILDING	MTG HT	MOUNTING HEIGHT
BLDG	BOTTOM	MTS	MANUAL TRANSFER SWITCH
BOT	BEARING TEMPERATURE DETECTOR	MV	MILLIVOLT
BTD	CONDUIT	N	NEW
C	CIRCUIT BREAKER	N/A	NOT APPLICABLE
CB	CONDUCTOR	NA	NON-AUTOMATIC
CDR	COMMUNICATIONS HAND STATION	NC	NORMALLY CLOSED
CHS	CIRCUIT	NF	NON FUSED
CKT	CEILING	NIC	NOT IN CONTRACT
CLG	CONTINUED	NO	NORMALLY OPEN
CNTD	CONVENIENCE OUTLET	NOM	NOMINAL
CO	CONDUIT ONLY, SPARE	NP	NAMEPLATE
C.O.	COMPRESSOR	NS	TORQUE SWITCH
COMPR	COMPARTMENTS	NTS	NOT TO SCALE
COMP	CONCRETE	OC	ON CENTER, OVERCURRENT
CONC	CONTROL POWER TRANSFORMER	OH	OVERHEAD
CPT	CONTROL RELAY	OL'S	OVERLOADS
CR	CURRENT TRANSFORMER	P	POLE, PHASE
CT	DIRECT BURIAL, DUCT BANK	PA	PUBLIC ACCESS
CU	DIRECT CURRENT	PB	PULLBOX, PUSH BUTTON
DB	DISTRIBUTED CONTROL UNIT	PDS	PRESSURE DIFFERENTIAL SWITCH
DC	DETAIL	PF	POWER FACTOR
DCU	DIAGRAM	PH	PHASE
DET	DISCONNECT	PLC	PROGRAMMABLE LOGIC CONTROLLER
DIAG	DISCONNECT SWITCH	PNL	PANEL
DISC	DRAWING	PP	POWER PANEL
DS	EXISTING	PR	PAIR
DWG	EACH	PRI	PRIMARY
E	EQUIPMENT CONTROL PANEL	PROVIDE	FURNISH, INSTALL AND CONNECT
EA	ELEVATION	PSH/L	PRESSURE SWITCH, HIGH/LOW
ECP	ELECTRIC(AL)	PT	POTENTIAL TRANSFORMER
EL	EMERGENCY	PVC	POLYVINYL CHLORIDE
ELEC	EMERGENCY POWER INTERLOCK	PW	PART WINDING
EM	EQUIPMENT	PWR	POWER
ENCL	ELAPSED TIME METER	RECP	RECEPTACLE
EPI	EXHAUST	REQD	REQUIRED
EQUIP	EXPLOSION PROOF	RGS	RIGID GALVANIZED STEEL CONDUIT
ETM	F.C.C.	RMS	ROOT MEAN SQUARE
EXH	FEEDER	RTD	RESISTANCE TEMPERATURE DETECTOR
EXP	FINISHED	RTU	REMOTE TERMINAL UNIT
F.C.C.	FLUORESCENT	RVNR	REDUCED VOLTAGE NON-REVERSING
FDR	FULL LOAD AMPS	SCH	SCHEDULE
FIN	FLEXIBLE	SEC	SECONDARY, SECONDS
FL	FIBER OPTIC	SEL	SELECTOR
FLA	FAIL OPEN	SH	SHIELDED
FLEX	FAIL SWITCH	SPEC	SPECIFICATIONS
FO	FUTURE	SPDT	SINGLE POLE DOUBLE THROW
F.O.	FUTURE	SPKR	SPEAKER
FS	FULL VOLTAGE NON REVERSING	SPST	SINGLE POLE SINGLE THROW
FUT	FULL VOLTAGE REVERSING	SS	STAINLESS STEEL, SPEED SWITCH
FVNR	GREEN GROUND CONDUCTOR	S/S	SELECTOR SWITCH
FVR	GALVANIZED	SUB	SUBSTATION
G	GENERATOR	SV	SOLENOID VALVE
GALV	GROUND FAULT CIRCUIT INTERRUPTER	SW	SWITCH
GEN	GROUND FAULT RELAY	SWBD	SWITCHBOARD
GFCI	GROUND	SWGR	SWITCHGEAR
GFR	HAND/AUTO	T1	TRANSFORMER NO. 1
GND,G	HAND HOLE	TACH	TACHOMETER
H/A	HIGH INTENSITY DISCHARGE	TB	TERMINAL BLOCK
HA	HAND/OFF/AUTO	TC	TIME CLOCK, TIME CONTROLLER
HID	HORSEPOWER	TDAD	TIME DELAY AFTER DE-ENERGIZATION (OFF-DELAY)
HOA	HIGH PRESSURE SODIUM	TDAE	TIME DELAY AFTER ENERGIZATION (ON-DELAY)
HP	HEIGHT	TEL	TELEPHONE
HPS	HEATER	TEMP	TEMPERATURE
HT	HIGH VOLTAGE (GENERALLY ABOVE 600V)	TR	TIME DELAY RELAY
HTR	HEATING, VENTILATION AND AIR CONDITIONING	TS	TEMPERATURE SWITCH
HV	HERTZ (CYCLES PER SECOND)	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
HVAC	H/O	TV	TELEVISION
HZ	INDICATION LAMP	TYP	TYPICAL
I/O	INCANDESCENT	UG	UNDERGROUND
IL	INSTANTANEOUS	UON	UNLESS OTHERWISE NOTED
INCAN	INTERLOCK	UPS	UNINTERRUPTIBLE POWER SUPPLY
INST	JUNCTION BOX	US	UNSWITCHED
INSTR	KILOVOLT	V	VOLTMETER
INTLK	KILOVOLT-AMPERE	VA	VOLT-AMP
JB	KILOWATT	VC	VACUUM CONTACTOR
KV	KILOWATT HOUR	VS	VOLTMETER SELECTOR SWITCH
KV	LIGHTING CONTACTOR	W	WATT, WIRE
KW	LOCAL CONTROL PANEL	W	WATTMETER
KWH	LEVEL DIFFERENTIAL SWITCH	WM	WITHOUT
LC	LUGS ONLY	W/O	WEATHERPROOF
LCP	LOCI-OUT STOP	WP	WEATHERPROOF
LDS	LIGHTING PANEL	WTD	WINDING TEMPERATURE DETECTOR
LOS		XFMR	TRANSFORMER
LP		XS	MISCELLANEOUS SWITCHES (VIBRATION, ETC.)
		ZS	POSITION (LIMIT) SWITCH

NOT ALL ABBREVIATIONS WILL BE USED ON THESE DRAWINGS

H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

7/04



DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO.

NO.	DATE	REVISIONS

SCALE	NONE
BY	APVD.

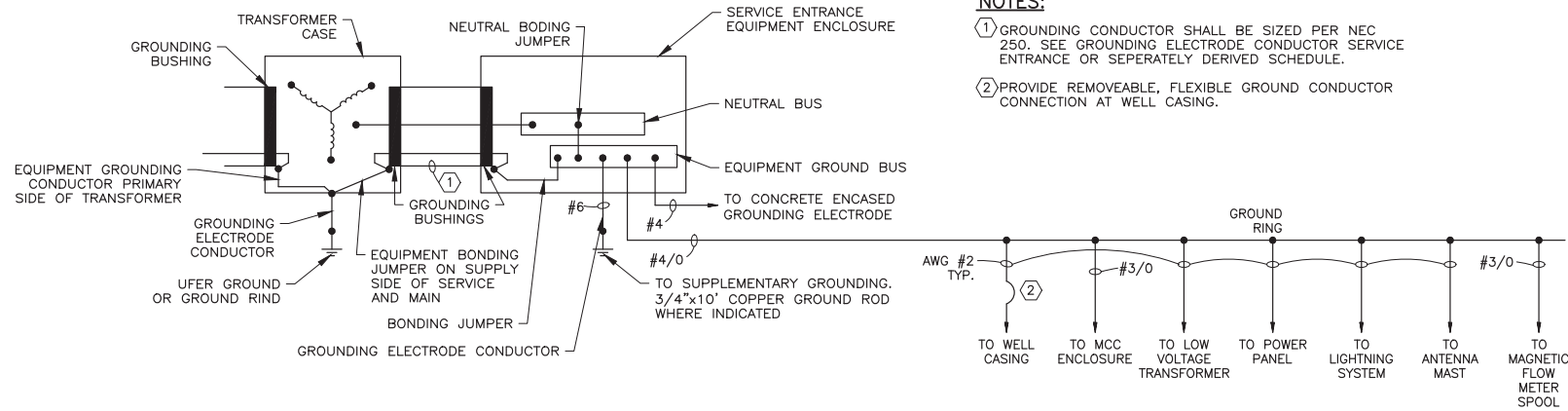


WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 LEGEND & COMMON SCHEDULES

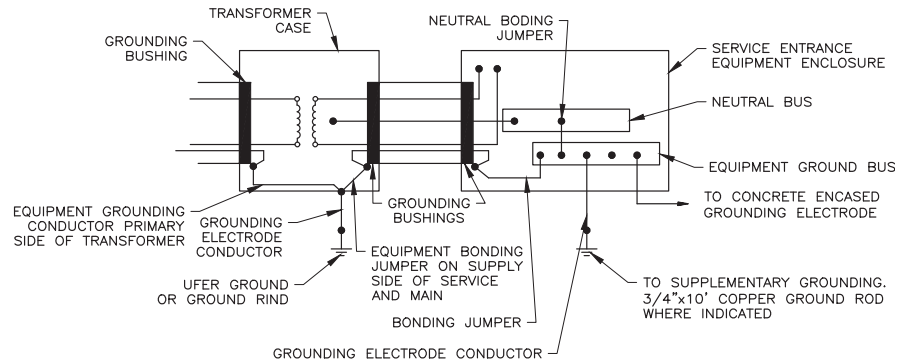
SHEET
E1.3
 127.24.400

NOTES:

- ① GROUNDING CONDUCTOR SHALL BE SIZED PER NEC 250. SEE GROUNDING ELECTRODE CONDUCTOR SERVICE ENTRANCE OR SEPERATELY DERIVED SCHEDULE.
- ② PROVIDE REMOVEABLE, FLEXIBLE GROUND CONDUCTOR CONNECTION AT WELL CASING.



THREE-PHASE SERVICE ENTRANCE GROUNDING DETAIL



SECONDARY POWER 1-PHASE, 3-WIRE TRANSFORMER GROUNDING DETAIL

GENERAL NOTES:

- 1. NOT USED.

SHEET KEYNOTES:

- 1. NOT USED.

FILE NAME:
FILE DATE:



PROJECT ENGINEER

DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO.

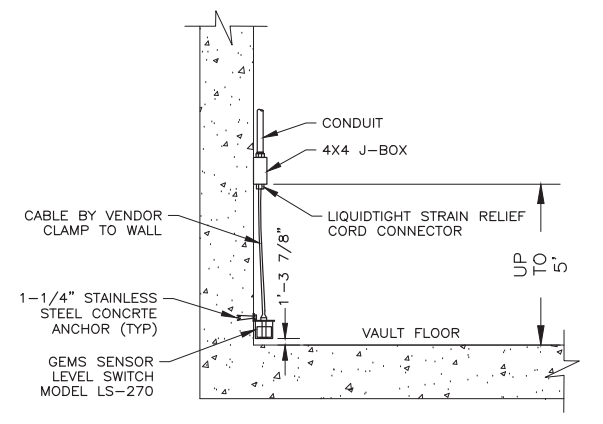
NO.	DATE	REVISIONS	BY	APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
ELECTRICAL
COMMON DIAGRAMS

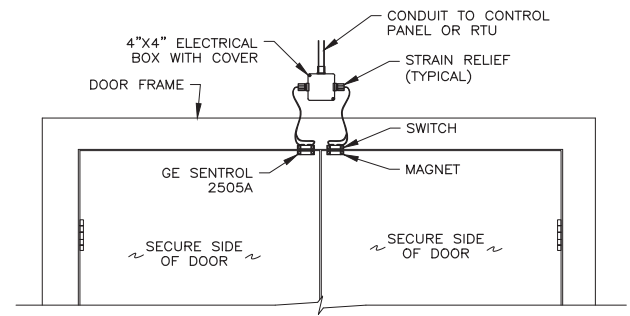
SHEET
E1.4
127.24.400



FLOOR FLOOD LEVEL SWITCH

1	1
E3.7	E4.9

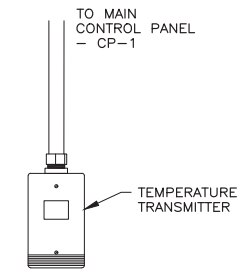
1" = 1'-0"



DOOR SECURITY DEVICES

2	2
E3.7	E4.9

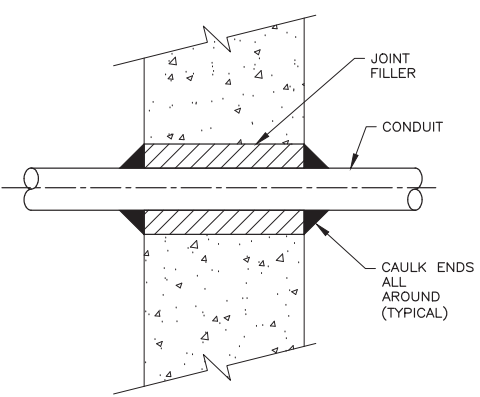
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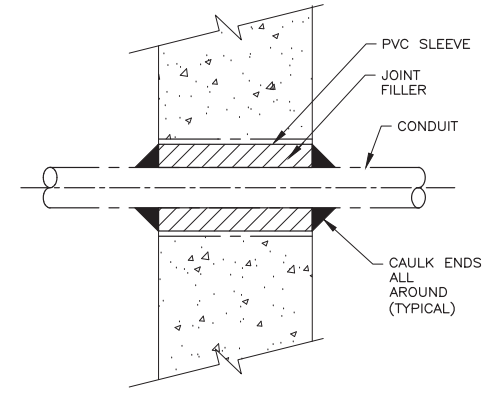
TEMPERATURE TRANSMITTER

3	3
E3.7	E4.9

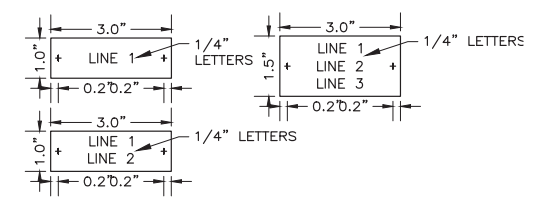
3" = 1'-0"



CONDUIT PENETRATION THRU EXISTING CONCRETE OR WALL



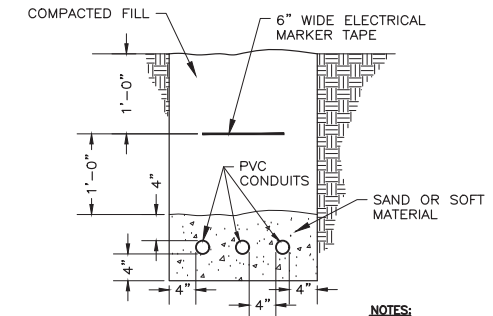
CONDUIT PENETRATION THRU NEW CONCRETE OR WALL



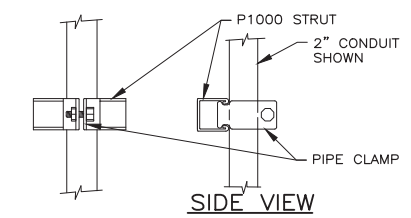
NAMEPLATE DETAIL

6	6
E3.11	E3.12
6	6
E4.13	E4.16
6	6
E4.18	E4.18

6" = 1'-0"



- NOTES:
- SEE INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAMS FOR QUANTITY OF CONDUITS.
 - REFER TO POWER PLANS FOR LOCATIONS OF EQUIPMENT AND VAULTS.



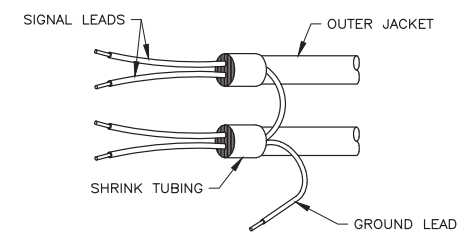
SIZE	EMT	RGS	EMT/RGS
1/2"	P1426	P1111	-
3/4"	P1427	P1112	P1212
1"	P1428	P1113	P1213
1-1/4"	P1429	P1114	P1214
1-1/2"	P1430	P1115	P1215
2"	P1431	P1117	P1217
2-1/2"	P1118	P1118	-
3"	P1119	P1119	-
3-1/2"	P1120	P1120	-
4"	P1121	P1121	-

* = SUPPLIED WITH SLOTTED HEAD SCREW AND NUT

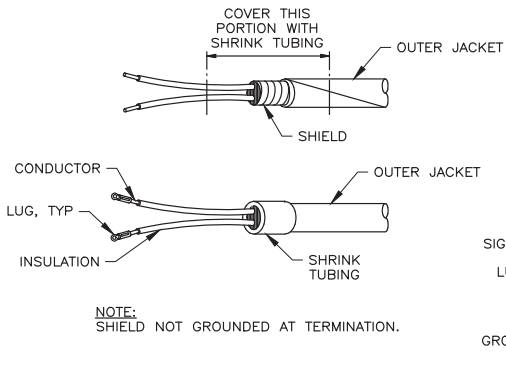
CONDUIT SUPPORT

8
E2.2

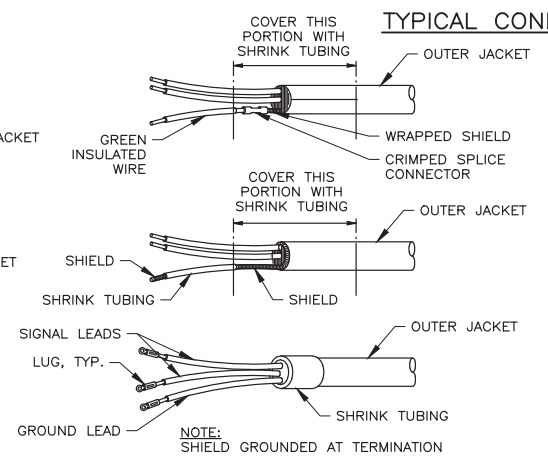
3" = 1'-0"



UNACCEPTABLE METHOD OF GROUNDING CONTROL CABLE SHIELD NTS



TERMINATION OF SHIELDED CONTROL CABLE NTS



TERMINATION OF SHIELDED CONTROL CABLE NTS

TYPICAL CONDUIT TRENCH SECTION

7
E3.5

1" = 1'-0"

FILE NAME: 7/04
FILE DATE:

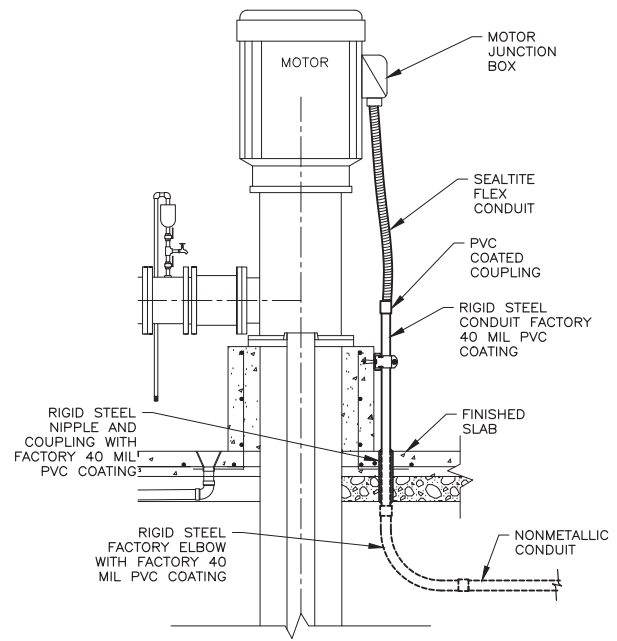


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DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO. DATE

REVISIONS		BY	APVD.

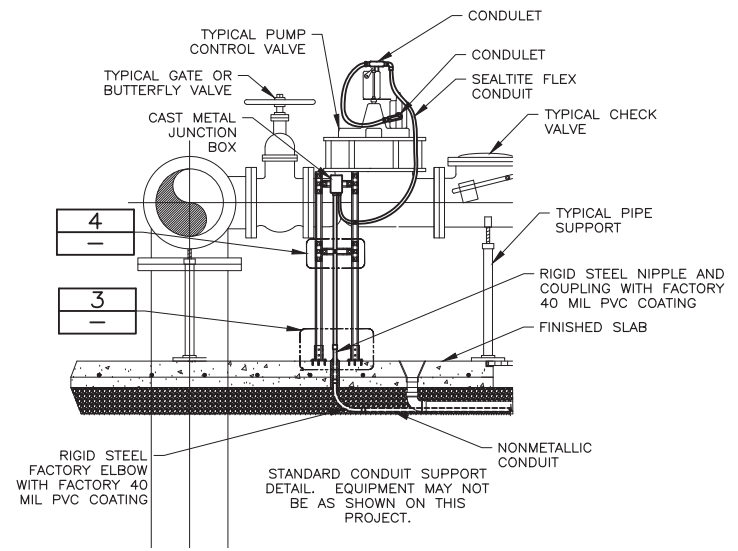
SCALE AS SHOWN

WELL PUMP STATION CONSTRUCTION ELECTRICAL DETAILS, SHT. 1



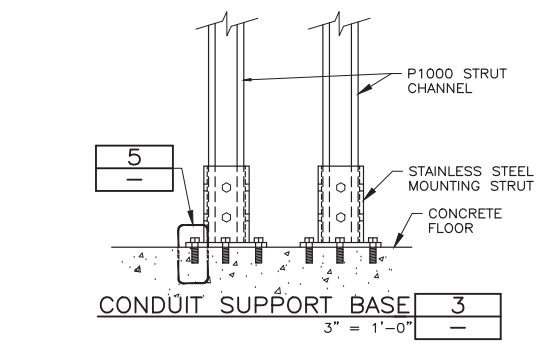
VERTICAL MOTOR CONDUIT INSTALLATION

1	1	
3/8" = 1'-0"	E3.6	E4.8



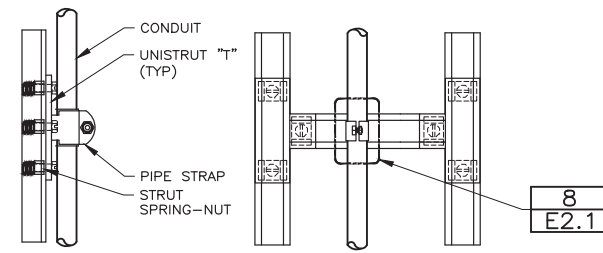
CONDUIT SUPPORT INSTALLATION

2	2	
3/4" = 1'-0"	E3.7	E4.9



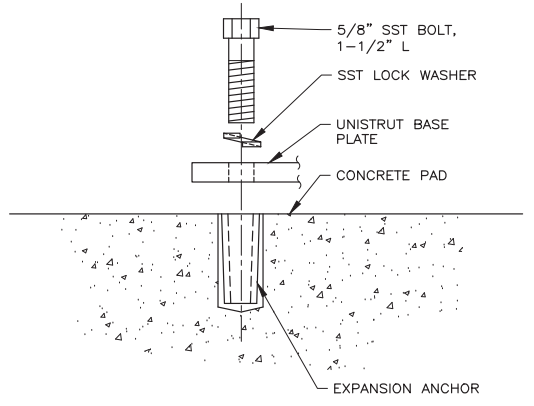
CONDUIT SUPPORT BASE

3	—
3" = 1'-0"	—



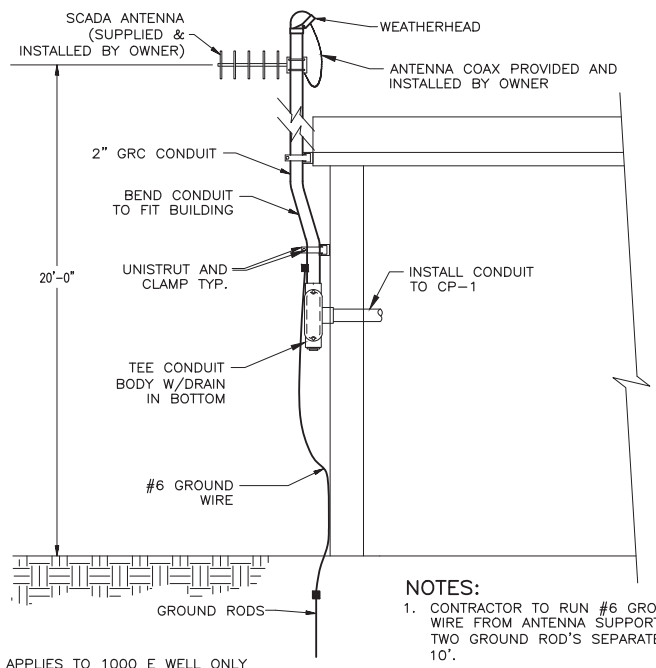
CONDUIT SUPPORT ATTACHMENT

4	—
3" = 1'-0"	—



SUPPORT ANCHOR

5	—
6" = 1'-0"	—

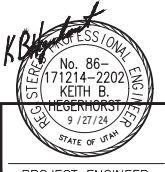


NOTES:
 1. CONTRACTOR TO RUN #6 GROUND WIRE FROM ANTENNA SUPPORT TO TWO GROUND ROD'S SEPARATED BY 10'.
 APPLIES TO 1000 E WELL ONLY

SCADA ANTENNA SUPPORT

6	—
1' = 1'-0"	E4.9

FILE NAME:
 FILE DATE:



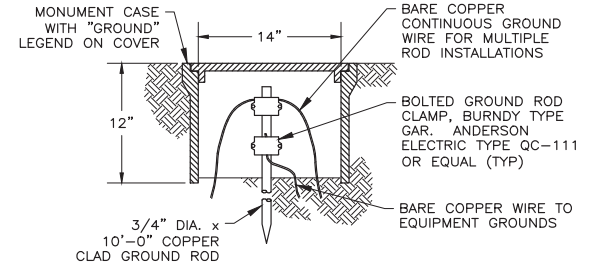
DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
DATE	JUNE 2023	NO.		DATE	

REVISIONS		BY	APVD.

SCALE
 AS SHOWN

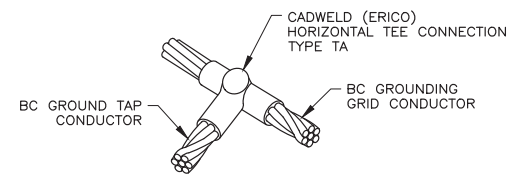


WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 DETAILS, SHT. 2



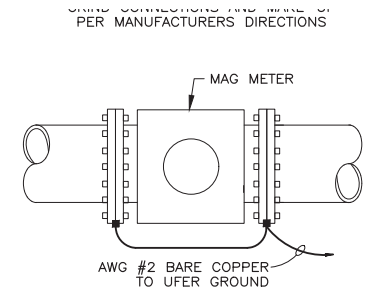
GROUND ROD AND WELL

1	1
1 1/2" = 1'-0"	E-3.5 E4.7



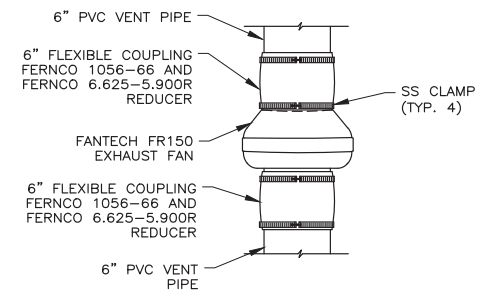
GROUND TEE CONNECTION

2	2
6" = 1'-0"	E3.6 E4.7
2	E4.8



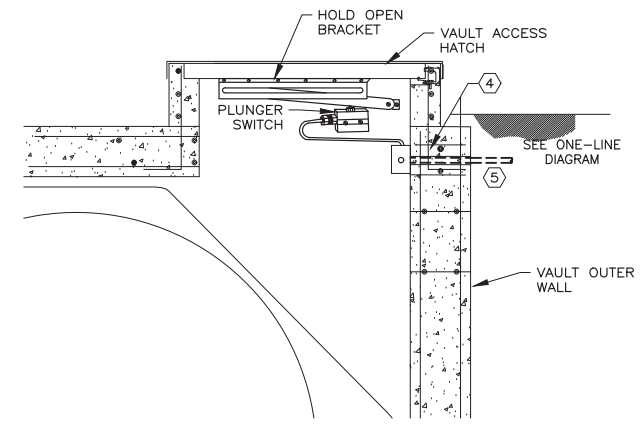
MAG METER GROUNDING

3	3
1 1/2" = 1'-0"	E3.6 E4.8



EXHAUST FAN INSTALLATION

4	
1 1/2" = 1'-0"	E5.1



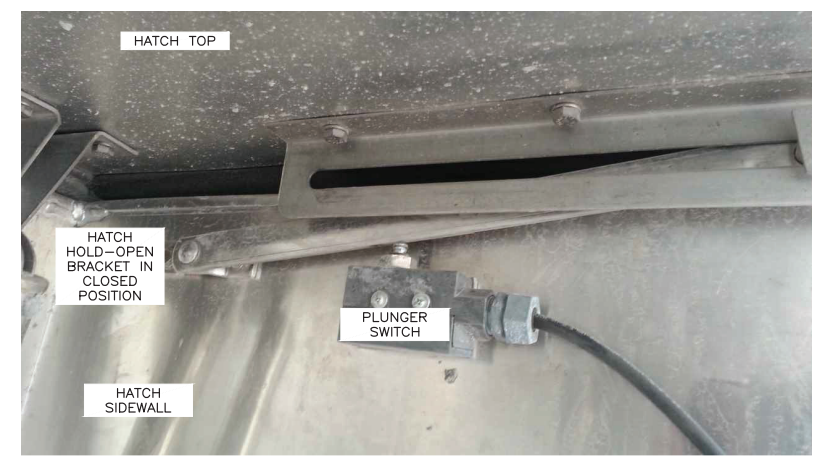
HINGED HATCH SWITCH INSTALLATION

5	
3/4" = 1'-0"	E5.1

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 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

- GENERAL NOTES:**
- REFER TO ONE-LINE DIAGRAMS FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
 - ALL CONDUCTORS FROM EACH DEVICE OR INSTRUMENT AS SPECIFIED ON CONTROL ONE-LINE TO BE CONTINUOUS FROM VAULT ENCLOSURE TO DEVICE WITHOUT SPLICES.

- SHEET KEYNOTES:**
- SOIL SLOPES AWAY FROM TANK. HEIGHT OF POLE BASE SHALL BE 6-INCHES ABOVE SOIL AT HIGHEST POINT. MODIFY SLOPE TO ENSURE 70% OF POLE BASE IS BELOW GRADE.
 - PHOTO IS OF A PREVIOUS PROJECT WHERE TWO HATCH POSITION SWITCHES WERE INSTALLED. CONTRACTOR SHALL INSTALL ONLY ONE POSITION SWITCH ON THE PRIMARY HATCH. PLUNGER SWITCH SHALL BE ACTUATED WITH HATCH HOLD-OPEN BRACKET WHEN HATCH IS CLOSED.
 - LOCATE ALL J-BOXES ON SECURE SIDE OF HATCH.
 - SEAL CONDUIT PENETRATION WITH SEALANT.
 - CONDUITS SHALL EXIT BELOW GRADE. DO NOT INSTALL ANY EXPOSED J-BOXES OR CONDUIT ON THE NON-SECURE SIDE OF THE HATCH.



(TYPICAL HATCH INTRUSION SWITCH INSTALLATION)



FILE NAME: 7/04
 FILE DATE:



DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
DATE	JUNE 2023	NO.		DATE	

REVISIONS		BY	APVD.

SCALE
 NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 DETAILS, SHT. 3

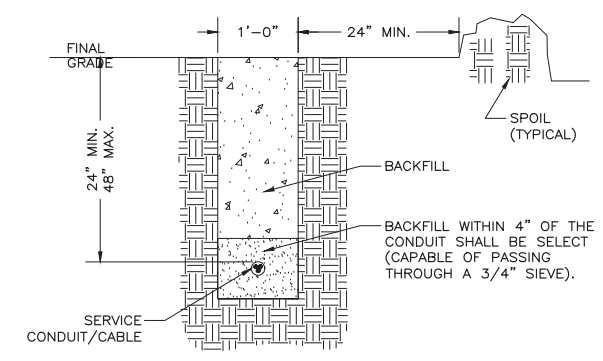
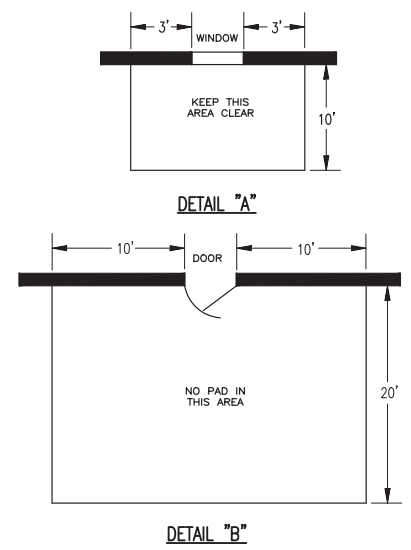
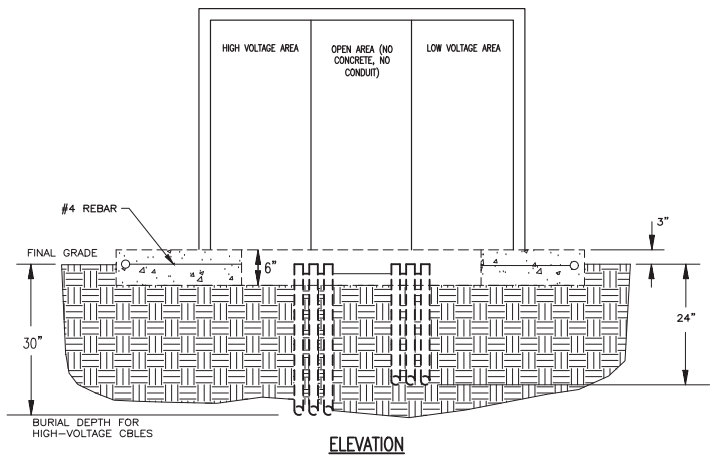
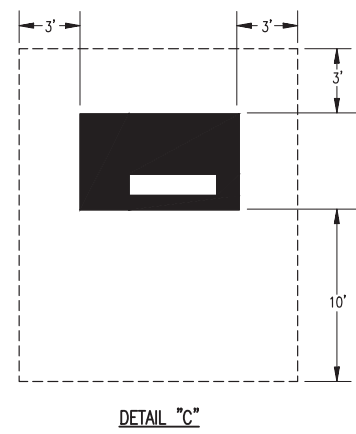
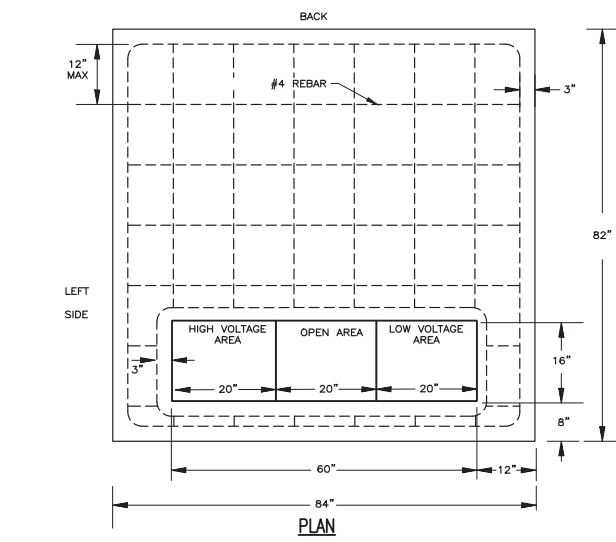
SHEET
E2.3
 127.24.400

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

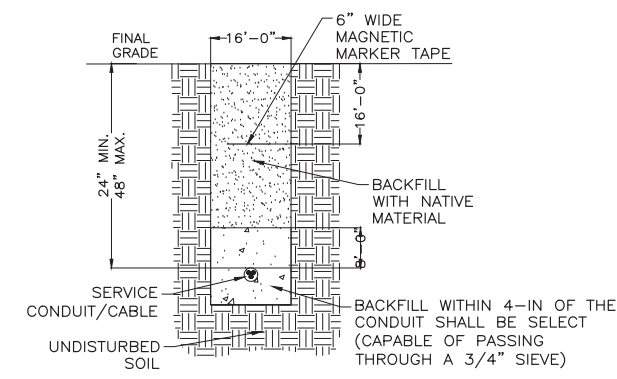
1. NOT USED.



RMP PRIMARY CONDUIT TRENCH

2
E3.5

1" = 1'-0"



RMP SECONDARY CONDUIT TRENCH

3
E3.5

3
E4.7

1" = 1'-0"

NOTES:

- SITE PREPARATION:** ALL DIRT BENEATH THE PAD SITE MUST BE COMPACTED AND LEVEL PRIOR TO SETTING OR POURING THE PAD TO PREVENT SETTLING.
- CONCRETE:** SHALL BE MADE USING A STANDARD BRAND OF PORTLAND CEMENT. STEEL REINFORCEMENT SHALL BE #4 REBAR PLACED ACCORDING TO THE DRAWINGS. THE PAD MUST BE POURED AT LEAST THREE FULL DAYS PRIOR TO SETTING THE UNIT. CONCRETE MUST BE KEPT ABOVE FREEZING AT LEAST 72 HOURS AFTER POURING. THE FINISHED SURFACE MUST BE COMPLETELY FLAT AND LEVEL. ALL WORK MUST BE DONE TO HIGH QUALITY STANDARDS.
- PREFABRICATION:** THE PAD MAY EITHER BE CONSTRUCTED ON THE SITE OR PREFABRICATED ACCORDING TO SPECIFICATIONS. PREFABRICATED PADS SHALL BE SET LEVEL AND PLUMB.
- TRANSFORMER CONDUIT WINDOW LAYOUT:** LOW VOLTAGE CONDUITS SHALL BE FORMED AS TIGHTLY AS POSSIBLE AGAINST RIGHT SIDE OF THE OPENING AND SHALL IN NO CASE EXTEND FURTHER THAN 16" FROM THE RIGHT SIDE OF CONDUIT WINDOW ON THE PAD. NO MORE THAN 4 CONDUITS WILL BE USED ON THE LOW VOLTAGE SIDE. DO NOT PUT ANY CONCRETE IN OR UNDER THE CONDUIT WINDOW. USE DIRT TO SEPARATE CONDUITS. BELL ENDS ARE REQUIRED FOR ALL METAL CONDUITS BUT NOT FOR PLASTIC CONDUIT.
- CLEARANCE:** THE FRONT OF THE PAD SHOULD ALWAYS FACE AWAY FROM ADJACENT STRUCTURES AND BE FREE OF OBSTRUCTIONS. AT LEAST THREE FEET MUST SEPARATE THE EDGES OF THE PAD FROM ANY ADJACENT STRUCTURES. THE EDGES OF THE PAD MUST BE AT LEAST TEN FEET FROM ANY COMBUSTIBLE STRUCTURE. THE AREA IN FRONT OF THE PAD MUST HAVE TEN FEET OF CLEAR LEVEL WORKING AREA FOR MAINTENANCE OF THE UNIT.

RMP PAD MOUNTED TRANSFORMER

1
E3.5

1
E4.7

3/4" = 1'-0"



DESIGNED KBH
 DRAFTED GDS
 CHECKED KBH
 PROJECT ENGINEER

DATE JUNE 2023 NO. DATE

REVISIONS		BY	APVD.

SCALE NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 DETAILS, SHT. 4

SHEET E2.4
 127.24.400

FILE NAME:
 FILE DATE:

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

GV 001

J. Barrier Posts

Six-inch steel or concrete barrier posts shall be provided by the customer wherever vehicular traffic may pose a threat to padmounted equipment. Steel posts shall be painted or galvanized, and may be filled with concrete. Concrete posts shall be painted. The posts shall have a domed top, and be free of burrs and sharp edges. Each barrier post shall be set in a concrete foundation at least 12 inches in diameter and 24 inches in depth below grade (see Figure 14).

Figure 14 - Barrier Post Details

Posts shall meet the following additional requirements:

1. In areas where construction equipment traffic poses a temporary threat to equipment, barrier posts shall be provided by the customer, and shall remain in place until the threat has been eliminated.
2. Enough barrier posts shall be installed to adequately protect the padmounted equipment from vehicular traffic.
3. If the distance between two posts, or between a post and a non-traffic area, is greater than six feet, an intermediate post shall be installed (see Figure 15).
4. Barrier posts shall be placed so as not to obstruct the opening of the equipment doors, nor to impede the operation of the equipment. If this is not possible, removable posts shall be used in the obstructive location(s) (see Figure 16).

Distribution Construction Standard © 2007 by PacifiCorp. All rights reserved. Engineer (D. Wedam): <i>DW</i> Standards Manager (G. Lyons): <i>GL</i>	Equipment Bases and Enclosures—General Information	PACIFICORP A NEVADA ENERGY HOLDINGS COMPANY 4 Apr 07 GV 001 Page 11 of 12
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ZG 621

5.4 Conduit Entrances

The padvault shall be constructed with TERM-A-DUCT or equivalent conduit entrances compatible with PVC, polyethylene (PE), or fiberglass 90° C-rated electrical-grade conduit. The standard conduit entrance locations are as follows, and are also shown in Figure 2:

Entrances at each end wall: Two 6.63" entrances, two 4.5" entrances, and two 2.38" entrances.

Entrances at each side wall: Eight 4.5" entrances and one 6.63" entrance.

Figure 1—5' x 7' (56" x 84") Vault, Cutaway View

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ZG 621

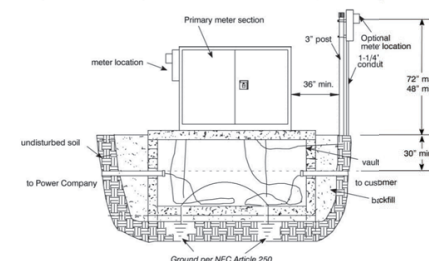
Figure 3—5' x 7' (56" x 84") Vault Ground Grid Layout

5.6 Installation

This unit shall be set at the site by the supplier. The contractor shall be responsible to ensure that all earth under the vault is compacted and leveled to no more than 2% slope prior to setting the vault. A clean gravel base under the padvault may be necessary in areas where drainage is poor. The interface between the pad and the enclosure shall be sealed using a waterproof substance, such as tar or mastic. The top of the frame should be flush with the final grade in pedestrian areas. Setting depth shall be determined by the local regulatory authority for full-traffic areas.

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Figure 62—Underground Pad-Mounted Primary Metering Enclosure



Requirements:

1. The meter may be located on the primary metering enclosure, or post-mounted as shown in Figure 62.
2. The location of the metering vault will be mutually agreed upon between the customer and Power Company. The size of the metering vault will be specified by the Power Company.

9.6.3 Switchgear, Pad-Mounted Metering, EUSERC 400

Customers shall meet the requirements of EUSERC Section 400 when switchgear enclosures are required for metering primary voltage delivery services.

Requirements:

- The customer shall provide/install:**
1. Enclosure drawings for approval prior to fabrication
 2. All necessary hardware per EUSERC, Section 400
 3. A concrete vault for the switchgear metering enclosure

9.7 Metering in a Customer-Owned Substation

The customer shall consult the Power Company for the location of metering equipment for customer-owned substations. Power Company metering equipment is not allowed in these substations.



This manual shall be distributed and interpreted in its entirety. Individual pages will not represent all the requirements necessary for an installation.
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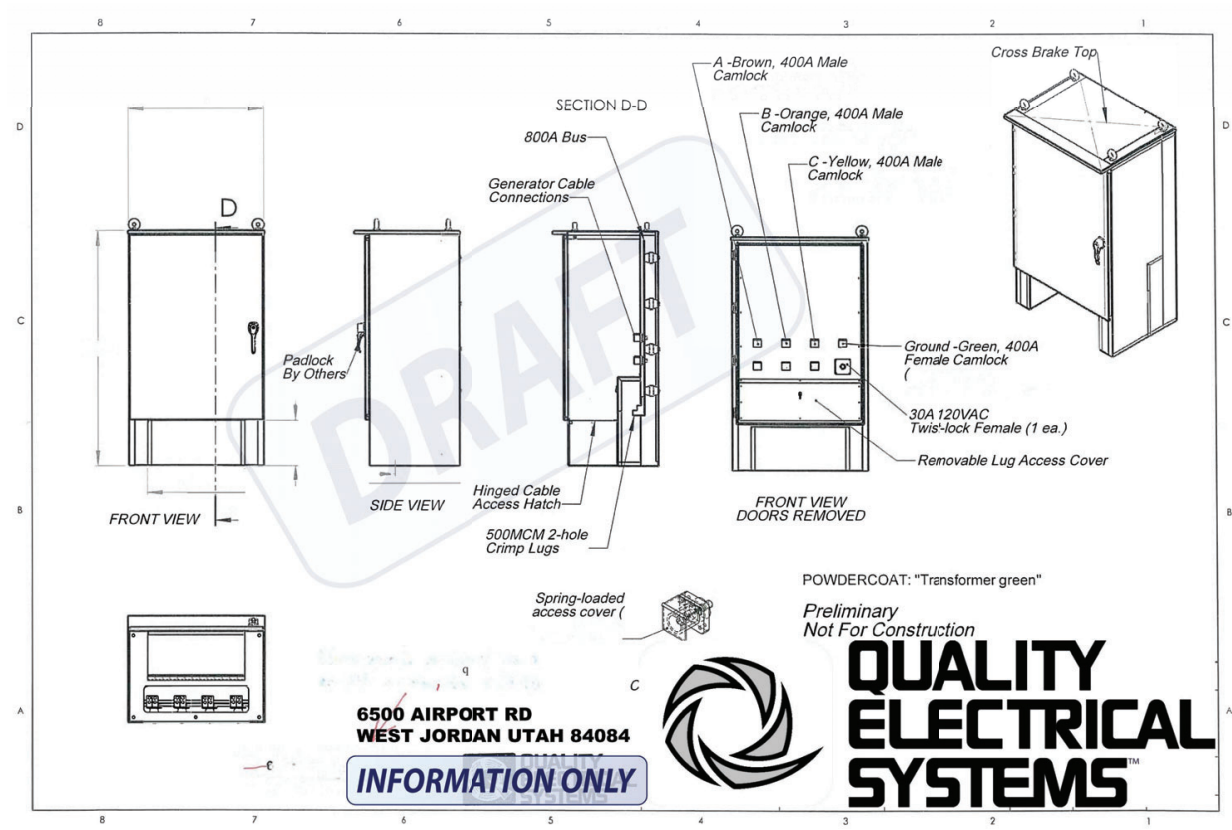
RMP METERING EQUIPMENT INSTALLATION	4
SCALE: NONE	E4.6

RMP BOLLARD POST	1
SCALE: NONE	—

RMP METERING PAD_VAULT	2
SCALE: NONE	—

DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST



- GENERAL NOTES:**
- UNIT IS SUPPLIED WITH TWO 400A CONNECTORS PER PHASE.
- SHEET KEYNOTES:**
- NOT USED.

