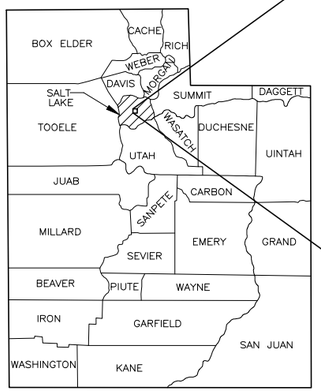
WEST JORDAN CITY

WELL NUMBER 8 PUMP BUILDING
CONSTRUCTION PLANS
APRIL 2024

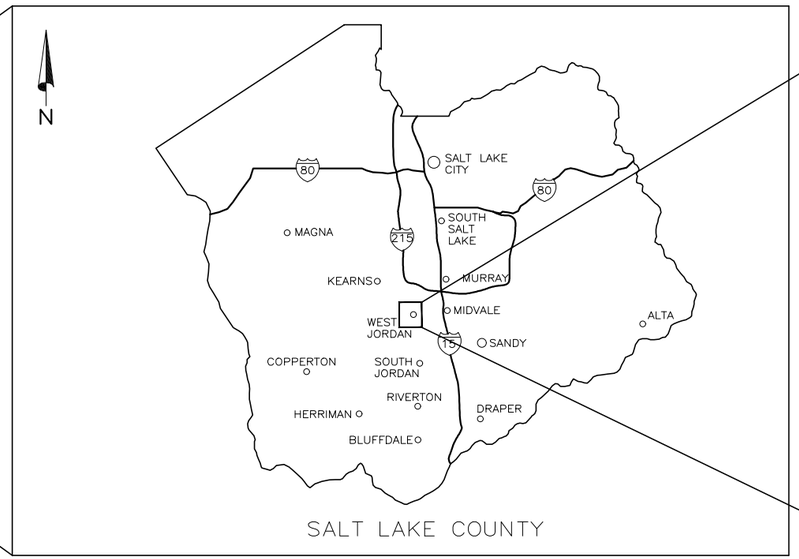
WEST JORDAN CITY

DAVID MURPHY, P.E.
UTILITY ENGINEERING MANAGER

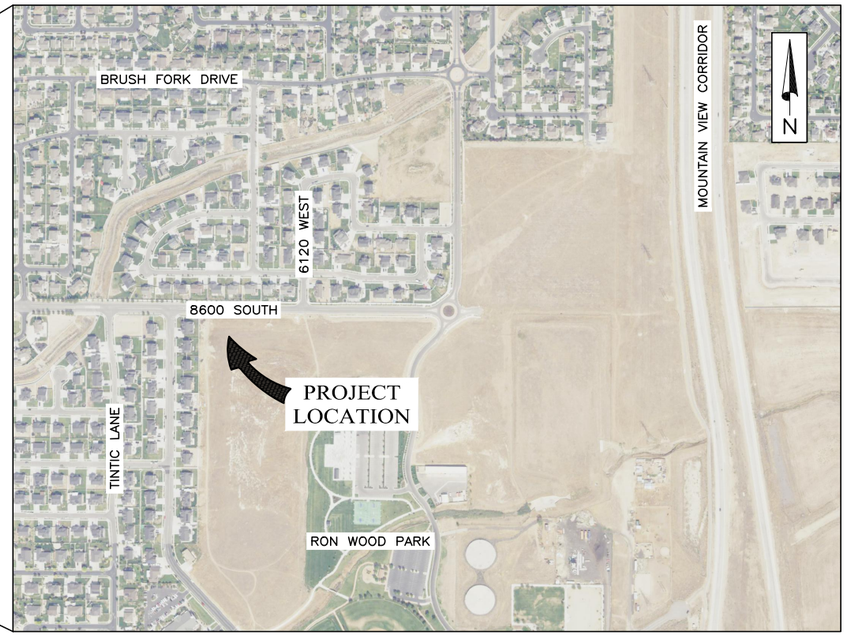
7960 SOUTH 4000 WEST
WEST JORDAN UTAH, 84088
(801) 569-5700