GENERATOR CONNECTION DETAIL

1

 1' = 1'-0"

E3.5

FILE NAME:
FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
DATE	JUNE 2023	NO.		DATE	

REVISIONS

BY	APVD.
----	-------

SCALE
AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 DETAILS, SHT. 6

SHEET
E2.6
127.24.400

700 EAST PROJECT TAG LIST
HVAC EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
10	ODU-1	OUTDOOR CONDENSING UNIT	BUILDING EXTERIOR	H-1,3,5	CONTRACTOR	CONTRACTOR
12	UH-1	UNIT HEATER	EMERG. SHWR. ROOM	H-7,9,11	CONTRACTOR	CONTRACTOR
13	UH-2	UNIT HEATER	PUMP CONTROL ROOM	H-13,15,17	CONTRACTOR	CONTRACTOR
14	UH-3	UNIT HEATER	PUMP CONTROL ROOM	H-19,21,23	CONTRACTOR	CONTRACTOR
16	EF-3	EXHAUST FAN	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
60	AHU-1	AIR HANDLING UNIT	PUMP CONTROL ROOM	H-25,27,29	CONTRACTOR	CONTRACTOR
115	EF-1	EXHAUST FAN	CHEMICAL ROOM	CP-6	CONTRACTOR	CONTRACTOR
124	MCU-1	MITSUBISHI OUTDOOR UNIT	BUILDING EXTERIOR	L-16,18	CONTRACTOR	CONTRACTOR
125	MS-1	MITSUBISHI SPLIT UNIT	CHEMICAL ROOM	L-20,22	CONTRACTOR	CONTRACTOR

INSTRUMENTATION

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
52	PQM-1	POWER QUALITY MONITOR	PUMP CONTROL ROOM	L-20	CONTRACTOR	CONTRACTOR
62	AE-3	CONDUCTIVITY PROBE	PUMP CONTROL ROOM	AIT-3	CONTRACTOR	CONTRACTOR
63	AE-4	pH PROBE	PUMP CONTROL ROOM	AIT-4	CONTRACTOR	CONTRACTOR
64	AIT-4	pH INDICATOR/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
65	FE-1	WELL FLOW ELEMENT	PUMP CONTROL ROOM	FIT-1	CONTRACTOR	CONTRACTOR
66	FIT-1	WELL FLOW IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
67	PT-1	PRESSURE TRANSMITTER, SYSTEM	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
68	LT-1	LEVEL TRANSMITTER, WELL	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
69	TIT-1	TURBIDITY IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
70	TE-1	TURBIDITY ELEMENT	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
71	AIT-3	CONDUCTIVITY IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
72	AIT-2	RESIDUAL CHLORINE IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
73	DPT-1	DIFFERENTIAL PRESSURE TRANSMITTER	SURGE VAULT	CP-1	CONTRACTOR	CONTRACTOR
74	LIT-1	STORAGE TANK RADAR LEVEL IND/TRANSMITTER	CHEMICAL ROOM	CP-1	CONTRACTOR	CONTRACTOR
75	LIT-2	DAY TANK RADAR LEVEL IND/TRANSMITTER	CHEMICAL ROOM	CP-1	CONTRACTOR	CONTRACTOR
78	WIT-1	DAY TANK WEIGHT SCALE	CHEMICAL ROOM	CP-1	CONTRACTOR	CONTRACTOR
80	WE-1	DAY TANK SCALE ELEMENT	CHEMICAL ROOM	WIT-1	CONTRACTOR	CONTRACTOR
82	FE/FIT-2	CHLORINE FLOW METER	CHEMICAL ROOM	CP-1	CONTRACTOR	CONTRACTOR
83	PT-2	PRESSURE TRANSMITTER, CHEMICAL	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
104	ZT-1	WASTE VALVE POSITION TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
119	PQM-2	POWER QUALITY MONITOR	PUMP CONTROL ROOM	VFD-1	CONTRACTOR	CONTRACTOR
169	LDS-1	STORAGE TANK LEAK DETECTION SENSOR	CHEMICAL ROOM	CP-1	CONTRACTOR	CONTRACTOR
173	TIT-1	ROOM TEMPERATURE INDICATING/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
174	TIT-2	ROOM TEMPERATURE INDICATING/TRANSMITTER	CHEMICAL ROOM	CP-1	CONTRACTOR	CONTRACTOR
176	TIT-3	ROOM TEMPERATURE INDICATING/TRANSMITTER	SHOWER AREA	CP-1	CONTRACTOR	CONTRACTOR

SWITCHES

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
85	PSH-1	HIGH PRESSURE SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
87	ZS-10A	SYSTEM VALVE FULL OPEN SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
88	ZS-10B	SYSTEM VALVE FULL CLOSED SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
89	LSH-1	FLOOR WATER LEVEL SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
91	LSH-3	FLOOR WATER LEVEL SWITCH	SHOWER AREA	CP-1	CONTRACTOR	CONTRACTOR
94	LSH-5	FLOOR WATER LEVEL SWITCH	SURGE VAULT	CP-1	CONTRACTOR	CONTRACTOR
108	VS-1	MOTOR VIBRATION SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
118	FS-1	SHOWER FLOW SWITCH	EMERG. SHWR. ROOM	CP-1	CONTRACTOR	CONTRACTOR
132	HS-1	EX. FAN HAND OFF AUTO SELECTOR SWITCH	SHOWER AREA	CP-6	CONTRACTOR	CONTRACTOR

VALVES

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
160	V-1	WASTE VALVE	PUMP CONTROL ROOM	H-14,16,18	CONTRACTOR	CONTRACTOR
162	SV-1	SOLENOID VALVE, LUBE OIL	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
163	V-2	SYSTEM VALVE	PUMP CONTROL ROOM	H-20,22,24	CONTRACTOR	CONTRACTOR
164	SV-3	SOLENOID VALVE, SURGE TANK AIR FILL	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
165	SV-4	SOLENOID VALVE, SURGE TANK AIR VENT	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
166	SV-5	SOLENOID VALVE, TURBIDITY	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR

PUMPS AND EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
19	CP-1	MAIN CONTROL PANEL/RTU	PUMP CONTROL ROOM	L-2	CONTRACTOR	CONTRACTOR
20	CP-2	CCTV ENCLOSURE	PUMP CONTROL ROOM	L-4	CONTRACTOR	CONTRACTOR
21	CP-3	SECURITY ENCLOSURE	PUMP CONTROL ROOM	L-6	CONTRACTOR	CONTRACTOR
23	CP-5	SMALL MOTOR CONTROL PANEL	PUMP CONTROL ROOM	H-3	CONTRACTOR	CONTRACTOR
24	CP-6	CHLORINATION CONTROL PANEL	CHEMICAL ROOM	L-8	CONTRACTOR	CONTRACTOR
25	P-1	WELL PUMP	PUMP CONTROL ROOM	RVSS-1	CONTRACTOR	CONTRACTOR
26	SP-2	SUMP PUMP	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
27	AC-1	AIR COMPRESSOR	PUMP CONTROL ROOM	H-8,10,12	CONTRACTOR	CONTRACTOR
28	PNL-H	PANELBOARD	PUMP CONTROL ROOM	MDP-1-1	CONTRACTOR	CONTRACTOR
29	XFMR-U	UTILITY TRANSFORMER	OUTSIDE	UTILITY	UTILITY COMPANY	UTILITY COMPANY
30	CTE-1	CURRENT TRANSFORMER ENCLOSURE	BUILDING EXTERIOR	XFMR-U	CONTRACTOR	CONTRACTOR
31	MS-1	METER SOCKET	BUILDING EXTERIOR	N/A	CONTRACTOR	CONTRACTOR
32	MSD-1	MAIN SERVICE DISCONNECT	BUILDING EXTERIOR	CTE-1	CONTRACTOR	CONTRACTOR
34	XFMR-T3	TRANSFORMER (120/240 V)	PUMP CONTROL ROOM	H-26,28	CONTRACTOR	CONTRACTOR
35	XFMR-T2	TRANSFORMER (208Y/120V)	PUMP CONTROL ROOM	H-2,4,6	CONTRACTOR	CONTRACTOR
40	PNL-L	PANELBOARD	PUMP CONTROL ROOM	XFMR-T2	CONTRACTOR	CONTRACTOR
43	EE-1	ELECTRICAL ENCLOSURE	SURGE VAULT	L-10,12	CONTRACTOR	CONTRACTOR
44	P-2	CHLORINE TRANSFER PUMP	CHEMICAL ROOM	CP-6	CONTRACTOR	CONTRACTOR
46	CDP-1	CHEMICAL DOSING PUMP	CHEMICAL ROOM	CP-6	CONTRACTOR	CONTRACTOR
49	MDP-1	MAIN DISTRIBUTION PANELBOARD	PUMP CONTROL ROOM	MSD-1	CONTRACTOR	CONTRACTOR
50	SLP-1	SOLUTION PUMP	PUMP CONTROL ROOM	CP-5	CONTRACTOR	CONTRACTOR
51	IC-1	IRRIGATION CONTROLLER	PUMP CONTROL ROOM	L-13	CONTRACTOR	CONTRACTOR
56	GC-1	GENERATOR CONNECTION	SITE	GENERATOR	CONTRACTOR	CONTRACTOR
57	VFD-1	VARIABLE FREQUENCY CONTROLLER	PUMP CONTROL ROOM	MDP-1-2	CONTRACTOR	CONTRACTOR
148	IWH-1	INLINE WATER HEATER	SHOWER AREA	L-15	CONTRACTOR	CONTRACTOR

SECURITY EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
95	ZS-1A	DOOR POSITION SWITCH	PUMP ROOM VEST.	CP-1	CONTRACTOR	CONTRACTOR
96	ZS-1B	DOOR POSITION SWITCH	PUMP ROOM VEST.	CP-1	CONTRACTOR	CONTRACTOR
97	ZS-2A	DOOR POSITION SWITCH	SHOWER AREA	CP-1	CONTRACTOR	CONTRACTOR
98	ZS-2B	DOOR POSITION SWITCH	SHOWER AREA	CP-1	CONTRACTOR	CONTRACTOR
109	ZS-8	HATCH POSITION SWITCH	SURGE VAULT	CP-1	CONTRACTOR	CONTRACTOR
135	CCTV-1	270-DEG FIXED CAMERA	BUILDING EXTERIOR	CP-2	OWNER	OWNER
136	CCTV-2	270-DEG FIXED CAMERA	BUILDING EXTERIOR	CP-2	OWNER	OWNER
137	CCTV-3	270-DEG FIXED CAMERA	CHEMICAL ROOM	CP-2	OWNER	OWNER
140	IL-1A	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
141	IL-1B	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
142	IL-2A	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
143	IL-2B	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
144	IL-3A	INFRARED ILLUMINATOR	CHEMICAL ROOM	CP-3	OWNER	OWNER
145	IL-3B	INFRARED ILLUMINATOR	CHEMICAL ROOM	CP-3	OWNER	OWNER

Short-Circuit Box

Node - UNN14-3

Kmax (0 ohm)	Kmax (+Impedance)	Voltage	12.5	kV
LLL 6235	6235	R X		
LLG 6274	6274	Zth+	0.1108	0.7755
LL 5393	5393	Zth0	0.1851	0.8390
LG 6040	6040	X/R	7.00	4.53
Dist	2172.4 ft or miles			
	Ohms	PerUnit	X/R	
R:	0.1723	0.1108	7.00	
X:	1.2058	0.7755		
Ro:	0.2878	0.1851		
Xo:	1.3047	0.8390		

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS

HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
HPE PROJECT:22.013 © 2024
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

700 EAST WELL EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	EQUIPMENT RATING						DISCONNECT					STARTER	REMARKS		
		VOLTS	PH	HP	WATTS	FLA	MCA	AMPS	POLES	NEMA	FUSE	CONNECTION			TYPE	NEMA SIZE
AC-1	AIR COMPRESSOR	480	3	3	11,626	14	-	30	600	3	1	-	-	HARD-WIRED	INCL.	-
CDP-1	CHLORINE DOSING PUMP	120	1	-	1,000	8.3	-	-	-	-	-	-	5-20R	-	PLUG-CORD	N/A
CP-1	MAIN CONTROL PANEL	120	1	-	1,000	8.33	-	-	-	-	-	-	-	-	-	-
CP-2	CCTV ENCLOSURE	120	1	-	200	1.7	-	-	-	-	-	-	-	-	HARD-WIRED	N/A
CP-3	SECURITY ENCLOSURE	120	1	-	300	2.5	-	-	-	-	-	-	-	-	HARD-WIRED	N/A
CP-5	SMALL MOTOR CONTROL PANEL	120	1	-	2,020	16.8	-	-	-	-	-	-	-	-	HARD-WIRED	N/A
CP-6	CHLORINATION CONTROL PANEL	120	1	-	1,844	15.4	-	-	-	-	-	-	-	-	HARD-WIRED	N/A
D6-1	SAFETY SWITCH	240	1	-	-	-	-	30	240	2	3R	-	-	-	HARD-WIRED	N/A
EE-1	ELECTRICAL ENCLOSURE	120	1	-	1,586	13.2	-	-	-	-	-	-	-	-	HARD-WIRED	N/A
IC-1	IRRIGATION CONTROLLER	120	1	-	180	-	-	-	-	-	-	-	5-20R	-	PLUG-CORD	N/A
IWH-1	INLINE WATER HEATER	120	1	-	200	-	-	-	-	-	-	-	-	-	HARD-WIRED	N/A
P-1	WELL PUMP	460	3	300	257,043	323	-	-	-	-	-	-	-	-	-	VFD 300 HP 1)
P-2	CHLORINE TRANSFER PUMP	120	1	0.5	1,176	9.8	-	-	-	-	-	-	5-20R	-	PLUG-CORD	-
SLP-1	SOLUTION PUMP	480	3	1	1,734	2.1	-	-	-	-	-	-	-	-	HARD-WIRED	FVNR 00
SP-3	SUMP PUMP	120	1	0.5	1,176	9.8	-	-	-	-	-	-	5-20R	-	PLUG-CORD	INCL. -
V-1	WASTE VALVE ACTUATOR	480	3	0.33	900	1.08	-	-	30	600	3	1	-	-	HARD-WIRED	INCL. -
V-1	SYSTEM VALVE ACTUATOR	480	3	0.33	900	1.08	-	-	30	600	3	1	-	-	HARD-WIRED	INCL. -
VFD-1	VFD MOTOR CONTROLLER	480	3	-	-	-	-	-	-	-	-	-	-	-	HARD-WIRED	300 HP

NOTES: 1) REFER TO TYPICAL VFD CONTROL DIAGRAM ON E3.14

700 EAST HVAC MECHANICAL EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	LOCATION	EQUIPMENT RATING						DISCONNECT					STARTER	REMARKS		
			VOLTS	PH	HP	WATTS	FLA	MCA	AMPS	POLES	NEMA	FUSE	CONNECTION			TYPE	NEMA SIZE
AHU-1	AIR HANDLER	INDOOR	480	3	3	2,660	3.2	4	30	600	3	1	6	-	HARD-WIRED	INCL.	-
EF-1	EXHAUST FAN	CHEMICAL ROOM	120	1	F	96	0.8	1	-	-	-	-	5-20	-	PLUG-CORD	FVNR	00
EF-3	EXHAUST FAN	SURGE VAULT	120	1	F	200	-	-	-	-	-	-	5-20	-	PLUG-CORD	RELAY	10A 1), 3)
MCU-1	MITSUBISHI OUTDOOR (SPLIT) UNIT	OUTDOOR	208	1	1	1,498	7.2	9	30	240	2	3R	15	-	HARD-WIRED	INCL.	-
MS-1	MITSUBISHI (SPLIT) UNIT	INDOOR	208	1	1	166	0.8	1	30	240	2	1	15	-	HARD-WIRED	INCL.	- 1)
ODU-1	OUTDOOR UNIG	OUTDOOR	480	3	3	13,302	16	20	30	600	3	3R	25	-	HARD-WIRED	INCL.	-
UH-1	UNIT HEATER	SHOWER AREA	480	3	3	5,000	6.01	-	-	-	-	-	-	-	HARD-WIRED	INCL.	- 2)
UH-2	UNIT HEATER	PUMP ROOM	480	3	3	5,000	6.01	-	-	-	-	-	-	-	HARD-WIRED	INCL.	- 2)
UH-3	UNIT HEATER	PUMP ROOM	480	3	3	5,000	6.01	-	-	-	-	-	-	-	HARD-WIRED	INCL.	- 2)

NOTES: 1) INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT.
2) DISCONNECT NOT REQUIRED.
3) PROVIDE STARTER IN VAULT ELECTRICAL ENCLOSURE.

CP-5 SMALL MOTOR CONTROL PANEL

LOCATION: PUMP CONTROL ROOM	TYPE: CUSTOM	VOLTS: 120			
DIMENSIONS: 30" W x 12"D x 36" H	NEMA: 1	PHASE: 1			
MOUNTING: SURFACE		WIRES: 3			
FEED: BOTTOM					
PHASE LOADS					
BRKR	WIRE	CONT.	NON-CONT.	A	
A	P	DESCRIPTION	SIZE	WATTS	NO. CONT. N-CONT.
10	1	CONTROL POWER	#12	100	1 100 0
30	1	SOLUTION PUMP (1 HP)	212	1,920	2 1,920 0
TOTAL WATTS:				2,020	0 2,020 0
CONTINUOUS LOAD:				2,020	
CONTINUOUS LOAD * 125%:				2,525	

MDP-1 PANELBOARD

LOCATION: PUMP CONTROL ROOM		MFR: SQUARE D		225 AMPS		VOLTS: 480Y/277						
DIMENSIONS: 42"W x 9.5"D x 50"H		TYPE: I-LINE		X M.L.O.		PHASE: 3						
MOUNTING: SURFACE		NEMA: 1		22,000 A.I.C.		WIRES: 4						
FEED: TOP		X SPD		FED FROM:								
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR		
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.	
225	3	PANELBOARD H	440	41,774	16,790	1	16,086	6,351	14,145	5,895	11,542	4,545
800	3	WELL VFD MOTOR CONTROLLER	2-340	268,219	2	89,406	0	89,406	0	89,406	0	0
		SPACE			3							
		SPACE			4							
TOTAL WATTS:			309,993	16,790	105,493	6,351	103,552	5,895	100,949	4,545		
CONTINUOUS LOAD:			309,993									
CONTINUOUS LOAD * 125%:			387,491									
NON-CONTINUOUS LOAD:			16,790									
DESIGN WATTS:			404,282									
MIN. RATING (AMPS):			487									

XFMR-T2 TRANSFORMER

LOCATION: PUMP CONTROL ROOM		16.0 PRIMARY AMPS		PRIMARY VOLTS: 480							
DIMENSIONS: "W" x "D" x "H"		37.0 SECONDARY AMPS		SECONDARY VOLTS: 208Y/120							
MOUNTING: WALL				KVA: 15							
FEED: SIDE				FED FROM: PNL H							
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR	
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.
			8,133	3,156	4,423	1,356	2,482	900	1,229	900	
TOTAL WATTS:			8,133	3,156	4,423	1,356	2,482	900	1,229	900	
CONTINUOUS LOAD:			8,133								
CONTINUOUS LOAD * 125%:			10,167								
NON-CONTINUOUS LOAD:			3,156								
DESIGN WATTS:			13,323								

CP-6 CHEMICAL ROOM CONTROL PANEL

LOCATION: CHLORINATION ROOM		TYPE: CUSTOM		VOLTS: 120							
DIMENSIONS: 30" W x 12"D x 36" H		NEMA: 4X		PHASE: 1							
MOUNTING: SURFACE				WIRES: 3							
FEED: BOTTOM											
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR	
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.
10	1	EXHAUST FAN	212	288	1	288	0				
20	1	TRANSFER PUMP	212	1,176	2	0	1,176				
20	1	RECEPT. (IN CONTROL PANEL)	#12	180	3	0	180				
5	1	CHLORINE DOSING PUMP POWER	#12	100	4	100	0				
10	1	CONTROL POWER	#12	100	5	100	0				
TOTAL WATTS:			488	1,356	488	1,356					
CONTINUOUS LOAD:			488								
CONTINUOUS LOAD * 125%:			610								
NON-CONTINUOUS LOAD:			1,356								
DESIGN WATTS:			1,966								
MIN. RATING (AMPS):			16								

EE-1 ELECTRICAL ENCLOSURE

LOCATION: SURGE TANK VAULT		MFR: N/A		N/A AMPS		VOLTS: 240/120					
DIMENSIONS: 20"W x 8"D x 24"H		TYPE: CUSTOM		20 M.C.B.		PHASE: 1					
MOUNTING: SURFACE		NEMA: 4X FIBERGLASS				WIRES: 3					
FEED: SIDE				FED FROM: PANELBOARD L							
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR	
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.
10	1	CONTROL POWER	212	100	1	100	0				
10	1	EF-3, EXHAUST FAN	212	150	2			150	0		
20	1	SP-2, RECEPT. SUMP PUMP	212	1,176	3			1,176	0		
20	1	VAULT OUTLET	212	180	4				0	180	
20	1	VAULT LIGHTS	212	76	5			76	0		
20	1	AVAILABLE SPARE			6						
TOTAL WATTS:			1,252	180	0	0	1,252	0	0	180	
CONTINUOUS LOAD:			1,252								
CONTINUOUS LOAD * 125%:			1,565								
NON-CONTINUOUS LOAD:			180								
DESIGN WATTS:			1,745								
MIN. RATING (AMPS):			7								

PANELBOARD H

LOCATION: PUMP CONTROL ROOM		MFR: SQUARE D		225 AMPS		VOLTS: 480Y/277						
DIMENSIONS: 20"W x 5.75"D x "H"		TYPE: NF		X M.L.O.		PHASE: 3						
MOUNTING: SURFACE		NEMA: 1		22,000 A.I.C.		WIRES: 4						
FEED: BOTTOM		X SPD		FED FROM: MDP-1								
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR		
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.	
25	3	ODU-1 OUTDOOR CONDENSING UNIT	30	4,429	1	8,851	1,356					
				4,429	3			6,911	900			
				4,429	5					5,658	900	
20	3	UH-1 UNIT HEATER	312	1,666	7	1,666	3,045					
				1,666	9			1,666	3,045			
				1,666	11					1,666	3,045	
20	3	UH-2 UNIT HEATER	312	1,666	13	1,666	300					
				1,666	15			1,666	300			
				1,666	17					1,666	300	
20	3	UH-3 UNIT HEATER	312	1,666	19	1,666	300					
				1,666	21			1,666	300			
				1,666	23					1,666	300	
25	3	AHU-1 AIR HANDLER UNIT	886	25	2,236	1,350						
				886	27			2,236	1,350			
				886	29					886	0	
		1 AVAILABLE SPACE			31	0	0					
		1 AVAILABLE SPACE			33			0	0			
		1 AVAILABLE SPACE			35					0	0	
		1 AVAILABLE SPACE			37	0	0					
		1 AVAILABLE SPACE			39			0	0			
		1 AVAILABLE SPACE			41					0	0	
TOTAL WATTS:			30,941	0	16,086	6,351	14,145	5,895	11,542	4,545	16,790	10,833
CONTINUOUS LOAD:			41,774									
CONTINUOUS LOAD * 125%:			52,217									
NON-CONTINUOUS LOAD:			16,790									
DESIGN WATTS:			69,008									
MIN. RATING (AMPS):			83									

PANELBOARD L

LOCATION: PUMP CONTROL ROOM		MFR: SQUARE D		225 AMPS		VOLTS: 208Y/120						
DIMENSIONS: 20"W x 5.75"D x "H"		TYPE: NQ		50 M.C.B.		PHASE: 3						
MOUNTING: SURFACE		NEMA: 1		10,000 A.I.C.		WIRES: 4						
FEED: BOTTOM		X SPD		FED FROM: XFMR-T2								
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR		
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.	
20	1	LTS, INTERIOR	212	810	1	1,810	0					
20	1	LTS, EXTERIOR	212	81	3			281	0			
20	1	RECEPT. PUMP CONTROL ROOM	212	720	5					300	720	
		1 AVAILABLE SPACE			7	488	1,356					
20	1	RECEPT., CHEMICAL RM. & SHOWER	212	900	9			1,252	900			
20	1	RECEPT. EXTERIOR & VESTIBULE	212	180	11					180	180	
20	1	RECEPT. IRRIGATION CONTROLLER	212	100	13	2,120	0					
20	1	IWH-1 INLINE WATER HEATER	212	200	15			949	0			
		1 AVAILABLE SPACE			17					749	0	
		1 AVAILABLE SPACE			19	5	0					
		1 AVAILABLE SPACE			21			0	0			
		1 AVAILABLE SPACE			23					0	0	
		1 AVAILABLE SPACE			25	0	0					
		1 AVAILABLE SPACE			27			0	0			
		1 AVAILABLE SPACE			29					0	0	
		1 AVAILABLE SPACE			31	0	0					
		1 AVAILABLE SPACE			33			0	0			
		1 AVAILABLE SPACE			35					0	0	
		1 AVAILABLE SPACE			37	0	0					
		1 AVAILABLE SPACE			39			0	0			
		1 AVAILABLE SPACE			41					0	0	
TOTAL WATTS:			1,371	1,620	4,423	1,356	2,482	900	1,229	900	1,536	6,763
CONTINUOUS LOAD:			8,133									
CONTINUOUS LOAD * 125%:			10,167									
NON-CONTINUOUS LOAD:			3,156									
DESIGN WATTS:			13,323									
MIN. RATING (AMPS):			37									

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

FILE NAME:
FILE DATE:



DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

PROJECT ENGINEER	
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REVISIONS

SCALE	NONE
BY	APVD.



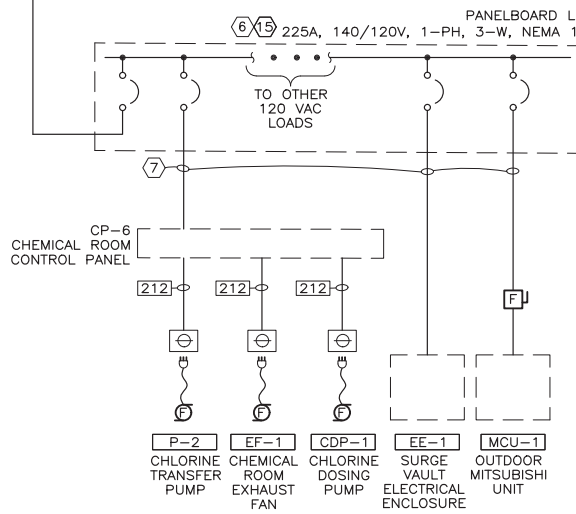
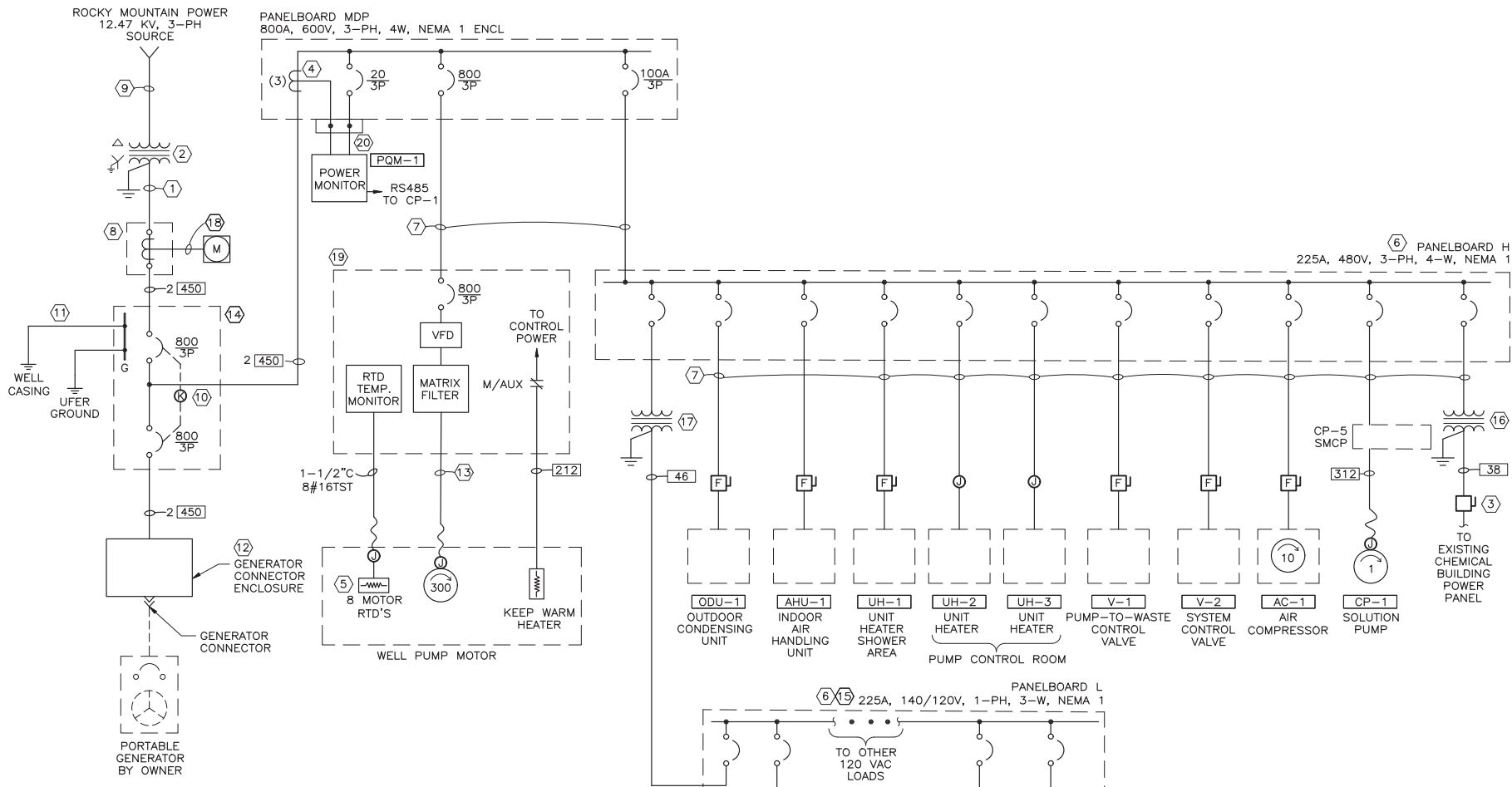
WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 SCHEDULES

GENERAL NOTES:

1. REFER TO ELECTRICAL PLANS FOR EQUIPMENT LOCATIONS.

SHEET KEYNOTES:

- 3-4" CONDUITS BY CONTRACTOR, CONDUCTORS BY ROCKY MOUNTAIN POWER.
- UTILITY TRANSFORMER SUPPLIED AND INSTALLED BY ROCKY MOUNTAIN POWER. TRANSFORMER PAD BY CONTRACTOR. REFER TO ROCKY MOUNTAIN POWER STANDARD DETAILS.
- PROVIDE A 240V, 60A, 2 POLE, 3W NEMA 3R DISCONNECT. INSTALL DISCONNECT ON SOUTH WEST CORNER OF EXISTING BUILDING. WHEN NEW POWER SOURCE HAS BEEN INSTALLED AND ENERGIZED, REMOVE THE OLD SERVICE EXPOSED CONDUIT AND CONDUCTORS.
- EQUIPMENT SUPPLIER SHALL SIZE CT'S AS REQUIRED.
- MOTOR SHALL HAVE SIX WINDING AND TWO BEARING RTD'S.
- CIRCUIT BREAKER SIZES AND PANEL RATINGS ARE SHOWN ON PANEL SCHEDULE.
- REFER TO CIRCUIT ID SHOWN IN PANELBOARD SCHEDULES, THEN THE WIRE AND CONDUIT REQUIREMENTS ARE SHOWN IN THE CONDUIT/CONDUCTOR TABLE ON E1.2.
- CT METERING ENCLOSURE: 800A, 600V CT METERING ENCLOSURE. CT'S PROVIDED AND INSTALLED BY UTILITY COMPANY.
- 4" C, CONDUCTORS PROVIDED AND INSTALLED BY UTILITY COMPANY. AVAILABLE FAULT CURRENT INDICATED IN THE SHORT-CIRCUIT TABLE ON E3.1
- PROVIDE A KIRK KEY LOCKING SYSTEM. LOCKING SYSTEM SHALL BE USED AS A MANUAL TRANSFER SWITCH FOR THE PORTABLE GENERATOR.
- REFER TO GROUNDING DETAIL ON E1.4 FOR CONDUCTOR REQUIREMENTS.
- REFER TO SITE PLAN ON E3.5 FOR LOCATION OF GENERATOR CONNECTOR ENCLOSURE. ROUTE CONDUIT CONDUCTORS IN A WAY THAT LENGTH OF CONDUCTORS FOR PARALLEL RUNS IS THE SAME. SEE QES GENERATOR CONNECTOR ENCLOSURE DETAIL ON SHEET E2.2.
- VFD CONDUCTORS: 2 EA, 2-1/2" C, W/3-4/0 SHIELDED VFD CABLE (BELDEN 29532 OR APPROVED EQUAL).
- MAIN SERVICE DISCONNECT: 600V, CIRCUIT BREAKERS IN A NEMA 3R ENCLOSURE. LABEL AS "MAIN SERVICE DISCONNECT" AND "GENERATOR". LABEL AVAILABLE FAULT CURRENT AS REQUIRED BY NEC 110.24.
- PANELBOARD L: 240V, 225A, 3-PH, 4-W, NEMA 1.
- TRANSFORMER T3: 10 KVA, 480V PRIMARY 120/240V SECONDARY.
- TRANSFORMER T2: 15 KVA, 480V PRIMARY 208Y/120V SECONDARY.
- 1" C, CONDUCTORS PROVIDED AND INSTALLED BY UTILITY COMPANY.
- VARIABLE FREQUENCY DRIVE (VFD) MOTOR CONTROLLER: 480 VAC, 3-PHASE WITH A MATRIX HARMONIC FILTER, IN A NEMA 1 ENCLOSURE.
- THE POWER QUALITY METER SHALL BE LOCATED IN PUMP CONTROL ROOM IN A SEPARATE ENCLOSURE NEAR THE JWCD RTU. CONTRACTOR SHALL INSTALL 1-1" C FROM THE MDP J-BOX TO THE PQM ENCLOSURE. INSTALL 4#10 CONDUCTORS FOR THE CT CIRCUITS. INSTALL 4#12 FOR THE VOLTAGE CIRCUITS.



POWER ONE-LINE DIAGRAM

ELECTRICAL UTILITY INSTALLATION		
UTILITY INFORMATION		
UTILITY COMPANY:	ROCKY MOUNTAIN POWER	
UTILITY COMPANY CONTACT:	MITCHELL LINDSAY	
CONTACT INFORMATION:	PHONE: 801 220-6103	
WORK ORDER NUMBER:	7185996	
ICE PRIMARY	SUPPLIED BY:	INSTALLED BY:
PRIMARY TRENCHING/BACKFILL	-	CONTRACTOR
PRIMARY CONDUIT	CONTRACTOR	CONTRACTOR
PRIMARY CONDUCTOR	UTILITY COMPANY	UTILITY COMPANY
ICE TRANSFORMER	SUPPLIED BY:	INSTALLED BY:
TRANSFORMER PAD	CONTRACTOR	CONTRACTOR
TRANSFORMER	UTILITY COMPANY	UTILITY COMPANY
ICE SECONDARY	SUPPLIED BY:	INSTALLED BY:
SECONDARY TRENCHING/BACKFILL	-	CONTRACTOR
SECONDARY CONDUIT	CONTRACTOR	CONTRACTOR
SECONDARY CONDUCTOR	UTILITY COMPANY	UTILITY COMPANY
RING EQUIPMENT	SUPPLIED BY:	INSTALLED BY:
METER	UTILITY COMPANY	UTILITY COMPANY
METER SOCKET	CONTRACTOR	CONTRACTOR
COMBO METER/MAIN	-	-
CURRENT TRANSFORMER ENCL.	CONTRACTOR	CONTRACTOR
MAIN SERVICE DISCONNECT	CONTRACTOR	CONTRACTOR
CT ENCL. TO METER SOCKET WIRING	UTILITY COMPANY	UTILITY COMPANY
CT ENCL. TO METER SOCKET CONDUIT	CONTRACTOR	CONTRACTOR
SERVICE DISCONNECT	SUPPLIED BY:	INSTALLED BY:
CIRCUIT BREAKER	CONTRACTOR	CONTRACTOR
FUSED DISCONNECT SWITCH	-	-



FILE NAME:
FILE DATE:



DESIGNED KBH
 DRAFTED GDS
 CHECKED KBH
 DATE JUNE 2023

NO.	3
NO.	2
NO.	1
NO.	

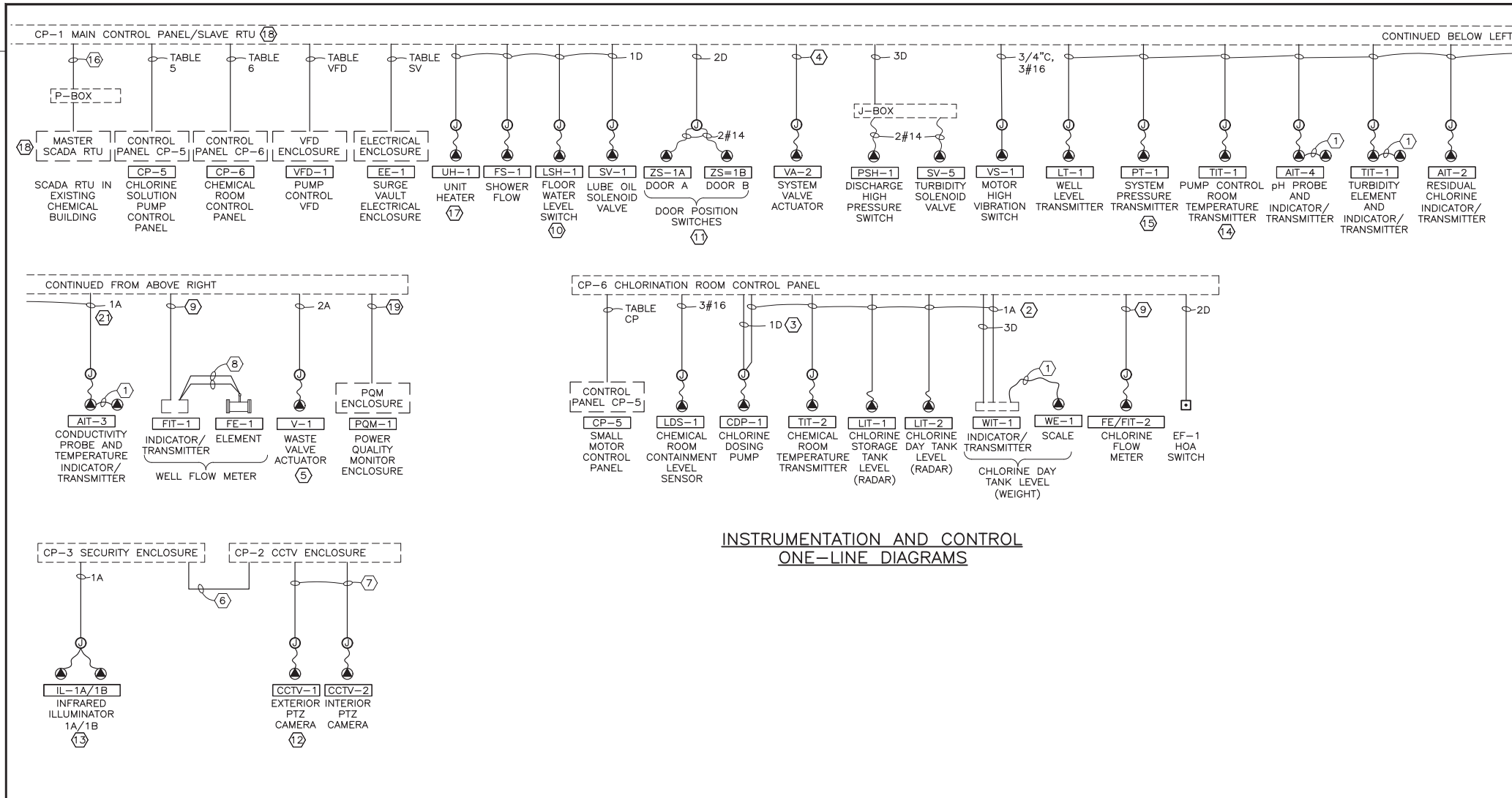
NO.	DATE	REVISIONS	BY	APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 POWER ONE-LINE DIAGRAM

SHEET
E3.3
127.24.400



INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAMS

3/4:CGENERAL NOTES:

- FOR DEVICE AND EQUIPMENT LOCATIONS REFER TO ELECTRICAL PLAN SHEETS.
- ALL CONDUIT SHALL BE 3/4", EXCEPT AS NOTED. CONDUITS TO BE ROUTED AT CONTRACTORS OPTION.

SHEET KEYNOTES:

- VENDOR SUPPLIED CABLE, INSTALLED BY CONTRACTOR.
- INSTALL ANALOG CONDUCTORS FROM FIELD DEVICE TO CP-1 VIA CP-4 WITHOUT TERMINATING IN THE CHEMICAL ROOM CONTROL PANEL.
- WIRE TO PUMP EXTERNAL STOP.
- 3/4"C, 3#14 VALVE FO/FC POSITION. 3#14 FO/FC POSITION COMMAND.
- 1-TSP FOR VALVE POSITION COMMAND, 1-TSP FOR VALVE POSITION.
- 1"C WITH CAT 6 CONDUCTOR BY CONTRACTOR.
- 3/4"C WITH CAT 6 CONDUCTOR BY CONTRACTOR.
- 1-1/4"C, CONDUCTORS PROVIDED BY FLOW METER SUPPLIER AND INSTALLED BY CONTRACTOR.
- 3/4"C, INSTALL BELDEN 9841 CONDUCTOR (#14TSP - MODBUS). INSTALL 2#16 DC POWER TO FLOW METER.
- SHOWN FOR PUMP ROOM FLOOD SWITCH LSH-1. DUPLICATE FOR THE SHOWER ROOM FLOOD SWITCH LSH-3.
- SHOWN FOR PUMP ROOM DOOR POSITION SWITCHES ZS-1A/1B. DUPLICATE FOR SHOWER AREA DOOR SWITCHES ZS-2A/2B.
- SHOWN FOR EXTERNAL CAMERA CCTV-1. DUPLICATE FOR EXTERNAL CAMERA CCTV-2.
- SHOWN FOR PUMP ROOM ILLUMINATORS 1A/1B. DUPLICATE FOR EXTERNAL ILLUMINATORS 2A/2B AND INTERNAL ILLUMINATORS 3A/3B.
- SHOWN FOR PUMP ROOM TEMPERATURE INDICATING/TRANSMITTER TIT-1. DUPLICATE FOR CHEMICAL ROOM TEMPERATURE INDICATING/TRANSMITTER TIT-2 AND SHOWER AREA TEMPERATURE INDICATING/TRANSMITTER TIT-3.
- SHOWN FOR SYSTEM PRESSURE TRANSMITTER PT-1. DUPLICATE FOR CHLORINE SYSTEM TRANSMITTER PT-2.
- 2" CONDUIT WITH TWO FIBER OPTIC CABLES: 6 STRAND 62.5/125 MICROMETER MULTIMODE OPTICAL CABLE CORPORATION DX06-0550 SERIES. TERMINATE ALL FIBERS WITH ST CONNECTORS. TEST TERMINATED FIBERS AND PROVIDE RESULTS TO JWWD.
- SHOWN FOR SHOWER AREA UNIT HEATER UH-1. DUPLICATE FOR PUMP CONTROL ROOM UNIT HEATERS UH-2 AND UH-3.
- THE OWNER WILL MODIFY THE EXISTING RTU IN THE CHEMICAL BUILDING TO BECOME THE MASTER RTU. THE OWNER WILL BUILD THE NEW CP-1/RTU TO BE A SLAVE RTU.
- REFER TO E3.3, KEYNOTE 20
- 24VDC POWER SUPPLIED TO FLOW METER FROM CP-1 VIA ONE TSP.
- DEVICE IS DUAL CHANNEL, CONDUCTIVITY AND TEMPERATURE. OWNER WILL NOT MONITOR TEMPERATURE.

I&C WIRE/CONDUIT TABLE

IDENT.	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
1A	3/4"	1	#18TSP	1 ANALOG SIGNAL
2A	3/4"	2	#18TSP	2 ANALOG SIGNALS
3A	3/4"	3	#18TSP	3 ANALOG SIGNALS

TABLE 5 (CP-1 TO CP-5 SMALL MOTOR CP)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#16	+24VDC	24VDC SOURCE FROM CP-1
	1	#16	+24VDC	C-5 HOA IN HAND MODE
	1	#16	+24VDC	C-5 HOA IN HAND MODE
	1	#16	+24VDC	CP-6 HOR IN HAND MODE

TABLE VFD

CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1	#14	+24VDC	+24VDC
1	#14	+24VDC	VFD FAULT
1	#14	+24VDC	VFD FILTER HIGH TEMPERATURE
1	#14	+24VDC	VFD HIGH TEMP. SHUTDOWN
1	#14	+24VDC	VFD HOA IN AUTO POSITION
1	#14	+24VDC	VFD HOA IN HAND POSITION
1	#14	+24VDC	VFD RUNNING
1	#14	+24VDC	VFD START
1	#14	+24VDC	VFD STOP
1	#14	120 VAC	COMMON
1	#14	120 VAC	VFD CALL RUN

TABLE 6 (CP-1 TO CHEMICAL RM CP-6)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1"	1	#16	+24VDC	24VDC SOURCE FROM CP-1
	1	#16	+24VDC	CONTAINMENT TRENCH HIGH LEVEL ALARM
	1	#16	+24VDC	EF HOA IN AUTO MODE
	1	#16	+24VDC	EF HOA IN HAND MODE
	1	#16	+24VDC	EXHAUST FAN ON
	1	#16	+24VDC	FLOW METER POWER RETURN
	1	#16	+24VDC	FLOW METER POWER SOURCE
	1	#16	+24VDC	TP HOA IN AUTO MODE
	1	#16	+24VDC	TP HOA IN HAND MODE
	1	#16	+24VDC	TRANSFER PUMP ON
	1	#16	120 VAC	120VAC SOURCE TO CP-1
	1	#16	120 VAC	CALL FOR EXHAUST FAN RUN
3/4"	1	#18TSP	4-20 mA	VFD COMMAND SPEED
	1	#18TSP	4-20 mA	VFD RUNNING SPEED
	1	RS485	MODBUS	BELDEN 9842 (RTD TEMP. MONITOR)
	1	-	CAT6U	ETHERNET
3/4"	1	-	CAT6U	POWER QUALITY MONITOR
	1	-	-	PULL STRING
3/4"	1	RS485	MODBUS	FLOW SIGNAL
1"	-	-	-	SPARE

TABLE CP (CP-5 TO CHEMICAL RM CP-6)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1"	1	#14	120VAC	120 VAC FUSED TO CP-1
	1	#14	120VAC	120 VAC SWITCHED FROM CP-1
	1	#14	120VAC	HOR SWITCH COMMON (FUSED)
	1	#14	120VAC	HOR SWITCH IN HAND POSITION
	1	#14	120VAC	HOR SWITCH IN REMOTE POSITION
	1	#14	120VAC	SOLUTION PUMP ON
1	#14	120VAC	SOLUTION PUMP OFF	

TABLE SV (CP-1 TO SURGE VAULT)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#14	+24VDC	SOURCE FROM CP-1
	1	#14	+24VDC	EF-3 EXHAUST FAN RUN
	1	#14	+24VDC	LSH-5 VAULT FLOOD SWITCH
	1	#14	+24VDC	ZS-8 ACCESS HATCH POSITION SW.
	1	#14	120 VAC	SV-4 AIR RELEASE SOL. VALVE OPEN
	1	#14	120 VAC	SV-3 AIR SUPPLY SOL. VALVE OPEN
3/4"	1	#16TSP	#16TSP	DPT-1 DIFFERENTIAL PRESSURE TRANS.

FILE NAME:
FILE DATE:



DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO.

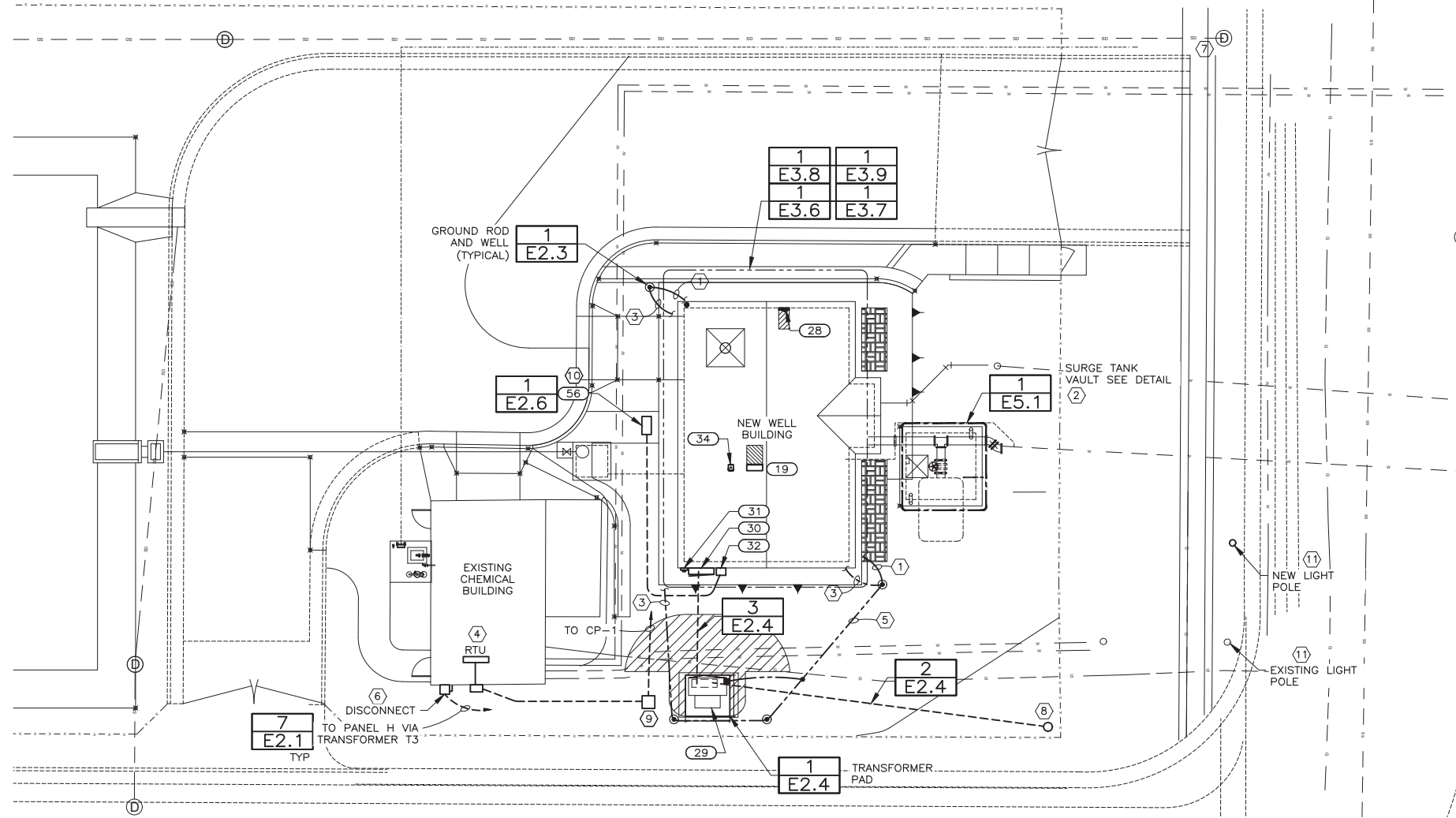
REVISIONS

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 INST. & CONTROL ONE-LINE DIAGRAM

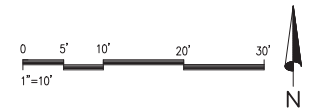
SHEET
E3.4
127.24.400



700 EAST SITE PLAN ITEM LIST (E3.5)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
19	CP-1	MAIN CONTROL PANEL/RTU	L-2	PUMP CONTROL ROOM
28	PWL-H	PANELBOARD	MDP-1-1	PUMP CONTROL ROOM
29	XFMR-U	UTILITY TRANSFORMER	UTILITY	OUTSIDE
30	CTE-1	CURRENT TRANSFORMER ENCLOSURE	XFMR-U	BUILDING EXTERIOR
31	MS-1	METER SOCKET	N/A	BUILDING EXTERIOR
32	MSD-1	MAIN SERVICE DISCONNECT	CTE-1	BUILDING EXTERIOR
34	XFMR-T3	TRANSFORMER (120/240 V)	H-26,28	PUMP CONTROL ROOM
56	GC-1	GENERATOR CONNECTION	GENERATOR	SITE

- GENERAL NOTES:**
- FOR WIRE AND CONDUIT REQUIREMENTS REFER TO POWER ONE-LINE AND PANELBOARD SCHEDULES. SEE ALSO THE CONDUIT/CONDUCTOR TABLE.
 - REFER TO SHEET E5.3 FOR INSTALLATION REQUIREMENTS FOR LIGHTNING PROTECTION SYSTEM.
 - EXISTING CHEMICAL BUILDING (CB) HAS DOOR POSITION SWITCHES WIRED TO THE CB RTU. MAINTAIN CIRCUIT INTEGRITY.



SHEET KEYNOTES:

- UP TO LIGHTNING PROTECTION. SEE SHEET E5.3 FOR LIGHTNING SYSTEM INSTALLATION REQUIREMENTS.
- SURGE TANK. SEE SHEET E5.1 FOR ELECTRICAL INSTALLATION REQUIREMENTS.
- TO UFER GROUND IN FOOTING.
- APPROXIMATE LOCATION OF EXISTING RTU.
- REFER TO GROUNDING DETAIL ON E1.4 FOR CONDUCTOR SIZES.
- COORDINATE WITH OWNER THE LOCATION OF DISCONNECT FOR SUPPLY POWER TO EXISTING CHEMICAL BUILDING.
- APPROXIMATE LOCATION OF EXISTING MILBANK PEDESTAL TO BE DISCONNECTED AND SALVAGED TO OWNER. PROVIDE POWER FOR EXISTING BUILDING FROM PANEL H/TRANSFORMER T3
- APPROXIMATE LOCATION OF EXISTING 4" CONDUIT ROUTED TO RMP POWER POLE. EXTEND CONDUIT TO NEW TRANSFORMER LOCATION.
- 24"x24"x24" PULL BOX. SEE E3.4 KEYNOTE 16. INSTALL A 2-IN PVC WATER DRAIN TO DAYLIGHT LOCATION BELOW THE DRAIN INTAKE LEVEL. SECURE A 1/8-IN METAL SCREEN ON THE DRAIN PIPE.
- COORDINATE WITH OWNER FOR THE LOCATION OF GENERATOR CONNECTOR ENCLOSURE DURING CONSTRUCTION. LOCATION SHOWN IS APPROXIMATE.
- EXISTING STREET LIGHT AND POLE BASE TO BE REMOVED. INSTALL A NEW POLE BASE AND A NEW STREET LIGHT 10 FEET NORTH IN PARK STRIP. REROUTE EXISTING CONDUIT/CONDUCTORS TO NEW LIGHT POLE LOCATION MAINTAINING CIRCUIT INTEGRITY. COORDINATE WITH CITY FOR FINAL LOCATION AND MINIMUM STREET LIGHTING REQUIREMENTS.
 POLE:
 PRODUCT NUMBER: HAPCO ITEM# 77509BPP1
 DESCRIPTION: POL, AL, PED, 5/22/E, 18 MH, BLK.
 LIGHT:

PRODUCT NUMBER: HADCO S5976-AK3UBG1505A
 DESCRIPTION: VS70 MOD TYPE III ACORN GLOBE
 SINGLE ACORN S6936

FILE NAME:
 FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS

DESIGNED	KBH	3					
DRAFTED	GDS	2					
CHECKED	KBH	1					
PROJECT ENGINEER	DATE	JUNE 2023	NO.		DATE		

SCALE
 AS SHOWN



**WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 SITE PLAN**

SHEET
E3.5
 127.24.400

700 EAST INST. & CONTROL PLAN ITEM LIST (E3.7)

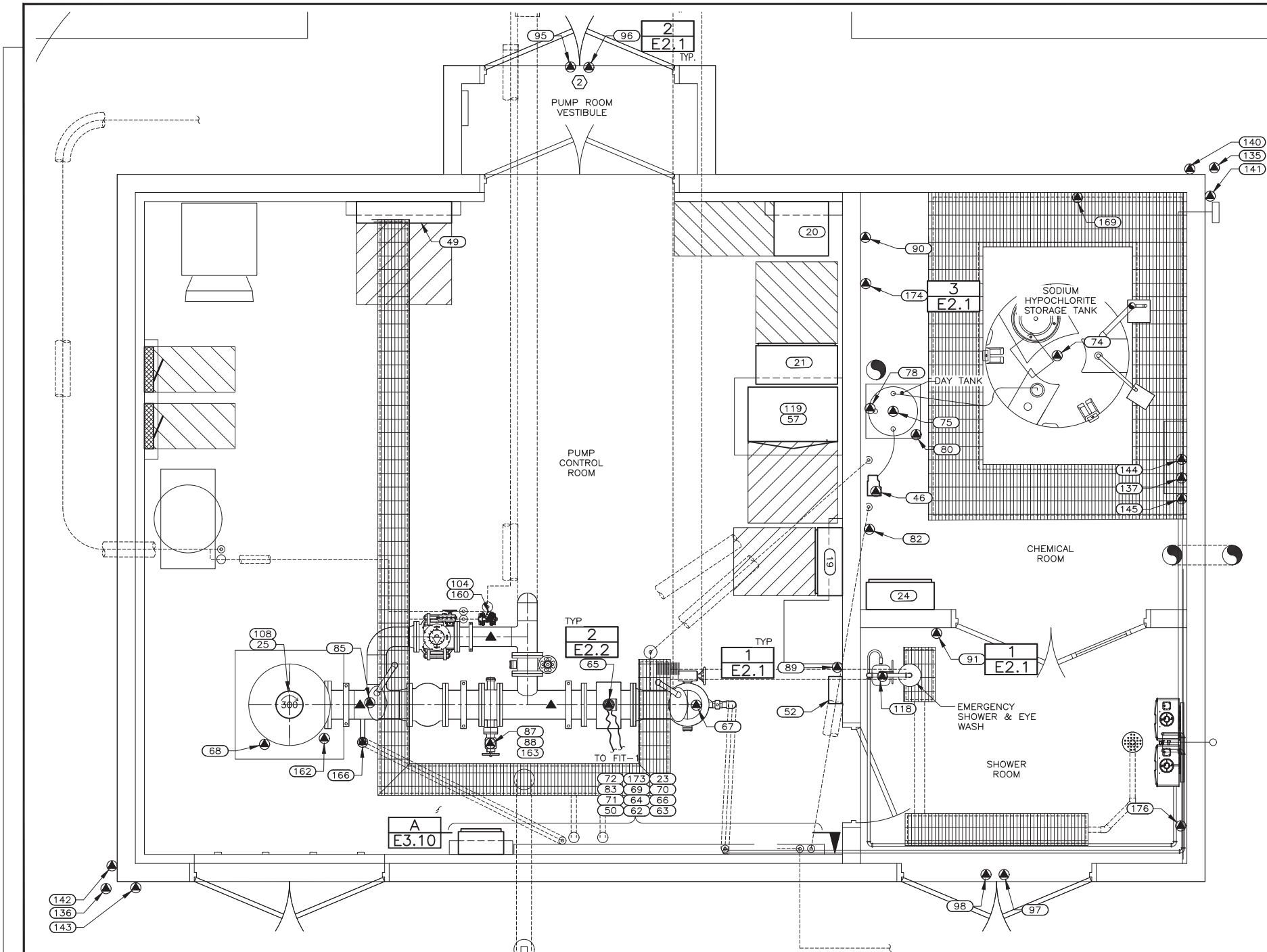
DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
19	CP-1	MAIN CONTROL PANEL/RTU	L-2	PUMP CONTROL ROOM
20	CP-2	CCTV ENCLOSURE	L-4	PUMP CONTROL ROOM
21	CP-3	SECURITY ENCLOSURE	L-6	PUMP CONTROL ROOM
23	CP-5	SMALL MOTOR CONTROL PANEL	H-3	PUMP CONTROL ROOM
24	CP-6	CHLORINATION CONTROL PANEL	L-8	CHEMICAL ROOM
25	P-1	WELL PUMP	RVSS-1	PUMP CONTROL ROOM
46	CDP-1	CHEMICAL DOSING PUMP	CP-6	CHEMICAL ROOM
49	MDP-1	MAIN DISTRIBUTION PANELBOARD	MSD-1	PUMP CONTROL ROOM
50	SLP-1	SOLUTION PUMP	CP-5	PUMP CONTROL ROOM
52	PQM-1	POWER QUALITY MONITOR	L-20	PUMP CONTROL ROOM
57	VFD-1	VARIABLE FREQUENCY CONTROLLER	MDP-1-2	PUMP CONTROL ROOM
62	AE-3	CONDUCTIVITY PROBE	AIT-3	PUMP CONTROL ROOM
63	AE-4	pH PROBE	AIT-4	PUMP CONTROL ROOM
64	AIT-4	pH INDICATOR/TRANSMITTER	CP-1	PUMP CONTROL ROOM
65	FE-1	WELL FLOW ELEMENT	FIT-1	PUMP CONTROL ROOM
66	FIT-1	WELL FLOW IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
67	PT-1	PRESSURE TRANSMITTER, SYSTEM	CP-1	PUMP CONTROL ROOM
68	LT-1	LEVEL TRANSMITTER, WELL	CP-1	PUMP CONTROL ROOM
69	TIT-1	TURBIDITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
70	TE-1	TURBIDITY ELEMENT	CP-1	PUMP CONTROL ROOM
71	AIT-3	CONDUCTIVITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
72	AIT-2	RESIDUAL CHLORINE IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
74	LIT-1	STORAGE TANK RADAR LEVEL IND/TRANSMITTER	CP-1	CHEMICAL ROOM
75	LIT-2	DAY TANK RADAR LEVEL IND/TRANSMITTER	CP-1	CHEMICAL ROOM
78	WIT-1	DAY TANK WEIGHT SCALE	CP-1	CHEMICAL ROOM
80	WE-1	DAY TANK SCALE ELEMENT	WIT-1	CHEMICAL ROOM
82	FE/FIT-2	CHLORINE FLOW METER	CP-1	CHEMICAL ROOM
83	PT-2	PRESSURE TRANSMITTER, CHEMICAL	CP-1	PUMP CONTROL ROOM
85	PSH-1	HIGH PRESSURE SWITCH	CP-1	PUMP CONTROL ROOM
87	ZS-10A	SYSTEM VALVE FULL OPEN SWITCH	CP-1	PUMP CONTROL ROOM
88	ZS-10B	SYSTEM VALVE FULL CLOSED SWITCH	CP-1	PUMP CONTROL ROOM
89	LSH-1	FLOOR WATER LEVEL SWITCH	CP-1	PUMP CONTROL ROOM
91	LSH-3	FLOOR WATER LEVEL SWITCH	CP-1	SHOWER AREA
95	ZS-1A	DOOR POSITION SWITCH	CP-1	PUMP ROOM VEST.
96	ZS-1B	DOOR POSITION SWITCH	CP-1	PUMP ROOM VEST.
97	ZS-2A	DOOR POSITION SWITCH	CP-1	SHOWER AREA
98	ZS-2B	DOOR POSITION SWITCH	CP-1	SHOWER AREA
104	ZT-1	WASTE VALVE POSITION TRANSMITTER	CP-1	PUMP CONTROL ROOM
108	VS-1	MOTOR VIBRATION SWITCH	CP-1	PUMP CONTROL ROOM
118	FS-1	SHOWER FLOW SWITCH	CP-1	EMERG. SHWR. ROOM
119	PQM-2	POWER QUALITY MONITOR	VFD-1	PUMP CONTROL ROOM
135	CCTV-1	270-DEG FIXED CAMERA	CP-2	BUILDING EXTERIOR
136	CCTV-2	270-DEG FIXED CAMERA	CP-2	BUILDING EXTERIOR
137	CCTV-3	270-DEG FIXED CAMERA	CP-2	CHEMICAL ROOM
140	IL-1A	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
141	IL-1B	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
142	IL-2A	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
143	IL-2B	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
144	IL-3A	INFRARED ILLUMINATOR	CP-3	CHEMICAL ROOM
145	IL-3B	INFRARED ILLUMINATOR	CP-3	CHEMICAL ROOM
160	V-1	WASTE VALVE	H-14,16,18	PUMP CONTROL ROOM
162	SV-1	SOLENOID VALVE, LUBE OIL	CP-1	PUMP CONTROL ROOM
163	V-2	SYSTEM VALVE	H-20,22,24	PUMP CONTROL ROOM
166	SV-5	SOLENOID VALVE, TURBIDITY	CP-1	PUMP CONTROL ROOM
169	LDS-1	STORAGE TANK LEAK DETECTION SENSOR	CP-1	CHEMICAL ROOM
173	TIT-1	ROOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	PUMP CONTROL ROOM
174	TIT-2	ROOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	CHEMICAL ROOM
176	TIT-3	ROOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	SHOWER AREA

GENERAL NOTES:

- FOR CONDUIT AND WIRE REQUIREMENTS REFER TO I&C ONE-LINE DIAGRAM ON E3.4.
- DEVICES SHOWN ARE DIAGRAMMATIC. VERIFY DEVICE LOCATIONS PRIOR TO CONDUIT ROUGH-IN.

SHEET KEYNOTES:

- NOT USED.
- THIS SET OF DOUBLE DOORS WILL HAVE A REMOVABLE TRANSOM ABOVE THE DOOR FRAME. MODIFY LOCATION OF J-BOX AS REQUIRED.



INSTRUMENTATION PLAN 1
 E3.5
 1/2"=1'-0"

FILE NAME:
 FILE DATE:

KEITH HEGERHORST
 PROFESSIONAL ENGINEER
 No. 86-171214-2202
 KEITH B. HEGERHORST
 9/27/24
 STATE OF UTAH

DESIGNED	NO.	DATE	NO.	DATE	REVISIONS	BY	APVD.
KBH	3						
GDS	2						
KBH	1						
DATE	JUNE 2023	NO.		DATE			

SCALE
 NONE

JORDAN VALLEY WATER
 CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 INST. & CONTROL PLAN

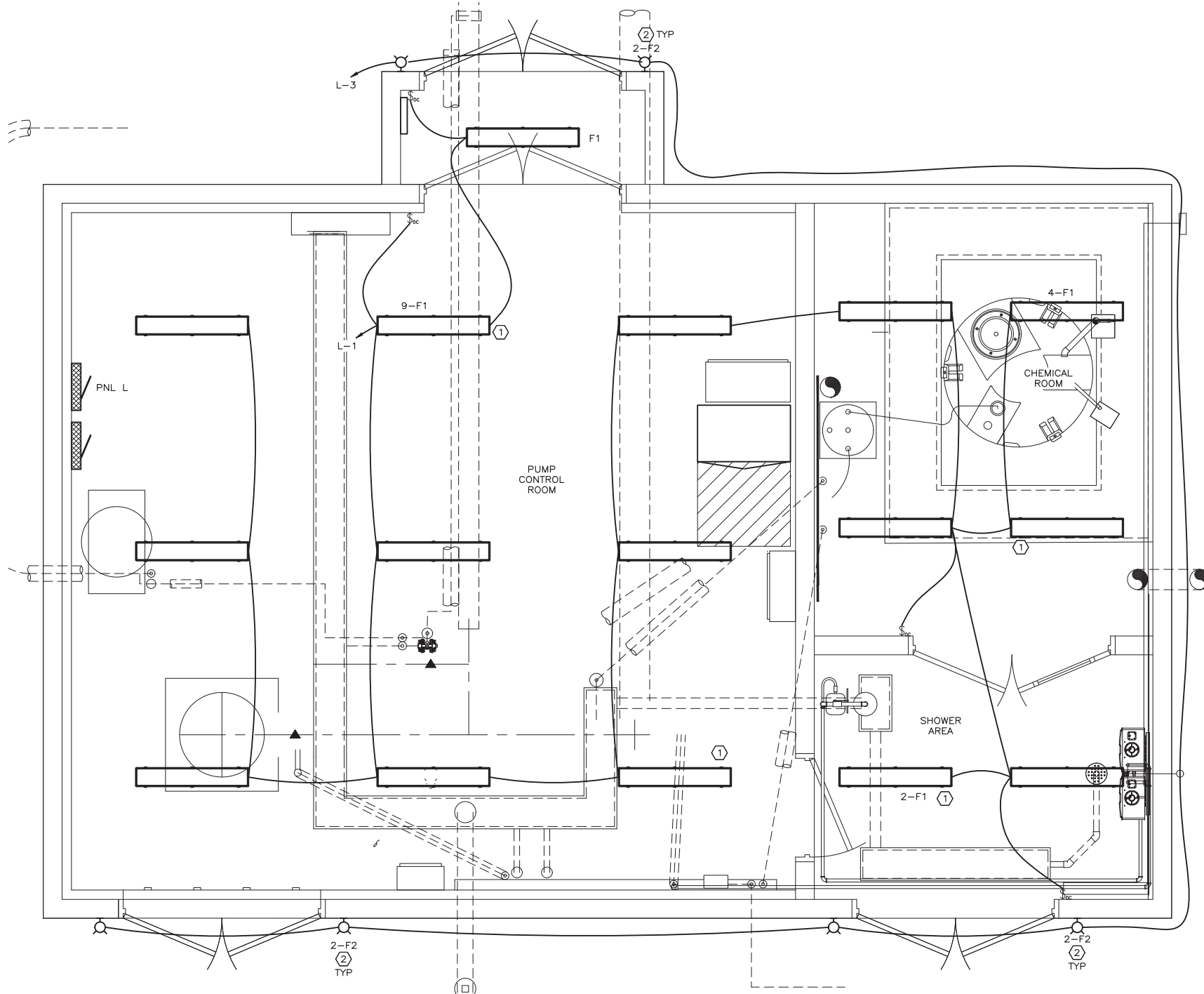
SHEET
E3.7
 127.24.400

GENERAL NOTES:

1. FOR WIRE AND CONDUIT REQUIREMENTS REFER TO PANELBOARD SCHEDULE FOR THE CIRCUIT ID, THEN THE WIRE AND CONDUIT REQUIREMENTS ARE PROVIDED ON THE CONDUIT/CONDUCTOR TABLE ON E1.1
2. FIXTURE SCHEDULE LOCATED ON E1.3.

SHEET KEYNOTES:

1. PROVIDE A 90-MINUTE BATTERY IN THIS FIXTURE.
2. INSTALL EXTERIOR FIXTURES 6-IN ABOVE TOP OF DOOR.



LIGHTING PLAN 1
 E3.5
 1/2"=1'-0"



FILE NAME:
 FILE DATE:

HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS		BY	APVD.

SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 LIGHTING PLAN

SHEET
E3.8
 127.24.400

700 EAST HVAC PLAN ITEM LIST (E3.9)

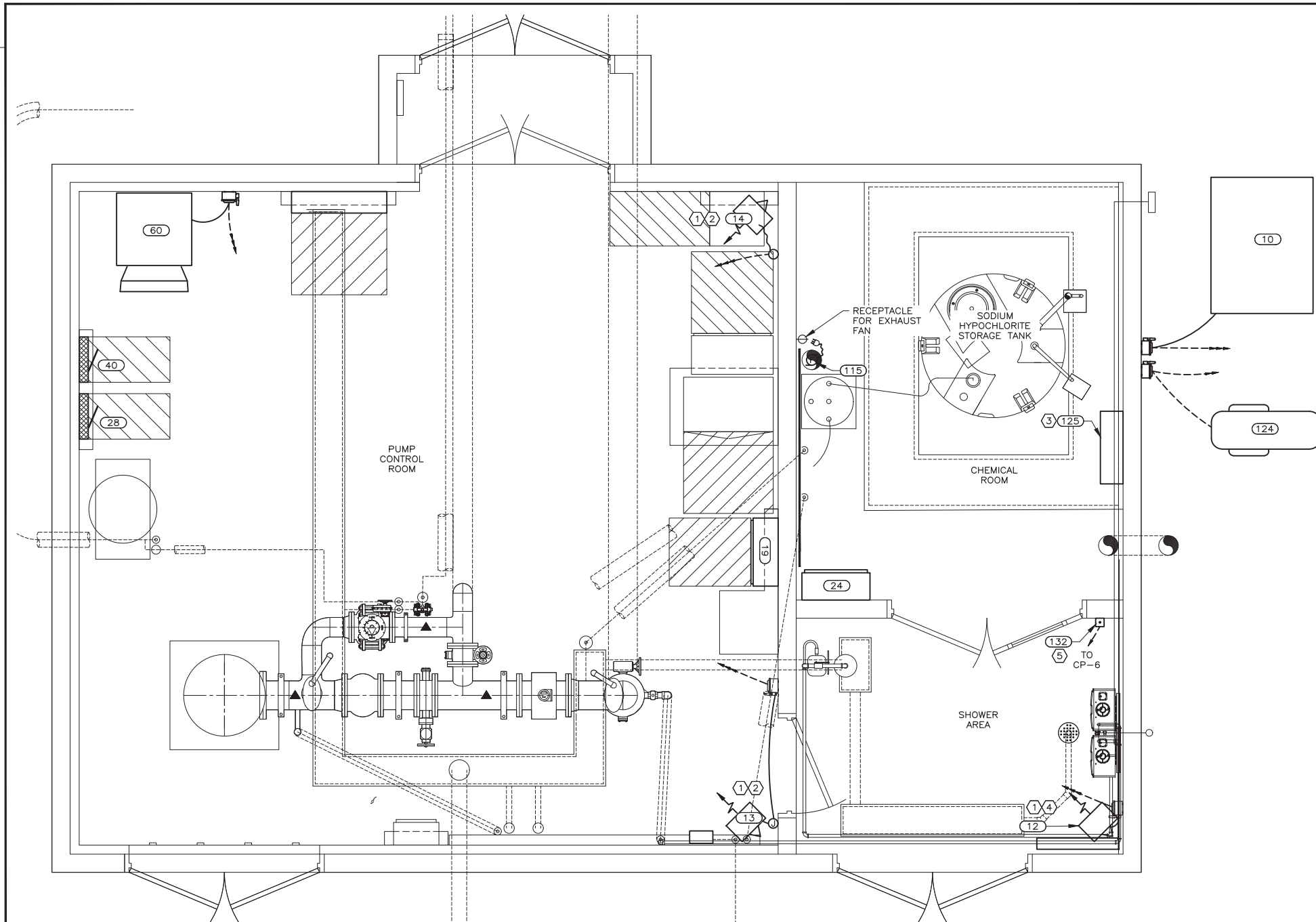
DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
10	ODU-1	OUTDOOR CONDENSING UNIT	H-1,3,5	BUILDING EXTERIOR
12	UH-1	UNIT HEATER	H-7,9,11	EMERG. SHWR. ROOM
13	UH-2	UNIT HEATER	H-13,15,17	PUMP CONTROL ROOM
14	UH-3	UNIT HEATER	H-19,21,23	PUMP CONTROL ROOM
19	CP-1	MAIN CONTROL PANEL/RTU	L-2	PUMP CONTROL ROOM
24	CP-6	CHLORINATION CONTROL PANEL	L-8	CHEMICAL ROOM
28	PNL-H	PANELBOARD	MDP-1-1	PUMP CONTROL ROOM
40	PNL-L	PANELBOARD	XFMR-T2	PUMP CONTROL ROOM
60	AHU-1	AIR HANDLING UNIT	H-25,27,29	PUMP CONTROL ROOM
115	EF-1	EXHAUST FAN	CP-6	CHEMICAL ROOM
124	MCU-1	MITSUBISHI OUTDOOR UNIT	L-16,18	BUILDING EXTERIOR
125	MS-1	MITSUBISHI SPLIT UNIT	L-20,22	CHEMICAL ROOM
132	HS-1	EX. FAN HAND OFF AUTO SELECTOR SWITCH	CP-6	SHOWER AREA

GENERAL NOTES:

- POWER SOURCE OR "HOME RUN" FOR EACH ELECTRICAL LOAD IS LISTED IN THE ITEM TABLE ON THIS SHEET. FOR WIRE AND CONDUIT REQUIREMENTS REFER TO THE POWER ONE-LINE (E3.3) 4AND PANELBOARD SCHEDULES (E3.1 & E3.2) FOR THE CIRCUIT ID, THEN THE WIRE AND CONDUIT REQUIREMENTS ARE IN THE CONDUIT/CONDUCTOR TABLE ON E1.1.
- PLAN IS DIAGRAMMATIC. REFER TO MANUFACTURERS INSTALLATION REQUIREMENT FOR CONDUIT LOCATIONS PRIOR TO CONDUIT ROUGH-IN.

SHEET KEYNOTES:

- REFER TO E3.4 FOR WIRE AND CONDUIT REQUIREMENTS.
- PUMP CONTROL ROOM UNIT HEATER CONTROLLED FROM CP-1.
- MITSUBISHI INDOOR UNIT RECEIVES POWER FROM THE OUTDOOR UNIT.
- SHOWER AREA UNIT HEATER CONTROLLED FROM CP-1.
- INSTALL RECESSED SWITCH +60-IN ABOVE FINISHED FLOOR. REFER TO INSTRUMENTATION AND CONTROL ONE-LINE DRAWING FOR WIRE AND CONDUIT REQUIREMENTS. LABEL "CHEMICAL ROOM EXHAUST FAN"



HVAC POWER PLAN 1
 E3.5
 1/2"=1'-0"

FILE NAME:
 FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
DATE	JUNE 2023	NO.	DATE		

REVISIONS		BY	APVD.

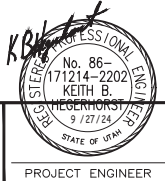
SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 HVAC PLAN

SHEET
 E3.9
 127.24.400

FILE NAME:
FILE DATE:



DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO.

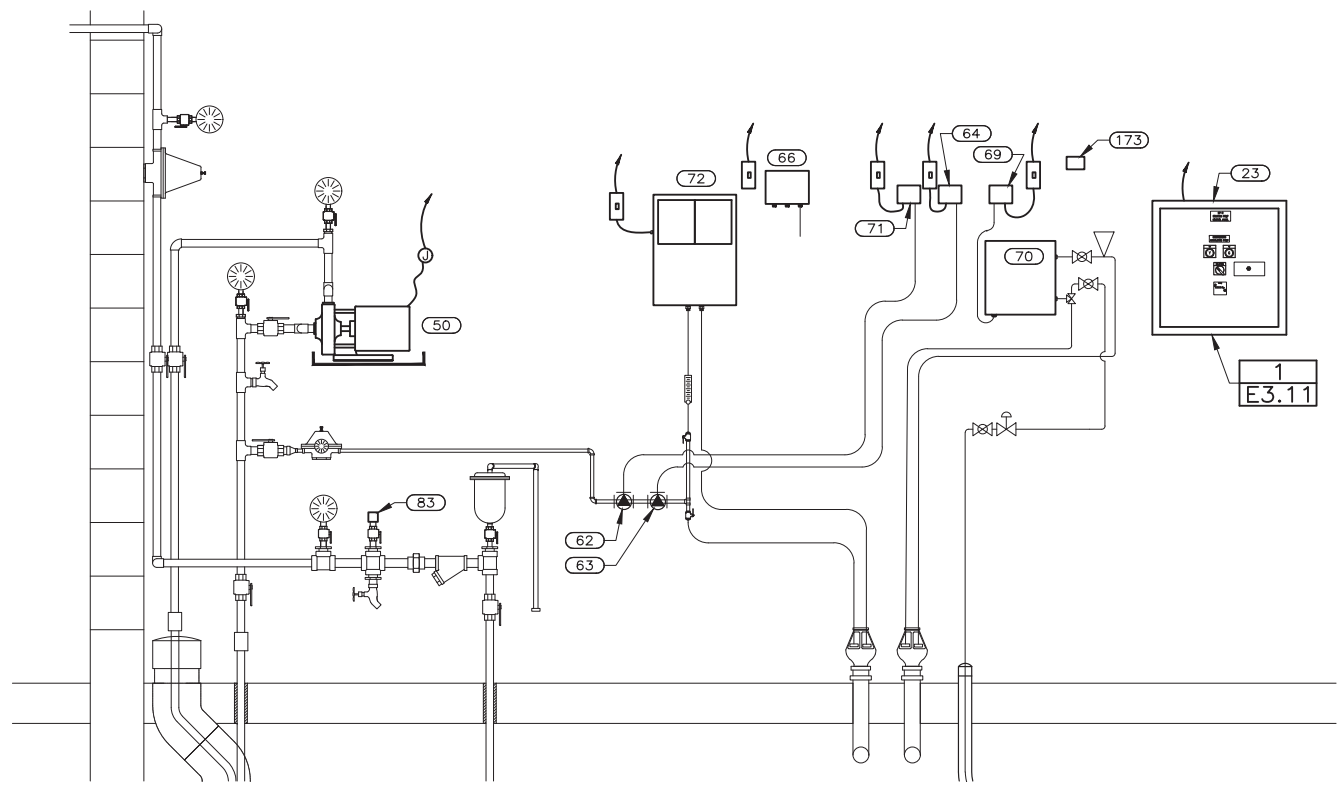
REVISIONS		NO.	DATE

SCALE
AS SHOWN



WELL PUMP STATION CONSTRUCTION
ELECTRICAL – 700 EAST
INSTRUMENTATION PANEL

SHEET
E3.10
127.24.400



INSTRUMENTATION PANEL A
E3.7
1"=1'-0"

700 EAST INSTRUMENTATION PANEL ITEM LIST (E3.10)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
23	CP-5	SMALL MOTOR CONTROL PANEL	H-3	PUMP CONTROL ROOM
50	SLP-1	SOLUTION PUMP	CP-5	PUMP CONTROL ROOM
62	AE-3	CONDUCTIVITY PROBE	AIT-3	PUMP CONTROL ROOM
63	AE-4	pH PROBE	AIT-4	PUMP CONTROL ROOM
64	AIT-4	pH INDICATOR/TRANSMITTER	CP-1	PUMP CONTROL ROOM
66	FTI-1	WELL FLOW IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
69	TIT-1	TURBIDITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
70	TE-1	TURBIDITY ELEMENT	CP-1	PUMP CONTROL ROOM
71	AIT-3	CONDUCTIVITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
72	AIT-2	RESIDUAL CHLORINE IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
83	PT-2	PRESSURE TRANSMITTER, CHEMICAL	CP-1	PUMP CONTROL ROOM
173	TIT-1	PH TEMPERATURE INDICATING/TRANSMIT	CP-1	PUMP CONTROL ROOM

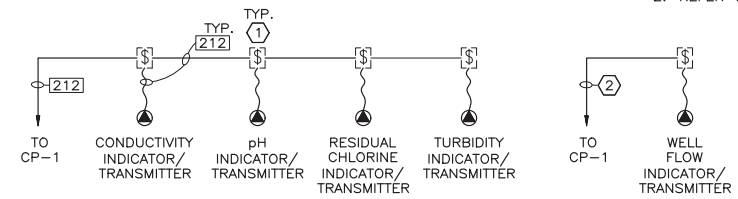
H.P.E., INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
HPE PROJECT:22.013 © 2024
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

- FOR WIRE AND CONDUIT REQUIREMENTS REFER TO THE INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAMS ON E3.4.

SHEET KEYNOTES:

- INSTALL SWITCH NEAR INSTRUMENT AND LABEL EACH SWITCH FOR THE INSTRUMENT IT CONTROLS.
- REFER TO E3.4, KEYNOTE 9.



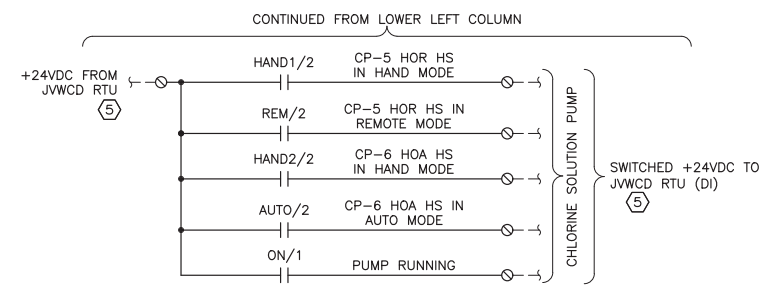
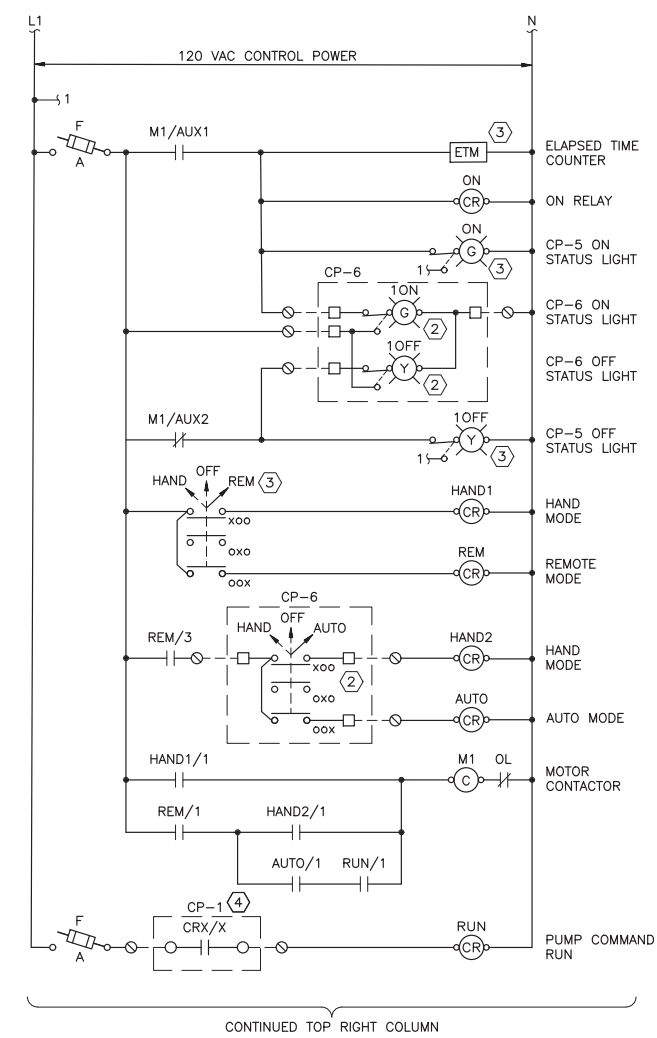
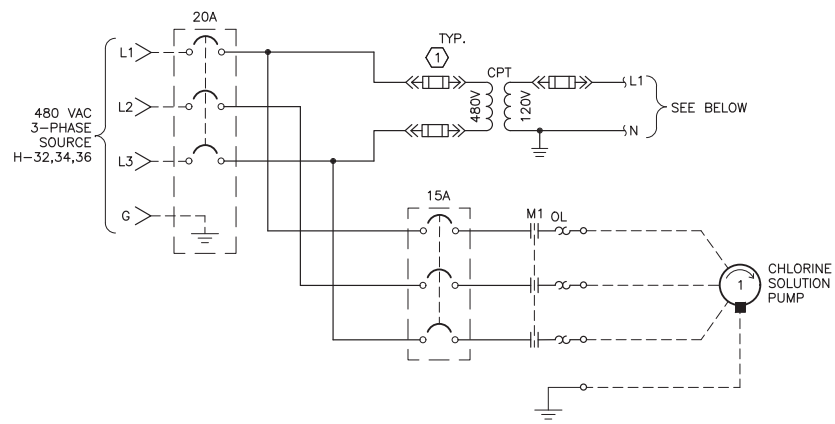
INSTRUMENTATION POWER DIAGRAM

GENERAL NOTES:

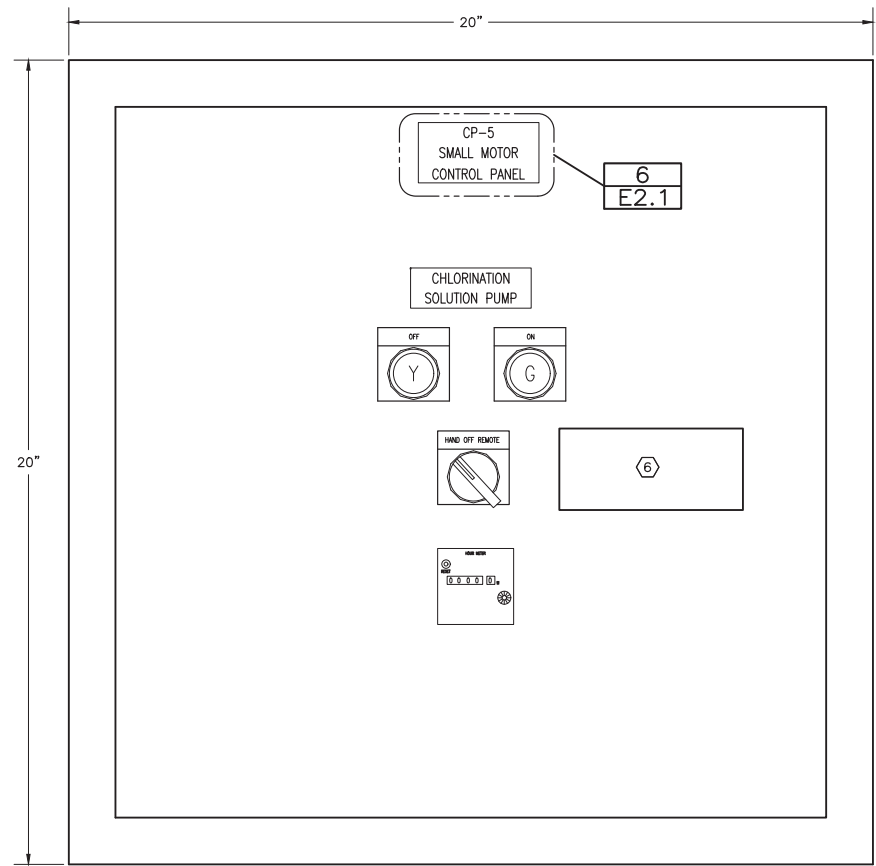
- CONTROL PANEL DIMENSIONS SHOWN ARE ANTICIPATED. CONTRACTOR SHALL MODIFY FOR THE SUPPLIED COMPONENTS.
- CONTRACTOR SHALL DETERMINE INTERIOR ARRANGEMENT. CONTRACTOR SHALL PROVIDE WIRE NUMBERS, TERMINAL NUMBERS AND OVERCURRENT DEVICE NUMBERS.
- CP-5 SHALL INCLUDE THE MOTOR CONTROLLER, AND SWITCHES AS SHOWN.

SHEET KEYNOTES:

- FUSES SIZED BY EQUIPMENT SUPPLIER.
- DEVICE LOCATED IN CP-6 THE CHEMICAL ROOM CONTROL PANEL.
- DEVICE INSTALLED ON ENCLOSURE DOOR AND AVAILABLE TO THE OPERATOR.
- 24VDC RELAY IN CP-1 SWITCHING 120 VAC FROM CP-5. RELAY PROVIDED IN CP-1 BY OWNER.
- JWCD RTU WILL PROVIDE A 24VDC SOURCE TO A DRY CONTACT IN CP-5, WITH SWITCHED SIGNAL BACK TO THE RTU.
- PROVIDE A LABEL: "LEAVE SWITCH IN REMOTE TO ENABLE CONTROL FROM CHEMICAL ROOM CONTROL PANEL".



CP-5 TYPICAL CONTROL DIAGRAM



CP-5 SMALL MOTOR CONTROL PANEL 1
 6" = 1'-0" E3.6

TABLE 5 (CP-1 TO CP-5 SMALL MOTOR CP)

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#16	+24VDC	24VDC SOURCE FROM CP-1
	1	#16	+24VDC	C-5 HOA IN HAND MODE
	1	#16	+24VDC	C-5 HOA IN HAND MODE
	1	#16	+24VDC	C-5 HOA IN HAND MODE
	1	#16	+24VDC	CP-6 HOR IN HAND MODE
	1	#16	+24VDC	CP-6 HOR IN REMOTE MODE
	1	#16	+24VDC	PUMP RUNNING
	1	#16	120 VAC	FUSED 120 VAC TO CP-1
	1	#16	120 VAC	SWITCHED RUN COMMAND
	3	#16	-	SPARE
1"	-	-	SPARE	

TABLE CP (CP-5 TO CHEMICAL RM CP-6)

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1"	1	#14	120VAC	120 VAC FUSED TO CP-1
	1	#14	120VAC	120 VAC SWITCHED FROM CP-1
	1	#14	120VAC	HOR SWITCH COMMON (FUSED)
	1	#14	120VAC	HOR SWITCH IN HAND POSITION
	1	#14	120VAC	HOR SWITCH IN REMOTE POSITION
	1	#14	120VAC	SOLUTION PUMP ON
	1	#14	120VAC	SOLUTION PUMP OFF

FILE NAME: 7/04
 FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO. DATE

REVISIONS		BY	APVD.

SCALE AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 CP-5 SMALL MOTOR CONTROL PANEL

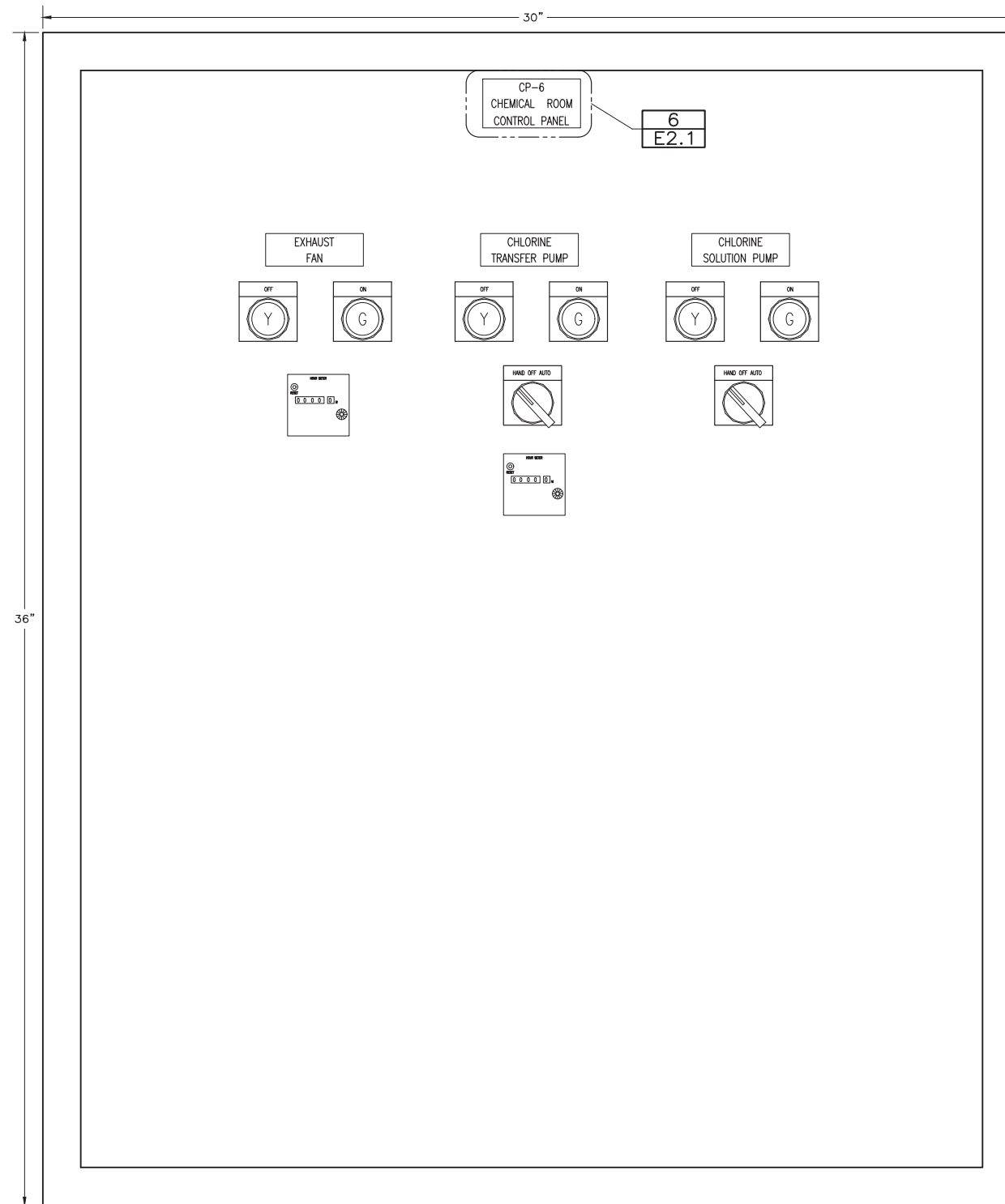
SHEET E3.11
 127.24.400

GENERAL NOTES:

- CONTROL PANEL DIMENSIONS SHOWN ARE ANTICIPATED. CONTRACTOR SHALL MODIFY FOR THE SUPPLIED COMPONENTS.
- CONTRACTOR SHALL DETERMINE INTERIOR ARRANGEMENT.
- REFER TO E3.13 FOR TYPICAL CONTROL DIAGRAM.

SHEET KEYNOTES:

- NOT USED.



CP-6 CHEMICAL ROOM CONTROL PANEL 1
 6" = 1'-0" E3.6

FILE NAME: 7/04
FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

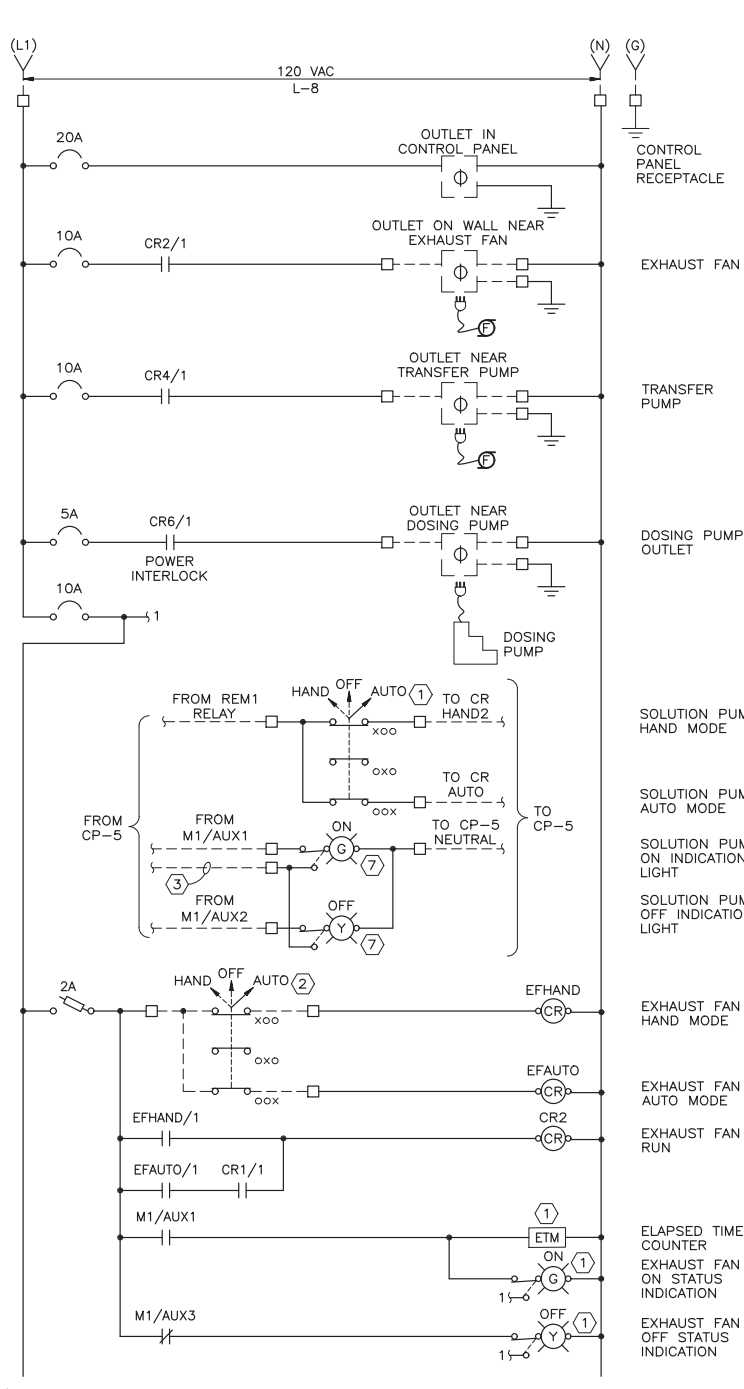
REVISIONS		BY	APVD.

SCALE
AS SHOWN

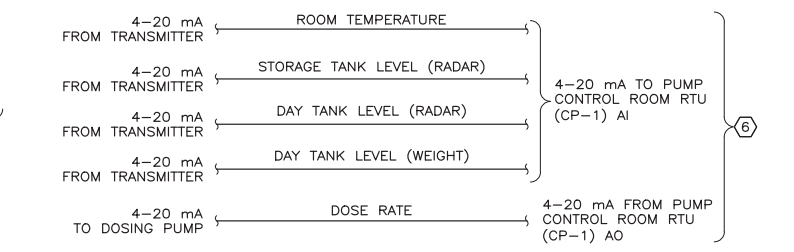
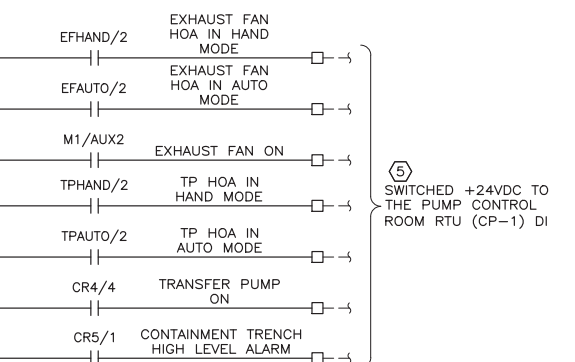
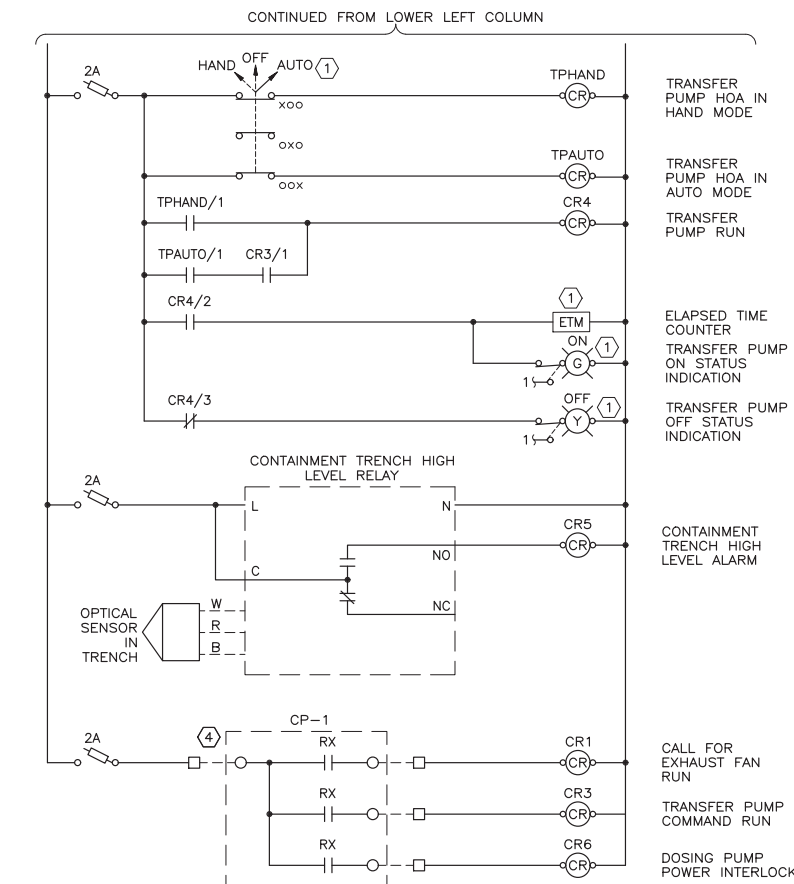


WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 CP-6 CHEMICAL ROOM CONTROL PANEL

SHEET
E3.12
127.24.400



CONTINUED TOP RIGHT COLUMN



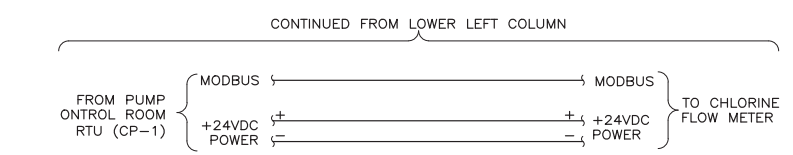
CONTINUED TOP RIGHT COLUMN

TABLE 6 (CP-1 TO CHEMICAL RM CP-6)

CONDUIT SIZE	CONDUCTOR	SIGNAL DESCRIPTION
1"	#16 +24VDC	24VDC SOURCE FROM CP-1
	#16 +24VDC	CONTAINMENT TRENCH HIGH LEVEL ALARM
	#16 +24VDC	EF HOA IN AUTO MODE
	#16 +24VDC	EF HOA IN HAND MODE
	#16 +24VDC	EXHAUST FAN ON
	#16 +24VDC	FLOW METER POWER RETURN
	#16 +24VDC	FLOW METER POWER SOURCE
	#16 +24VDC	TP HOA IN AUTO MODE
	#16 +24VDC	TP HOA IN HAND MODE
	#16 +24VDC	TRANSFER PUMP ON
	#16 120 VAC	120VAC SOURCE TO CP-1
	#16 120 VAC	CALL FOR EXHAUST FAN RUN
	#16 120 VAC	DOSING PUMP POWER INTERLOCK
	#16 120 VAC	TRANSFER PUMP COMMAND ON
	#16 -	SPARE
	1-1/2"	#18TSP 4-20 mA
#18TSP 4-20 mA		DAY TANK LEVEL (RADAR)
#18TSP 4-20 mA		DAY TANK LEVEL (WEIGHT)
#18TSP 4-20 mA		ROOM TEMPERATURE
#18TSP 4-20 mA		STORAGE TANK LEVEL (RADAR)
3/4"	RS485 MODBUS	FLOW SIGNAL
1"	-	SPARE

TABLE CP (CP-5 TO CHEMICAL RM CP-6)

CONDUIT SIZE	CONDUCTOR	SIGNAL DESCRIPTION
1"	#14 120VAC	120 VAC FUSED TO CP-1
	#14 120VAC	120 VAC SWITCHED FROM CP-1
	#14 120VAC	HOR SWITCH COMMON (FUSED)
	#14 120VAC	HOR SWITCH IN HAND POSITION
	#14 120VAC	HOR SWITCH IN REMOTE POSITION
	#14 120VAC	SOLUTION PUMP ON
	#14 120VAC	SOLUTION PUMP OFF



CP-6 TYPICAL CONTROL WIRING DIAGRAM

H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

- CONTROL DIAGRAM IS TYPICAL FOR THE CHEMICAL ROOM CONTROL PANEL. MODIFY AS REQUIRED FOR THE DEVICES SUPPLIED.
- CONTRACTOR SHALL PROVIDE FUSE, TERMINAL AND WIRE NUMBERS AS REQUIRED.
- REFER TO E3.12 FOR CONTROL PANEL EXTERIOR ARRANGEMENT.