STATE OF UTAH



VICINITY MAP



PROJECT LOCATION
6183 WEST 8600 SOUTH

APPROVED BY PLANNING DEPARTMENT
BY: LARRY GARDNER – CITY PLANNER
01/19/2023

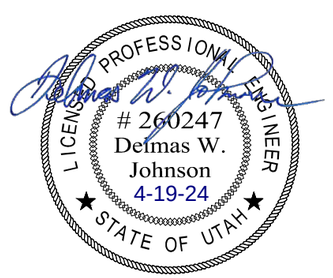
CONDITIONAL USE PERMIT APPROVED BY WJ
PLANNING COMMISSION
08/18/2020

WEST JORDAN CITY OFFICIALS

MAYOR
DIRK BURTON
CITY COUNCIL
PAMELA BLOOM
KELVIN GREEN
ZACH JACOB
CHAD LAMB
BOB BEDORE
KAYLEEN WHITELOCK
KENT SHELTON

HANSEN, ALLEN & LUCE DESIGN TEAM

MARVIN E. ALLEN, P.E. – PRINCIPAL
DELMAS W. JOHNSON, P.E. – PROJECT MANAGER
JACOB K. NIELSEN, P.E. – PROJECT ENGINEER
ROBERT C. CONDER, S.E. – STRUCTURAL ENGINEER
(CONDER ENGINEERING)
KEITH B. HEGERHORST, P.E. – ELECTRICAL ENGINEER
(HPE, INC. ELECTRICAL ENGINEERS)
TAYLOR E. GROBERG, P.E.
(BLUEFIELD ENGINEERING)
ERIC LYMAN – LANDSCAPE ARCHITECT
(E.A. LYMAN LANDSCAPE ARCHITECTS)
JAY R. MCQUIVEY – GEOTECHNICAL
(AGEC, INC.)



HANSEN ALLEN & LUCE inc
ENGINEERS

859 W. SOUTH JORDAN PKWY STE. 200
SOUTH JORDAN UTAH, 84095
(801) 566-5599

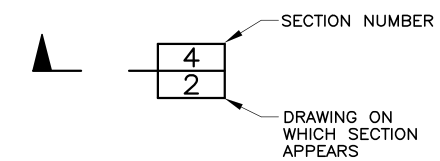
FILE NAME: PROJECTS\089 - WEST JORDAN\29.100 - WELL NO. 8 PUMP BUILDING\CAD\G-1 COVER.DWG
FILE DATE: 4.15.2024 11:11:43 (DCL)

1/93

SECTION & DETAIL IDENTIFICATION

SECTION IDENTIFICATION

SECTION CUT ON DRAWING NO. 1:



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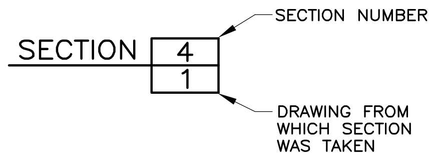
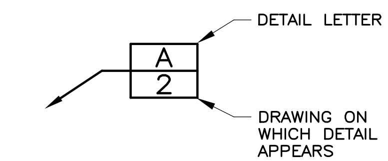


DETAIL IDENTIFICATION

DETAIL CALL-OUT ON DRAWING NO. 1:



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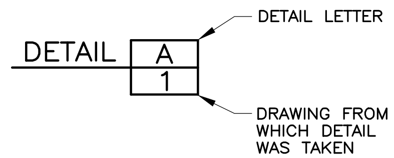

NOTES:

1. IF SECTION CUT AND SECTION OR DETAIL CALL-OUT AND DETAIL ARE SHOWN ON SAME DRAWING, DRAWING NUMBER IS REPLACED BY A LINE.
2. DETAIL LETTERS "I" AND "O" NOT USED.