SHEET KEYNOTES:

- DEVICE SHALL BE INSTALLED IN ENCLOSURE DOOR AND AVAILABLE TO THE OPERATOR.
- HOA SWITCH INSTALLED IN SHOWER ROOM.
- FROM CP-5, FUSED CONTROL POWER.
- 24VDC RELAY IN CP-1 SWITCHING 120 VAC FROM CP-6. RELAY PROVIDED IN CP-1 BY OWNER.
- WELL BUILDING RTU WILL PROVIDE A 24VDC SOURCE TO A DRY CONTACT IN THE CHEMICAL ROOM CONTROL PANEL, WITH SWITCHED 24VDC BACK TO CP-1.
- INSTALL ANALOG SIGNALS THROUGH CHEMICAL ROOM CONTROL PANEL. NO TERMINATION REQUIRED.

FILE NAME: 7/04
 FILE DATE:
 KEITH B. HEGERHORST
 PROFESSIONAL ENGINEER
 No. 86-171214-2202
 KEITH B. HEGERHORST
 9/27/24
 STATE OF UTAH

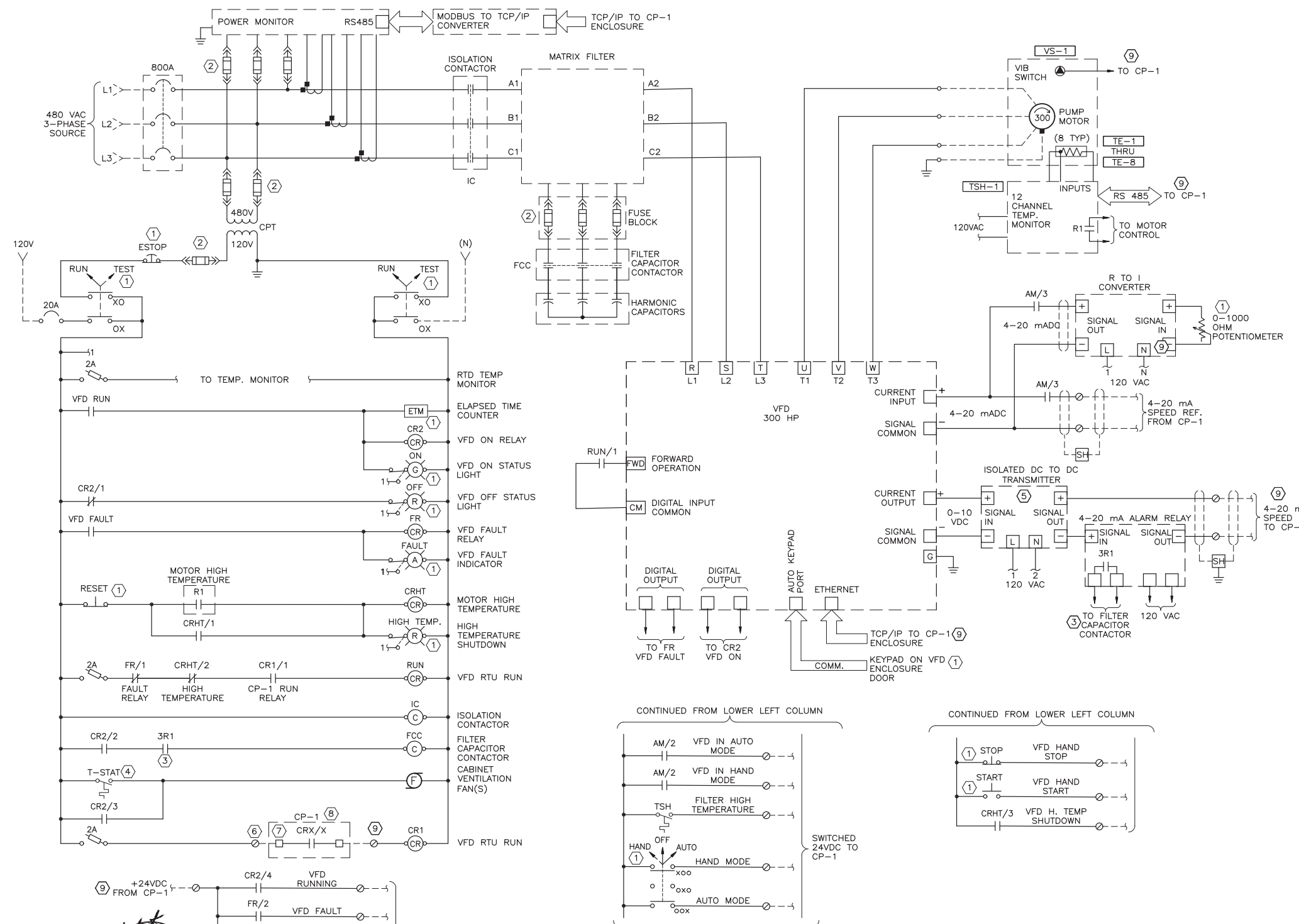
DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO. DATE

REVISIONS		BY	APVD.

SCALE: NONE

 JORDAN VALLEY WATER CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 CP-6 WIRING DIAGRAM
 SHEET E3.13
 127.24.400



GENERAL NOTES:

- CONTROL DIAGRAM SHOWN IS CONCEPTUAL AND SHALL BE MODIFIED AS REQUIRED FOR THE SPECIFIC VFD SUPPLIED.
- CONTRACTOR SHALL PROVIDE TERMINAL, WIRE AND OVERCURRENT DEVICE NUMBERS AS REQUIRED.

SHEET KEYNOTES:

- DEVICE SHALL BE LOCATED ON ENCLOSURE DOOR AVAILABLE TO THE OPERATOR.
- FUSES SIZED BY EQUIPMENT MANUFACTURER.
- FILTER CAPACITORS SHALL BE DE-ENERGIZED WHEN VFD IS OPERATING LESS THAN 30% OUTPUT HERTZ.
- VFD CIRCULATION FAN(S) SHALL BE THERMOSTATICALLY CONTROLLED AND OPERATE WHEN THE VFD IS OPERATING.
- PROVIDE SIGNAL CONVERTER AS REQUIRED.
- TERMINAL IN VFD ENCLOSURE
- TERMINAL IN CP-1 ENCLOSURE.
- 24VDC RELAY IN CP-1 SWITCHING 120 VAC FROM VFD-1. RELAY PROVIDED IN CP-1 BY OWNER.
- REFER TO INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAM FOR WIRE AND CONDUIT REQUIREMENTS.

TABLE VFD

E	CONDUCTOR		SIGNAL DESCRIPTION	
	QTY	SIZE	VOLTAGE	MCP TO VFD
1"	1	#14	+24VDC	+24VDC
	1	#14	+24VDC	VFD FAULT
	1	#14	+24VDC	VFD FILTER HIGH TEMPERATURE
	1	#14	+24VDC	VFD HIGH TEMP. SHUTDOWN
	1	#14	+24VDC	VFD HOA IN AUTO POSITION
	1	#14	+24VDC	VFD HOA IN HAND POSITION
	1	#14	+24VDC	VFD RUNNING
	1	#14	+24VDC	VFD START
	1	#14	+24VDC	VFD STOP
	1	#14	120 VAC	COMMON
1	#14	120 VAC	VFD CALL RUN	
3/4"	1	#18TSP	+20 mA	VFD COMMAND SPEED
	1	#18TSP	+20 mA	VFD RUNNING SPEED
3/4"	1	RS485	MODBUS	BELDEN 9842 (RTD TEMP. MONITOR)
3/4"	1	-	CAT6U	ETHERNET
	1	-	CAT6U	POWER QUALITY MONITOR
3/4"	-	-	-	PULL STRING

TYPICAL VFD WIRING DIAGRAM

FILE NAME:
 FILE DATE:
 KEITH B. HEGERHORST
 No. 86-171214-2202
 9/27/24
 STATE OF UTAH
 PROFESSIONAL ENGINEER

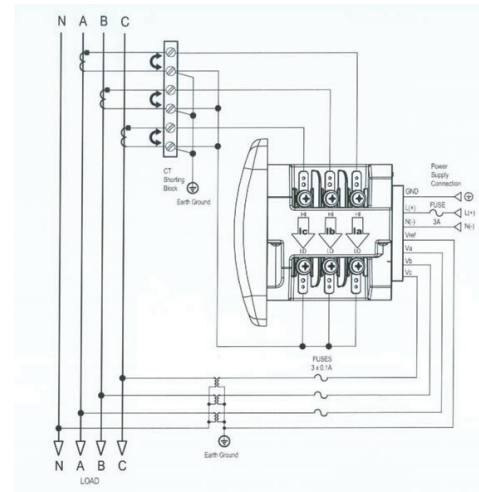
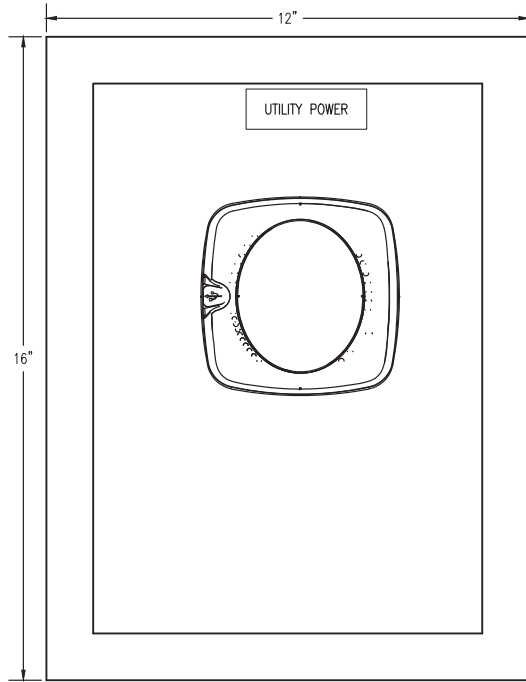
DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO. DATE

REVISIONS

NO.	DATE	BY	APVD.
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SCALE: NONE

JORDAN VALLEY WATER CONSERVANCY DISTRICT



POWER QUALITY WIRING DIAGRAM

H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 ©2021
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

- 1. NOT USED.

SHEET KEYNOTES:

- 1. NOT USED.

POWER QUALITY METER ENCLOSURE 1
 6" = 1'-0" E3.6

FILE NAME:
 FILE DATE:



PROJECT ENGINEER

DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO.

NO.	DATE	REVISIONS	BY	APVD.

SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL – 700 EAST
 POWER QUALITY METER

SHEET
 E3.15
 127.24.400

700 E WELL RTU ANALOG INPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
AI	CONDUCTIVITY, WELL WATER	ANALYZER, CONDUCTIVITY
AI	LEVEL (RADAR), DAY TANK	TRANSMITTER, LEVEL, RADAR
AI	LEVEL (RADAR), S. HYPOCHLORITE STRG TANK	TRANSMITTER, LEVEL, RADAR
AI	LEVEL (WEIGHT), DAY TANK	TRANSMITTER, TANK WEIGHT SCALE
AI	LEVEL, SURGE TANK WATER	TRANSMITTER, DIFFERENTIAL PRESSURE
AI	LEVEL, WELL WATER	TRANSMITTER, LEVE, SUBMERSIBLE
AI	pH, WELL WATER	ANALYZER, pH
AI	POSITION, WASTE VALVE	VALVE ACTUATOR
AI	PRESSURE, SYSTEM DISCHARGE	TRANSMITTER, PRESSURE
AI	RESIDUAL CHLORINE, WELL DISCHARGE	ANALYZER, RESIDUAL CHLORINE
AI	SPEED, PUMP RUNNING	VFD, WELL PUMP
AI	TEMPERATURE, CHEMICAL ROOM	TRANSMITTER, TEMPERATURE
AI	TEMPERATURE, PUMP CONTROL ROOM	TRANSMITTER, TEMPERATURE
AI	TEMPERATURE, SHOWER AREA ROOM	TRANSMITTER, TEMPERATURE
AI	TURBIDITY, WELL WATER	ANALYZER, TURBIDITY

ANALOG OUTPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
AO	COMMAND, CHLORINE DOSE RATE	DOSING PUMP, CHLORINE
AO	POSITION COMMAND, WASTE VALVE	VALVE ACTUATOR
AO	WELL SPEED CONTROL	WELL VFD

DISCRETE INPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
DI	ALARM CHEMICAL ROOM CONTAINMENT DRAIN LEVEL	SWITCH, LEVEL
DI	ALARM PUMP ROOM FLOOR HIGH WATER LEVEL	SWITCH, LEVEL
DI	ALARM, SHOWER AREA FLOOR HIGH WATER LEVEL	SWITCH, LEVEL
DI	ALARM, SURGE TANK VAULT FLOOR HIGH WATER LEVEL	SWITCH, LEVEL
DI	ALARM VFD TROUBLE	MOTOR CONTROLLER
DI	FLOW, EYE WASH SHOWER	SWITCH, FLOW
DI	MODE, CHEMICAL ROOM EF HOA IN HAND	MOTOR CONTROLLER
DI	MODE, CHEMICAL ROOM EF HOA IN HAND	MOTOR CONTROLLER
DI	MODE, CHLORINE SOLUTION PUMP HOA IN AUTO	MOTOR CONTROLLER
DI	MODE, CHLORINE SOLUTION PUMP HOA IN HAND	MOTOR CONTROLLER
DI	MODE, CHLORINE SOLUTION PUMP HOR IN HAND	MOTOR CONTROLLER
DI	MODE, CHLORINE SOLUTION PUMP HOR IN REMOTE	MOTOR CONTROLLER
DI	MODE, WELL VFD HOA IN AUTO	MOTOR CONTROLLER
DI	MODE, WELL VFD HOA IN HAND	MOTOR CONTROLLER
DI	POSITION, PUMP ROOM WEST, DOOR A OPEN	SWITCH, POSITION
DI	POSITION, PUMP ROOM WEST, DOOR B OPEN	SWITCH, POSITION
DI	POSITION, SHOWER AREA DOOR A OPEN	SWITCH, POSITION
DI	POSITION, SHOWER AREA DOOR B OPEN	SWITCH, POSITION
DI	POSITION, SURGE TANK HATCH OPEN	SWITCH, POSITION
DI	POSITION, SYSTEM VALVE FULL-CLOSED	SWITCH, POSITION
DI	POSITION, SYSTEM VALVE FULL-OPEN	SWITCH, POSITION
DI	POSITION, VFD START SWITCH CLOSED	SWITCH, START
DI	POSITION, VFD STOP SWITCH OPEN	SWITCH, STOP
DI	PRESSURE, WELL DISCHARGE PRESSURE HIGH	SWITCH, PRESSURE
DI	STATUS, CHEMICAL ROOM EF ON	MOTOR CONTROLLER
DI	STATUS, CHLORINE SOLUTION PUMP ON	MOTOR CONTROLLER
DI	STATUS, SURGE TANK VAULT EF ON	MOTOR CONTROLLER
DI	STATUS, WELL VFD RUNNING	MOTOR CONTROLLER
DI	TEMPERATURE WELL VFD TRANSFORMER HIGH	MOTOR CONTROLLER
DI	TEMPERATURE, WELL MOTOR HIGH	MOTOR HT RELAY
DI	VIBRATION, WELL MOTOR HIGH	MOTOR CONTROLLER

DISCRETE OUTPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
DO	CALL FOR HEAT, CHEMICAL ROOM	UHIT HEATER
DO	CALL FOR HEAT, PUMP CONTROL ROOM	UHIT HEATER
DO	CALL FOR HEAT, SHOWER AREA	UHIT HEATER
DO	COMMAND RUN, CHLORINATION RM EF	MOTOR CONTROLLER
DO	COMMAND RUN, CHLORINE SOLUTION PUMP	MOTOR CONTROLLER
DO	COMMAND RUN, WELL VFD	MOTOR CONTROLLER
DO	PUMP INHIBIT, CHLORINE DOSING PUMP	CHLORINE DOSING PUMP
DO	SV COMMAND OPEN, SURGE TANK AIR SUPPLY	VALVE, SOLENOID
DO	SV COMMAND OPEN, SURGE TANK AIR VENT	VALVE, SOLENOID
DO	SV COMMAND OPEN, TURBIDITY SUPPLY	VALVE, SOLENOID
DO	SV COMMAND OPEN, OIL LUBE	VALVE, SOLENOID
DO	COMMAND, VFD START	MOTOR CONTROLLER
DO	COMMAND, SYSTEM VALVE FULL-OPEN	VALVE ACTUATOR
DO	COMMAND, SYSTEM VALVE FULL-CLOSE	VALVE ACTUATOR

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 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
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 HPE PROJECT:22.013 ©2021
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. INPUT-OUTPUT LIST DOES NOT INCLUDE THE EXISTING CHEMICAL BUILDING 1/0.

SHEET KEYNOTES:

1. NOT USED.

MODBUS SIGNALS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
RS485	MOTOR WINDING/BEARING TEMPERATURES	MOTOR RTD TEMPERATURE MONITOR
RS485	WELL FLOW	FLOW METER
RS485	CHLORINE SYSTEM FLOW	FLOW METER

FILE NAME:
FILE DATE:



DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
DATE	JUNE 2023	NO.	DATE		

REVISIONS					
NO.	DATE	DESCRIPTION	BY	APVD.	

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL – 700 EAST
 RTU PLC INPUT AND OUTPUT LISTS

SHEET
E3.16
127.24.400

1000 EAST PROJECT TAG LIST
HVAC EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
11	ODU-1	OUTDOOR CONDENSING UNIT	BUILDING EXTERIOR	H-1,3,5	CONTRACTOR	CONTRACTOR
15	UH-5	UNIT HEATER	SHOWER AREA	L-21,23	CONTRACTOR	CONTRACTOR
16	EF-3	EXHAUST FAN	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
17	UH-1	UNIT HEATER	FLUORIDATION ROOM	H-7,9,11	CONTRACTOR	CONTRACTOR
18	UH-2	UNIT HEATER	CHLORINATION ROOM	H-13,15,17	CONTRACTOR	CONTRACTOR
61	AHU-1	AIR HANDLING UNIT	PUMP CONTROL ROOM	H-25,27,29	CONTRACTOR	CONTRACTOR
116	EF-2	EXHAUST FAN	FLUORIDATION ROOM	CP-4	CONTRACTOR	CONTRACTOR
117	EF-1	EXHAUST FAN	CHLORINATION ROOM	CP-7	CONTRACTOR	CONTRACTOR
122	UH-3	UNIT HEATER	PUMP CONTROL ROOM	H-19,21,23	CONTRACTOR	CONTRACTOR
123	UH-4	UNIT HEATER	PUMP CONTROL ROOM	H-25,27,29	CONTRACTOR	CONTRACTOR

PUMPS AND EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
19	CP-1	MAIN CONTROL PANEL/RTU	PUMP CONTROL ROOM	L-2	CONTRACTOR	CONTRACTOR
20	CP-2	CCTV ENCLOSURE	PUMP CONTROL ROOM	L-4	CONTRACTOR	CONTRACTOR
21	CP-3	SECURITY ENCLOSURE	PUMP CONTROL ROOM	L-6	CONTRACTOR	CONTRACTOR
22	CP-4	FLUORIDE CONTROL PANEL	FLUORIDATION ROOM	L-8	CONTRACTOR	CONTRACTOR
23	CP-5	SMALL MOTOR CONTROL PANEL	PUMP CONTROL ROOM	H-32,34,26	CONTRACTOR	CONTRACTOR
25	P-1	WELL PUMP	PUMP CONTROL ROOM	VFD-1	CONTRACTOR	CONTRACTOR
26	SP-2	SUMP PUMP	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
27	AC-1	AIR COMPRESSOR	PUMP CONTROL ROOM	H-8,10,12	CONTRACTOR	CONTRACTOR
28	PNL-H	PANELBOARD	PUMP CONTROL ROOM	XFMR-T1	CONTRACTOR	CONTRACTOR
33	VFD-1	VARIABLE FREQUENCY CONTROLLER	PUMP CONTROL ROOM	PMDE-2	CONTRACTOR	CONTRACTOR
35	XFMR-T2	TRANSFORMER (208Y/120V)	PUMP CONTROL ROOM	H-2,4,6	CONTRACTOR	CONTRACTOR
36	PME-1	PRIMARY METERING EQUIPMENT	SITE	UTILITY	UTILITY COMPANY	CONTRACTOR
37	XFMR-T4	TRANSFORMER (480Y/277V)	EAST BUILDING	H2-1	CONTRACTOR	CONTRACTOR
38	TC-1	TABLET CHLORINATOR	CHLORINATION ROOM	L-11,13	OWNER	CONTRACTOR
39	VFD-1	VFD-1 VENTILATION FAN POWER	PUMP CONTROL ROOM	H-26,28,30	CONTRACTOR	CONTRACTOR
40	PNL-L	PANELBOARD	PUMP CONTROL ROOM	XFMR-T2	CONTRACTOR	CONTRACTOR
41	VFD-1	VFD-1 CONTROL POWER	PUMP CONTROL ROOM	L-10,12	CONTRACTOR	CONTRACTOR
42	FDS-1	TRANSFORMER FEEDER DISCONNECT	SITE	PMDE-2	CONTRACTOR	CONTRACTOR
43	EE-1	ELECTRICAL ENCLOSURE	SURGE VAULT	L-10,12	CONTRACTOR	CONTRACTOR
45	P-2A	FLUORIDE TRANSFER PUMP	FLUORIDATION ROOM	CP-4	CONTRACTOR	CONTRACTOR
47	CDP-1	CHEMICAL DOSING PUMP	FLUORIDATION ROOM	CP-4	CONTRACTOR	CONTRACTOR
48	P-2B	FLUORIDE TRANSFER PUMP	FLUORIDATION ROOM	CP-4	CONTRACTOR	CONTRACTOR
50	SLP-1	SOLUTION PUMP	PUMP CONTROL ROOM	CP-5	CONTRACTOR	CONTRACTOR
53	SLP-2	SOLUTION PUMP (MIDVALE)	PUMP CONTROL ROOM	CP-5	CONTRACTOR	CONTRACTOR
54	CDP-2	CHEMICAL DOSING PUMP	FLUORIDATION ROOM	CP-4	CONTRACTOR	CONTRACTOR
55	MS-1	METER SOCKET	SITE	-	UTILITY COMPANY	UTILITY COMPANY
58	PMDE-1	PAD MOUNTED SWITCHGEAR	SITE	PME-1	CONTRACTOR	CONTRACTOR
59	PMDE-2	PAD MOUNTED SWITCHGEAR	SITE	PMDE-1	CONTRACTOR	CONTRACTOR
111	AM-1	ANTENNA MAST	BUILDING EXTERIOR	0	CONTRACTOR	CONTRACTOR
114	CP-7	EF CONTROL PANEL	CHLORINATION ROOM	L-18	CONTRACTOR	CONTRACTOR
120	FDS-3	FUSED DISCONNECT SWITCH	SITE	PMDE-1	CONTRACTOR	CONTRACTOR
121	PNL-H2	PANELBOARD	SITE	XFMR-T3	CONTRACTOR	CONTRACTOR
131	XFMR-T3	PAD MOUNTED TRANSFORMER	SITE	-	CONTRACTOR	CONTRACTOR
148	IWH-1	INLINE WATER HEATER	SHOWER AREA	L-15	CONTRACTOR	CONTRACTOR
151	FDS-2	FUSED DISCONNECT SWITCH	OUTSIDE	PMDE-1	CONTRACTOR	CONTRACTOR
152	XFMR-T1	PAD MOUNTED TRANSFORMER	OUTSIDE	PMDE-2	CONTRACTOR	CONTRACTOR
153	IC-1	VFD INTERRUPTING CONTACTOR	OUTSIDE	PMDE-2	CONTRACTOR	CONTRACTOR

SWITCHES

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
85	PSH-1	HIGH PRESSURE SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
87	ZS-10A	SYSTEM VALVE FULL OPEN SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
88	ZS-10B	SYSTEM VALVE FULL CLOSED SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
89	LSH-1	FLOOR WATER LEVEL SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
92	LSH-3	FLOOR WATER LEVEL SWITCH	SHOWER AREA	CP-1	CONTRACTOR	CONTRACTOR
94	LSH-5	FLOOR WATER LEVEL SWITCH	SURGE VAULT	CP-1	CONTRACTOR	CONTRACTOR
107	LSH-2	FLOOR WATER LEVEL SWITCH	CHLORINATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
108	VS-1	MOTOR VIBRATION SWITCH	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
118	FS-1	SHOWER FLOW SWITCH	EMERG. SHWR. ROOM	CP-1	CONTRACTOR	CONTRACTOR
133	HS-1	EX. FAN HAND OFF AUTO SELECTOR SWITCH	SHOWER AREA	CP-7	CONTRACTOR	CONTRACTOR
134	HS-2	EX. FAN HAND OFF AUTO SELECTOR SWITCH	SHOWER AREA	CP-4	CONTRACTOR	CONTRACTOR

VALVES

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
160	V-1	WASTE VALVE	PUMP CONTROL ROOM	H-14,16,18	CONTRACTOR	CONTRACTOR
162	SV-1	SOLENOID VALVE, LUBE OIL	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
163	V-2	SYSTEM VALVE	PUMP CONTROL ROOM	H-20,22,24	CONTRACTOR	CONTRACTOR
164	SV-3	SOLENOID VALVE, SURGE TANK AIR FILL	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
165	SV-4	SOLENOID VALVE, SURGE TANK AIR VENT	SURGE VAULT	EE-1	CONTRACTOR	CONTRACTOR
166	SV-5	SOLENOID VALVE, TURBIDITY	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR

INSTRUMENTATION

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
62	AE-3	CONDUCTIVITY PROBE	PUMP CONTROL ROOM	AIT-3	CONTRACTOR	CONTRACTOR
63	AE-4	pH PROBE	PUMP CONTROL ROOM	AIT-4	CONTRACTOR	CONTRACTOR
64	AIT-4	pH INDICATOR/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
65	FE-1	WELL FLOW ELEMENT	PUMP CONTROL ROOM	FIT-1	CONTRACTOR	CONTRACTOR
66	FIT-1	WELL FLOW IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
67	PT-1	PRESSURE TRANSMITTER, SYSTEM	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
68	LT-1	LEVEL TRANSMITTER, WELL	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
69	TIT-1	TURBIDITY IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
70	TE-1	TURBIDITY ELEMENT	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
71	AIT-3	CONDUCTIVITY IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
72	AIT-2	RESIDUAL CHLORINE IND/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
73	DPT-1	DIFFERENTIAL PRESSURE TRANSMITTER	SURGE VAULT	CP-1	CONTRACTOR	CONTRACTOR
76	LIT-1	STORAGE TANK RADAR LEVEL IND/TRANSMITTER	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
77	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
79	WIT-1A	DAY TANK WEIGHT SCALE	FLUORIDATION ROOM	L-14	CONTRACTOR	CONTRACTOR
81	WE-1A	DAY TANK SCALE ELEMENT	FLUORIDATION ROOM	WIT-1A	CONTRACTOR	CONTRACTOR
83	PT-2	PRESSURE TRANSMITTER, CHEMICAL	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
84	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
86	WIT-1B	DAY TANK WEIGHT SCALE	FLUORIDATION ROOM	L-16	CONTRACTOR	CONTRACTOR
104	ZT-1	WASTE VALVE POSITION TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
105	WE-1B	DAY TANK SCALE ELEMENT	FLUORIDATION ROOM	WIT-1B	CONTRACTOR	CONTRACTOR
110	AE-1	FLUORIDE GAS ANALYSIS ELEMENT	FLUORIDATION ROOM	ASH-1	CONTRACTOR	CONTRACTOR
112	AAH-1	FLUORIDE LEAK ALARM	PUMP CONTROL ROOM	L-22	CONTRACTOR	CONTRACTOR
127	FE/FIT-2A	FLUORIDE FLOW INDICATOR/TRANSMITTER	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
128	FE/FIT-2B	FLUORIDE FLOW INDICATOR TRANSMITTER	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
129	FE/FIT-3	CHLORINE FLOW INDICATOR/TRANSMITTER	CHLORINATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
171	LDS-1	CONTAINMENT TRENCH LEAK DETECTION SENSOR	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
173	TIT-1	ROOM TEMPERATURE INDICATING/TRANSMITTER	PUMP CONTROL ROOM	CP-1	CONTRACTOR	CONTRACTOR
175	TIT-2	ROOM TEMPERATURE INDICATING/TRANSMITTER	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
176	TIT-3	ROOM TEMPERATURE INDICATING/TRANSMITTER	SHOWER AREA	CP-1	CONTRACTOR	CONTRACTOR
177	TIT-4	ROOM TEMPERATURE INDICATING/TRANSMITTER	CHLORINATION ROOM	CP-1	CONTRACTOR	CONTRACTOR

SECURITY EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
95	ZS-1A	DOOR POSITION SWITCH	PUMP ROOM VEST.	CP-1	CONTRACTOR	CONTRACTOR
96	ZS-1B	DOOR POSITION SWITCH	PUMP ROOM VEST.	CP-1	CONTRACTOR	CONTRACTOR
99	ZS-3A	DOOR POSITION SWITCH	CHLORINATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
100	ZS-3B	DOOR POSITION SWITCH	CHLORINATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
101	ZS-4A	DOOR POSITION SWITCH	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
102	ZS-4B	DOOR POSITION SWITCH	FLUORIDATION ROOM	CP-1	CONTRACTOR	CONTRACTOR
103	ZS-5	DOOR POSITION SWITCH	SHOWER AREA	CP-1	CONTRACTOR	CONTRACTOR
109	ZS-8	HATCH POSITION SWITCH	SURGE VAULT	CP-1	CONTRACTOR	CONTRACTOR
135	CCTV-1	270-DEG FIXED CAMERA	BUILDING EXTERIOR	CP-2	OWNER	OWNER
136	CCTV-2	270-DEG FIXED CAMERA	BUILDING EXTERIOR	CP-2	OWNER	OWNER
138	CCTV-3	270-DEG FIXED CAMERA	CHLORINATION ROOM	CP-2	OWNER	OWNER
140	IL-1A	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
141	IL-1B	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
142	IL-2A	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
143	IL-2B	INFRARED ILLUMINATOR	BUILDING EXTERIOR	CP-3	OWNER	OWNER
146	IL-3A	INFRARED ILLUMINATOR	CHLORINATION ROOM	CP-3	OWNER	OWNER
147	IL-3B	INFRARED ILLUMINATOR	CHLORINATION ROOM	CP-3	OWNER	OWNER

1000 EAST HVAC MECHANICAL EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	LOCATION	EQUIPMENT RATING						DISCONNECT				STARTER	REMARKS		
			VOLTS	PH	HP	WATTS	FLA	MCA	AMPS	VOLTS	POLES	NEMA			FUSE	CONNECTION
AHU-1	AIR HANDLER	INDOOR	480	3		3,325	4	5	30	600	3	1	15	HARD-WIRED	INCL.	
EF-1	EXHAUST FAN	FLUORIDE ROOM	120	1	F	192	1.6	2	-	-	-	5-20	-	HARD-WIRED	FVNR	00
EF-2	EXHAUST FAN	CHLORINE ROOM	120	1	F	288	2.4	3	-	-	-	5-20	-	HARD-WIRED	FVNR	00
EF-3	EXHAUST FAN	SURGE VAULT	120	1	F	200	-	-	-	-	-	-	-	HARD-WIRED	RELAY	10A 1), 3)
ODU-1	OUTDOOR UNIG	OUTDOOR	480	3		21,948	26.4	33	60	600	3	3R	40	HARD-WIRED	INCL.	
UH-1	UNIT HEATER	FLUORIDE ROOM	480	3		5,000	6.01	-	30	600	3	1	NF	HARD-WIRED	INCL.	
UH-2	UNIT HEATER	CHLORINE ROOM	480	3		5,000	6.01	-	30	600	3	1	NF	HARD-WIRED	INCL.	
UH-3	UNIT HEATER	PUMP ROOM	480	3		5,000	6.01	-	-	-	-	-	-	HARD-WIRED	INCL.	2)
UH-4	UNIT HEATER	PUMP ROOM	480	3		5,000	6.01	-	-	-	-	-	-	HARD-WIRED	INCL.	2)
UH-5	WALL HEATER	SHOWER AREA	208	1		1,500	5.76	7.2	-	-	-	-	-	HARD-WIRED	INCL.	1)

NOTES: 1) PROVIDE MANUAL STARTER AS THE LOCAL DISCONNECT SWITCH. FIELD LOCATE NEAR UNIT.
2) DISCONNECT NOT REQUIRED.
3) PROVIDE STARTER IN VAULT ELECTRICAL ENCLOSURE.

1000 EAST WELL EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	EQUIPMENT RATING						DISCONNECT				STARTER	REMARKS			
		VOLTS	PH	HP	WATTS	FLA	MCA	AMPS	VOLTS	POLES	NEMA			FUSE	CONNECTION	TYPE
AC-1	AIR COMPRESSOR	480	3	3	11,626	14	-	30	600	3	1	-	-	HARD-WIRED	INCL.	-
CDP-1	CHLORINE DOSING PUMP	120	1	-	1,000	8.3	-	-	-	-	-	5-20R	-	PLUG-CORD	N/A	-
CDP-1	CHLORINE DOSING PUMP	120	1	-	1,000	8.3	-	-	-	-	-	5-20R	-	PLUG-CORD	N/A	-
CP-1	MAIN CONTROL PANEL	120	1	-	1,000	8.33	-	-	-	-	-	-	-	HARD-WIRED	N/A	-
CP-2	CCTV ENCLOSURE	120	1	-	200	1.7	-	-	-	-	-	-	-	HARD-WIRED	N/A	-
CP-3	SECURITY ENCLOSURE	120	1	-	300	2.5	-	-	-	-	-	-	-	HARD-WIRED	N/A	-
CP-4	FLUORIDE CONTROL PANEL	120	1	-	3,112	25.9	-	-	-	-	-	-	-	HARD-WIRED	N/A	-
CP-5	SMALL MOTOR CONTROL PANEL	480	3	-	3,638	4.4	-	-	-	-	-	-	-	HARD-WIRED	N/A	-
CP-7	EXHAUST FAN CONTROL PANEL	120	1		200	1.0										
EE-1	ELECTRICAL ENCLOSURE	120	1		1,586	13.2								HARD-WIRED	N/A	
IWH-1	INLINE WATER HEATER	120	1		200	-								HARD-WIRED	N/A	
P-1	WELL PUMP	4160	3	300	634,398	88.2	-	-	-	-	-	-	-	HARD-WIRED	VFD	700 HP 1)
P-2A	FLUORIDE TRANSFER PUMP	120	1	0.5	1,176	9.8	-	-	-	-	-	5-20R	-	PLUG-CORD	N/A	
P-2B	FLUORIDE TRANSFER PUMP	120	1	0.5	1,176	9.8	-	-	-	-	-	5-20R	-	PLUG-CORD	N/A	
PC-1	TABLET CHLORINATOR	208	1		2,880	13.8								HARD-WIRED	N/A	
SLP-1	SOLUTION PUMP	480	3	1	1,734	2.1	-	-	-	-	-	-	-	HARD-WIRED	FVNR	00
SLP-2	SOLUTION PUMP	480	3	1	1,734	2.1	-	-	-	-	-	-	-	HARD-WIRED	FVNR	00
SP-3	SUMP PUMP	120	1	0.5	1,176	9.8	-	-	-	-	-	5-20R	-	PLUG-CORD	INCL.	-

NOTES: 1) REFER TO TYPICAL VFD CONTROL DIAGRAM ON E4.18</

PMDE-1 NEW PAD-MOUNTED DISTRIBUTION EQUIPMENT

XFMR-T3 NEW PAD-MOUNTED TRANSFORMER

H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

LOCATION: E SIDE OF EXIST EAST BUILDING		MFRG: S&C		600 AMPS		VOLTS: 12,470				
DIMENSIONS:		TYPE: PME-12		600 SWITCH		PHASE: 3				
MOUNTING: FLOOR		NEMA: 3R		A.I.C.		WIRES: 4				
FEED: BOTTOM		FED FROM: PME-1								
		PHASE LOADS		A		B		C		
A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
50	3	PMDE-2, NEW WELL		720,414	24,906	1	240,698	9,305	239,586	8,513
20	3	XFMR-T3, EXISTING WELL		237,285	2,576	2	78,443	2,076	80,969	500
		3 SPARE WAY				3				
		TOTAL WATTS:		957,699	27,482		319,141	11,381	320,555	9,013
		CONTINUOUS LOAD:		957,699						
		CONTINUOUS LOAD * 125%:		1,197,123						
		NON-CONTINUOUS LOAD:		27,482						
		DESIGN WATTS:		1,224,606						
		MIN. RATING (AMPS):		57						

LOCATION: E SIDE OF EXIST EAST BUILDING		MFRG: S&C		13.9 PRIMARY AMPS		PRIMARY VOLTS: 12,470				
DIMENSIONS: "W" x "D" x "H"		TYPE: PME-12		359.9 SECONDARY AMPS		SECONDARY VOLTS: 480				
MOUNTING: PAD MOUNTED, LIQUID FILLED		NEMA: 3R		A.I.C.		WIRES: 4				
FEED: BOTTOM		FED FROM: PME-1								
		PHASE LOADS		A		B		C		
A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
		PANELBOARD H2		237,285	2,576		78,443	2,076	80,969	500
		TOTAL WATTS:		237,285	2,576		78,443	2,076	80,969	500
		CONTINUOUS LOAD:		237,285						
		CONTINUOUS LOAD * 125%:		296,606						
		NON-CONTINUOUS LOAD:		2,576						
		DESIGN WATTS:		299,182						

GENERAL NOTES:

- GIVEN THE CIRCUIT ID, REFER FOR WIRE AND CONDUIT REQUIREMENTS REFER TO THE CONDUIT/CONDUCTOR TABLE ON E1.2.

SHEET KEYNOTES:

- NOT USED.

MDP-2 NEW MAIN DISTRIBUTION PANELBOARD

RVSS-1 EXISTING WELL MOTOR CONTROLLER (TO REMAIN)

XFMR-T4 NEW TRANSFORMER

LOCATION: E SIDE OF EXIST. EAST BUILDING		MFRG: SQUARE D COMPANY		800 AMPS		VOLTS: 480				
DIMENSIONS:		TYPE: I-LINE		X M.L.O.		PHASE: 3				
MOUNTING: SURFACE		NEMA: 3R		42,000 A.I.C.		WIRES: 3				
FEED: BOTTOM		FED FROM: XFMR-T3								
		PHASE LOADS		A		B		C		
A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
40	2	XFMR-T4, NEW PNL L2	28	3,666	2,576	1	570	2,076	3,096	500
600	3	RVSS-1, WELL MOTOR (250 HP)	2-335	233,619	0	2	77,873	0	77,873	0
		TOTAL WATTS:		237,285	2,576		78,443	2,076	80,969	500
		CONTINUOUS LOAD:		237,285						
		CONTINUOUS LOAD * 125%:		296,606						
		NON-CONTINUOUS LOAD:		2,576						
		DESIGN WATTS:		299,182						
		MIN. RATING (AMPS):		360						

LOCATION: EXISTING EAST BUILDING, EAST WALL		MFRG: ALLEN BRADLEY		600 AMPS		VOLTS: 480				
DIMENSIONS:		TYPE:		600 FUSES		PHASE: 3				
MOUNTING: FLOOR		NEMA: 1		A.I.C.		WIRES: 3				
FEED: TOP		FED FROM: PNL-H2								
		PHASE LOADS		A		B		C		
A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
600	3	WELL MOTOR RVSS (250 HP) SPACE	E	233,619	0	1	77,873	0	77,873	0
		TOTAL WATTS:		233,619	0		77,873	0	77,873	0
		CONTINUOUS LOAD:		233,619						
		CONTINUOUS LOAD * 125%:		292,024						
		NON-CONTINUOUS LOAD:		0						
		DESIGN WATTS:		292,024						
		MIN. RATING (AMPS):		352						

LOCATION: EXISTING EAST BUILDING, EAST WALL		MFRG: S&C		14.9 PRIMARY AMPS		PRIMARY VOLTS: 480				
DIMENSIONS: "H" x "W" x "D"		TYPE: I-LINE		29.8 SECONDARY AMPS		SECONDARY VOLTS: 240/120				
MOUNTING: WALL		NEMA: 3R		A.I.C.		WIRES: 3				
FEED: BOTTOM		FED FROM: PNL H2								
		PHASE LOADS		A		B		C		
A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
		PNL-L2 PANELBOARD		3,666	2,576		570	2,076	3,096	500
		TOTAL WATTS:		3,666	2,576		570	2,076	3,096	500
		CONTINUOUS LOAD:		3,666						
		CONTINUOUS LOAD * 125%:		4,583						
		NON-CONTINUOUS LOAD:		2,576						
		DESIGN WATTS:		7,159						

PNL-L2 NEW PANELBOARD

PNL-P EXISTING PUSHMATIC PANELBOARD (TO BE REMOVED)

LOCATION: EXISTING EAST BUILDING		MFRG: SQUARE D		125 AMPS		VOLTS: 240/120					
DIMENSIONS: 20"W x 5.75"D x "H"		TYPE: NQ		35 M.C.B.		PHASE: 1					
MOUNTING: SURFACE		NEMA: 1		10,000 A.I.C.		WIRES: 3					
FEED: BOTTOM		FED FROM: XFMR-T4									
		PHASE LOADS		A		B		C			
BRKR	A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
20	1		*EAST BLD LIGHTS	212	250	1	250	180			
20	1		*EAST BLD HEAT	212	120	3			620	0	
20	1		*EAST BLD RECEPTACLE	212		540	5	200	540		
20	1		*EAST BLD SCADA RTU	212	800	7			1,976	0	
30	2		**EXISTING PANEL W IN WELL BLDG	20	120	1,356	9	120	1,356		
-	-		1 AVAILABLE SPACE		500	500	11		500	500	
-	-		1 AVAILABLE SPACE				13	0	0	0	0
-	-		1 AVAILABLE SPACE				15	0	0	0	0
-	-		1 AVAILABLE SPACE				17	0	0	0	0
		TOTAL WATTS:		1,790	2,396		570	2,076	3,096	500	180
		CONTINUOUS LOAD:		3,666							1,876
		CONTINUOUS LOAD * 125%:		4,583							
		NON-CONTINUOUS LOAD:		2,576							
		DESIGN WATTS:		7,159							
		MIN. RATING (AMPS):		30							

LOCATION: EXISTING EAST BUILDING		MFRG: -		- AMPS		VOLTS: 240/120					
DIMENSIONS: 20"W x 5.75"D x "H"		TYPE: -		- M.C.B.		PHASE: 1					
MOUNTING: EXISTING		NEMA: 1		A.I.C.		WIRES: 3					
FEED: EXISTING		FED FROM: PNL-SERVICE									
		PHASE LOADS		A		B		C			
BRKR	A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
40	2		LIGHTS	E	250	1	250	540		2	540
20	1		HEATER	E	120	3			920	0	
20	1		PNL-1 (SUB-FED 30A FUSED DISCONNECT)			540	5	0	540		
-	-		1 AVAILABLE SPACE				120	1,356	500	500	
		TOTAL WATTS:		370	540		370	2,436	1,420	500	540
		CONTINUOUS LOAD:		1,170						800	
		CONTINUOUS LOAD * 125%:		1,463							
		NON-CONTINUOUS LOAD:		1,080							
		DESIGN WATTS:		2,543							
		MIN. RATING (AMPS):		11							

PNL-W EXISTING WELL BUILDING PANEL (TO REMAIN)

LOCATION: EXISTING WELL BUILDING		MFRG: SQUARE D		AMPS		VOLTS: 240/120					
DIMENSIONS: 20"W x 5.75"D x "H"		TYPE: Q0-612		30 M.C.B.		PHASE: 1					
MOUNTING: SURFACE		NEMA: 1		10,000 A.I.C.		WIRES: 3					
FEED: BOTTOM		FED FROM: 30A FUSED DISCONNECT									
		PHASE LOADS		A		B		C			
BRKR	A	P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.
40	2		LIGHTS	E	120	1	120	1,176		2	1,176
20	1		COOLER	E	500	3			500	500	
20	1		GFCI RECEPTACLE	E	180	5	0	180		6	
		TOTAL WATTS:		120	680		120	1,356	500	500	1,176
		CONTINUOUS LOAD:		620							
		CONTINUOUS LOAD * 125%:		775							
		NON-CONTINUOUS LOAD:		1,856							
		DESIGN WATTS:		2,631							
		MIN. RATING (AMPS):		11							

FILE NAME:
FILE DATE:



DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS		BY	APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 SCHEDULES, SHT. 1

SHEET
E4.2
127.24.400

PMDE-2 PAD-MOUNTED DISTRIBUTION EQUIPMENT

LOCATION: SITE	MFGR: S&C	200 AMPS	VOLTS: 12,470
DIMENSIONS:	TYPE: VISTA 933122	X M.L.O.	PHASE: 3
MOUNTING: FLOOR	NEMA: 3R	A.I.C.	WIRES: 3
FEED: BOTTOM	FED FROM: PMDE-1		

		PHASE LOADS									
				A		B		C			
A	P	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.
10E	3	XFMR-T1, NEW PNL MDP1	* 72,955	25,690	1	24,498	10,745	23,357	8,083	25,100	6,863
50E	3	VFD-1 WELL MOTOR CONTROLLER SPACE	* 655,685	0	2	218,562	0	218,562	0	218,562	0
TOTAL WATTS:		728,640	25,690	243,059	10,745	241,919	8,083	243,662	6,863		
CONTINUOUS LOAD:		728,640									
CONTINUOUS LOAD * 125%:		910,800	* SEE POWER ONE-LINE DIAGRAM								
NON-CONTINUOUS LOAD:		25,690									
DESIGN WATTS:		936,490									
MIN. RATING (AMPS):		43									

VFD-1 NEW WELL MOTOR CONTROLLER

LOCATION: PUMP CONTROL ROOM	MFGR:	100 AMPS	VOLTS: 12,470
DIMENSIONS:	TYPE:	PHASE: 3	
MOUNTING: FLOOR	NEMA: 3R	A.I.C.	WIRES: 3
FEED: BOTTOM	FED FROM: PMDE-2		

		PHASE LOADS									
				A		B		C			
A	P	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.
50	3	WELL MOTOR (750 HP) SPACE	* 655,685	0	1	218,562	0	218,562	0	218,562	0
TOTAL WATTS:		655,685	0	218,562	0	218,562	0	218,562	0	218,562	0
CONTINUOUS LOAD:		655,685									
CONTINUOUS LOAD * 125%:		819,606	* SEE POWER ONE-LINE DIAGRAM								
NON-CONTINUOUS LOAD:		0									
DESIGN WATTS:		819,606									
MIN. RATING (AMPS):		38									

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

XFMR-T1 NEW PAD-MOUNTED TRANSFORMER

LOCATION: SITE	5.4 PRIMARY AMPS	PRIMARY VOLTS: 12,470
DIMENSIONS: "W" x "D" x "H"	140.6 SECONDARY AMPS	SECONDARY VOLTS: 480
MOUNTING: PAD MOUNTED, LIQUID FILLED	KVA: 112.5	
FEED: BOTTOM	FED FROM: PMDE-2	

		PHASE LOADS									
				A		B		C			
A	P	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.		
		PNL-MDP1 PANELBOARD	* 72,955	25,690	1	24,498	10,745	23,357	8,083	25,100	6,863
TOTAL WATTS:		72,955	25,690	24,498	10,745	23,357	8,083	25,100	6,863		
CONTINUOUS LOAD:		72,955									
CONTINUOUS LOAD * 125%:		91,193	* SEE POWER ONE-LINE DIAGRAM								
NON-CONTINUOUS LOAD:		25,690									
DESIGN WATTS:		116,884									

PNL-H PANELBOARD

LOCATION: PUMP CONTROL ROOM	MFGR: SQUARE D	225 AMPS	VOLTS: 480Y/277
DIMENSIONS: 20"W x 5.75"D x "H"	TYPE: NF	150 M.C.B.	PHASE: 3
MOUNTING: SURFACE	NEMA: 1	22,000 A.I.C.	WIRES: 4
FEED: BOTTOM	FED FROM: XFMR-T1		

		PHASE LOADS																	
				A		B		C											
BRKR	A	P	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.	BRKR		
50	3	CU-1 CONDENSING UNIT	36	9,743	1	12,241	2,892						2	2,892	2,498	30	XFMR T2, TRANSFORMER	25	3
-	-	-	-	9,743	3								4	2,100	1,535	-	-	-	-
-	-	-	-	9,743	5								6	676	2,080	-	-	-	-
20	3	UH-1 UNIT HEATER	312	1,666	7	1,666	5,813						8	5,813	30	AIR COMPRESSOR (15 HP)	40	3	
-	-	-	-	1,666	9								10	5,813	-	-	-	-	-
-	-	-	-	1,666	11								12	5,813	-	-	-	-	-
20	3	UH-2 UNIT HEATER	312	1,666	13	1,666	300						14	300	312	WASTE VALVE ACTUATOR	20	3	
-	-	-	-	1,666	15								16	300	-	-	-	-	-
-	-	-	-	1,666	17								18	300	-	-	-	-	-
20	3	UH-3 UNIT HEATER	312	2,500	19	2,500	300						20	300	312	SYSTEM VALVE ACTUATOR	20	3	
-	-	-	-	2,500	21								22	300	-	-	-	-	-
-	-	-	-	2,500	23								24	300	-	-	-	-	-
1		AVAILABLE SPACE			25	2,750	0						26	2,750	312	VFD VENTILATION FAN POWER	20	3	
1		AVAILABLE SPACE			27								28	2,750	-	-	-	-	-
1		AVAILABLE SPACE			29								30	2,750	-	-	-	-	-
1		AVAILABLE SPACE			31	1,313	0						32	0	1,313	312	CP-5 SMALL MOTOR CONTROL PANEL	20	3
1		AVAILABLE SPACE			33								34	0	1,163	-	-	-	-
1		AVAILABLE SPACE			35								36	0	1,163	-	-	-	-
1		AVAILABLE SPACE			37	0	0						38						1
1		AVAILABLE SPACE			39								40						1
1		AVAILABLE SPACE			41								42						1
TOTAL WATTS:		46,728	0	22,136	9,305	21,024	8,513	21,569	7,089	24,906	18,000								
CONTINUOUS LOAD:		64,729																	
CONTINUOUS LOAD * 125%:		80,911																	
NON-CONTINUOUS LOAD:		24,906																	
DESIGN WATTS:		105,817																	
MIN. RATING (AMPS):		127																	

CP-5 SMALL MOTOR CONTROL PANEL

LOCATION: PUMP CONTROL ROOM	TYPE: CUSTOM	N/A AMPS	VOLTS: 480
DIMENSIONS: 30"W x 12"D x 36"H	NEMA: 1	20 M.C.B.	PHASE: 3
MOUNTING: SURFACE			WIRES: 4
FEED: -	10,000 A.I.C.		FED FROM: PNL H

		PHASE LOADS										
				A		B		C				
BRKR	A	P	WIRE SIZE	CONT. WATTS	NON-CONT. WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.
10	1	CONTROL POWER	-	150	1	150	0					
15	1	SOLUTION PUMP NO. 1	312	1,744	0	2	581	0	581	0	581	0
15	1	SOLUTION PUMP NO. 2	312	1,744	0	3	581	0	581	0	581	0
TOTAL WATTS:		3,638	0	1,313	0	1,163	0	1,163	0	1,163	0	
CONTINUOUS LOAD:		3,638										
CONTINUOUS LOAD * 125%:		4,547										
NON-CONTINUOUS LOAD:		0										
DESIGN WATTS:		4,547										
MIN. RATING (AMPS):		5										

XFMR-T2 TRANSFORMER

LOCATION: PUMP CONTROL ROOM	18.7 PRIMARY AMPS	PRIMARY VOLTS: 480
DIMENSIONS: 14.75" H x 9.75" W x 9.75" D	43.1 SECONDARY AMPS	SECONDARY VOLTS: 208Y/120
MOUNTING: WALL	KVA: 30	
FEED: BOTTOM	FED FROM: PNL H	

		PHASE LOADS							
				A		B		C	
		CONT. WATTS	N-CONT. WATTS	CONT.	N-CONT.	CONT.	N-CONT.	CONT.	N-CONT.
	PANELBOARD L	4,855	9,452	2,698	4,332	1,707	1,670	450	3,450
TOTAL WATTS:		4,855	9,452	2,698	4,332	1,707	1,670	450	3,450
CONTINUOUS LOAD:		4,855							
CONTINUOUS LOAD * 125%:		6,069							
NON-CONTINUOUS LOAD:		9,452							
DESIGN WATTS:		15,521							

FILE NAME:
FILE DATE:



DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS			
NO.	DATE	BY	APVD.

SCALE: NONE

JORDAN VALLEY WATER CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 SCHEDULES, SHT. 2

SHEET E4.3
 127.24.400

PNL-L PANELBOARD

LOCATION: PUMP CONTROL ROOM		MFR: SQUARE D		225 AMPS		VOLTS: 208Y/120					
DIMENSIONS: 20"W x 5.75"D x 4"H		TYPE: NQ		90 M.C.B.		PHASE: 3					
MOUNTING: SURFACE		NEMA: 1		10,000 A.I.C.		WIRES: 4					
FEED: BOTTOM				X SPD		FED FROM: XFMR-T2					
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR	
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	NO	P
20	1	212	810	1	1,810	0				2	1
20	1	212	55	3			255	0		4	1
20	1	212		900	5			300	900	6	1
20	1	212		180	7	588	2,712			8	1
20	1	212		720	9		1,252	720		10	1
20	2	212		1,440	11			0	1,620	12	2
20	1	212		1,440	13	100	1,440			14	1
20	1	212		200	15		100	200		16	1
20	1	212		180	17			150	180	18	1
20	1	212		180	19	200	180			20	1
20	2	212		750	21		100	750		22	1
20	1	212		750	23			0	750	24	1
20	1	212		25	25	0	0			26	1
20	1	212		27	27			0	0	28	1
20	1	212		29	29			0	0	30	1
TOTAL WATTS:		865		6,740		2,698		4,332		1,707	
CONTINUOUS LOAD:		4,855									
CONTINUOUS LOAD * 125%:		6,069									
NON-CONTINUOUS LOAD:		9,452									
DESIGN WATTS:		15,521									
MIN. RATING (AMPS):		43									

EE-1 ELECTRICAL ENCLOSURE

LOCATION: SURGE TANK VAULT		MFR: N/A		N/A AMPS		VOLTS: 240/120					
DIMENSIONS: 20"W x 8"D x 24"H		TYPE: CUSTOM		20 M.C.B.		PHASE: 1					
MOUNTING: SURFACE		NEMA: 4X FIBERGLASS				WIRES: 3					
FEED: SIDE						FED FROM: PANELBOARD L					
BRKR		WIRE		CONT.		N-CONT.		PHASE LOADS		BRKR	
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	NO	P
10	1	212		100	1	100	0			1	1
10	1	212		150	2					2	1
20	1	212		1,176	3		1,176	0	150	0	1
20	1	212			4			0	0	180	1
20	1	212		76	5		76	0		6	1
20	1	212			6						1
TOTAL WATTS:				1,252		180		0		0	
CONTINUOUS LOAD:				1,252							
CONTINUOUS LOAD * 125%:				1,565							
NON-CONTINUOUS LOAD:				180							
DESIGN WATTS:				1,745							
MIN. RATING (AMPS):				7							

CP-4 FLUORIDATION ROOM CONTROL PANEL

LOCATION: CHEM. BLD, FLUORIDATION ROOM		TYPE: CUSTOM		VOLTS: 120							
DIMENSIONS: 30" W x 12"D x 36" H		NEMA: 12		PHASE: 1							
MOUNTING: WALL				WIRES: 3							
FEED: BOTTOM				FED FROM: PNL L							
BRKR		WIRE		CONT.		NON-CONT.		PHASE LOADS		BRKR	
A	P	SIZE	WATTS	WATTS	NO	CONT.	N-CONT.	CONT.	N-CONT.	NO	P
10	1	212		288	1	288	0			1	1
20	1	212			2		1,176	0	1,176	2	1
20	1	212			3		1,176	0	1,176	3	1
20	1	#12			4		180	0	180	4	1
5	1	#12		100	5	100	0			5	1
5	1	#12		100	6	100	0			6	1
10	1	#12		100	7	100	0			7	1
TOTAL WATTS:				588		2,532		588		2,532	
CONTINUOUS LOAD:				588							
CONTINUOUS LOAD * 125%:				735							
NON-CONTINUOUS LOAD:				2,532							
DESIGN WATTS:				3,267							
MIN. RATING (AMPS):				27							

H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH FAX (801) 642-2154
 AMERICAN FORK, UT 84003 © 2024
 HPE PROJECT: 22.013
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

Short-Circuit Box

Node - OH_11402001.0294005/354720

Kmax (0 ohm)	Kmax (+Impedance)	Voltage	12.5	kV
LLL 6051	6051	R		X
LLG 5945	5945	Zth+	0.1260	0.8013
LL 5222	5222	Zth0	0.2856	1.0634
LG 5397	5397	X/R	6.36	3.72

Dist 3895.2 ft or miles

Ohms	PerUnit	X/R
R: 0.1959	0.1260	6.36
X: 1.2461	0.8013	
Ro: 0.4442	0.2856	
Xo: 1.6536	1.0634	

FILE NAME: 7/04



HANSEN ALLEN & LUCE ENGINEERS

DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO.

REVISIONS	
NO.	DATE

SCALE: NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 SCHEDULES, SHT. 3

SHEET E4.4
 127.24.400

ROCKY MOUNTAIN POWER
12.47 KV, 3-PH
SOURCE

ROCKY MOUNTAIN POWER
240/120V, 1-PH, 3W
SOURCE

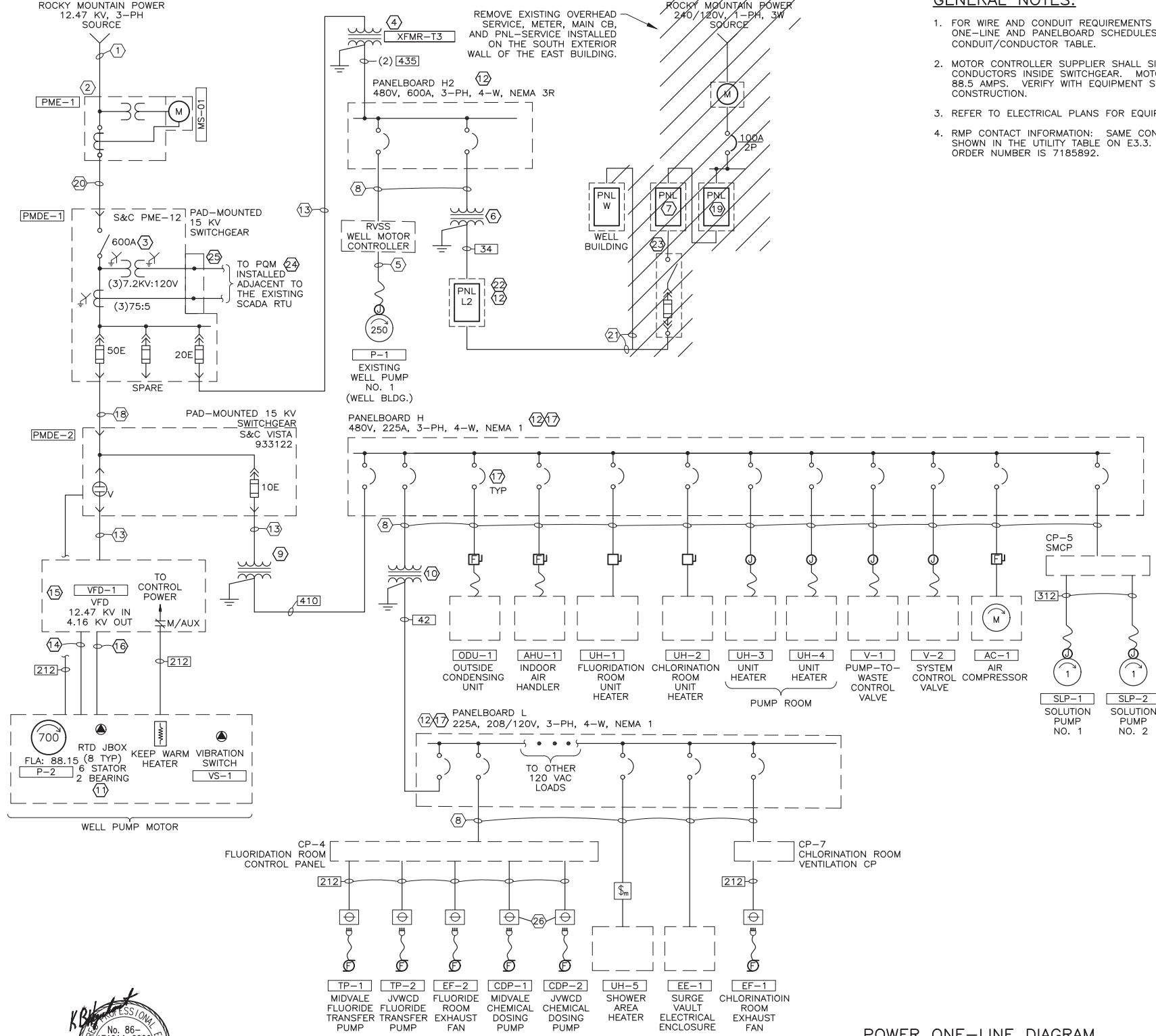
GENERAL NOTES:

- FOR WIRE AND CONDUIT REQUIREMENTS REFER TO POWER ONE-LINE AND PANELBOARD SCHEDULES. SEE ALSO THE CONDUIT/CONDUCTOR TABLE.
- MOTOR CONTROLLER SUPPLIER SHALL SIZE FUSES AND CONDUCTORS INSIDE SWITCHGEAR. MOTOR FLA APPR. 88.5 AMPS. VERIFY WITH EQUIPMENT SUPPLIER DURING CONSTRUCTION.
- REFER TO ELECTRICAL PLANS FOR EQUIPMENT LOCATIONS.
- RMP CONTACT INFORMATION: SAME CONTACT PERSON AS SHOWN IN THE UTILITY TABLE ON E3.3. THE RMP WORK ORDER NUMBER IS 7185892.

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
HPE PROJECT: 22.013 © 2024
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

SHEET KEYNOTES:

- NEW 6-IN CONDUIT. CONDUCTOR PROVIDED AND INSTALLED BY ROCKY MOUNTAIN POWER (RMP). COORDINATE WITH RMP AS REQUIRED. AVAILABLE FAULT CURRENT INDICATED ON SHORT-CIRCUIT TABLE ON E4.4.
- PRIMARY METERING ENCLOSURE WITH METER SOCKET: PROVIDED BY RMP. INSTALLED BY CONTRACTOR ON A PAD/VAULT AS REQUIRED BY RMP. PT'S AND CT'S PROVIDED BY RMP.
- MAIN SERVICE DISCONNECT: 15 KV, 600A RATED SWITCH NEMA 3R LOCKABLE ENCLOSURE. LABEL AS "MAIN SERVICE DISCONNECT" WITH AVAILABLE FAULT CURRENT AS REQUIRED BY NEC 110.24.
- TRANSFORMER T3: 300 KVA, OIL-FILLED PAD MOUNTED TRANSFORMER, 12,470 V PRIMARY, 480Y/277 V SECONDARY.
- EXISTING TO REMAIN. NO CONTACTOR WORK ANTICIPATED.
- TRANSFORMER T4: 15 KVA, 480 V PRIMARY, 120/240 V SECONDARY. INSTALL IN THE EAST BUILDING NEAR THE EXISTING PUSHMATIC PANELBOARD.
- EXISTING PUSHMATIC PANELBOARD IN EAST BUILDING TO BE REMOVED. RE-WIRE ALL BRANCH CIRCUITS TO NEW PANELBOARD L2.
- REFER TO PANELBOARD SCHEDULE FOR CIRCUIT ID, THEN THE WIRE AND CONDUIT REQUIREMENT ARE AS SHOWN ON THE CONDUIT/CONDUCTOR TABLE ON E1.2.
- TRANSFORMER T1: 112.5 KVA, PAD MOUNTED, OIL-FILLED 12,470 V PRIMARY, 480/277 V SECONDARY TRANSFORMER.
- TRANSFORMER T2: 30 KVA, 480 V PRIMARY, 208Y/120 V SECONDARY, 3-PH, 4-W.
- MOTOR SHALL HAVE SIX WINDING AND TWO BEARING RTD'S
- REFER TO PANEL SCHEDULES FOR ADDITIONAL PANEL INFORMATION.
- 4°C, 3 NO. 2 CU, 15 KV SHIELDED CONDUCTORS
- 4°C, 3 NO. 2 CU, 5 KV SHIELDED CONDUCTORS.
- MEDIUM VOLTAGE VARIABLE FREQUENCY DRIVE (VFD) MOTOR CONTROLLER, 12,470 V INPUT, 4,160V OUTPUT, 100 AMP, 3PH, 3W, NEMA 1 ENCLOSURE
- 1.1-1/2"C, 8 EA, #24TST CONDUCTORS
- REFER TO PANELBOARD SCHEDULES FOR CB RATINGS
- A 6-IN CONDUIT IS INSTALLED FROM NEAR THE UTILITY POLE TO A LOCATION S-E OF THE NEW WELL BUILDING. INSTALL NEW CONDUIT AS REQUIRED. INSTALL 3 NO. 2 CU, 15 KV SHIELDED CONDUCTORS.
- EXISTING PANEL SERVICE TO BE REMOVED. RE-WIRE 4 20A/1P VAULT CIRCUITS TO PANELBOARD L2. PROVIDE NEW CONTINUOUS CONDUCTORS FROM PANELBOARD TO VAULT.
- 4°C, 3 NO. 4/0 CU, 15 KV SHIELDED CONDUCTORS.
- THE EXISTING PANELBOARD W (WELL) LOCATED IN THE WELL BUILDING SHALL REMAIN. RE-FEED PANEL FROM THE NEW PANELBOARD L2 IN THE EAST BUILDING.
- NEW PANELBOARD L2. INSTALL WHERE THE PUSHMATIC PANELBOARD WAS LOCATED.
- REMOVE THE 30A FUSED DISCONNECT.
- THE POWER QUALITY METER (PQM) WILL BE LOCATED IN A SEPARATE ENCLOSURE NEAR THE EXISTING SCADA RTU IN THE EXISTING EAST BUILDING. CONTRACTOR TO INSTALL (2) 1" CONDUITS FROM THE PME-12 J-BOX TO THE PQM ENCLOSURE. INSTALL (4) #10 CONDUCTORS FOR THE CT CIRCUITS. INSTALL (4) #12 CONDUCTORS FOR THE PT CIRCUITS.
- TERMINATE THE CIRCUITS IN THE PME-12 J-BOX. CT CIRCUIT SHALL TERMINATE ON A SHORTING TERMINAL BLOCK. PT CIRCUIT SHALL TERMINATE ON A STANDARD TERMINAL BLOCK. LABEL EACH TERMINAL BLOCK.
- PROVIDE AND INSTALL A TWIST-LOCK PLUG-RECEPTACLE (L5-20) FOR THE FLUORIDE DOSING PUMPS.



POWER ONE-LINE DIAGRAM

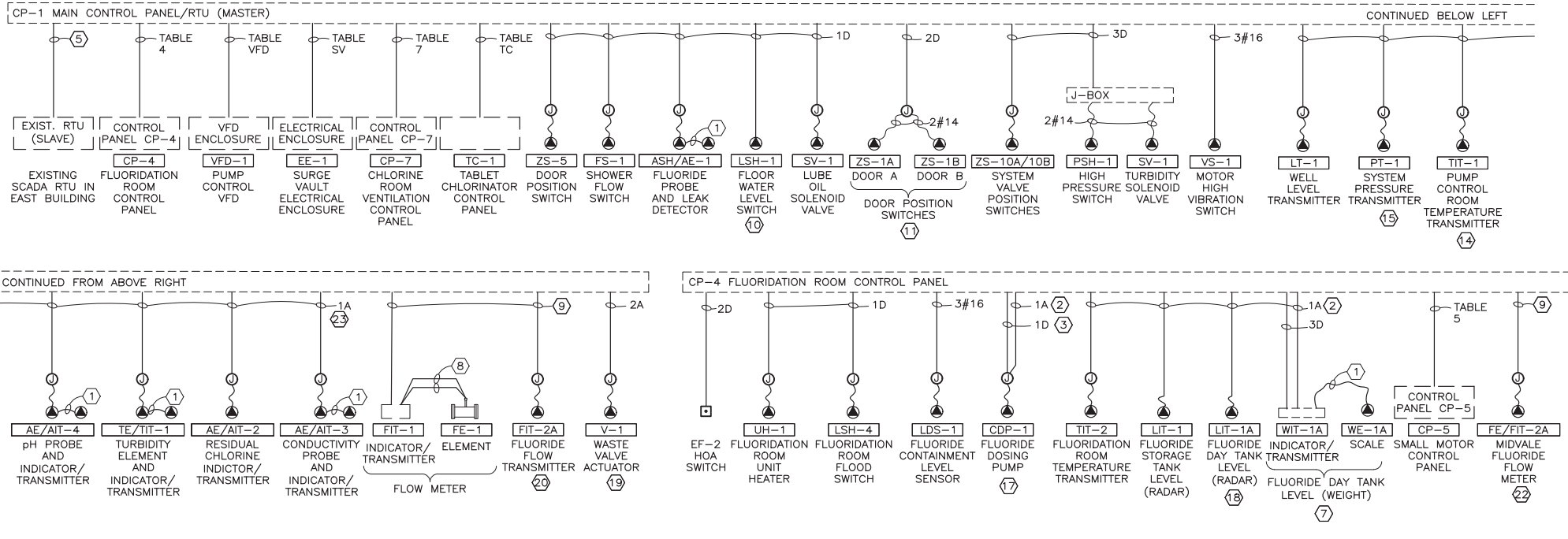
FILE NAME:
FILE DATE:



DESIGNED KBH	3					
DRAFTED GDS	2					
CHECKED KBH	1					
DATE JUNE 2023	NO.	DATE				

SCALE NONE
BY APVD.
JORDAN VALLEY WATER CONSERVANCY DISTRICT

PROGRESS PRINT
6-5-2024
95%
Not to be used for construction.
Hegerhorst Power Engineering, Inc.



GENERAL NOTES:

- FOR DEVICE AND EQUIPMENT LOCATIONS REFER TO INSTRUMENTATION AND CONTROL PLAN SHEET E4.8.
- ALL CONDUIT SHALL BE 3/4", EXCEPT AS NOTED. CONDUITS TO BE ROUTED AT CONTRACTORS OPTION.

SHEET KEYNOTES:

- VENDOR SUPPLIED CABLE, INSTALLED BY CONTRACTOR.
- INSTALL ANALOG CONDUCTORS FROM FIELD DEVICE TO CP-1 VIA CP-4 WITHOUT TERMINATING IN THE CHEMICAL ROOM CONTROL PANEL.
- WIRE TO PUMP EXTERNAL STOP.
- INSTALL RECEPTACLE WITHIN 55 INCHES OF DOSING PUMP.
- 2" CONDUIT WITH TWO FIBER OPTIC CABLES: 6 STRAND 62.5/125 MICROMETER MULTIMODE OPTICAL CABLE CORPORATION DX06-0550 SERIES. TERMINATE ALL FIBERS WITH ST CONNECTORS. TEST TERMINATED FIBERS AND PROVIDE RESULTS TO JWCD.
- 1" C BY CONTRACTOR, CAT 6 CONDUCTOR.
- SHOWN FOR DAY TANK NO. 1. DUPLICATE FOR DAY TAN NO. 2.
- 1-1/4" C, CONDUCTORS PROVIDED BY FLOW METER SUPPLIER, INSTALLED BY CONTRACTOR.
- 3/4" C, INSTALL BELDEN 9841 CONDUCTOR (#14TSP - MODBUS). INSTALL 2#16 DC POWER TO FLOW METER.
- SHOWN FOR PUMP ROOM FLOOD SWITCH LSH-1. DUPLICATE FOR SHOWER ROOM FLOOD SWITCH LSH-3, AND CHLORINATION ROOM FLOOD SWITCH LSH-2.
- SHOWN FOR PUMP ROOM DOOR POSITION SWITCHES ZS-1A/1B. DUPLICATE FOR FLUORIDATION ROOM DOOR SWITCHES ZS-3A/3B AND CHLORINATION ROOM DOOR SWITCHES ZS-4A/4B.
- SHOWN FOR EXTERNAL CAMERA 1 CCTV-1. DUPLICATE FOR EXTERNAL CAMERA 2 CCTV-2.
- SHOWN FOR EXTERNAL ILLUMINATORS IL 1A & 1B. DUPLICATE FOR EXTERNAL ILLUMINATORS IL-2A/2B AND INTERNAL ILLUMINATORS IL-3A/3B.
- SHOWN FOR PUMP ROOM TEMPERATURE INDICATING/ TRANSMITTER TIT-1. DUPLICATE FOR SHOWER AREA TEMPERATURE INDICATING/TRANSMITTER TT-3 AND AND CHLORINE ROOM TEMPERATURE INDICATING/TRANSMITTER TT-4.
- SHOWN FOR SYSTEM PRESSURE TRANSMITTER PT-1. DUPLICATE FOR FLUORIDATION SYSTEM PRESSURE TRANSMITTER. PT-2.
- NOT USED.
- SHOWN FOR MIDVALE DOSING PUMP CDP-1. DUPLICATE FOR JWCD DOSING PUMP CDP-2.
- SHOWN FOR DAY TANK NO. 1 RADAR LEVEL LIT-1A. DUPLICATE FOR DAY TANK NO. 2 RADAR LEVEL LIT-1B.
- 1-TSP FOR VALVE POSITION COMMAND, 1-TSP FOR VALVE POSITION.
- SHOWN FOR FLUORIDE FLOW INDICATOR/TRANSMITTER FIT-2A. DUPLICATE FOR FLUORIDE FLOW INDICATOR/ TRANSMITTER FIT-2B AND CHLORINE FLOW INDICATOR/TRANSMITTER FIT-3 AND CHLORINE ROOM TEMPERATURE INDICATING/TRANSMITTER TT-4.
- DEVICE IS DUAL CHANNEL, CONDUCTIVITY AND TEMPERATURE. OWNER WILL NOT MONITOR TEMPERATURE.
- SHOWN FOR MIDVALE FLUORIDE FLOW METER FE/FIT-2A. DUPLICATE FOR JWCD FLUORIDE FLOW METER FE/FIT-2B.

INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAMS

TABLE 7 (CP-1 TO CHLORINE ROOM CP-7)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#16	+24VDC	SOURCE FROM CP-1
	1	#16	+24VDC	EF-2 HOA IN HAND
	1	#16	+24VDC	EF-2 HOA IN AUTO
	1	#16	+24VDC	EF-2 ON
	1	#16	120 VAC	SOURCE FROM CP-1
2	1	#16	120 VAC	CALL FOR EF-2 RUN
	2	#16	-	SPARE

TABLE SV (CP-1 TO SURGE VAULT)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#14	+24VDC	SOURCE FROM CP-1
	1	#14	+24VDC	EF-3 EXHAUST FAN RUN
	1	#14	+24VDC	LSH-5 VAULT FLOOD SWITCH
	1	#14	+24VDC	ZS-8 ACCESS HATCH POSITION SW.
	1	#14	120 VAC	SV-4 AIR RELEASE SOL. VALVE OPEN
	1	#14	120 VAC	SV-3 AIR SUPPLY SOL. VALVE OPEN
	1	#14	120 VAC	120 VAC COMMON
3/4"	1	#16TSP	#16TSP	DPT-1 DIFFERENTIAL PRESSURE TRANS.

TABLE 4 (CP-1 TO FLUORIDATION RM CP-4)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION	
1-1/2"	1	#16	+24VDC	CONTAINMENT TRENCH HIGH LEVEL ALARM	
	1	#16	+24VDC	EF HOA IN AUTO MODE	
	1	#16	+24VDC	EF HOA IN HAND MODE	
	1	#16	+24VDC	EXHAUST FAN ON	
	1	#16	+24VDC	JWCD TP HOA IN AUTO MODE	
	1	#16	+24VDC	JWCD TP HOA IN HAND MODE	
	1	#16	+24VDC	JWCD TRANSFER PUMP ON	
	1	#16	+24VDC	MIDVALE TP HOA IN HAND MODE	
	1	#16	+24VDC	MIDVALE TRANSFER PUMP ON	
	1	#16	+24VDC	MIDVALE TP HOA IN AUTO MODE	
	1	#16	+24VDC	SOURCE FROM CP-1	
	1	#16	+24VDC	MIDVALE FLUORIDE FIT DC POWER	
1-1/2"	1	#16	+24VDC	MIDVALE FLUORIDE FIT DC RETURN	
	1	#16	+24VDC	JWCD FLUORIDE FIT DC POWER	
	1	#16	+24VDC	JWCD FLUORIDE FIT DC RETURN	
	1	#16	120 VAC	EXHAUST FAN COMMAND RUN	
	1	#16	120 VAC	JWCD DOSING PUMP POWER INTERLOCK	
	1	#16	120 VAC	JWCD TRANSFER PUMP COMMAND RUN	
	1	#16	120 VAC	MIDVALE DOSING PUMP POWER INTERLOCK	
	1	#16	120 VAC	MIDVALE TRANSFER PUMP COMMAND RUN	
	1	#16	120 VAC	SOURCE FROM CP-1	
	6	#16	-	SPARE	
	1-1/2"	1	#18TSP	4-20 mA	JWCD DAY TANK LEVEL (RADAR)
		1	#18TSP	4-20 mA	JWCD DAY TANK LEVEL (WEIGHT)
1		#18TSP	4-20 mA	JWCD DOSING PUMP DOSE RATE	
1		#18TSP	4-20 mA	MIDVALE DAY TANK LEVEL (RADAR)	
1		#18TSP	4-20 mA	MIDVALE DAY TANK LEVEL (WEIGHT)	
1		#18TSP	4-20 mA	MIDVALE DOSING PUMP DOSE RATE	
1		#18TSP	4-20 mA	ROOM TEMPERATURE	
1		#18TSP	4-20 mA	STORAGE TANK LEVEL (RADAR)	
1"		1	RS485	MODBUS	MIDVALE FLOW METER
		1	RS485	MODBUS	JWCD FLOW METER
1"		-	-	-	SPARE

I&C WIRE/CONDUIT TABLE

IDENT.	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
1A	3/4"	1	#18TSP	1 ANALOG SIGNAL
2A	3/4"	2	#18TSP	2 ANALOG SIGNALS
3A	3/4"	3	#18TSP	3 ANALOG SIGNALS

IDENT.	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
1D	3/4"	2	#14	1 SIGNAL
2D	3/4"	3	#14	1 COMMON, 2 DISCRETE SIG.
3D	3/4"	4	#14	VARIES
4D	3/4"	5	#14	VARIES

TABLE 5 (CP-1 TO CP-5 SMALL MOTOR CP)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#16	+24VDC	24VDC SOURCE FROM CP-1
	1	#16	+24VDC	C-5 HOA IN HAND MODE
	1	#16	+24VDC	C-5 HOA IN AUTO MODE
	1	#16	+24VDC	CP-6 HOR IN HAND MODE
	1	#16	+24VDC	CP-6 HOR IN REMOTE MODE
	1	#16	+24VDC	PUMP RUNNING
	1	#16	120 VAC	FUSED 120 VAC TO CP-1
	1	#16	120 VAC	SWITCHED RUN COMMAND
	3	#16	-	SPARE
	1"	-	-	-

TABLE VFD

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1"	1	#14	+24VDC	+24VDC
	1	#14	+24VDC	MOTOR HIGH T. SHUTDOWN
	1	#14	+24VDC	VFD FAULT
	1	#14	+24VDC	VFD HAND START
	1	#14	+24VDC	VFD HAND STOP
	1	#14	+24VDC	VFD HOA IN AUTO
	1	#14	+24VDC	VFD HOA IN HAND
	1	#14	+24VDC	VFD RUNNING
	1	#14	+24VDC	VFD TRANSFORMER HIGH TEMP.
	1	#14	120 VAC	120V RETURN
	1	#14	120 VAC	VFD CALL RUN
	2	#14	-	SPARE
3/4"	1	#18TSP	-	VFD RUNNING SPEED
	1	#18TSP	-	VFD COMMAND SPEED
3/4"	1	RS485	-	BELDEN 9842 (TEMP. MONITOR)
	1	CAT6U	-	ETHERNET
3/4"	1	-	-	PULL STRING
	1	-	-	PULL STRING

TABLE TC

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#14	+24VDC	+24VDC
	1	#14	+24VDC	CHLORINATOR FAULT
	1	#14	+24VDC	CHLORINATOR RUNNING
	4	#14	-	SPARE
	1	#14	120 VAC	COMMON
	1	#14	120 VAC	CALL FOR DOSING PUMP RUN
	1	#18TSP	4-20 mA	DOSING COMMAND
3/4"	-	-	-	PULL STRING

FILE NAME: _____
 FILE DATE: _____

KEITH HEGERHORST
 PROFESSIONAL ENGINEER
 No. 86-171214-2202
 KEITH B. HEGERHORST
 9/27/24
 STATE OF UTAH

DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO. DATE

REVISIONS

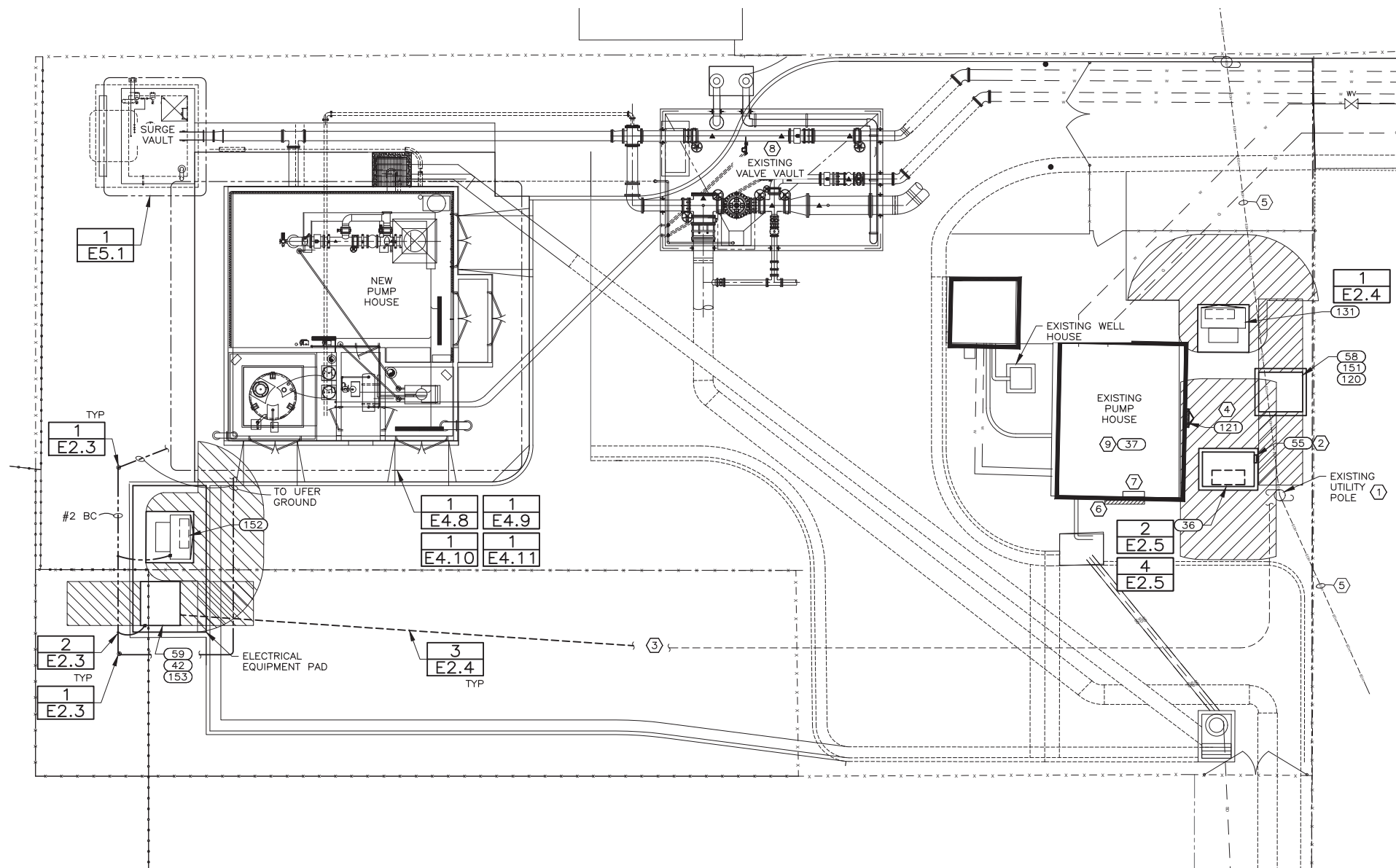
BY APVD.

SCALE
 NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 INST. & CONTROL ONE-LINE DIAGRAM

1000 EAST SITE PLAN ITEM LIST (E4.7)				
DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
36	PME-1	PRIMARY METERING EQUIPMENT	UTILITY	SITE
37	XFMR-T4	TRANSFORMER (480Y/277V)	H2-1	EAST BUILDING
42	FDS-1	TRANSFORMER FEEDER DISCONNECT	PMDE-2	SITE
55	MS-1	METER SOCKET	-	SITE
58	PMDE-1	PAD MOUNTED SWITCHGEAR	PMDE-1	SITE
59	PMDE-2	PAD MOUNTED SWITCHGEAR	PMDE-1	SITE
120	FDS-3	FUSED DISCONNECT SWITCH	PMDE-1	SITE
121	PNL-H2	PANELBOARD	XFMR-T3	SITE
131	XFMR-T3	PAD MOUNTED TRANSFORMER	-	SITE
151	FDS-2	FUSED DISCONNECT SWITCH	PMDE-1	OUTSIDE
152	XFMR-T1	PAD MOUNTED TRANSFORMER	PMDE-2	OUTSIDE
153	IC-1	VFD INTERRUPTING CONTACTOR	PMDE-2	OUTSIDE



GENERAL NOTES:

- FOR WIRE AND CONDUIT REQUIREMENTS REFER TO POWER ONE-LINE AND PANELBOARD SCHEDULES FOR THE CIRCUIT ID, THEN REFER TO THE CONDUIT/CONDUCTOR TABLE ON E1.1 FOR THE CONDUIT AND WIRE REQUIREMENTS.
- NOT ALL CONDUIT IS SHOWN ON THIS PLAN.
- REFER TO CIVIL SITE PLAN FOR ADDITIONAL SITE DETAILS.

SHEET KEYNOTES:

- UTILITY POLE TO REMAIN. COORDINATE WITH ROCKY MOUNTAIN POWER (RMP) TO REMOVE OVERHEAD SERVICE CONDUCTORS AND INSTALL CONDUIT RISER FOR NEW SERVICE CONDUCTORS TO THE PAD MOUNTED METERING EQUIPMENT.
- PRIMARY METERING EQUIPMENT:** PROVIDED BY RMP AND INSTALLED BY CONTRACTOR. PROVIDE EXTERNAL MOUNTED METER SOCKET AS REQUIRED BY RMP. RMP TO PROVIDE INTERNAL PT'S, CT'S AND UTILITY METER. RMP TO PROVIDE AND INSTALL CONDUCTORS FROM POLE TO EQUIPMENT.
- THERE IS AN EXISTING 6-IN CONDUIT BURIED CONDUIT FROM APPROXIMATELY THIS LOCATION TO THE UTILITY POLE AREA. EAST SITE TASK: CONTRACTOR SHALL EXPOSE AND EXTEND THE CONDUIT TO THE PAD MOUNTED SWITCHGEAR PMS-1. WEST SITE TASK: EXPOSE AND EXTEND CONDUIT UNDERGROUND TO THE PAD MOUNTED SWITCHGEAR PMS-2. PROVIDE, INSTALL AND TERMINATE CONDUCTORS AS SHOWN ON THE ONE-LINE DIAGRAM.
- COORDINATE WITH RMP TO REMOVE THE EXISTING BUILDING OVERHEAD SERVICE TO THE UTILITY POLE. REMOVE THE EXISTING CT ENCLOSURE. INSTALL PANELBOARD H NEAR THE SAME LOCATION. RE-FEED MOTOR CONTROLLER INSIDE THE EXISTING BUILDING AND MAINTAIN ELECTRICAL INTEGRITY FOR THE BUILDING.
- EXISTING OVERHEAD UTILITY POWER TO REMAIN.
- AFTER THE NEW SERVICE AND EQUIPMENT IS INSTALLED, REMOVE THE OVERHEAD 120/240 V SERVICE TO THE EXISTING BUILDING SOUTH WALL.
- APPROXIMATE LOCATION OF THE SCADA RTU ENCLOSURE IN THE EAST BUILDING.
- NO CONTRACTOR WORK ANTICIPATED IN VAULT.
- SEE E4.5 KEYNOTE 6.

FILE NAME:
FILE DATE:



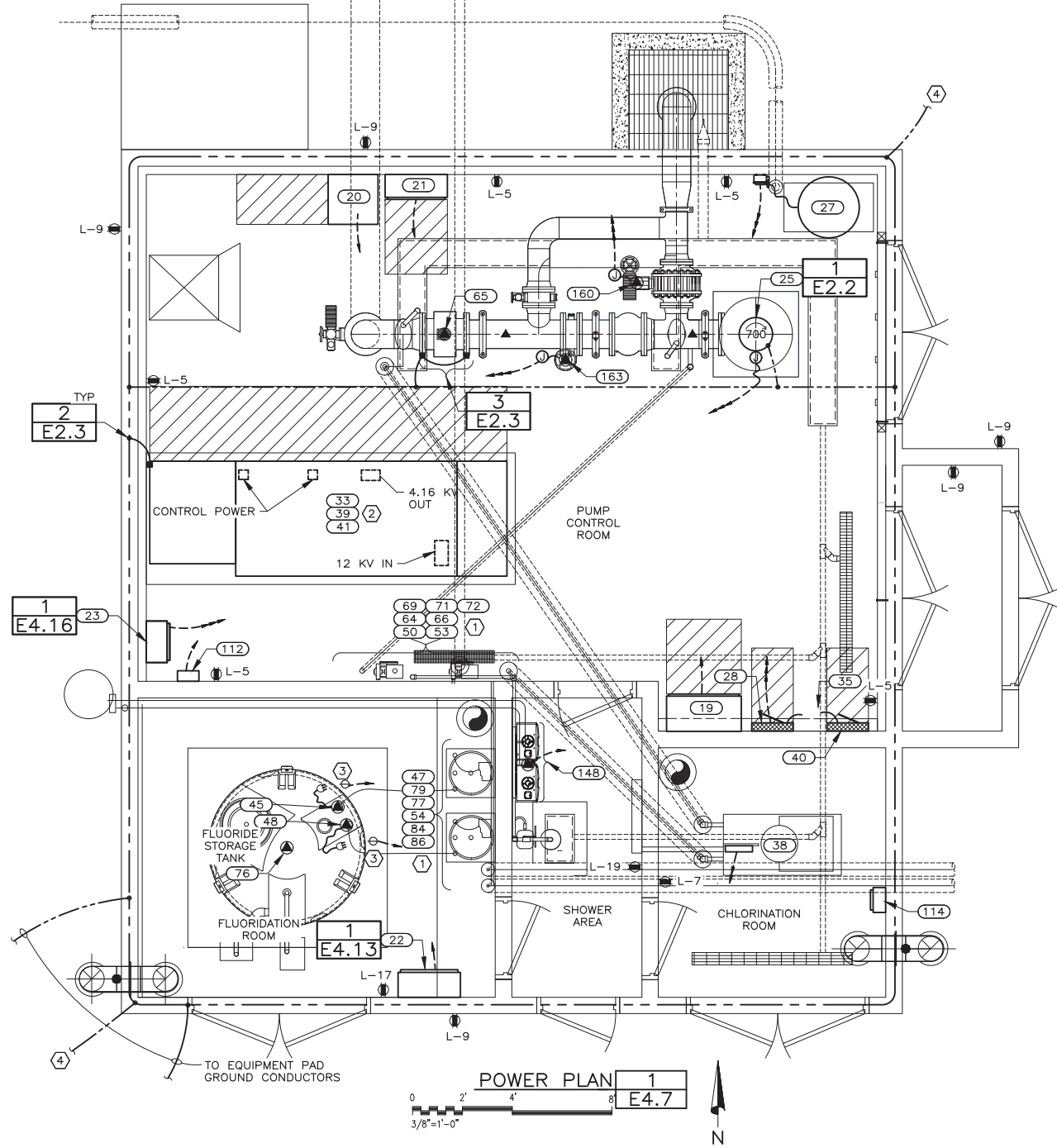
DESIGNED	KBH	3					
DRAFTED	GDS	2					
CHECKED	KBH	1					
DATE	JUNE 2023	NO.		DATE		REVISIONS	BY
							APVD.

SCALE
AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 SITE PLAN

SHEET
E4.7
127.24.400



1000 EAST POWER PLAN ITEM LIST (E4.7)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
19	CP-1	MAIN CONTROL PANEL/RTU	L-2	PUMP CONTROL ROOM
20	CP-2	CCTV ENCLOSURE	L-4	PUMP CONTROL ROOM
21	CP-3	SECURITY ENCLOSURE	L-6	PUMP CONTROL ROOM
22	CP-4	FLUORIDE CONTROL PANEL	L-8	FLUORIDATION ROOM
23	CP-5	SMALL MOTOR CONTROL PANEL	H-32,34,26	PUMP CONTROL ROOM
25	P-1	WELL PUMP	VFD-1	PUMP CONTROL ROOM
27	AC-1	AIR COMPRESSOR	H-8,10,12	PUMP CONTROL ROOM
28	PNL-H	PANELBOARD	XFMR-T1	PUMP CONTROL ROOM
33	VFD-1	VARIABLE FREQUENCY CONTROLLER	PMDE-2	PUMP CONTROL ROOM
35	XFMR-T2	TRANSFORMER (208Y/120V)	H-2,4,6	PUMP CONTROL ROOM
38	TC-1	TABLET CHLORINATOR	L-11,13	CHLORINATION ROOM
39	VFD-1	VFD-1 VENTILATION FAN POWER	H-26,28,30	PUMP CONTROL ROOM
40	PNL-L	PANELBOARD	XFMR-T2	PUMP CONTROL ROOM
41	VFD-1	VFD-1 CONTROL POWER	L-10,12	PUMP CONTROL ROOM
45	P-2A	FLUORIDE TRANSFER PUMP	CP-4	FLUORIDATION ROOM
47	CDP-1	CHEMICAL DOSING PUMP	CP-4	FLUORIDATION ROOM
48	P-2B	FLUORIDE TRANSFER PUMP	CP-4	FLUORIDATION ROOM
50	SLP-1	SOLUTION PUMP	CP-5	PUMP CONTROL ROOM
53	SLP-2	SOLUTION PUMP (MIDVALE)	CP-5	PUMP CONTROL ROOM
54	CDP-2	CHEMICAL DOSING PUMP	CP-4	FLUORIDATION ROOM
64	AIT-4	pH INDICATOR/TRANSMITTER	CP-1	PUMP CONTROL ROOM
65	FE-1	WELL FLOW ELEMENT	FIT-1	PUMP CONTROL ROOM
66	FIT-1	WELL FLOW IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
69	TIT-1	TURBIDITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
71	AIT-3	CONDUCTIVITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
72	AIT-2	RESIDUAL CHLORINE IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
76	LIT-1	STORAGE TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
77	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
79	WIT-1A	DAY TANK WEIGHT SCALE	L-14	FLUORIDATION ROOM
84	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
86	WIT-1B	DAY TANK WEIGHT SCALE	L-16	FLUORIDATION ROOM
112	AAH-1	FLUORIDE LEAK ALARM	L-22	PUMP CONTROL ROOM
114	CP-7	EF CONTROL PANEL	L-18	CHLORINATION ROOM
148	IWH-1	INLINE WATER HEATER	L-15	SHOWER AREA
160	V-1	WASTE VALVE	H-14,16,18	PUMP CONTROL ROOM
163	V-2	SYSTEM VALVE	H-20,22,24	PUMP CONTROL ROOM

H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
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 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

- POWER SOURCE OR "HOME RUN" FOR EACH DEVICE IS LISTED IN THE ITEM TABLE ON THIS SHEET. FOR WIRE AND CONDUIT REQUIREMENTS REFER TO POWER ONE-LINE AND PANELBOARD SCHEDULES FOR THE CIRCUIT ID, THEN THE WIRE AND CONDUIT REQUIREMENTS ARE IN THE CONDUIT/CONDUCTOR TABLE ON E1.1.
- PLAN IS DIAGRAMMATIC. REFER TO MANUFACTURER'S INSTALLATION REQUIREMENTS FOR CONDUIT LOCATIONS PRIOR TO CONDUIT ROUGH-IN.
- INSTALL ALL INTERIOR RECEPTACLES AT +36-IN ABOVE FINISHED FLOOR. INSTALL ALL EXTERIOR RECEPTACLES AT +18-IN ABOVE FINISHED SURFACE AND PROVIDE AN IN-SERVICE W/P COVER.
- MEDIUM VOLTAGE VFD FLOOR PLAN IS FOR A TMIEC VFD. IF OTHER MANUFACTURER UNIT IS SUPPLIED, CONTRACTOR SHALL MODIFY DIMENSIONS AND CONDUIT LOCATIONS AS REQUIRED.

SHEET KEYNOTES:

- POWER FOR DEVICES ON INSTRUMENTATION WALL AND DAY TANK AREA SHOWN ON E4.12.
- VFD REQUIRES SEPARATE 480 VAC POWER SOURCE FOR VENTILATION FANS AND 120 VAC FOR CONTROL POWER. REFER TO ITEM LIST FOR POWER SOURCE.
- PROVIDE A NEMA L5-20 TWIST LOCK RECEPTACLE INSTALLED +48" AFF ON A STRUT SUPPORT.
- TO ROOF LIGHTNING PROTECTION SYSTEM. REFER TO E6.3.

FILE NAME:
FILE DATE:



DESIGNED	KBH	3
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DATE	JUNE 2023	NO.

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SCALE
AS SHOWN



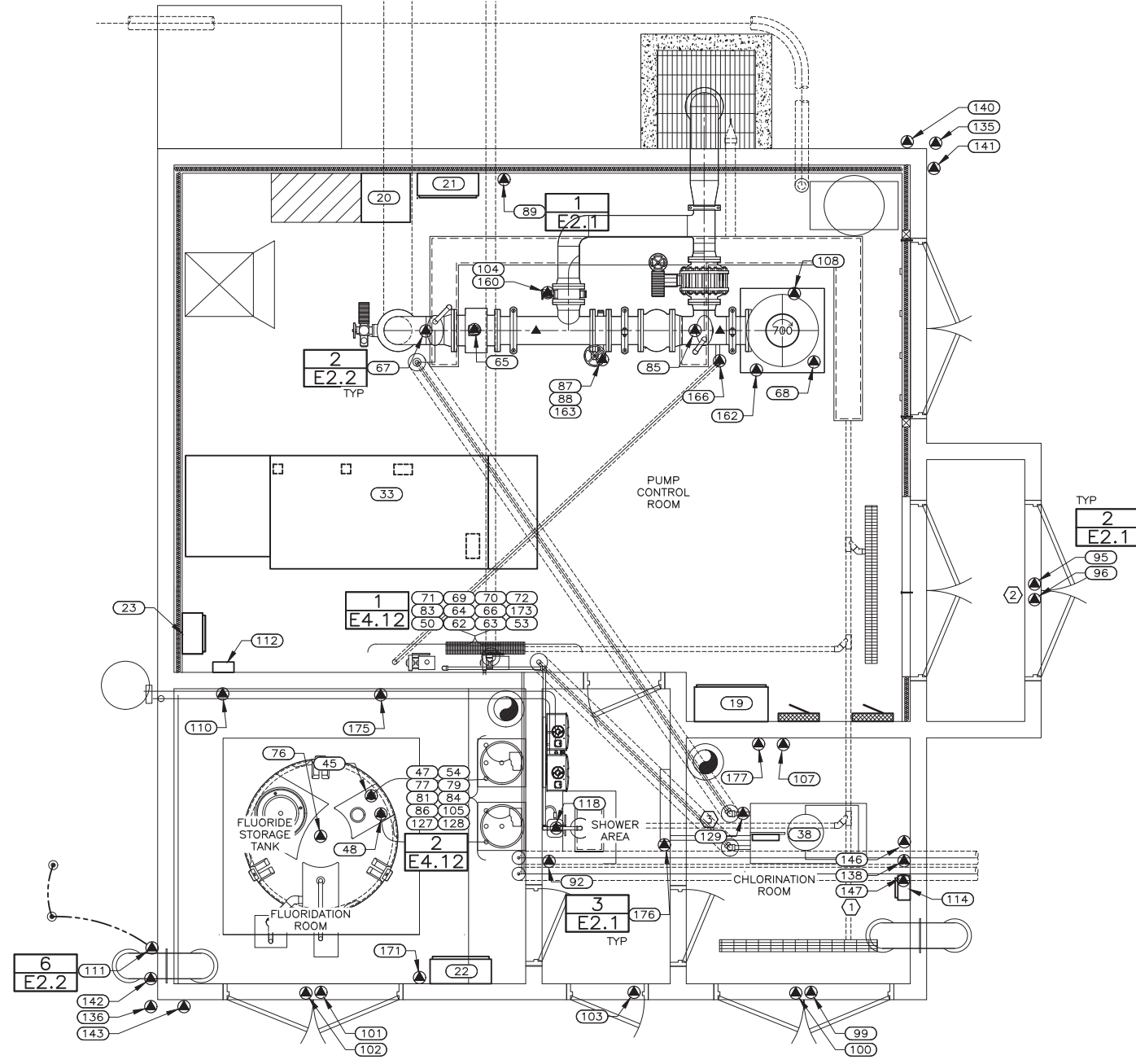
WELL PUMP STATION CONSTRUCTION
ELECTRICAL - 1000 EAST
POWER PLAN

SHEET
E4.8
127.24.400

1000 EAST INSTR. & CONTROL PLAN ITEM LIST (E4.8)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
19	CP-1	MAIN CONTROL PANEL/RTU	L-2	PUMP CONTROL ROOM
20	CP-2	CCTV ENCLOSURE	L-4	PUMP CONTROL ROOM
21	CP-3	SECURITY ENCLOSURE	L-6	PUMP CONTROL ROOM
22	CP-4	FLUORIDE CONTROL PANEL	L-8	FLUORIDATION ROOM
23	CP-5	SMALL MOTOR CONTROL PANEL	H-32,34,26	PUMP CONTROL ROOM
33	VFD-1	VARIABLE FREQUENCY CONTROLLER	PMDE-2	PUMP CONTROL ROOM
38	TC-1	TABLET CHLORINATOR	L-11,13	CHLORINATION ROOM
45	P-2A	FLUORIDE TRANSFER PUMP	CP-4	FLUORIDATION ROOM
47	CDP-1	CHEMICAL DOSING PUMP	CP-4	FLUORIDATION ROOM
48	P-2B	FLUORIDE TRANSFER PUMP	CP-4	FLUORIDATION ROOM
50	SLP-1	SOLUTION PUMP	CP-5	PUMP CONTROL ROOM
53	SLP-2	SOLUTION PUMP (MIDVALE)	CP-5	PUMP CONTROL ROOM
54	CDP-2	CHEMICAL DOSING PUMP	CP-4	FLUORIDATION ROOM
62	AE-3	CONDUCTIVITY PROBE	AIT-3	PUMP CONTROL ROOM
63	AE-4	pH PROBE	AIT-4	PUMP CONTROL ROOM
64	AIT-4	pH INDICATOR/TRANSMITTER	CP-1	PUMP CONTROL ROOM
65	FE-1	WELL FLOW ELEMENT	FIT-1	PUMP CONTROL ROOM
66	FIT-1	WELL FLOW IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
67	PT-1	PRESSURE TRANSMITTER, SYSTEM	CP-1	PUMP CONTROL ROOM
68	LT-1	LEVEL TRANSMITTER, WELL	CP-1	PUMP CONTROL ROOM
69	TIT-1	TURBIDITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
70	TE-1	TURBIDITY ELEMENT	CP-1	PUMP CONTROL ROOM
71	AIT-3	CONDUCTIVITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
72	AIT-2	RESIDUAL CHLORINE IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
76	LIT-1	STORAGE TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
77	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
79	WIT-1A	DAY TANK WEIGHT SCALE	L-14	FLUORIDATION ROOM
81	WE-1A	DAY TANK SCALE ELEMENT	WIT-1A	FLUORIDATION ROOM
83	PT-2	PRESSURE TRANSMITTER, CHEMICAL	CP-1	PUMP CONTROL ROOM
84	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
85	PSH-1	HIGH PRESSURE SWITCH	CP-1	PUMP CONTROL ROOM
86	WIT-1B	DAY TANK WEIGHT SCALE	L-16	FLUORIDATION ROOM
87	ZS-10A	SYSTEM VALVE FULL OPEN SWITCH	CP-1	PUMP CONTROL ROOM
88	ZS-10B	SYSTEM VALVE FULL CLOSED SWITCH	CP-1	PUMP CONTROL ROOM
89	LSH-1	FLOOR WATER LEVEL SWITCH	CP-1	PUMP CONTROL ROOM
92	LSH-3	FLOOR WATER LEVEL SWITCH	CP-1	SHOWER AREA
95	ZS-1A	DOOR POSITION SWITCH	CP-1	PUMP ROOM VEST.
96	ZS-1B	DOOR POSITION SWITCH	CP-1	PUMP ROOM VEST.
99	ZS-3A	DOOR POSITION SWITCH	CP-1	CHLORINATION ROOM
100	ZS-3B	DOOR POSITION SWITCH	CP-1	CHLORINATION ROOM
101	ZS-4A	DOOR POSITION SWITCH	CP-1	FLUORIDATION ROOM
102	ZS-4B	DOOR POSITION SWITCH	CP-1	FLUORIDATION ROOM
103	ZS-5	DOOR POSITION SWITCH	CP-1	SHOWER AREA
104	ZT-1	WASTE VALVE POSITION TRANSMITTER	CP-1	PUMP CONTROL ROOM
105	WE-1B	DAY TANK SCALE ELEMENT	WIT-1B	FLUORIDATION ROOM
107	LSH-2	FLOOR WATER LEVEL SWITCH	CP-1	CHLORINATION ROOM
108	VS-1	MOTOR VIBRATION SWITCH	CP-1	PUMP CONTROL ROOM
110	AE-1	FLUORIDE GAS ANALYSIS ELEMENT	ASH-1	FLUORIDATION ROOM
111	AM-1	ANTENNA MAST	0	BUILDING EXTERIOR
112	AAH-1	FLUORIDE LEAK ALARM	L-22	PUMP CONTROL ROOM
114	CP-7	EF CONTROL PANEL	L-18	CHLORINATION ROOM
118	FS-1	SHOWER FLOW SWITCH	CP-1	EMERG. SHWR. ROOM
127	FE/FIT-2A	FLUORIDE FLOW INDICATOR/TRANSMITTER	CP-1	FLUORIDATION ROOM
128	FE/FIT-2B	FLUORIDE FLOW INDICATOR/TRANSMITTER	CP-1	FLUORIDATION ROOM
129	FE/FIT-3	CHLORINE FLOW INDICATOR/TRANSMITTER	CP-1	CHLORINATION ROOM
135	CCTV-1	270-DEG FIXED CAMERA	CP-2	BUILDING EXTERIOR
136	CCTV-2	270-DEG FIXED CAMERA	CP-2	BUILDING EXTERIOR
138	CCTV-3	270-DEG FIXED CAMERA	CP-2	CHLORINATION ROOM
140	IL-1A	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
141	IL-1B	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
142	IL-2A	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
143	IL-2B	INFRARED ILLUMINATOR	CP-3	BUILDING EXTERIOR
146	IL-3A	INFRARED ILLUMINATOR	CP-3	CHLORINATION ROOM
147	IL-3B	INFRARED ILLUMINATOR	CP-3	CHLORINATION ROOM
160	V-1	WASTE VALVE	H-14,16,18	PUMP CONTROL ROOM
162	SV-1	SOLENOID VALVE, LUBE OIL	CP-1	PUMP CONTROL ROOM
163	V-2	SYSTEM VALVE	H-20,22,24	PUMP CONTROL ROOM
166	SV-5	SOLENOID VALVE, TURBIDITY	CP-1	PUMP CONTROL ROOM
171	LDS-1	CONTAINMENT TRENCH LEAK DETECTION SENSOR	CP-1	FLUORIDATION ROOM
173	TIT-1	ROOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	PUMP CONTROL ROOM
175	TIT-2	ROOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	FLUORIDATION ROOM
176	TIT-3	ROOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	SHOWER AREA
177	TIT-4	ROOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	CHLORINATION ROOM

- GENERAL NOTES:**
- FOR WIRE AND CONDUIT REQUIREMENTS REFER TO THE INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAM ON E4.5.
 - LOCATIONS OF DEVICES SHOWN AT THE PUMP IS DIAGRAMMATIC. VERIFY ACTUAL LOCATION DURING CONSTRUCTION PRIOR TO CONDUIT ROUGH-IN.
- SHEET KEYNOTES:**
- INSTALL ILLUMINATOR ABOVE CONTROL PANEL.
 - THIS SET OF DOUBLE DOORS WILL HAVE A REMOVABLE TRANSOM ABOVE THE DOOR FRAME. MODIFY LOCATION OF J-BOX AS REQUIRED.
 - PRIOR TO CONDUIT ROUGH-IN VERIFY ACTUAL LOCATION OF THE CHLORINE FLOW METER DURING CONSTRUCTION.



INSTRUMENTATION PLAN 1
 E4.7
 3/8" = 1'-0"



DESIGNED	KBH	3					
DRAFTED	GDS	2					
CHECKED	KBH	1					
DATE	JUNE 2023	NO.		DATE			

SCALE AS SHOWN

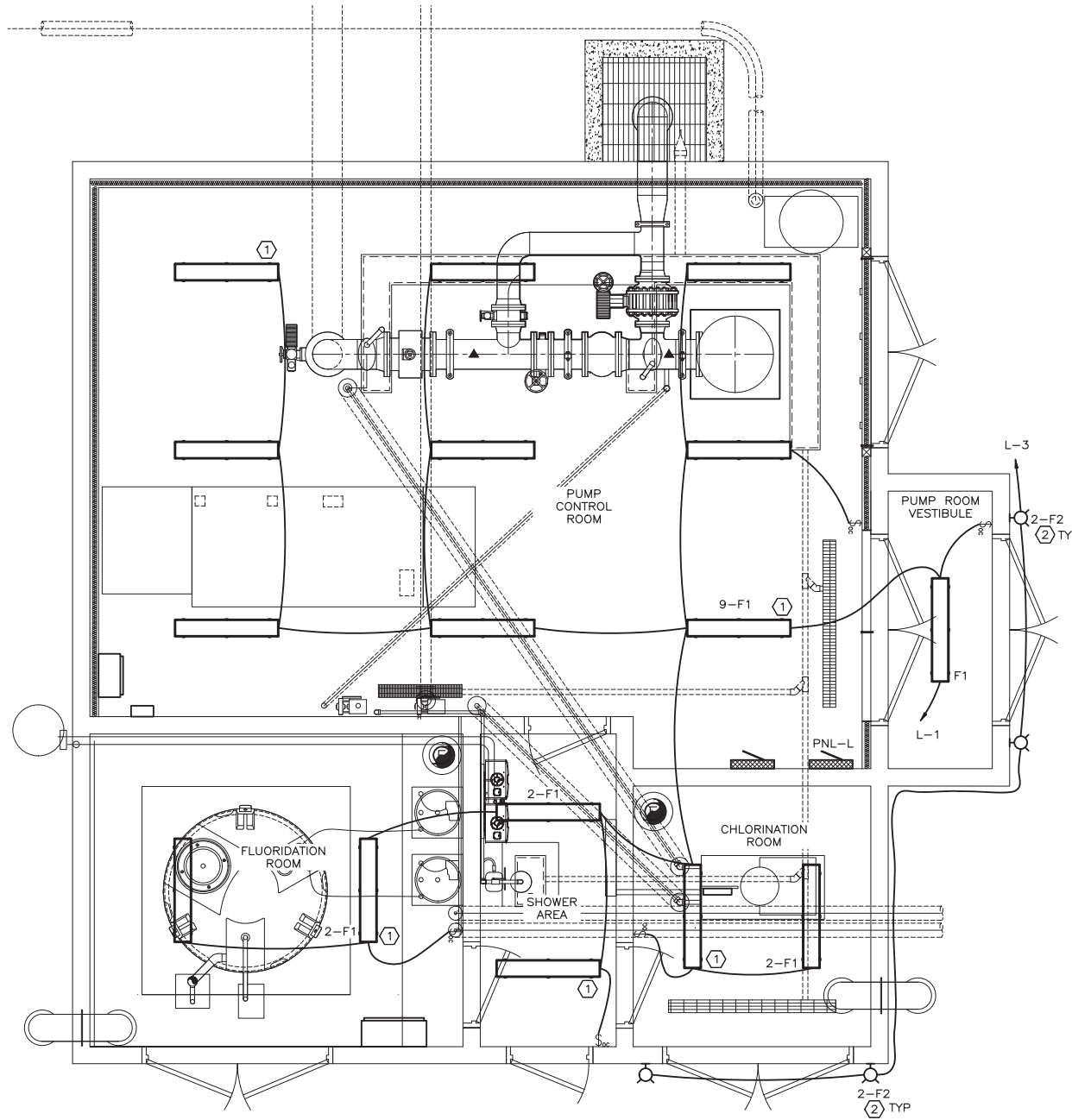
JORDAN VALLEY WATER
 CONSERVANCY DISTRICT

GENERAL NOTES:

1. FOR WIRE AND CONDUIT REQUIREMENTS REFER TO PANELBOARD SCHEDULE FOR THE CIRCUIT ID, THEN THE WIRE AND CONDUIT REQUIREMENTS ARE PROVIDED ON THE CONDUIT/CONDUCTOR TABLE ON E1.1 SEE ALSO THE CONDUIT/CONDUCTOR TABLE.
2. FIXTURE SCHEDULE LOCATED ON E1.3.

SHEET KEYNOTES:

1. PROVIDE FIXTURE WITH A 90-MINUTE EMERGENCY POWER BATTERY.
2. INSTALL FIXTURE 6-IN ABOVE TOP OF DOOR.



LIGHTING PLAN 1
 E4.7
 3/8"=1'-0"



FILE NAME:
 FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

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REVISIONS					
NO.	DATE	DESCRIPTION	BY	APVD.	

SCALE
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WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 LIGHTING PLAN

SHEET
E4.10
 127.24.400

1000 EAST HVAC PLAN ITEM LIST (E4.11)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
11	ODU-1	OUTDOOR CONDENSING UNIT	H-1,3,5	BUILDING EXTERIOR
15	UH-5	UNIT HEATER	L-21,23	SHOWER AREA
17	UH-1	UNIT HEATER	H-7,9,11	FLUORIDATION ROOM
18	UH-2	UNIT HEATER	H-13,15,17	CHLORINATION ROOM
19	CP-1	MAIN CONTROL PANEL/RTU	L-2	PUMP CONTROL ROOM
22	CP-4	FLUORIDE CONTROL PANEL	L-8	FLUORIDATION ROOM
28	PNL-H	PANELBOARD	XFMR-T1	PUMP CONTROL ROOM
40	PNL-L	PANELBOARD	XFMR-T2	PUMP CONTROL ROOM
61	AHU-1	AIR HANDLING UNIT	H-25,27,29	PUMP CONTROL ROOM
114	CP-7	EF CONTROL PANEL	L-18	CHLORINATION ROOM
116	EF-2	EXHAUST FAN	CP-4	FLUORIDATION ROOM
117	EF-1	EXHAUST FAN	CP-7	CHLORINATION ROOM
122	UH-3	UNIT HEATER	H-19,21,23	PUMP CONTROL ROOM
123	UH-4	UNIT HEATER	H-25,27,29	PUMP CONTROL ROOM
133	HS-1	EX. FAN HAND OFF AUTO SELECTOR SWITCH	CP-7	SHOWER AREA
134	HS-2	EX. FAN HAND OFF AUTO SELECTOR SWITCH	CP-4	SHOWER AREA

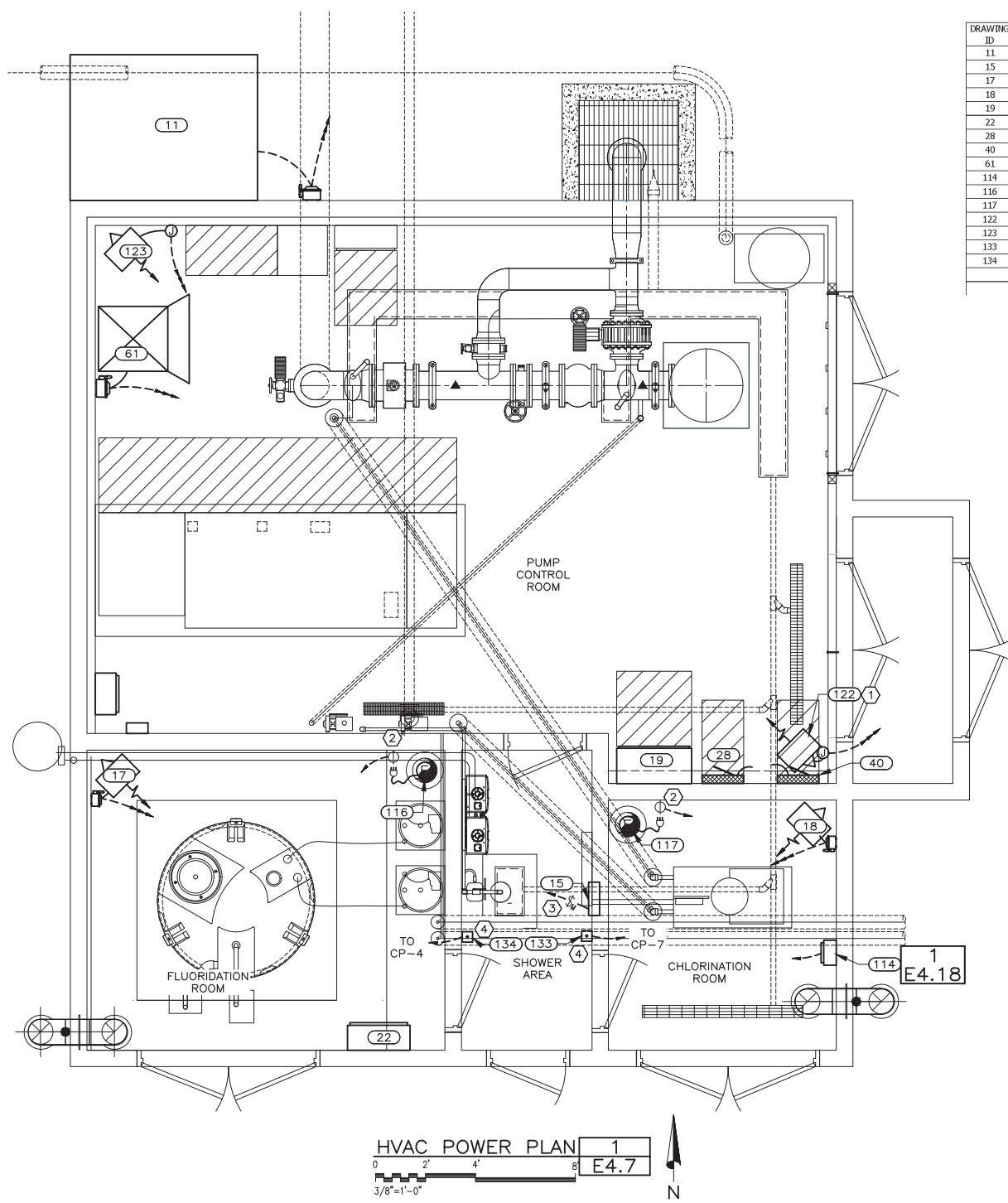
H.P.E. INC. ELECTRICAL ENGINEERS
 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
 HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

- POWER SOURCE OR "HOME RUN" FOR EACH DEVICE IS LISTED IN THE ITEM TABLE ON THIS SHEET. FOR WIRE AND CONDUIT REQUIREMENTS REFER TO POWER ONE-LINE AND PANELBOARD SCHEDULES FOR THE CIRCUIT ID, THEN THE WIRE AND CONDUIT REQUIREMENTS ARE IN THE CONDUIT/CONDUCTOR TABLE ON E1.1.
- PLAN IS DIAGRAMMATIC. REFER TO MANUFACTURER'S INSTALLATION REQUIREMENTS FOR CONDUIT LOCATIONS PRIOR TO CONDUIT ROUGH-IN.

SHEET KEYNOTES:

- UNIT HEATER INSTALLED ABOVE ELECTRICAL EQUIPMENT.
- LABEL "EXHAUST FAN DISCONNECT".
- FIELD INSTALL A 2-POLE MANUAL MOTOR STARTER AND LABEL AS "HEATER DISCONNECT".
- INSTALL RECESSED SWITCH +60-IN ABOVE FINISHED FLOOR. REFER TO INSTRUMENTATION AND CONTROL ONE-LINE DRAWING FOR WIRE AND CONDUIT REQUIREMENTS. LABEL "FLUORIDATION ROOM EXHAUST FAN" OR "CHLORINATION ROOM EXHAUST FAN" AS REQUIRED.



HVAC POWER PLAN 1
 0 2' 4' 8' E4.7
 3/8"=1'-0" N

FILE NAME:
 FILE DATE:



DESIGNED	KBH	3							
DRAFTED	GDS	2							
CHECKED	KBH	1							
DATE	JUNE 2023	NO.		DATE		REVISIONS		BY	APVD.

SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 HVAC POWER PLAN

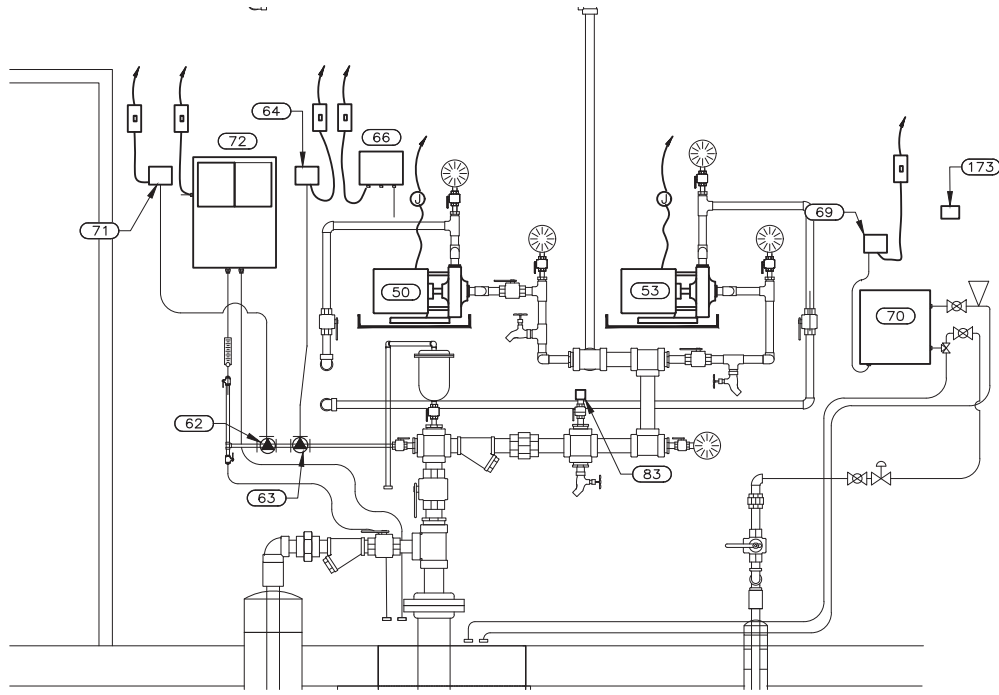
SHEET
 E4.11
 127.24.400

GENERAL NOTES:

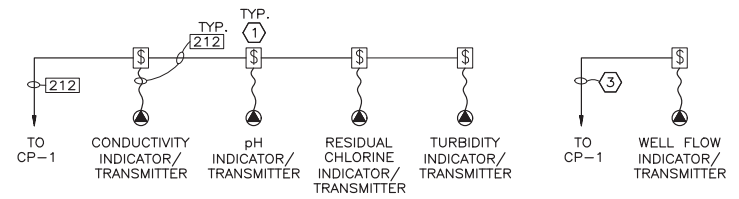
1. POWER SOURCE OR "HOME RUN" FOR EACH DEVICE IS LISTED IN THE ITEM TABLE ON THIS SHEET. FOR WIRE AND CONDUIT REQUIREMENTS REFER TO THE POWER ONE-LINE AND PANELBOARD SCHEDULES FOR THE CIRCUIT ID, THEN THE WIRE AND CONDUIT REQUIREMENTS ARE IN THE CONDUIT/CONDUCTOR TABLE ON E1.1.

SHEET KEYNOTES:

1. INSTALL SWITCH NEAR INSTRUMENT AND LABEL SWITCH FOR THE INSTRUMENT IS CONTROLS.
2. REFER TO THE INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAM ON E4.6 FOR POWER AND CONTROL/MONITORING CONDUIT AND CONDUCTORS.
3. FLOW METER IS DC POWERED. REFER TO E4.6/KEYNOTE 9.



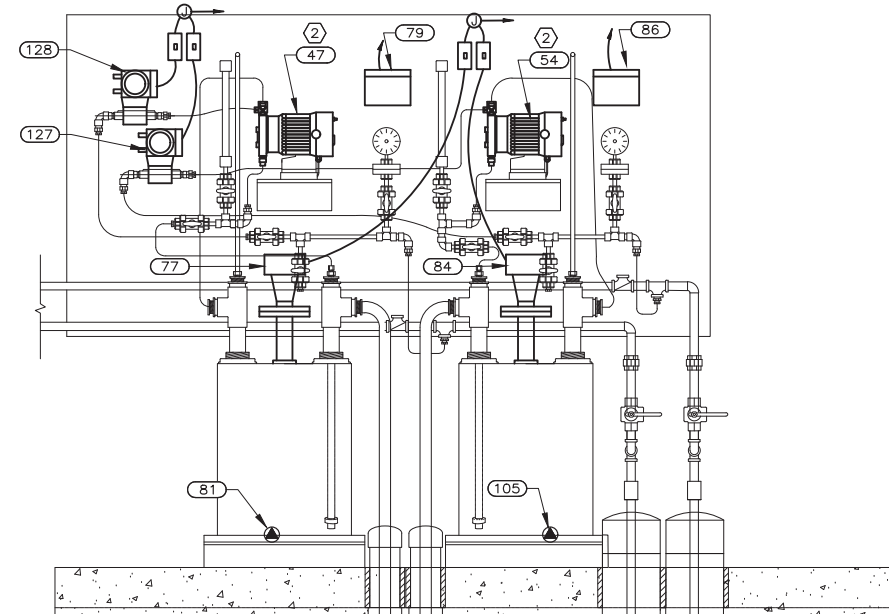
INSTRUMENTATION PANEL 1
 E4.8
 0 0.5' 1' 2' 3'
 1"=1'-0"



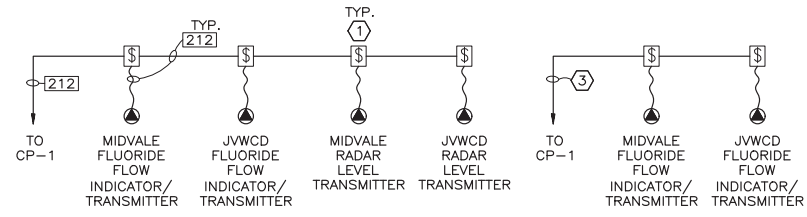
INSTRUMENTATION POWER DIAGRAM

1000 EAST INST. WALL & DAY TANK AREA ITEM LIST (E4.12)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
47	CDP-1	CHEMICAL DOSING PUMP	CP-4	FLUORIDATION ROOM
50	SLP-1	SOLUTION PUMP	CP-5	PUMP CONTROL ROOM
53	SLP-2	SOLUTION PUMP (MIDVALE)	CP-5	PUMP CONTROL ROOM
54	CDP-2	CHEMICAL DOSING PUMP	CP-4	FLUORIDATION ROOM
62	AE-3	CONDUCTIVITY PROBE	AIT-3	PUMP CONTROL ROOM
63	AE-4	pH PROBE	AIT-4	PUMP CONTROL ROOM
64	AIT-4	pH INDICATOR/TRANSMITTER	CP-1	PUMP CONTROL ROOM
66	FIT-1	WELL FLOW IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
69	TIT-1	TURBIDITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
70	TE-1	TURBIDITY ELEMENT	CP-1	PUMP CONTROL ROOM
71	AIT-3	CONDUCTIVITY IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
72	AIT-2	RESIDUAL CHLORINE IND/TRANSMITTER	CP-1	PUMP CONTROL ROOM
77	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
79	WIT-1A	DAY TANK WEIGHT SCALE	L-14	FLUORIDATION ROOM
81	WE-1A	DAY TANK SCALE ELEMENT	WIT-1A	FLUORIDATION ROOM
83	PT-2	PRESSURE TRANSMITTER, CHEMICAL	CP-1	PUMP CONTROL ROOM
84	LIT-2A	DAY TANK RADAR LEVEL IND/TRANSMITTER	CP-1	FLUORIDATION ROOM
86	WIT-1B	DAY TANK WEIGHT SCALE	L-16	FLUORIDATION ROOM
105	WE-1B	DAY TANK SCALE ELEMENT	WIT-1B	FLUORIDATION ROOM
127	FE/FIT-2A	FLUORIDE FLOW INDICATOR/TRANSMITTER	CP-1	FLUORIDATION ROOM
128	FE/FIT-2B	FLUORIDE FLOW INDICATOR TRANSMITTER	CP-1	FLUORIDATION ROOM
173	TIT-1	DOM TEMPERATURE INDICATING/TRANSMITTER	CP-1	PUMP CONTROL ROOM



DAY TANK AREA ELEVATION 2
 E4.8
 0 0.5' 1' 2' 3'
 1"=1'-0"



INSTRUMENTATION POWER DIAGRAM

FILE NAME:
 FILE DATE:



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SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 INSTRUMENTATION PANEL

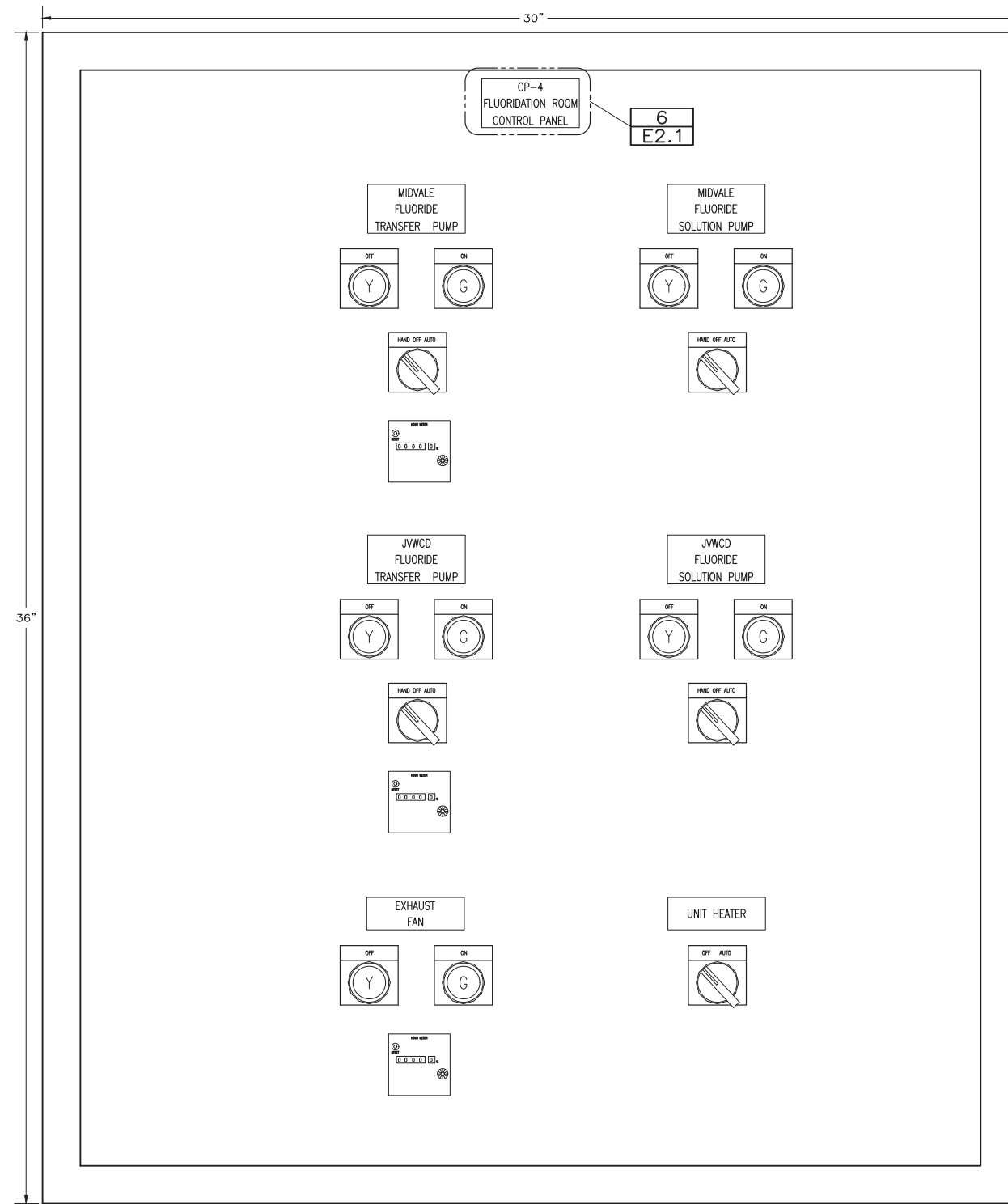
SHEET
 E4.12
 127.24.400

GENERAL NOTES:

- CONTROL PANEL DIMENSIONS SHOWN ARE ANTICIPATED. CONTRACTOR SHALL MODIFY FOR THE SUPPLIED COMPONENTS.
- CONTRACTOR SHALL DETERMINE INTERIOR ARRANGEMENT.
- REFER TO E4.14 AND E4.15 FOR TYPICAL CONTROL DIAGRAM.

SHEET KEYNOTES:

- NOT USED.



CP-4 FLUORIDATION CONTROL PANEL 1
 6" = 1'-0" E4.8

FILE NAME:
 FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

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WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 CP-4 FLUORIDATION RM CONTROL PANEL

SHEET
 E4.13
 127.24.400

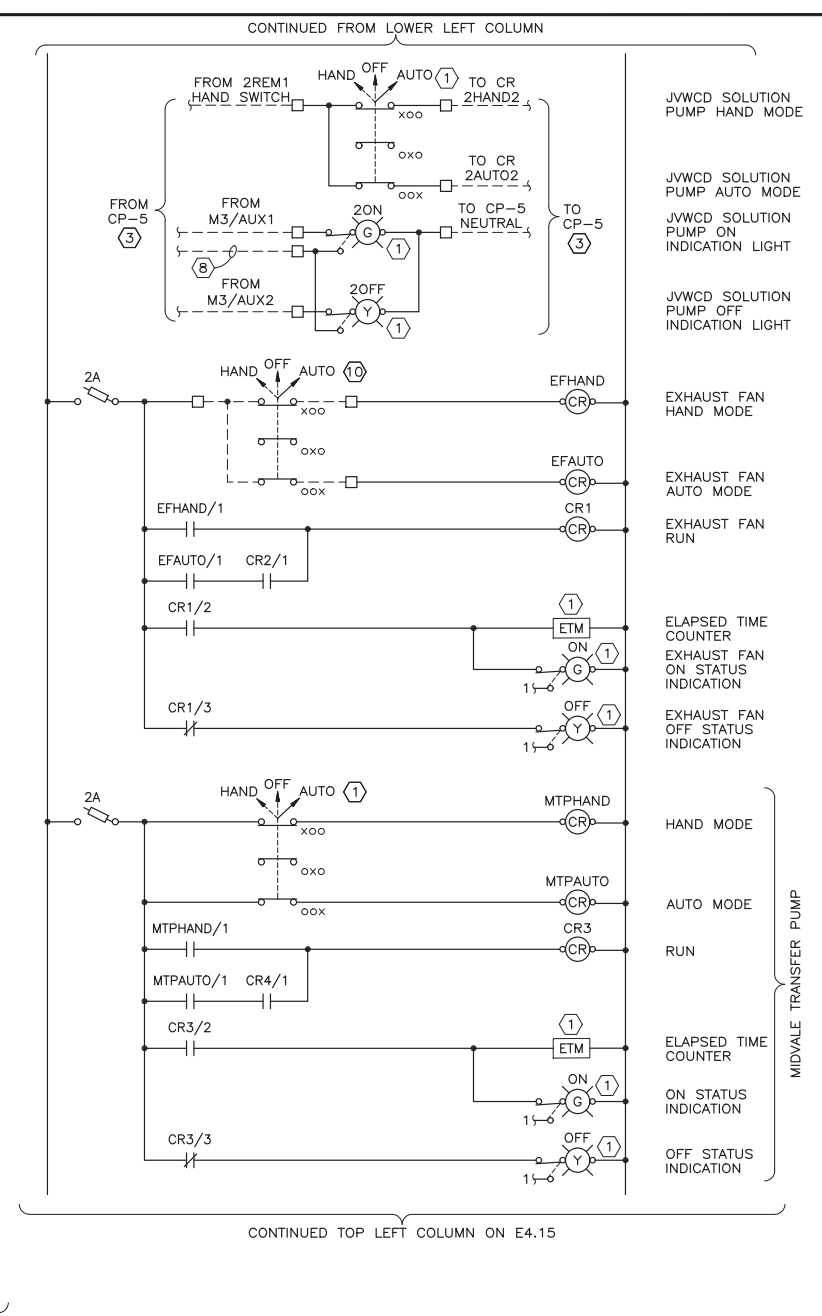
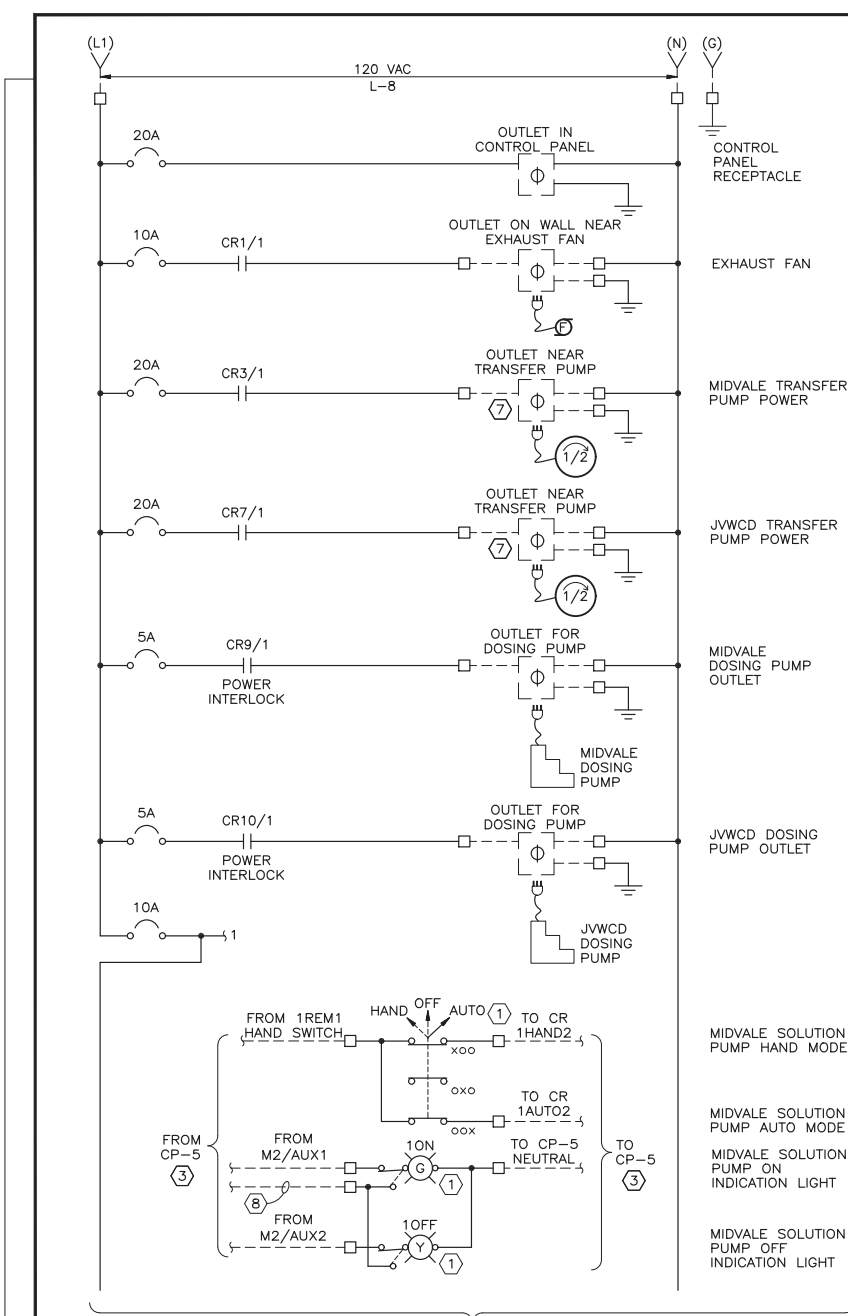


TABLE 4 (CP-1 TO FLUORIDATION RM CP-4)

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1	#16	+24VDC		CONTAINMENT TRENCH HIGH LEVEL ALARM
1	#16	+24VDC		EF HOA IN AUTO MODE
1	#16	+24VDC		EF HOA IN HAND MODE
1	#16	+24VDC		EXHAUST FAN ON
1	#16	+24VDC		JWVCD TP HOA IN AUTO MODE
1	#16	+24VDC		JWVCD TP HOA IN HAND MODE
1	#16	+24VDC		JWVCD TRANSFER PUMP ON
1	#16	+24VDC		MIDVALE TP HOA IN HAND MODE
1	#16	+24VDC		MIDVALE TRANSFER PUMP ON
1	#16	+24VDC		MIDVALE TP HOA IN AUTO MODE
1	#16	+24VDC		SOURCE FROM CP-1
1	#16	+24VDC		MIDVALE FLUORIDE FIT DC POWER
1	#16	+24VDC		MIDVALE FLUORIDE FIT DC RETURN
1	#16	+24VDC		JWVCD FLUORIDE FIT DC POWER
1	#16	+24VDC		JWVCD FLUORIDE FIT DC RETURN
1	#16	120 VAC		EXHAUST FAN COMMAND RUN
1	#16	120 VAC		JWVCD DOSING PUMP POWER INTERLOCK
1	#16	120 VAC		JWVCD TRANSFER PUMP COMMAND RUN
1	#16	120 VAC		MIDVALE DOSING PUMP POWER INTERLOCK
1	#16	120 VAC		MIDVALE TRANSFER PUMP COMMAND RUN
1	#16	120 VAC		SOURCE FROM CP-1
6	#16	-		SPARE
1	#18TSP	4-20 mA		JWVCD DAY TANK LEVEL (RADAR)
1	#18TSP	4-20 mA		JWVCD DAY TANK LEVEL (WEIGHT)
1	#18TSP	4-20 mA		JWVCD DOSING PUMP DOSE RATE
1	#18TSP	4-20 mA		MIDVALE DAY TANK LEVEL (RADAR)
1	#18TSP	4-20 mA		MIDVALE DAY TANK LEVEL (WEIGHT)
1	#18TSP	4-20 mA		MIDVALE DOSING PUMP DOSE RATE
1	#18TSP	4-20 mA		ROOM TEMPERATURE
1	#18TSP	4-20 mA		STORAGE TANK LEVEL (RADAR)
1°C	RS-485	MODBUS		MIDVALE FLOW METER
1°C	RS-485	MODBUS		JWVCD FLOW METER
1°C	-	-		SPARE

TABLE 5 (CP-4 TO SMALL MOTOR CP-5)

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1	#14	120 N		P1 120V NEUTRAL
1	#14	120VAC		P1 FUSED 120 VAC
1	#14	120VAC		P1 HOA AUTO MODE
1	#14	120VAC		P1 HOA HAND MODE
1	#14	120VAC		P1 HOR IN REMOTE MODE
1	#14	120VAC		P1 NOT RUNNING
1	#14	120VAC		P1 PUMP RUNNING
1	#14	120 N		P2 120V NEUTRAL
1	#14	120VAC		P2 FUSED 120 VAC
1	#14	120VAC		P2 HOA AUTO MODE
1	#14	120VAC		P2 HOA HAND MODE
1	#14	120VAC		P2 HOR IN REMOTE MODE
1	#14	120VAC		P2 NOT RUNNING
1	#14	120VAC		P2 PUMP RUNNING
4	#14	-		SPARES

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 POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
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 708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
 HPE PROJECT:22.013 © 2024
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

- CONTROL DIAGRAM IS TYPICAL FOR THE FLUORIDATION ROOM CONTROL PANEL. MODIFY AS REQUIRED FOR THE DEVICES SUPPLIED.
- CONTRACTOR SHALL PROVIDE FUSE, TERMINAL AND WIRE NUMBERS AS REQUIRED.
- REFER TO E4.13 FOR CONTROL PANEL EXTERIOR ARRANGEMENT.

SHEET KEYNOTES:

- DEVICE SHALL BE INSTALLED IN ENCLOSURE DOOR AND AVAILABLE TO THE OPERATOR.
- TWO POSITION, SPRING RETURN TO OFF SELECTOR SWITCH.
- SOLUTION PUMPS ARE LOCATED IN THE PUMP CONTROL ROOM. CONTROL AND MONITORING OF THE PUMPS SHALL BE HARD WIRED BETWEEN CP-4 AND CP-5.
- PUMP CONTROL ROOM RTU 24VDC RELAY CONTACT. RELAY PROVIDED AND INSTALLED IN JWVCD RTU BY THE OWNER. COORDINATE TERMINAL NUMBERS FOR CONDUCTORS DURING CONSTRUCTION.
- PUMP CONTROL ROOM RTU WILL PROVIDE A 24VDC SOURCE TO A DRY CONTACT IN THE FLUORIDATION ROOM CONTROL PANEL, WITH SWITCHED POWER BACK TO CP-1.
- INSTALL ANALOG SIGNALS THROUGH FLUORIDATION ROOM CONTROL PANEL. NO TERMINATION REQUIRED.
- LABEL OUTLET AS "PUMP DISCONNECT".
- FROM CP-5, FUSED CONTROL POWER.
- DEVICE INSTALLED IN CP-5 SMALL MOTOR CONTROL PANEL, SEE E4.16.
- HOA SWITCH INSTALLED IN SHOWER AREA.

FILE NAME: _____
 FILE DATE: _____

DESIGNED KBH 3
 DRAFTED GDS 2
 CHECKED KBH 1
 DATE JUNE 2023 NO. DATE

NO.	DATE	REVISIONS	BY	APVD.

SCALE NONE

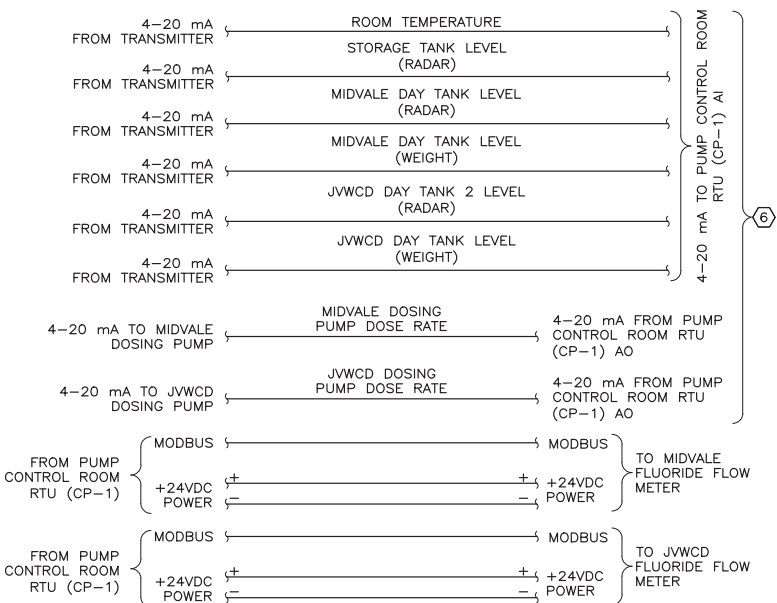
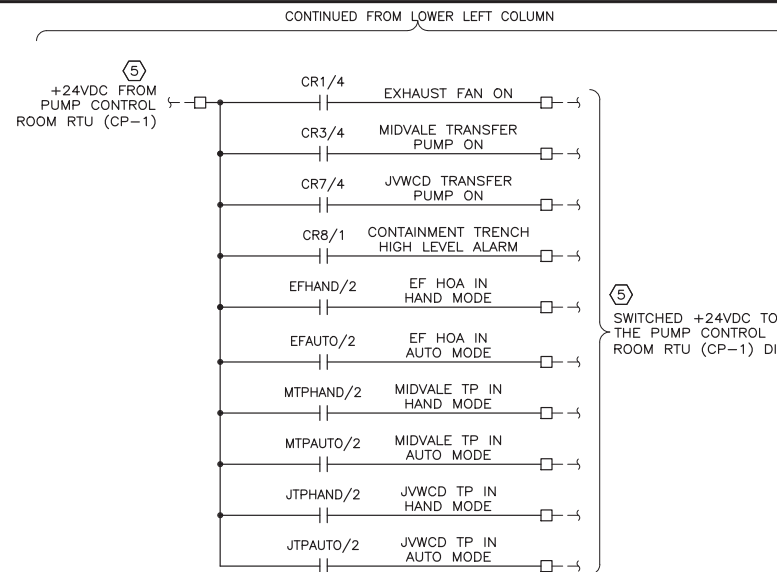
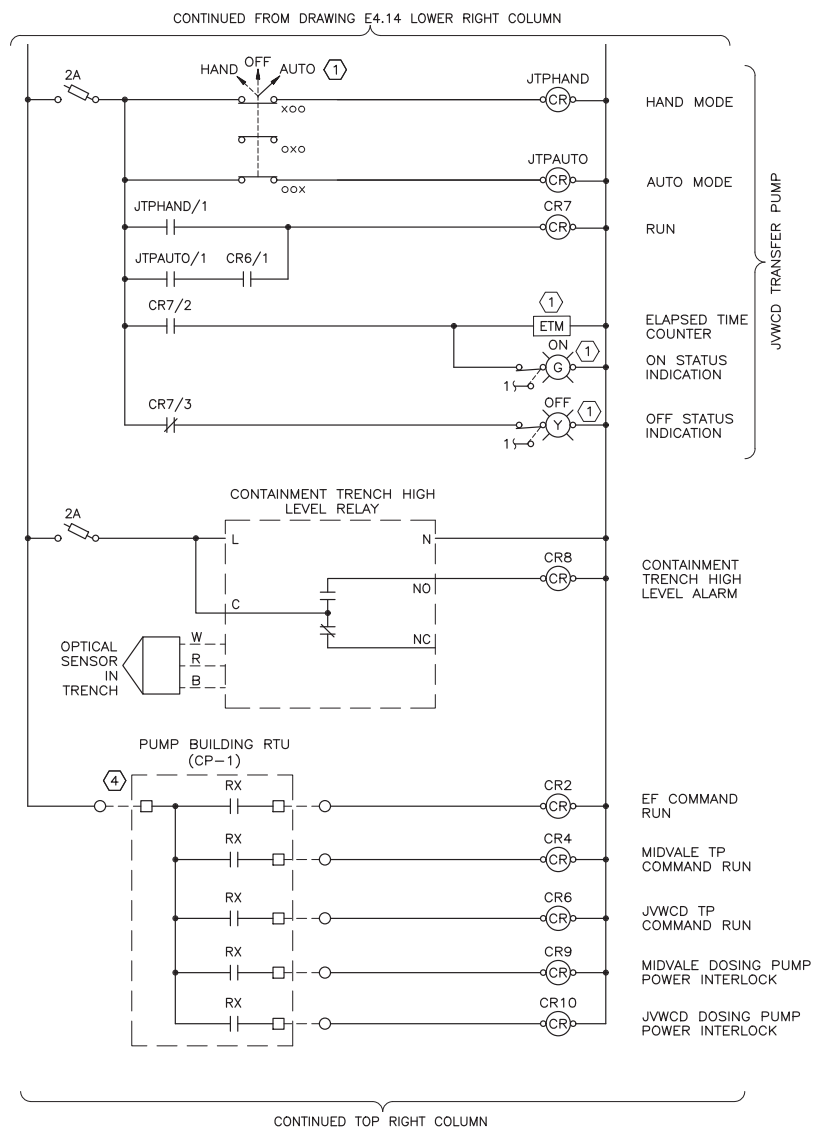
JORDAN VALLEY WATER CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 CP-4 WIRING DIAGRAM, SHT. 1

SHEET E4.14
 127.24.400

GENERAL NOTES:

- FOR GENERAL AND SHEET KEYNOTES REFER TO E4.14.



CP-4 TYPICAL CONTROL WIRING DIAGRAM

FILE NAME:
FILE DATE:



DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS

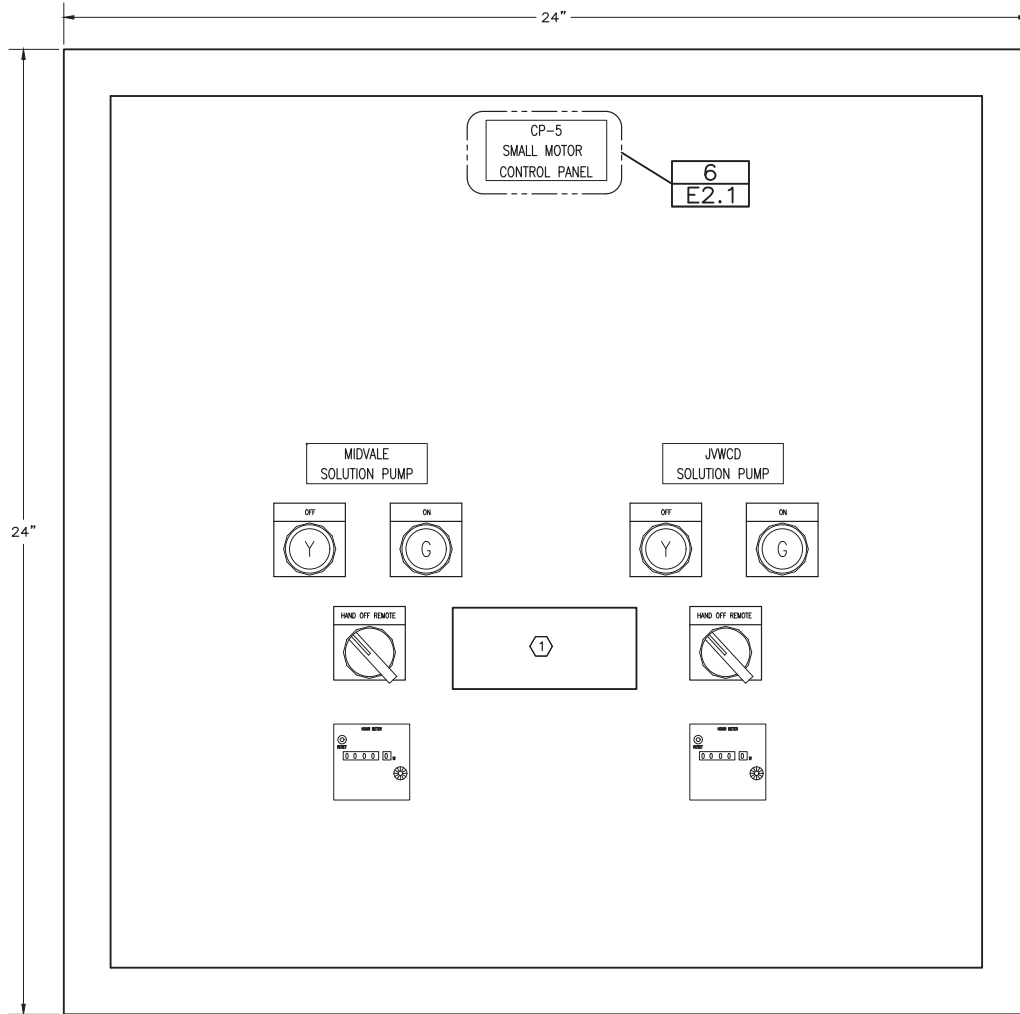
BY APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 CP-4 WIRING DIAGRAM, SHT. 2

SHEET
E4.15
127.24.400



GENERAL NOTES:

- CONTROL PANEL DIMENSIONS SHOWN ARE ANTICIPATED. CONTRACTOR SHALL MODIFY FOR THE SUPPLIED COMPONENTS.
- CONTRACTOR SHALL DETERMINE INTERIOR ARRANGEMENT. CONTRACTOR SHALL PROVIDE WIRE NUMBERS, TERMINAL NUMBERS AND OVERCURRENT DEVICE NUMBERS.
- REFER TO E4.17 FOR TYPICAL CONTROL DIAGRAM.
- CP-5 SHALL INCLUDE THE MOTOR CONTROLLERS, AND SWITCHES AS SHOWN.

SHEET KEYNOTES:

- PROVIDE A LABEL: "LEAVE SWITCH IN REMOTE TO ENABLE CONTROL FROM THE FLUORIDE ROOM CONTROL PANEL".

CP-5 SMALL MOTOR CONTROL PANEL 1
 6" = 1'-0" E4.7

FILE NAME:
 FILE DATE:
 7/04



PROJECT ENGINEER

DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO. DATE

REVISIONS		BY	APVD.

SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 CP-5 SMALL MOTOR CONTROL PANEL

SHEET
 E4.16
 127.24.400

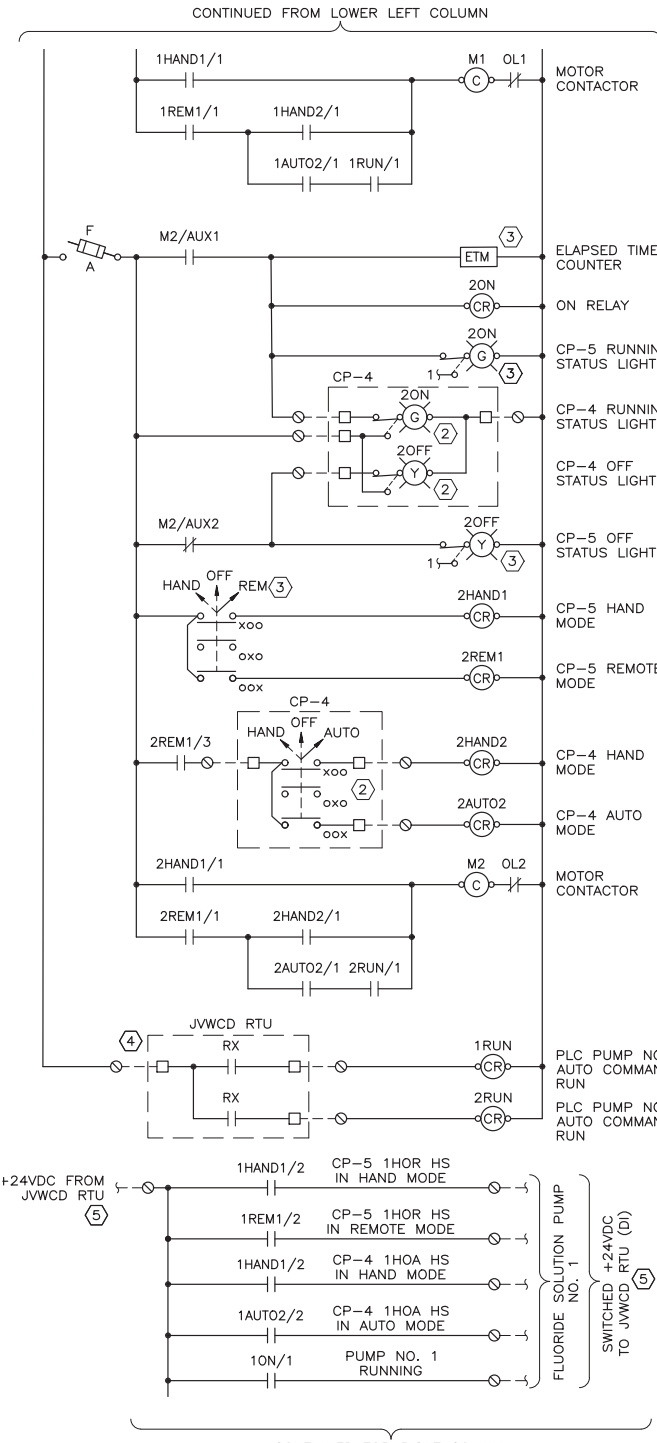
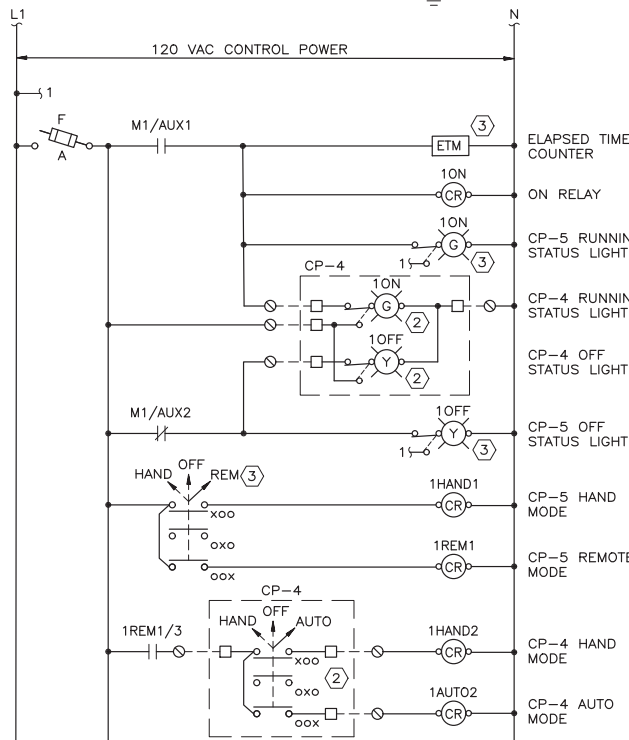
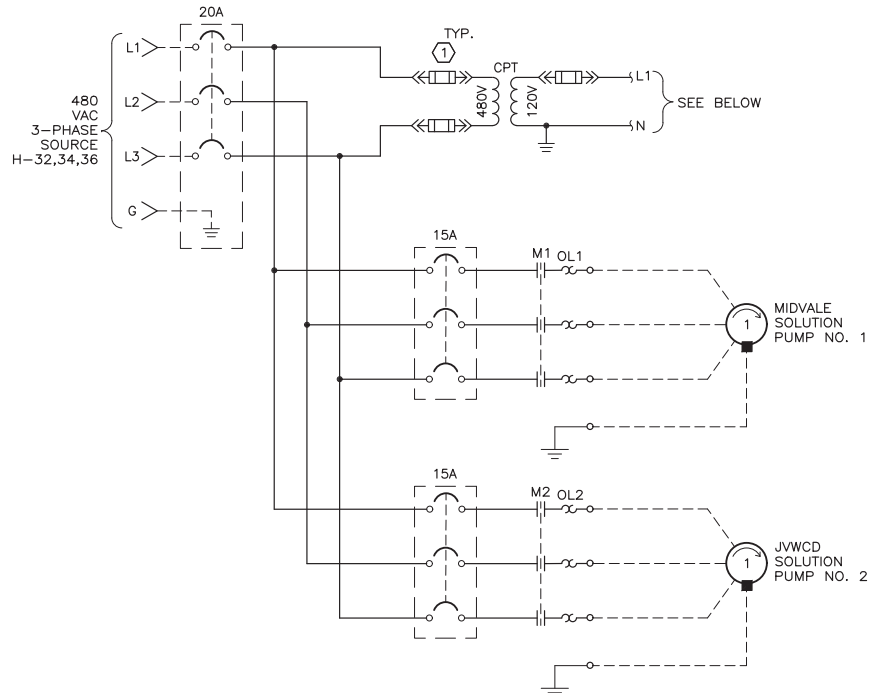


TABLE 5 (CP-1 TO CP-5 SMALL MOTOR CP)

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1"	1	#16	+24VDC	SOURCE FROM CP-1
	1	#16	+24VDC	JWVCD HS IN HAND MODE
	1	#16	+24VDC	JWVCD HS IN REMOTE MODE
	1	#16	+24VDC	JWVCD PUMP RUNNING
	1	#16	+24VDC	MIDVALE HS IN HAND MODE
	1	#16	+24VDC	MIDVALE HS IN REMOTE MODE
1"	1	#16	120 VAC	JWVCD PUMP COMMAND RUN
	1	#16	120 VAC	MIDVALE PUMP COMMAND RUN
	6	#16	-	SPARE
1"	-	-	-	SPARE

TABLE 5 (CP-4 TO SMALL MOTOR CP-5)

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#14	120 N	P1 120V NEUTRAL
	1	#14	120VAC	P1 FUSED 120 VAC
	1	#14	120VAC	P1 HOA AUTO MODE
	1	#14	120VAC	P1 HOA HAND MODE
	1	#14	120VAC	P1 HOR IN REMOTE MODE
	1	#14	120VAC	P1 NOT RUNNING
	1	#14	120VAC	P1 PUMP RUNNING
	1	#14	120 N	P2 120V NEUTRAL
	1	#14	120VAC	P2 FUSED 120 VAC
	1	#14	120VAC	P2 HOA AUTO MODE
	1	#14	120VAC	P2 HOA HAND MODE
	1	#14	120VAC	P2 HOR IN REMOTE MODE
	1	#14	120VAC	P2 NOT RUNNING
	1	#14	120VAC	P2 PUMP RUNNING
4	#14	-	SPARES	

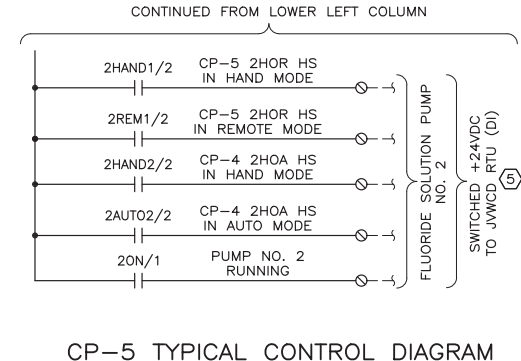
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 HPE PROJECT:22.013
 FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

- SOLUTION PUMPS AND CP-4 ARE LOCATED IN THE PUMP CONTROL ROOM. ADDITIONAL PUMP CONTROLS ARE LOCATED IN THE FLUORIDE ROOM CONTROL PANEL.
- ENCLOSURE ARRANGEMENT SHOWN ON E4.16.

SHEET KEYNOTES:

- FUSES SIZED BY EQUIPMENT SUPPLIER.
- DEVICE INSTALLED IN CP-4 ENCLOSURE DOOR, SEE E4.13.
- DEVICE INSTALLED ON ENCLOSURE DOOR AND AVAILABLE TO THE OPERATOR.
- MAIN CONTROL PANEL/RTU 24VDC RELAY CONTACT. RELAY PROVIDED AND INSTALLED IN JWVCD RTU ENCLOSURE BY THE OWNER. LABEL AND COIL CONDUCTORS FOR TERMINATION BY OWNER.
- JWVCD RTU WILL PROVIDE A 24VDC SOURCE TO A DRY CONTACT IN CP-5, WITH SWITCHED SIGNAL BACK TO THE MAIN CONTROL PANEL/RTU.



CP-5 TYPICAL CONTROL DIAGRAM

FILE NAME:
FILE DATE:



DESIGNED	KBH	3
DRAFTED	GDS	2
CHECKED	KBH	1
DATE	JUNE 2023	NO. DATE

REVISIONS		BY	APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 CP-5 TYPICAL CONTROL DIAGRAM

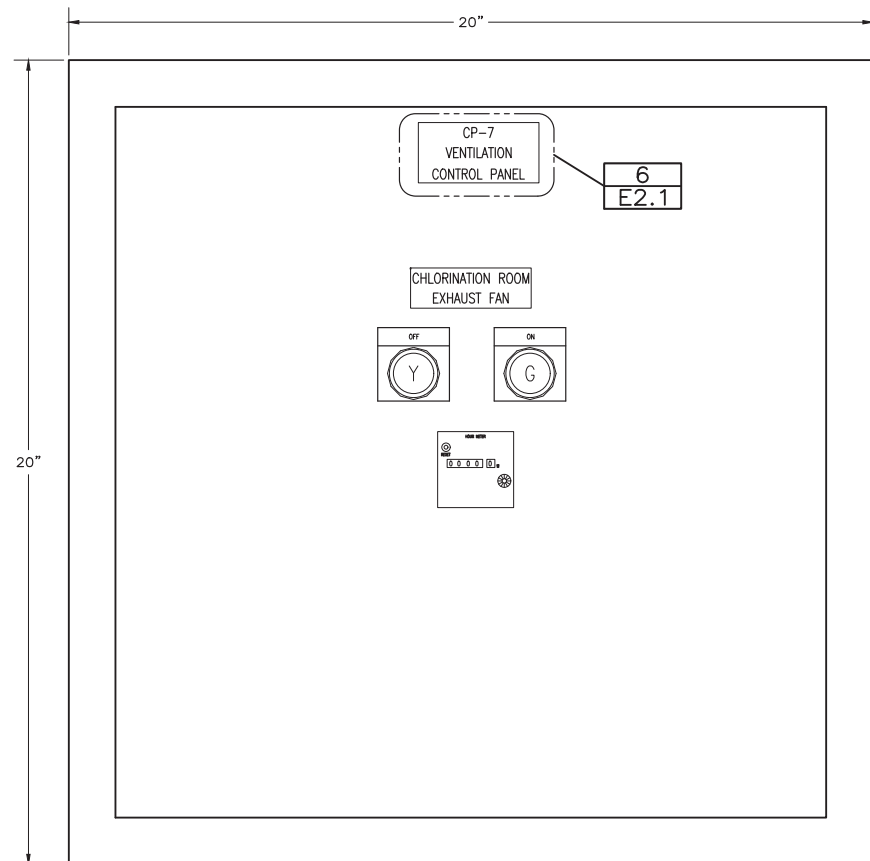
SHEET
E4.17
127.24.400

GENERAL NOTES:

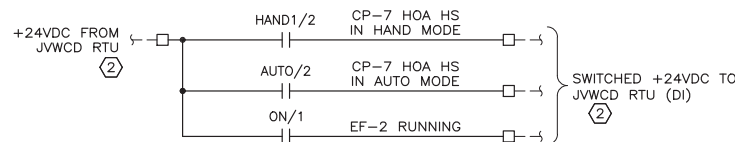
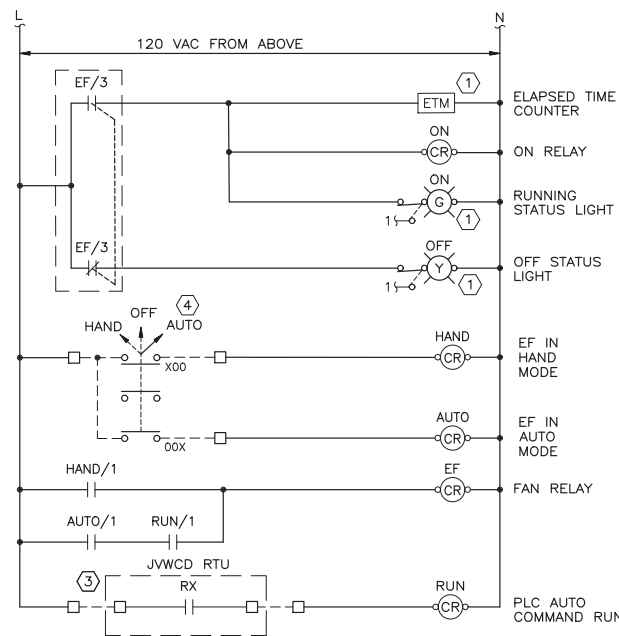
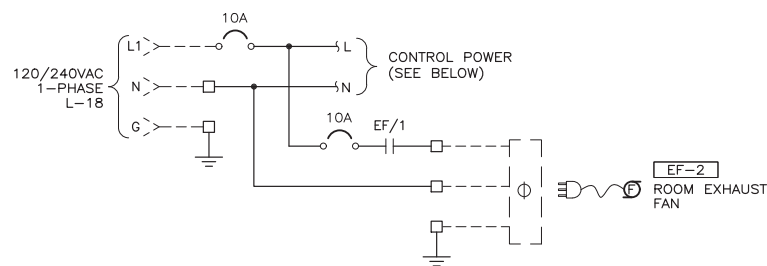
- CONTROL PANEL DIMENSIONS SHOWN ARE ANTICIPATED. CONTRACTOR SHALL MODIFY FOR THE SUPPLIED COMPONENTS.
- CONTRACTOR SHALL DETERMINE INTERIOR ARRANGEMENT. CONTRACTOR SHALL PROVIDE WIRE NUMBERS, TERMINAL NUMBERS AND OVERCURRENT DEVICE NUMBERS.

SHEET KEYNOTES:

- DEVICE INSTALLED ON ENCLOSURE DOOR AND AVAILABLE TO THE OPERATOR.
- JVWCD RTU WILL PROVIDE A 24VDC SOURCE TO A DRY CONTACT IN CP-7, WITH SWITCHED SIGNAL BACK TO THE RTU.
- EXHAUST FAN CONTROLLED BY JVWCD MAIN CONTROL PANEL/RTU.
- SWITCH INSTALLED IN SHOWER AREA.



CP-7 VENTILATION CONTROL PANEL 1
 6" = 1'-0" E4.8



CP-7 TYPICAL CONTROL DIAGRAM

FILE NAME:
 FILE DATE:



PROJECT ENGINEER

DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS		BY	APVD.

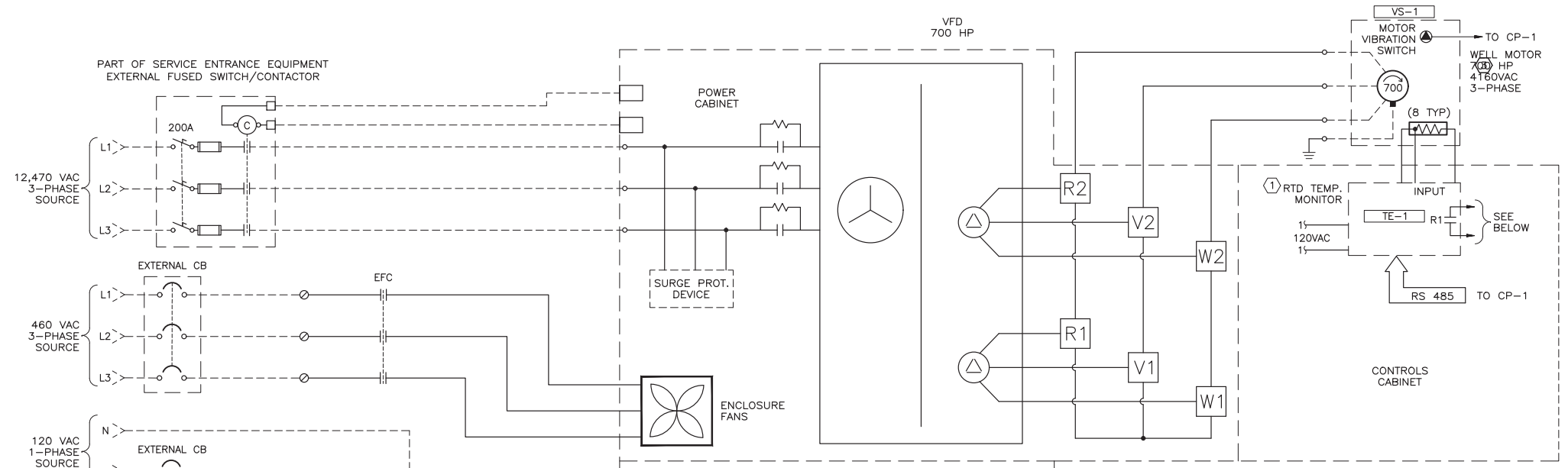
SCALE
 AS SHOWN



JORDAN VALLEY WATER
 CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 CP-7 VENTILATION CONTROL PANEL

SHEET
 E4.18
 127.24.400



- GENERAL NOTES:**
- CONTROL WIRING DIAGRAM SHOWN IS BASED ON A TMIEC DRIVE. CONTROL DIAGRAM SHALL BE MODIFIED AS REQUIRED FOR THE SELECTED VFD SUPPLIED.
 - NOT ALL COMPONENTS IN VFD ARE SHOWN.
 - FUSES SIZED BY VFD SUPPLIER.

- SHEET KEYNOTES:**
- PROVIDE DEVICE ON VFD ENCLOSURE DOOR.
 - PROVIDE SIGNAL CONVERTER AS REQUIRED.
 - REFER TO THE INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAM FOR WIRE AND CONDUIT REQUIREMENTS.
 - PROVIDE A DRY RELAY CONTACT FOR ALL OWNER REMOTE MONITORING POINTS.

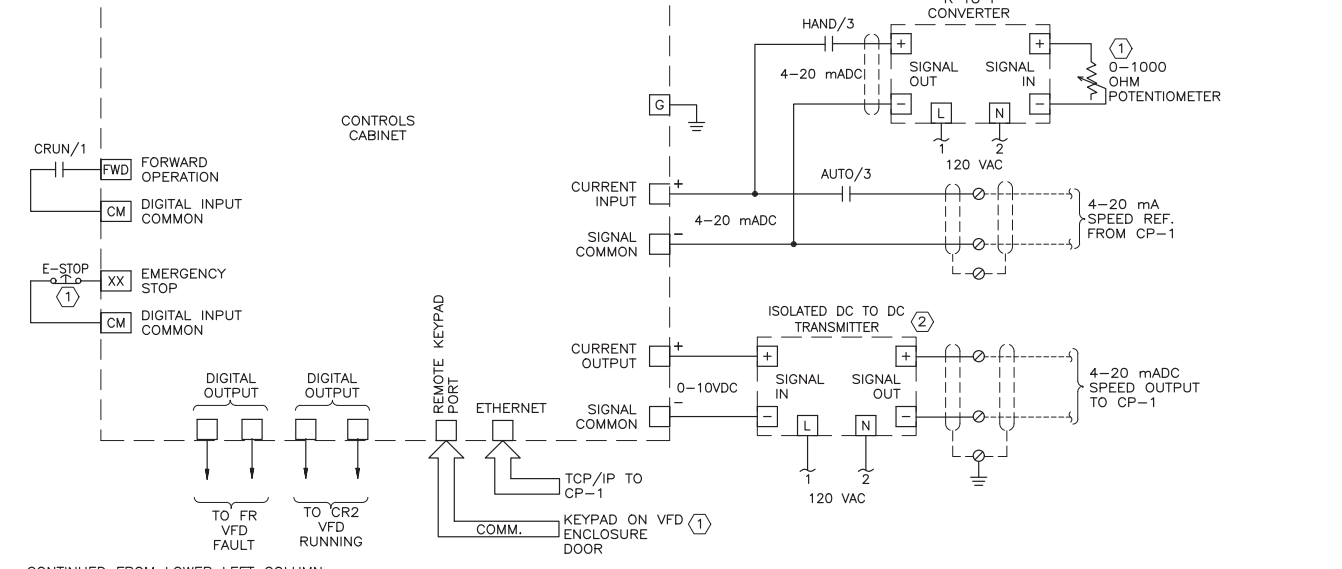
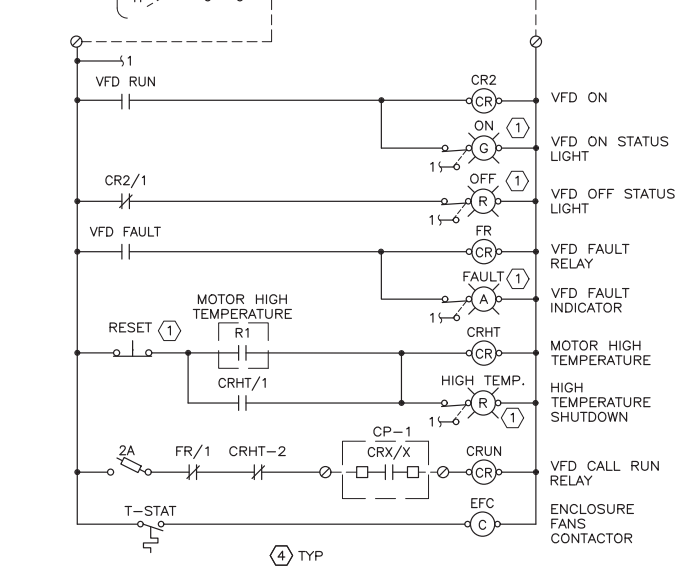
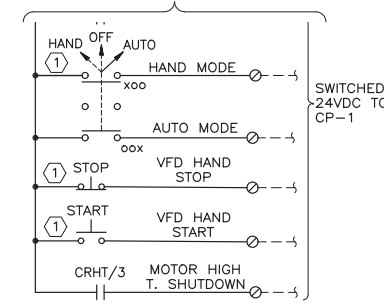
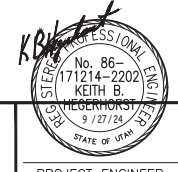


TABLE VFD

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
1"	1	#14	+24VDC	+24VDC
	1	#14	+24VDC	MOTOR HIGH T. SHUTDOWN
	1	#14	+24VDC	VFD FAULT
	1	#14	+24VDC	VFD HAND START
	1	#14	+24VDC	VFD HOA IN AUTO
	1	#14	+24VDC	VFD HOA IN HAND
	1	#14	+24VDC	VFD RUNNING
	1	#14	+24VDC	VFD TRANSFORMER HIGH TEMP.
	1	#14	120 VAC	120V RETURN
	1	#14	120 VAC	VFD CALL RUN
	2	#14		SPARE
	3/4"	1	#18TSP	
1		#18TSP		VFD COMMAND SPEED
3/4"	1	RS485		BELDEN 9842 (TEMP. MONITOR)
	1	CAT6U		ETHERNET
3/4"	-	-	-	PULL STRING



TYPICAL VFD CONTROL DIAGRAM



DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
PROJECT ENGINEER	DATE	JUNE 2023	NO.	DATE	

SCALE: NONE

JORDAN VALLEY WATER CONSERVANCY DISTRICT

1000 E WELL RTU I/O LIST
ANALOG INPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
AI	CONDUCTIVITY, WELL WATER	ANALYZER, CONDUCTIVITY
AI	FLOW, FLUORIDATION SYSTEM	FLOW METER
AI	FLOW, WELL	FLOW METER
AI	LEVEL (RADAR), FLUORIDE DAY TANK, JVVCD	TRANSMITTER, LEVEL, RADAR
AI	LEVEL (RADAR), FLUORIDE DAY TANK, MIDVALE	TRANSMITTER, LEVEL, RADAR
AI	LEVEL (RADAR), FLUORIDE STRG TANK	TRANSMITTER, LEVEL, RADAR
AI	LEVEL (WEIGHT), FLUORIDE DAY TANK, JVVCD	TRANSMITTER, TANK WEIGHT SCALE
AI	LEVEL (WEIGHT), FLUORIDE DAY TANK, MIDVALE	TRANSMITTER, TANK WEIGHT SCALE
AI	LEVEL, SURGE TANK WATER	TRANSMITTER, DIFFERENTIAL PRESSURE
AI	LEVEL, WELL WATER	TRANSMITTER, LEVEL, SUBMERSIBLE
AI	pH, WELL WATER	ANALYZER, pH
AI	POSITION, SYSTEM VALVE	POSITION, VALVE ACTUATOR
AI	POSITION, WASTE VALVE	POSITION, VALVE ACTUATOR
AI	PRESSURE, FLUORIDATION SYSTEM	TRANSMITTER, PRESSURE
AI	PRESSURE, SYSTEM DISCHARGE	TRANSMITTER, PRESSURE
AI	RESIDUAL CHLORINE, WELL DISCHARGE	ANALYZER, RESIDUAL CHLORINE
AI	SPEED, PUMP RUNNING	VFD, WELL PUMP
AI	TEMPERATURE, CHLORINE ROOM	TRANSMITTER, TEMPERATURE
AI	TEMPERATURE, FLUORIDATION ROOM	TRANSMITTER, TEMPERATURE
AI	TEMPERATURE, PUMP CONTROL ROOM	TRANSMITTER, TEMPERATURE
AI	TEMPERATURE, SHOWER AREA ROOM	TRANSMITTER, TEMPERATURE
AI	TURBIDITY, WELL WATER	ANALYZER, TURBIDITY

MODBUS SIGNALS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
RS485	MOTOR WINDING/BEARING TEMPERATURES	MOTOR RTD TEMPERATURE MONITOR
RS485	WELL FLOW	FLOW METER
RS485	MIDVALE FLUORIDE FLOW	FLOW METER
RS485	JVVCD FLUORIDE FLOW	FLOW METER
RS485	CHLORINE FLOW	FLOW METER

ANALOG OUTPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
AO	DOSE RATE COMMAND, CHEMICAL, CHLORINE	DOSING PUMP, CHLORINE
AO	DOSE RATE COMMAND, CHEMICAL, FLUORIDE (JVVCD)	DOSING PUMP, CHLORINE
AO	DOSE RATE COMMAND, CHEMICAL, FLUORIDE (MIDVALE)	DOSING PUMP, CHLORINE
AO	SPEED COMMAND, WELL PUMP VFD	MOTOR CONTROLLER
AO	POSITION COMMAND, WASTE VALVE	VALVE ACTUATOR
AO	POSITION COMMAND, SYSTEM VALVE	VALVE ACTUATOR

DISCRETE INPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
DI	ALARM, CHLORINATION ROOM FLOOR HIGH WATER	SWITCH, LEVEL
DI	ALARM, FLUORIDATE LEAK ALARM	SWITCH, ANALYSIS
DI	ALARM, FLUORIDATION ROOM FLOOR HIGH WATER	SWITCH, LEVEL
DI	ALARM, PUMP ROOM FLOOR HIGH WATER	SWITCH, LEVEL
DI	ALARM, SHOWER AREA FLOOR HIGH WATER	SWITCH, LEVEL
DI	ALARM, SURGE TANK VAULT FLOOR HIGH WATER	SWITCH, LEVEL
DI	ALARM, WELL VFD TROUBLE	MOTOR CONTROLLER
DI	FLOW, EYE WASH SHOWER	SWITCH, FLOW
DI	MODE, CHLORINATION ROOM EF HOA IN AUTO	MOTOR CONTROLLER
DI	MODE, CHLORINATION ROOM EF HOA IN HAND	MOTOR CONTROLLER
DI	MODE, FLUORIDATION ROOM EF HOA IN AUTO	MOTOR CONTROLLER
DI	MODE, FLUORIDATION ROOM EF HOA IN HAND	MOTOR CONTROLLER
DI	MODE, WELL VFD HOA IN AUTO	MOTOR CONTROLLER
DI	MODE, WELL VFD HOA IN HAND	MOTOR CONTROLLER
DI	POSITION, CHLORINATION ROOM DOOR A OPEN	SWITCH, POSITION
DI	POSITION, CHLORINATION ROOM DOOR B OPEN	SWITCH, POSITION
DI	POSITION, FLUORIDATION ROOM DOOR A OPEN	SWITCH, POSITION
DI	POSITION, FLUORIDATION ROOM DOOR B OPEN	SWITCH, POSITION
DI	POSITION, PUMP ROOM VEST. DOOR A OPEN	SWITCH, POSITION
DI	POSITION, PUMP ROOM VEST. DOOR B OPEN	SWITCH, POSITION
DI	POSITION, SHOWER AREA DOOR OPEN	SWITCH, POSITION
DI	POSITION, SURGE TANK HATCH OPEN	SWITCH, POSITION
DI	PRESSURE, WELL DISCHARGE HIGH	SWITCH, PRESSURE
DI	STATUS, JVVCD FLUORIDATION SOLUTION PUMP	MOTOR STARTER
DI	STATUS, MIDVALE FLUORIDATION SOLUTION PUMP	MOTOR STARTER
DI	STATUS, CHLORINATION ROOM EXHAUST FAN ON	MOTOR STARTER
DI	STATUS, FLUORIDATION ROOM EXHAUST FAN ON	MOTOR STARTER
DI	STATUS, SURGE TANK VAULT EF ON	MOTOR STARTER
DI	STATUS, WELL VFD RUNNING	MOTOR CONTROLLER
DI	TEMPERATURE, WELL MOTOR HIGH	RELAY, RTD TEMPERATURE
DI	TEMPERATURE, WELL VFD TRANSFORMER HIGH	MOTOR CONTROLLER
DI	VIBRATION, WELL MOTOR HIGH	SWITCH, VIBRATION
DI	POSITION, VFD START SWITCH CLOSED	SWITCH, START
DI	POSITION, VFD STOP SWITCH OPEN	SWITCH, STOP

DISCRETE OUTPUTS

IO TYPE	DESCRIPTION	DEVICE OR INSTRUMENT
DO	CALL FOR EXHAUST, CHLORINATION ROOM	MOTOR CONTROLLER
DO	CALL FOR EXHAUST, FLUORIDATION ROOM	MOTOR CONTROLLER
DO	CALL FOR HEAT, CHLORINATION ROOM	UNIT HEATER
DO	CALL FOR HEAT, FLUORIDATION ROOM	UNIT HEATER
DO	CALL FOR HEAT, PUMP CONTROL ROOM	UNIT HEATER
DO	CALL FOR HEAT, SHOWER AREA	UNIT HEATER
DO	COMMAND RUN, CHLORINE SOLUTION PUMP	MOTOR CONTROLLER
DO	COMMAND RUN, CHLORINATION ROOM EXHAUST FAN	MOTOR CONTROLLER
DO	COMMAND RUN, FLUORIDATION ROOM EXHAUST FAN	MOTOR CONTROLLER
DO	COMMAND RUN, FLUORIDE SOLUTION PUMP (JVVCD)	MOTOR CONTROLLER
DO	COMMAND RUN, FLUORIDE SOLUTION PUMP (MIDVALE)	MOTOR CONTROLLER
DO	COMMAND RUN, SURGE TANK VENT FAN	EE-1
DO	COMMAND RUN, WELL VFD	MOTOR CONTROLLER
DO	PUMP INHIBIT, CHLORINE DOSING	MOTOR CONTROLLER
DO	SV COMMAND OPEN, SURGE TANK AIR RELEASE	VALVE, SOLENOID
DO	SV COMMAND OPEN, SURGE TANK AIR SUPPLY	VALVE, SOLENOID
DO	SV COMMAND OPEN, TURBIDITY SUPPLY	VALVE, SOLENOID
DO	SV COMMAND OPEN, LUBE OIL	VALVE, SOLENOID

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708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
HPE PROJECT:22.013 ©2021
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. THIS INPUT_OUTPUT LIST DOES NOT INCLUDE ANY OF THE EXISTING RTU INPUT/OUTPUTS.

SHEET KEYNOTES:

1. NOT USED.

FILE NAME:
FILE DATE:



DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
DATE	JUNE 2023	NO.	DATE		

REVISIONS

SCALE
NONE



JORDAN VALLEY WATER
CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
ELECTRICAL
RTU PLC INPUT AND OUTPUT LIST

SHEET

E4.20

127.24.400

SURGE TANK VAULT ITEM LIST (E5.1)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
16	EF-3	EXHAUST FAN	EE-1	SURGE VAULT
26	SP-2	SUMP PUMP	EE-1	SURGE VAULT
43	EE-1	ELECTRICAL ENCLOSURE	L-10,12	SURGE VAULT
73	DPT-1	DIFFERENTIAL PRESSURE TRANSMITTER	CP-1	SURGE VAULT
94	LSH-5	FLOOR WATER LEVEL SWITCH	CP-1	SURGE VAULT
109	ZS-8	HATCH POSITION SWITCH	CP-1	SURGE VAULT
164	SV-3	SOLENOID VALVE, SURGE TANK AIR FILL	EE-1	SURGE VAULT
165	SV-4	SOLENOID VALVE, SURGE TANK AIR VENT	EE-1	SURGE VAULT

GENERAL NOTES:

- ALL WALL MOUNTED EQUIPMENT INSTALLED ON INSULATED WALLS WITHIN 4'-0" OF THE CEILING SHALL BE ANCHORED TO THE CONCRETE WALL. REFER TO TYPICAL DETAIL 2/E9.2.
- REFER TO ONE-LINE DIAGRAMS ON E2.1 FOR VAULT WIRE AND CONDUIT REQUIREMENTS.
- REFER TO SITE PLANS FOR GROUNDING REQUIREMENTS.
- FIXTURE SCHEDULE ON E1.3.

SHEET KEYNOTES:

- INSTALL WALL LIGHT SWITCH AND EXHAUST FAN HOA SWITCH IN WEATHERPROOF ENCLOSURES. LOCATE NEAR THE ACCESS HATCH OPENING, SUCH THAT THE SWITCHES CAN BE OPERATED WITHOUT ENTERING THE VAULT.
- INSTALL FLOW SWITCH IN A 1/2" PVC THREADED PVC TEE. ORIENT PARALLEL TO WALL.
- START/STOP FLOAT SWITCH SUPPLIED WITH SUMP PUMP. INSTALL AS REQUIRED.
- INSTALL EE-1 ON THE VAULT WALL BELOW THE LIGHT FIXTURE.
- PROVIDE A GFCI RECEPTACLE FOR THE SUMP PUMP.

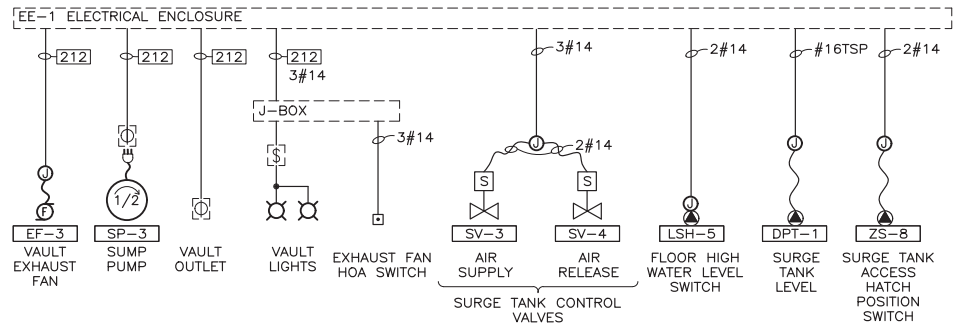
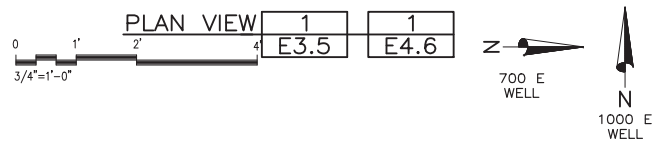
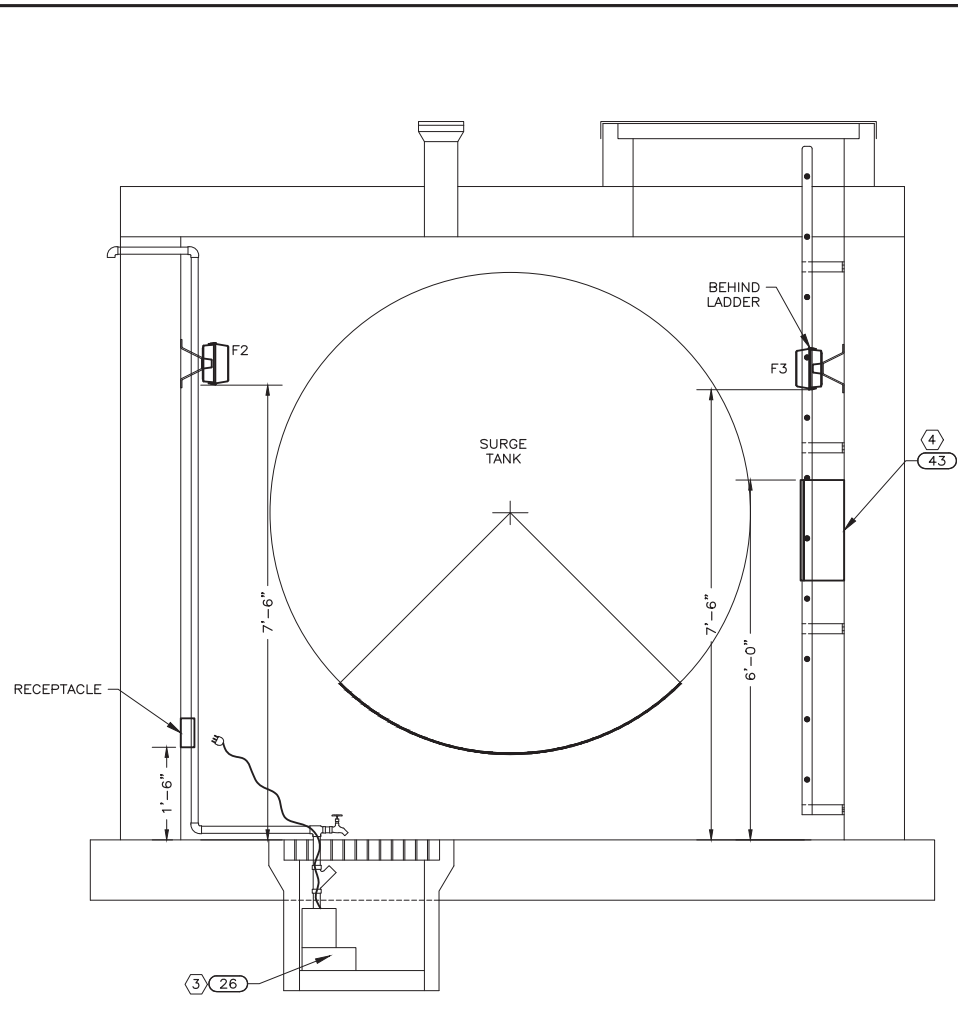
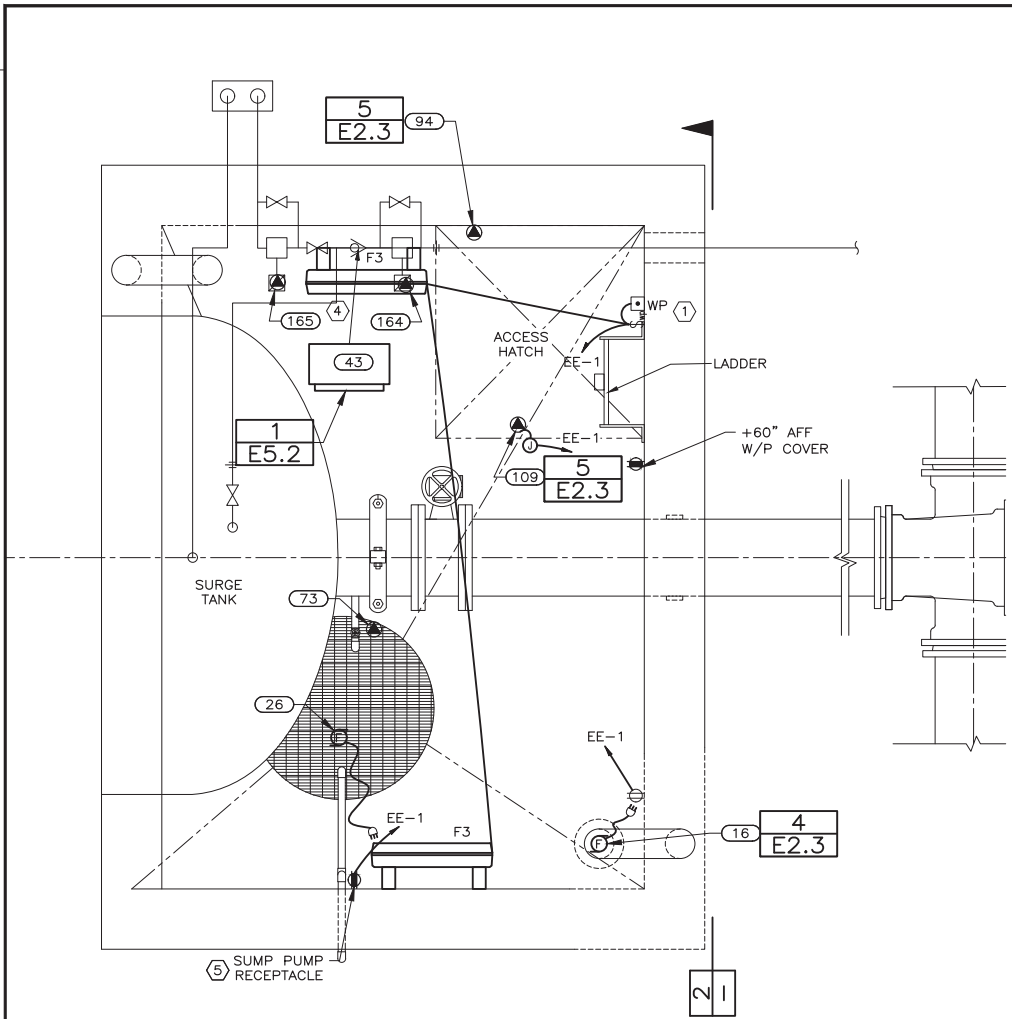


TABLE SV (CP-1)

CONDUIT SIZE	CONDUCTOR		
	QTY	SIZE	VOLTAGE
3/4"	1	#14	+24VDC
	1	#14	+24VDC
	1	#14	+24VDC
	1	#14	+24VDC
	1	#14	120 VAC
	1	#14	120 VAC
3/4"	1	#16TSP	#16TSP

SURGE VAULT ONE-LINE DIAGRAM

PROFESSIONAL ENGINEER
 No. 86-171214-2202
 KEITH B. HEGERHORST
 9/27/24
 STATE OF UTAH

DESIGNED	NO.	DATE	REVISIONS
KBH	3		
GDS	2		
KBH	1		
DATE	JUNE 2023	NO.	DATE

SCALE: AS SHOWN

JORDAN VALLEY WATER CONSERVANCY DISTRICT

WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 SURGE VAULT

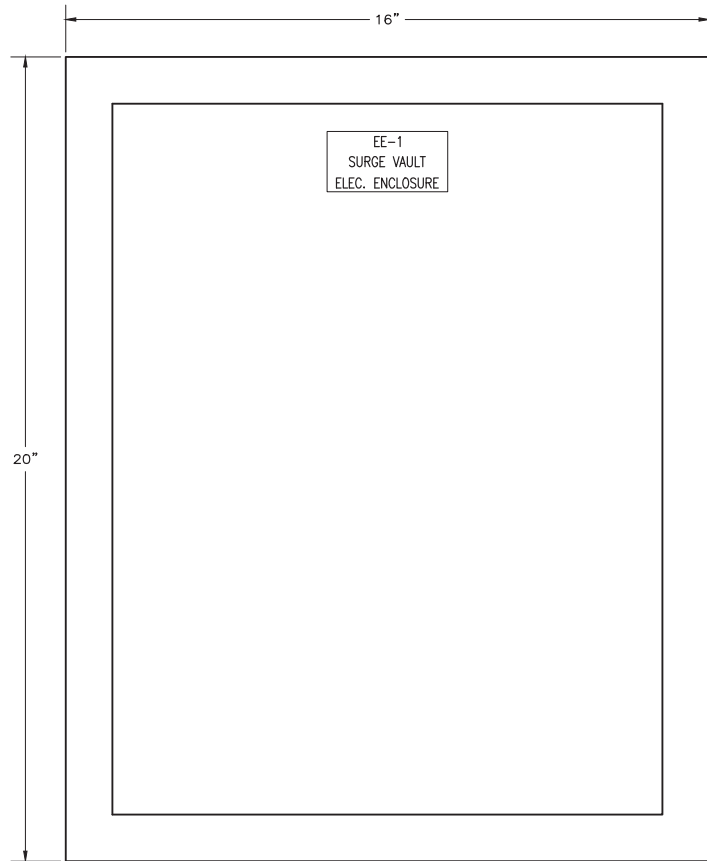
SHEET E5.1
 127.24.400

GENERAL NOTES:

- ENCLOSURE DIMENSIONS SHOWN ARE APPROXIMATE. FINAL DIMENSIONS DETERMINED BY CONTRACTOR BASED ON THE REQUIRED COMPONENTS.
- INTERNAL COMPONENT ARRANGEMENT DETERMINED BY CONTRACTOR.
- CONTROL DIAGRAM IS TYPICAL AND SHALL BE MODIFIED BY THE CONTRACTOR AS REQUIRED FOR THE SELECTED COMPONENTS.

SHEET KEYNOTES:

- SWITCH INSTALLED NEAR ACCESS HATCH AVAILABLE TO OPERATOR WITHOUT ENTERING THE VAULT.
- SET TIME SWITCH TO OPERATE FAN FOR 15 MINUTES EVERY 12 HOURS.
- 24VDC RELAY N CP-1 SWITCHING 120 VAC FROM EE-1. RELAY PROVIDED IN CP-1 BY OWNER.



CP-XX-04 VAULT ELECTRICAL ENCLOSURE 1
 6" = 1'-0" E5.1

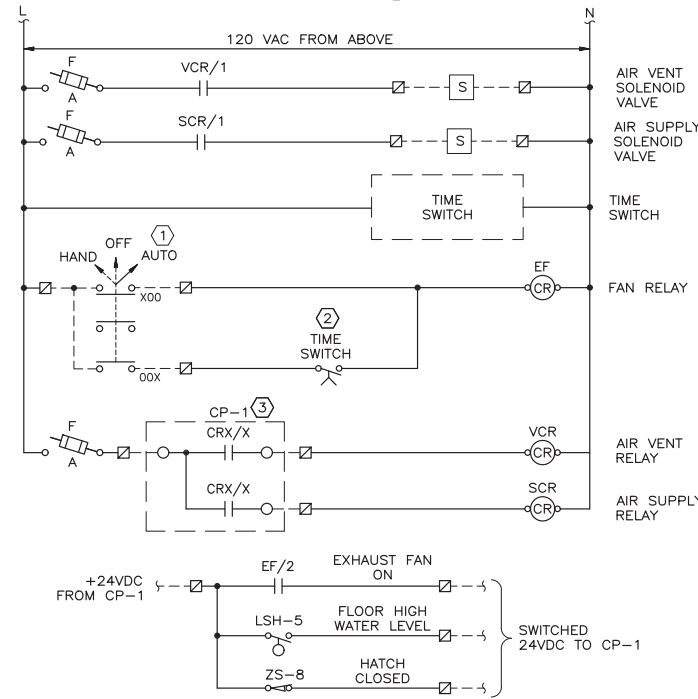
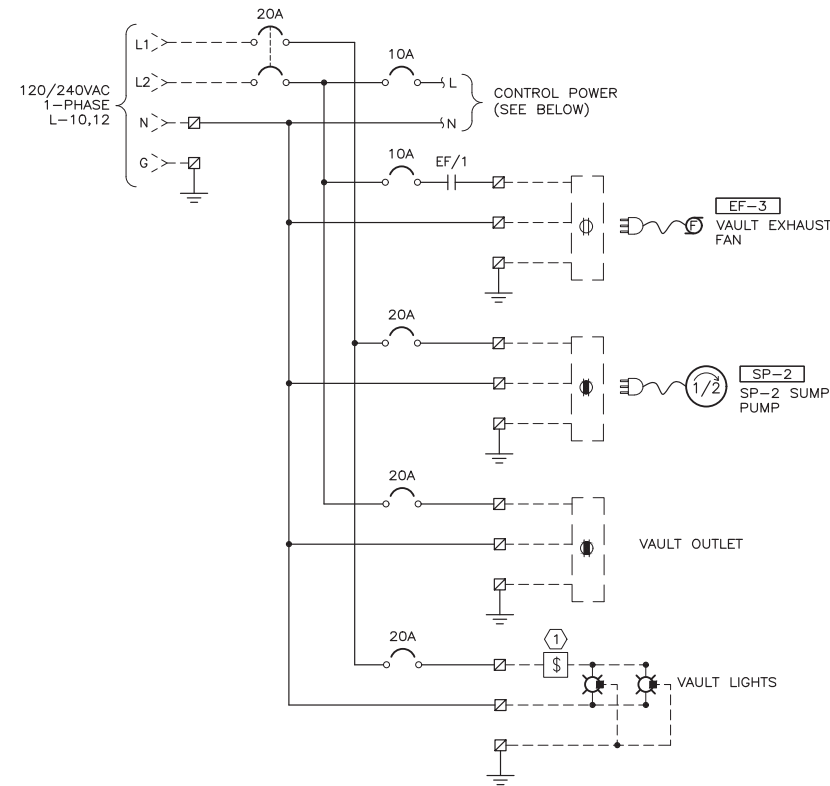


TABLE SV (CP-1 TO SURGE VAULT)

CONDUIT SIZE	QTY	CONDUCTOR SIZE	VOLTAGE	SIGNAL DESCRIPTION
3/4"	1	#14	+24VDC	SOURCE FROM CP-1
	1	#14	+24VDC	EF-3 EXHAUST FAN RUN
	1	#14	+24VDC	LSH-5 VAULT FLOOD SWITCH
	1	#14	+24VDC	ZS-8 ACCESS HATCH POSITION SW.
	1	#14	120 VAC	SV-4 AIR RELEASE SOL. VALVE OPEN
	1	#14	120 VAC	SV-3 AIR SUPPLY SOL. VALVE OPEN
3/4"	1	#14	120 VAC	120 VAC COMMON
	1	#16TSP	#16TSP	DPT-1 DIFFERENTIAL PRESSURE TRANS.

FILE NAME: 7/04
 FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS		BY	APVD.

SCALE AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL
 EE-1 SURGE VAULT ELECT. ENCLOSURE

GENERAL NOTES:

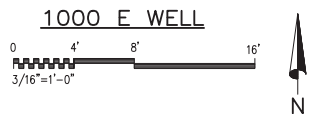
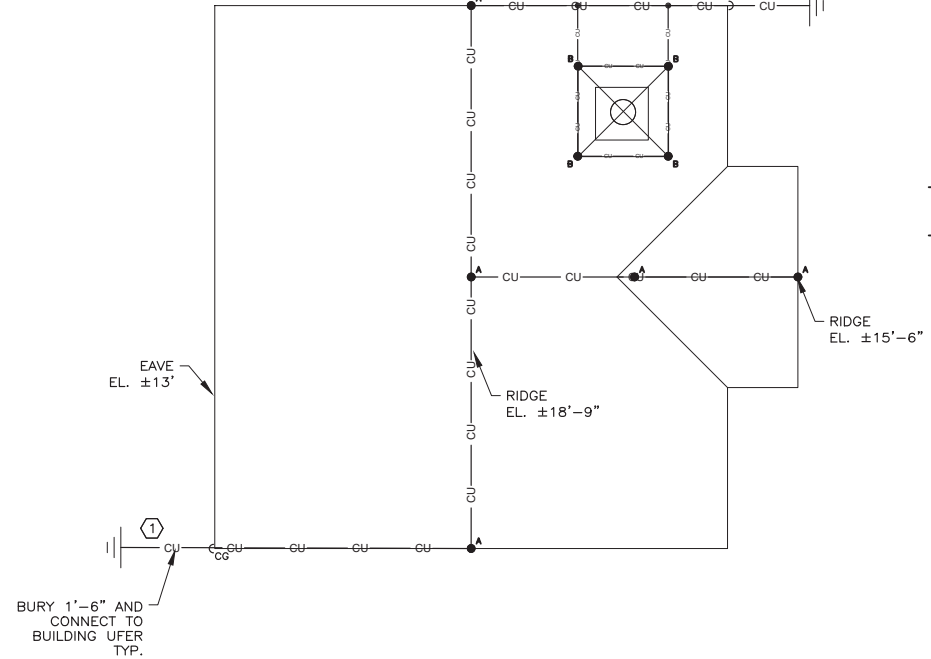
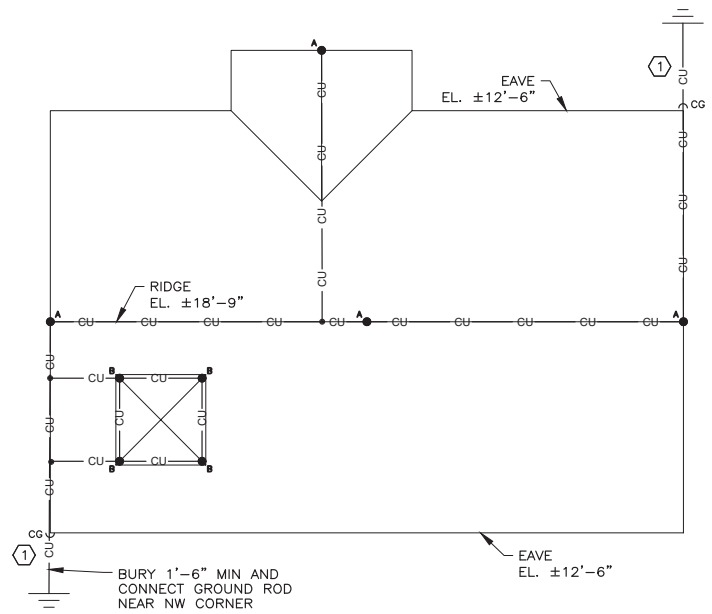
1. REFER TO ELECTRICAL SITE PLANS AND BUILDING GROUNDING PLANS FOR ADDITIONAL GROUNDING REQUIREMENTS.
2. SYSTEM INSTALLATION DETAILS SHOWN ON E5.5.

SHEET KEYNOTES:

1. INSTALL LIGHTNING DOWN CONDUCTORS IN PVC CONDUIT IN BUILDING WALLS. NO SURFACE MOUNTED CONDUCTORS EITHER INSIDE OR OUTSIDE THE BUILDING SHALL BE PERMITTED.

LEGEND

- AIR TERMINAL
- MECHANICAL CONNECTION
- ▲ MISC. BONDING
- ⊞ THRU-ROOF CONNECTOR
- CG PVC CABLE GUARD
- CLASS I ALUMINUM MAIN CONDUCTOR
- CLASS I COPPER MAIN CONDUCTOR
- ⊞ COPPER CLAD GROUND ROD WITH EXOTHERMIC WELD CONNECTION



FILE NAME:
FILE DATE:



DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS		BY	APVD.

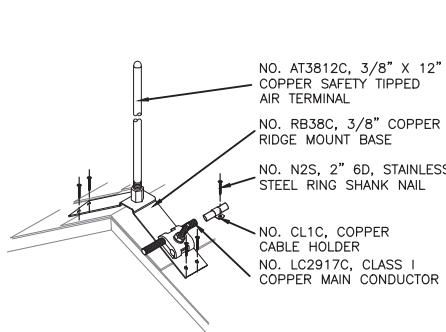
SCALE
AS SHOWN



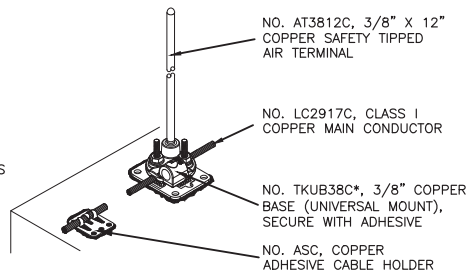
WELL PUMP STATION CONSTRUCTION
ELECTRICAL
ROOF LIGHTNING PROTECTION PLANS

SHEET
E5.3

127.24.400



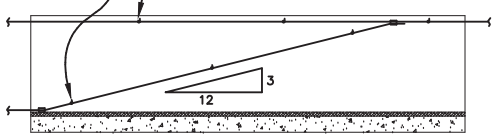
A AIR TERMINAL
— NTS



B AIR TERMINAL
— NTS

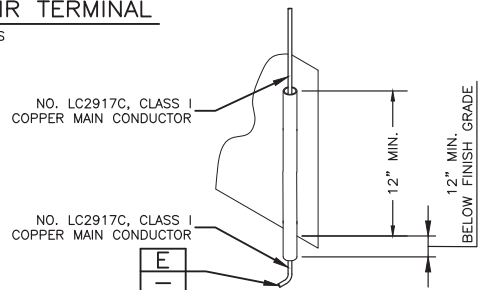
FASTEN CABLE 3'-0" O.C. MAX. WITH APPROPRIATE CABLE FASTENER.

NOTE: CONDUCTOR SHALL INTERCONNECT ALL AIR TERMINALS AND SHALL FORM A TWO-WAY PATH FROM EACH AIR TERMINAL HORIZONTALLY, DOWNWARD OR RISING AT A RATE NOT EXCEEDING 3" PER FOOT (76.2mm) TO CONNECTIONS WITH GROUND TERMINALS



C 4 TO 1 CONDUCTOR DETAIL
— NTS

* This product may be subject to patent rights of VFC. Consult your patent attorney about your rights and responsibilities regarding patented products.

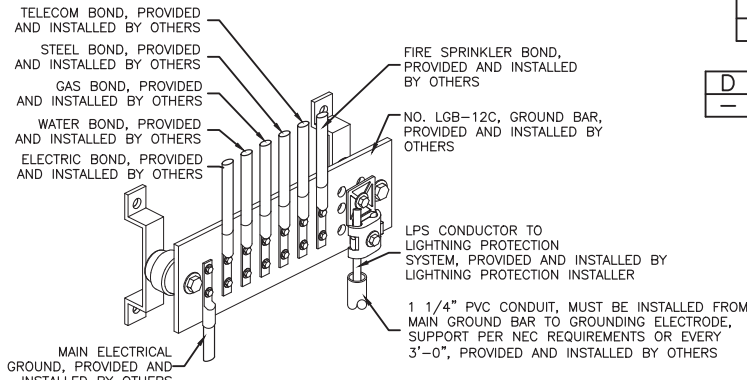


D CONDUIT DETAIL
— NTS

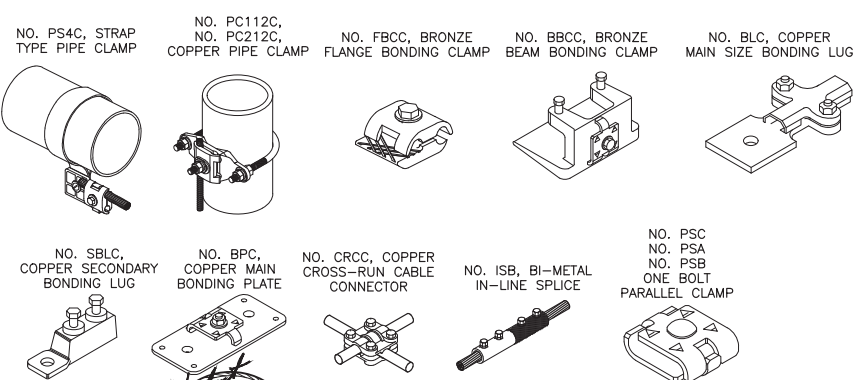
NOTE: NO BEND OF A CONDUCTOR SHALL FORM AN INCLUDED ANGLE OF LESS THAN 90 DEGREES, NOR SHALL IT HAVE A RADIUS OF BEND LESS THAN 203mm (8").



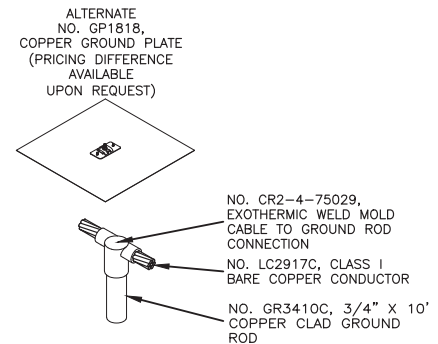
E BEND RADIUS DETAIL
— NTS



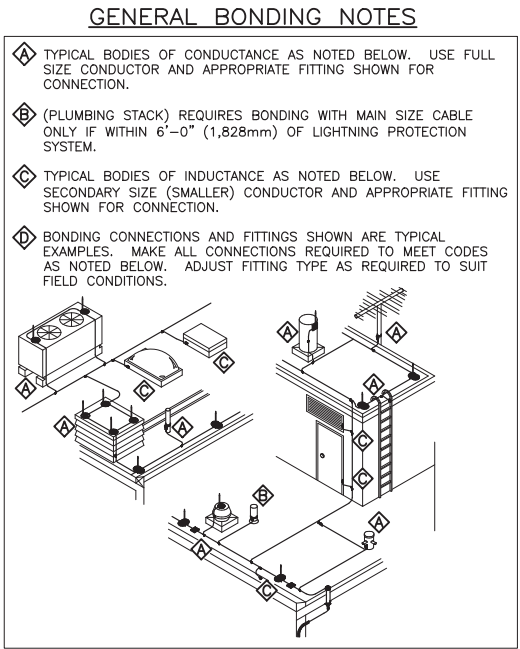
F COMMON BONDING GROUND BUS
— NTS



G MISCELLANEOUS
— NTS

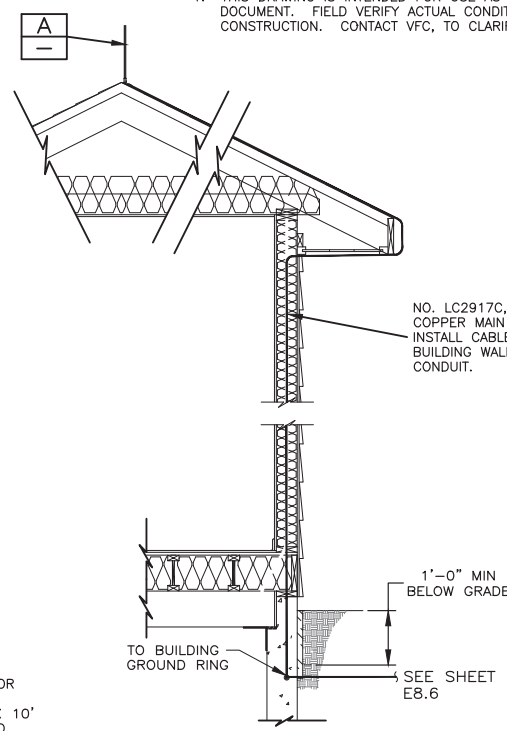


H FURSEWELD EXOTHERMIC WELD MOLD - CR2
— NTS



I GENERAL BONDING NOTES

1. THIS DRAWING IS INTENDED FOR USE AS A CONSTRUCTION DOCUMENT. FIELD VERIFY ACTUAL CONDITIONS PRIOR TO CONSTRUCTION. CONTACT VFC, TO CLARIFY ANY DISCREPANCIES.



J TYPICAL DOWNLEAD DETAIL
— NTS

- GENERAL INSTALLATION NOTES**
- LOCATE AIR TERMINALS AS SHOWN. TAKE CARE TO ENSURE THAT ALL POINTS ARE WITHIN 2'-0" (609mm) OF OUTSIDE BUILDING EDGE, OUTSIDE CORNERS, RIDGE ENDS, AND THAT MAX SPACING DOES NOT EXCEED 20'-0" (6.096mm), AND THAT MIN PROJECTION ABOVE OBJECT PROTECTED IS 10" (254mm); POINTS PROJECTING 24" (609mm) MAY BE SPACED @ 25'-0" (7.520mm) MAX.
 - MAINTAIN HORIZONTAL OR DOWNWARD COURSING OF MAIN CONDUCTOR. INSURE THAT ALL BENDS HAVE AT LEAST AN 8" (203mm) RADIUS AND DO NOT EXCEED 90 DEGREES.
 - ATTACH ALL EXPOSED ROOF, DOWN LEAD AND BONDING CABLES AT 3'-0" (914mm) ON CENTER MAX. VERIFY COMPATIBILITY OF ADHESIVE ON MEMBRANE ROOF APPLICATION PRIOR TO INSTALLATION.
 - GROUND ROD ELECTRODES SHALL BE INSTALLED AS SHOWN, BUT IN NO INSTANCE SHALL THEY BE LESS THAN 1'-0" (304mm) BELOW GRADE AND 2'-0" (609mm) FROM FOUNDATION WALL. DRIVEN RODS SHALL PENETRATE THE EARTH AT LEAST 10'-0" (3.048mm).
 - BOND TO WATER SERVICE AND OTHER PIPING SYSTEMS AS SHOWN AND AS REQUIRED BY CODE.
 - MAIN SIZE LIGHTNING CONDUCTOR BONDED TO MAIN GROUND BUS. FIELD VERIFY LOCATION 1 1/4" CONDUIT FOR ACCESS, INSTALLED BY OTHERS. INTERCONNECT LIGHTNING PROTECTION GROUND TO TELEPHONE AND OTHER BUILDING GROUND SYSTEMS LOCATION FIELD DETERMINED OR AS REQUIRED BY CODE.
 - LB'S AND SIMILAR CONDUIT BODIES MAY NOT BE USED IN THE INSTALLATION OF DOWNLEAD CONDUITS, AS THEY DO NOT ADHERE TO THE REQUIRED 8" (203mm) MINIMUM BEND RADIUS.
 - SYSTEM SHALL BE INSTALLED AS SHOWN TO INSURE PROPER CODE COMPLIANCE AND SYSTEM CERTIFICATION. ANY MAJOR VARIANCE SHALL BE RESUBMITTED FOR APPROVAL.
 - ALL MATERIALS TO BE UNDERWRITER'S LABORATORIES APPROVED WITH APPROPRIATE UL96 MARKINGS.
 - FINAL SYSTEM INSPECTION AND QUALITY CONTROL
 - THE CONTRACTOR SHALL FURNISH AN LPI-IP CERTIFICATE OR A UL CERTIFICATE UPON COMPLETION OF THE INSTALLATION.
 - LPI CERTIFICATION IF REQUIRED, REQUIRES SIGNATURE BY A REPRESENTATIVE OF THE OWNER AT MULTIPLE STAGES OF INSTALLATION & BY THEIR THIRD PARTY FIELD STAFF. UL CERTIFICATION IF REQUIRED, REQUIRES INSPECTION BY THEIR THIRD-PARTY FIELD STAFF AFTER COMPLETION OF THE INSTALLATION.
 - AS-BUILT DRAWINGS SHALL BE COMPLETED AND STAMPED BY AN LPI CERTIFIED MASTER DESIGNER - INSTALLER OF LIGHTNING PROTECTION SYSTEMS.
 - FINAL INSPECTION REPORT - A FINAL INSPECTION AND INSPECTION REPORT SHALL BE COMPLETED BASED ON ANSI/TIA/EIA 607, NEC, NFPA 780, AND UL96A INDUSTRY STANDARDS AS APPLICABLE. THE SCOPE OF THE INSPECTION AND REPORT SHALL INCLUDE:
 - TEST AND EVALUATION THE OF GROUNDING SYSTEM. RECORD FINAL SYSTEMS TO GROUND RESISTANCE LEVEL.
 - EVALUATION AND TESTING OF THE INTERNAL BONDING AND GROUNDING SYSTEMS.
 - EVALUATION AND TESTING OF EQUIPMENT GROUNDING.
 - EVALUATION OF AC SURGE SUPPRESSION INSTALLATION.
 - EVALUATION OF TELCO SURGE SUPPRESSION INSTALLATION.
 - COPY OF THE LPI-IP OR UL LIGHTNING PROTECTION CERTIFICATION.
 - FINAL AS-BUILT REVIEW AND SUBMISSION.

- SYSTEM TO BE DESIGNED AND INSTALLED BY:

VFC LIGHTNING PROTECTION
90 NORTH CUTLER DRIVE * NORTH SALT LAKE, UT 84054
PHONE: (801) 292-2956 * FAX: (801) 292-4164
EMAIL: cad@vfcinc.com * INTERNET: www.vfcinc.com
- SYSTEM DESIGNED UTILIZING UL LISTED VFC MATERIALS.

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH AMERICAN FORK, UT 84003 FAX (801) 642-2154
HPE PROJECT:22.013 © 2024
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

7/04
FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE ENGINEERS
No. 86
171214-2202
KEITH B. HEGERHORST
9/12/24
PROFESSIONAL ENGINEER
STATE OF UTAH

DESIGNED	KBH	3							
DRAFTED	GDS	2							
CHECKED	KBH	1							
DATE	JUNE 2023	NO.		DATE		REVISIONS		BY	APVD.

SCALE: NONE
JORDAN VALLEY WATER CONSERVANCY DISTRICT

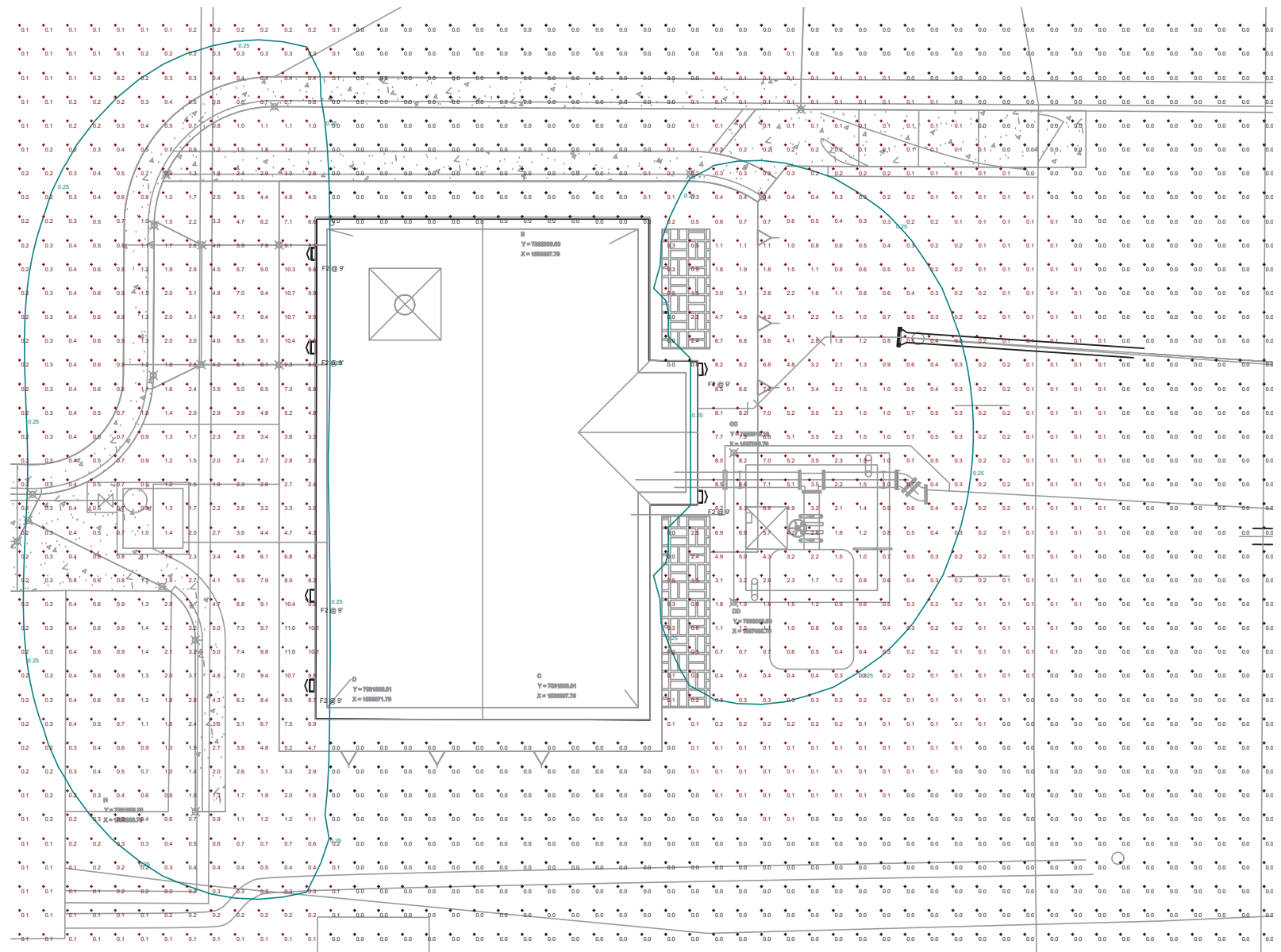
WELL PUMP STATION CONSTRUCTION ELECTRICAL LIGHTNING SYSTEM DETAILS
SHEET E5.4
127.24.400

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.



Luminaire Locations										
No.	Label	Location					Aim			
		X	Y	Z	MH	Orientation	Tilt	X	Y	Z
5	F2	281.27	156.45	9.00	9.00	88.57	0.00	281.27	156.45	0.00
6	F2	281.27	145.80	9.00	9.00	90.00	0.00	281.27	145.80	0.00
9	F2	248.89	137.53	9.00	9.00	270.54	0.00	248.89	137.53	0.00
10	F2	248.95	158.26	9.00	9.00	270.54	0.00	248.95	158.26	0.00
11	F2	249.00	166.11	9.00	9.00	270.54	0.00	249.00	166.11	0.00
4	F2	248.84	130.01	9.00	9.00	270.54	0.00	248.84	130.01	0.00

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	+	0.8 fc	11.0 fc	0.0 fc	N/A	N/A

700 E. SITE PHOTOMETRICS 1
 0 4' 8' 16'
 3/16"=1'-0"

Schedule										
Symbol	Label	Image	QTY	Manufacturer	Catalog	Description	Number Lamps	Lamp Output	LLF	Input Power
	F2		6	COOPER LIGHTING SOLUTIONS - LUMARK (FORMERLY EATON)	AXCS1A-GRF-W	1A AXCENT SMALL LED WALLPACK WITH 3000K CCT AND 80 CRI LEDS	1	1443	0.98	13.5

7/04
 FILE NAME:
 FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3		
DRAFTED	GDS	2		
CHECKED	KBH	1		
DATE	JUNE 2023	NO.	DATE	

REVISIONS			
NO.	DATE	BY	APVD.

SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 SITE PHOTOMETRICS

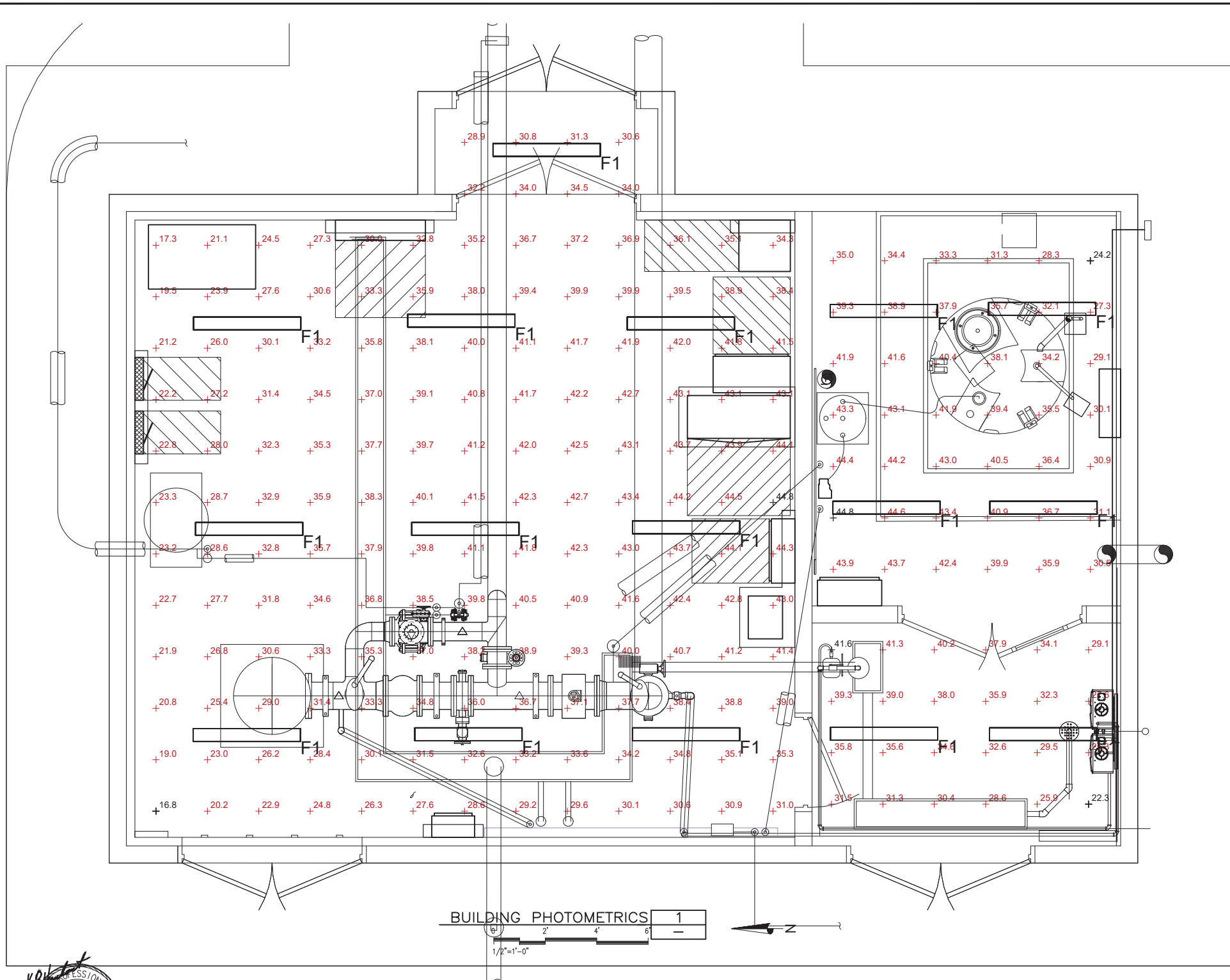
SHEET
E6.1
 127.24.400

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.



BUILDING PHOTOMETRICS 1

1/2"=1'-0"

FILE NAME:
FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS

DESIGNED	KBH	3							
DRAFTED	GDS	2							
CHECKED	KBH	1							
DATE	JUNE 2023	NO.		DATE		REVISIONS		BY	APVD.

SCALE
AS SHOWN



WELL PUMP STATION CONSTRUCTION
ELECTRICAL
BUILDING PHOTOMETRICS

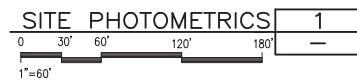
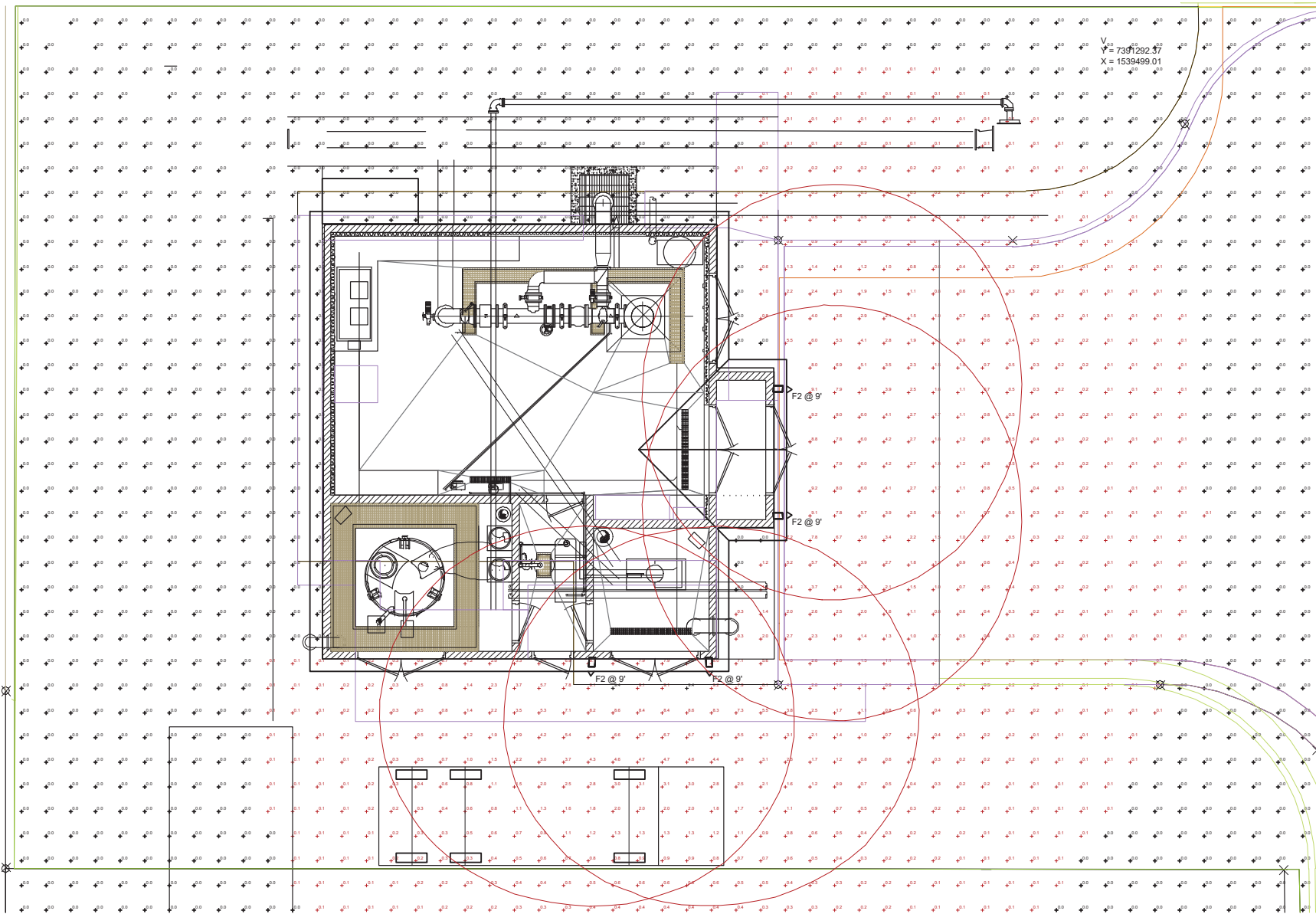
SHEET
E6.2
127.24.400

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.



FILE NAME:
FILE DATE:



HANSEN ALLEN & LUCE ENGINEERS

DESIGNED	KBH	3							
DRAFTED	GDS	2							
CHECKED	KBH	1							
DATE	JUNE 2023	NO.		DATE		REVISIONS		BY	APVD.

SCALE
AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 SITE PHOTOMETRICS

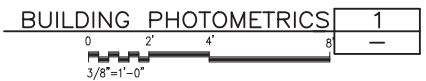
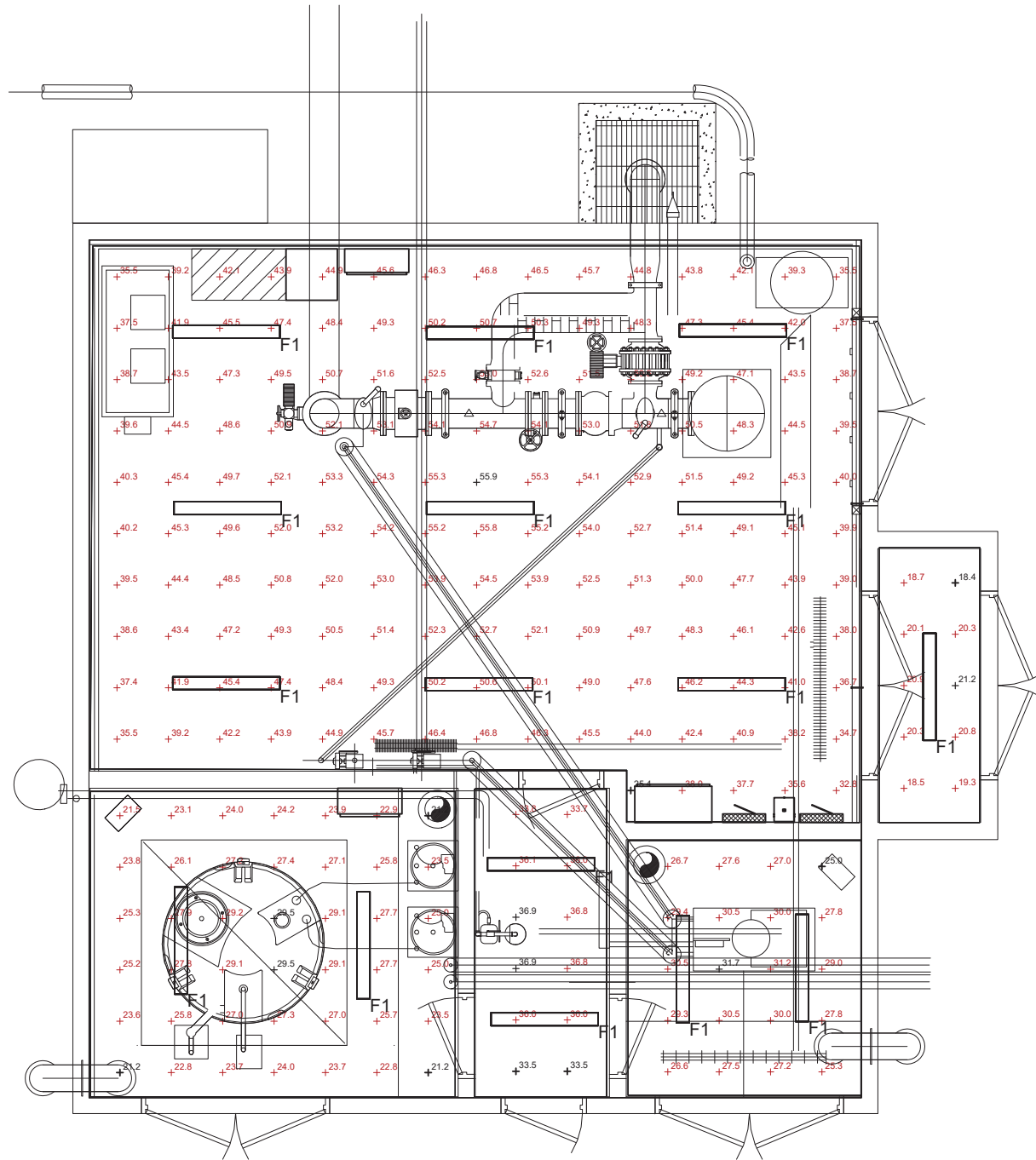
SHEET
E6.3
127.24.400

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.



FILE NAME: 7/04



HANSEN ALLEN & LUCE ENGINEERS
 PROJECT ENGINEER

DESIGNED	KBH	3			
DRAFTED	GDS	2			
CHECKED	KBH	1			
DATE	JUNE 2023	NO.	DATE	REVISIONS	BY
					APVD.

SCALE AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 BUILDING PHOTOMETRICS

SHEET E6.4
 127.24.400

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

COMcheck Software Version COMcheckWeb
Interior Lighting Compliance Certificate

Project Information
 Energy Code: 2021 IECC
 Project Title: 700 East Well Pump Station
 Project Type: New Construction

Construction Site: 7618 South 700 East Sandy, Utah
 Owner/Agent: Utah
 Designer/Contractor: Hegerhorst Power Engineering INC 708 east 50 south American Fork, Utah 84003 8016422051

Additional Efficiency Package(s)
 Credits: 10.0 Required 0.0 Proposed

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts
1-Workshop	988	0.91	899
Total Allowed Watts = 899			

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Watt. (C X D)	E
1-Workshop LED: LED Panel 44W:	1	16	51	810
Total Proposed Watts =				810

Interior Lighting PASSES: Design 10% better than code

Interior Lighting Compliance Statement
 Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Ben Eliot Sorenson Engineer Signature *Ben Eliot Sorenson* Date 11/1/2023

Project Title: 700 East Well Pump Station Report date: 11/01/23
 Data filename: Page 1 of 6

COMcheck Software Version COMcheckWeb
Exterior Lighting Compliance Certificate

Project Information
 Energy Code: 2021 IECC
 Project Title: 700 East Well Pump Station
 Project Type: New Construction
 Exterior Lighting Zone: 2 (Neighborhood business district (LZ2))

Construction Site: 7618 South 700 East Sandy, Utah
 Owner/Agent: Utah
 Designer/Contractor: Hegerhorst Power Engineering INC 708 east 50 south American Fork, Utah 84003 8016422051

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Walkway < 10 feet wide	80 ft of	0.5	Yes	40
Total Tradable Watts (a) =				40
Total Allowed Watts =				40
Total Allowed Supplemental Watts (b) =				400

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
 (b) A supplemental allowance equal to 400 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Watt. (C X D)	E
Walkway < 10 feet wide (80 ft of walkway length): Tradable Wattage LED: LED PAR 13W:	1	6	14	81
Total Tradable Proposed Watts =				81

Exterior Lighting PASSES: Design 82% better than code

Exterior Lighting Compliance Statement
 Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Ben Eliot Sorenson Engineer Signature *Ben Eliot Sorenson* Date 11/1/2023

Project Title: 700 East Well Pump Station Report date: 11/01/23
 Data filename: Page 2 of 6

COMcheck Software Version COMcheckWeb
Inspection Checklist
 Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COMcheck software
 Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req. ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C103.2 [PR8] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C406 [PR9] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: 700 East Well Pump Station Report date: 11/01/23
 Data filename: Page 3 of 6

7/04
 FILE NAME:
 FILE DATE:



DESIGNED	KBH	3		
DRAFTED	GDS	2		
CHECKED	KBH	1		
DATE	JUNE 2023	NO.	DATE	

REVISIONS	BY	APVD.

SCALE
 AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 700 EAST
 MODEL ENERGY CODE, SHT. 1

SHEET
 E7.1
 127.24.400

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3.1 [EL22]¹	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern ≥ 50 percent.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1.1 [EL18]¹	Occupancy sensors installed in classrooms/training rooms, conference/meeting/multi-purpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces ≤ 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1.2 [EL19]¹	Occupancy sensors control function in warehouses: In warehouses, the lighting in aislesways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1.3 [EL20]¹	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas ≤ 600 sq ft. within the space. 2) general lighting in each zone permitted to turn on upon occupancy in control zone. 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space. 4) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.2.1 [EL21]¹	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1)
 2 Medium Impact (Tier 2)
 3 Low Impact (Tier 3)

Project Title: 700 East Well Pump Station Report date: 11/01/23
 Data filename: Page 4 of 6

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4.1 [EL23]²	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.5 [EL27]¹	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.7 [EL28]¹	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.7 [EL26]¹	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.8 [EL27]¹	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.9.1 [EL28]²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.10 [EL29]¹	Total voltage drop across the combination of feeders and branch circuits ≤ 5%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.1.1 [EL30]¹	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy ≥ 65 lm/W or luminaires with efficacy ≥ 45 lm/W or comply with C405.2.4 or C405.3.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.11.1 [EL31]¹	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1)
 2 Medium Impact (Tier 2)
 3 Low Impact (Tier 3)

Project Title: 700 East Well Pump Station Report date: 11/01/23
 Data filename: Page 5 of 6

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3.2 [F117]¹	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.5.1 [F119]¹	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Exterior Lighting fixture schedule for values.
C408.1.1 [F157]¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5 [F116]¹	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.3 [F133]¹	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)
 2 Medium Impact (Tier 2)
 3 Low Impact (Tier 3)

Project Title: 700 East Well Pump Station Report date: 11/01/23
 Data filename: Page 6 of 6

7/04 FILE NAME: FILE DATE:



DESIGNED	KBH	3		
DRAFTED	GDS	2		
CHECKED	KBH	1		
DATE	JUNE 2023	NO.	DATE	

REVISIONS		BY	APVD.

SCALE
AS SHOWN



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL – 700 EAST
 MODEL ENERGY CODE, SH. 2

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

COMcheck Software Version COMcheckWeb
Interior Lighting Compliance Certificate

Project Information
 Energy Code: 2021 IECC
 Project Title: 1000 East Well
 Project Type: New Construction

Construction Site: 7750 South 1000 East Midvale, Utah
 Owner/Agent: Utah
 Designer/Contractor: Hegerhorst Power Engineering INC 708 east 50 south American Fork, Utah 84003 8016422051

Additional Efficiency Package(s)
 Credits: 10.0 Required 0.0 Proposed

A Area Category	B Floor Area (ft ²)	C Allowed Watts / ft ²	D Allowed Watts
1-Workshop	1050	0.91	956
Total Allowed Watts = 956			

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Watt. (C X D)	E
1-Workshop LED, F1: DAMP LOCATION: LED Panel 44W:	1	16	51	810
Total Proposed Watts =				810

Interior Lighting PASSES: Design 15% better than code

Interior Lighting Compliance Statement
 Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Ben Eliot Sorenson Name - Title
 Engineer Signature *Ben Eliot Sorenson* Date 11/2/2023

Project Title: 1000 East Well Report date: 11/02/23
 Data filename: Page 1 of 6

COMcheck Software Version COMcheckWeb
Exterior Lighting Compliance Certificate

Project Information
 Energy Code: 2021 IECC
 Project Title: 1000 East Well
 Project Type: New Construction
 Exterior Lighting Zone: 2 (Neighborhood business district (LZ2))

Construction Site: 7750 South 1000 East Midvale, Utah
 Owner/Agent: Utah
 Designer/Contractor: Hegerhorst Power Engineering INC 708 east 50 south American Fork, Utah 84003 8016422051

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts /	D Tradable Wattage	E Allowed Watts (B X C)
Walkway < 10 feet wide	66 ft of	0.5	Yes	33
Total Tradable Watts (a) =				33
Total Allowed Supplemental Watts (b) =				400

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
 (b) A supplemental allowance equal to 400 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixture	D Watt. (C X D)	E
Walkway < 10 feet wide (66 ft. of walkway length): Tradable Wattage LED, F2: EGRESS: LED PAR 13W:	1	4	14	54
Total Tradable Proposed Watts =				54

Exterior Lighting PASSES: Design 88% better than code

Exterior Lighting Compliance Statement
 Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2021 IECC requirements in COMcheck Version COMcheckWeb and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Ben Eliot Sorenson Name - Title
 Engineer Signature *Ben Eliot Sorenson* Date 11/2/2023

Project Title: 1000 East Well Report date: 11/02/23
 Data filename: Page 2 of 6

COMcheck Software Version COMcheckWeb
Inspection Checklist
 Energy Code: 2021 IECC

Requirements: 0.0% were addressed directly in the COMcheck software
 Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req. ID	Plan Review	Complies?	Comments/Assumptions
C103.2 (PR4) ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C103.2 (PR8) ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C406 (PR9) ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: 1000 East Well Report date: 11/02/23
 Data filename: Page 3 of 6

7/04
FILE NAME:
FILE DATE:



DESIGNED	KBH	3				
DRAFTED	GDS	2				
CHECKED	KBH	1				
DATE	JUNE 2023	NO.	DATE		BY	APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 MODEL ENERGY CODE, SHT. 1

SHEET
E7.3
127.24.400

GENERAL NOTES:

- NOT USED.

SHEET KEYNOTES:

- NOT USED.

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3 1 [EL22]¹	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1 1 [EL18]¹	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, corridors, warehouse storage areas, and other spaces <= 300 sq ft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1 2 [EL19]¹	Occupancy sensors control function in warehouses: In warehouses, the lighting in aiseways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more within 20 minutes of when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor. Lights not turned off by occupant sensors is done so by time-switch.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1 3 [EL20]¹	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq ft. within the space, 2) general lighting in each zone permitted to turn on upon occupancy in control zone, 3) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 4) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.2 1 [EL21]²	Each area not served by occupancy sensors (per C405.2.1.1) have time-switch controls and functions detailed in sections C405.2.2.1.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: 1000 East Well Report date: 11/02/23
 Data filename: Page 4 of 6

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.4 1 [EL23]¹	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.5 1 [EL27]¹	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.7 1 [EL28]¹	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.7 1 [EL26]¹	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.8 1 [EL27]²	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.9.1 1 [EL28]²	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.10 1 [EL29]²	Total voltage drop across the combination of feeders and branch circuits <= 5%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.1.1 1 [EL30]²	At least 90% of dwelling unit permanently installed lighting shall have lamp efficacy >= 65 lm/W or luminaires with efficacy >= 45 lm/W or comply with C405.2.4 or C405.3.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.11 1 [EL31]²	50% of 15/20 amp receptacles installed in enclosed offices, conference rooms, copy rooms, break rooms, classrooms and workstations and > 25% of branch circuit feeders for modular furniture will have automatic receptacle control in accordance with C405.11.1.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: 1000 East Well Report date: 11/02/23
 Data filename: Page 5 of 6

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3 1 [F117]¹	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.5.1 1 [F19]¹	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Exterior Lighting Fixture schedule for values.
C408.1.1 1 [F157]¹	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.2.5 1 [F16]¹	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.3 1 [F133]¹	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: 1000 East Well Report date: 11/02/23
 Data filename: Page 6 of 6

Additional Comments/Assumptions:

7/04



DESIGNED	KBH	3	
DRAFTED	GDS	2	
CHECKED	KBH	1	
DATE	JUNE 2023	NO.	DATE

REVISIONS		BY	APVD.

SCALE
NONE



WELL PUMP STATION CONSTRUCTION
 ELECTRICAL - 1000 EAST
 MODEL ENERGY CODE, SH. 2

SHEET
E7.4

127.24.400