ABBREVIATIONS

@	=	AT	MJ	=	MECHANICAL JOINT
CC	=	CENTER TO CENTER	MM	=	MILLIMETER
CIP	=	CAST IRON PIPE	N.T.S.	=	NOT TO SCALE
℄	=	CENTER LINE	O.C.	=	ON CENTER
CLR.	=	CLEARANCE	OHP	=	OVERHEAD POWER LINE
CMP	=	CORRUGATED METAL PIPE	POLY	=	POLYETHYLENE
ø	=	DIAMETER	PE	=	PLAIN END
DIA.	=	DIAMETER	℘	=	PROPERTY LINE
DIP	=	DUCTILE IRON PIPE	PRV	=	PRESSURE REDUCING VALVE
DWG	=	DRAWING	PSF	=	POUNDS PER SQUARE FOOT
EF	=	EACH FACE	PSI	=	POUNDS PER SQUARE INCH
EL.	=	ELEVATION	PVC	=	POLYVINYL CHLORIDE
E.O.	=	EDGE OF OIL	R.O.W.	=	RIGHT OF WAY
E.W.	=	EACH WAY	SCR	=	SCREWED
ES	=	EACH SIDE	SF	=	SQUARE FEET
FL	=	FLOW LINE	HP	=	HIGH PRESSURE
FLG	=	FLANGE	SQ.	=	SQUARE
FPS	=	FEET PER SECOND	SS	=	STAINLESS STEEL
FTG	=	FOOTING	STA.	=	STATION
GIP	=	GALVANIZED IRON PIPE	TBC	=	TOP BACK OF CURB
GPM	=	GALLONS PER MINUTE	THD.	=	THREAD
G.V.	=	GATE VALVE	TYP.	=	TYPICAL
ID	=	INSIDE DIAMETER	UBC	=	UNTREATED BASE COURSE
MAX.	=	MAXIMUM	UGP	=	UNDERGROUND POWER LINE
MG	=	MILLION GALLON(S)	YD.	=	YARD
MIN.	=	MINIMUM			

LEGEND

Symbol	Description
4-G	EXISTING GAS LINE W/ SIZE
GS	EXISTING GAS SERVICE
10-W	EXISTING WATER LINE W/ SIZE
WS	EXISTING WATER SERVICE
15-SS	EXISTING SANITARY SEWER W/ SIZE
SL	EXISTING SANITARY SEWER LATERAL
24-SD	EXISTING STORM DRAIN W/ SIZE
FO-UG	EXISTING FIBER OPTIC LINE
T-UG	EXISTING UNDERGROUND TELEPHONE
P-UG	EXISTING UNDERGROUND POWER LINE
P-OH	EXISTING OVERHEAD POWER LINE
X	EXISTING FENCE LINE
— — —	12' DEEP EXCAVATION LIMITS
-- - --	4' DEEP EXCAVATION LIMITS

EXISTING FIRE HYDRANT
EXISTING POWER POLE
EXISTING LIGHT POLE
EXISTING ELECTRICAL BOX
WM EXISTING WATER METER
SS EXISTING SANITARY SEWER MANHOLE
SD EXISTING STORM DRAIN MANHOLE
W EXISTING WATER MANHOLE
EXISTING GUY WIRE
EXISTING VALVES

DRAWING INDEX

DRAWING INDEX cont.

ALL COORDINATES SHOWN ARE IN UTAH STATE PLANE 83. CENTRAL ZONE, US SURVEY FEET, MODIFIED TO GROUND USING BASE POINT OF:
NORTHING 7,385,985.111
EASTING 1,492,189.396
ELEVATION 4889.879
SCALE FACTOR 1.000244269

N

SURVEY CONTROL TABLE

CONTROL POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	7,385,985.11	1,492,189.40	4,889.88	SLCO MON 2S2W3502
101	7,386,012.88	1,489,539.73	4,968.97	SLCO MON 2S2W3401
102	7,383,368.14	1,489,521.08	4,967.99	SLCO MON 3S2W0306
103	7,383,351.68	1,491,305.79	4,939.79	SLCO MON 26021016

FILE NAME: PROJECTS\089 - WEST JORDAN\29.100 - WELL NO. 8 PUMP BUILDING\CAD\G-3 SURVEY CONTROL.DWG
FILE DATE: 4.4.2024 16:26:11 (DCL)

HANSEN ALLEN & LUCE, Inc. ENGINEERS

LICENSED PROFESSIONAL ENGINEER — 246247 — Delmas W. Johnson — 4-19-24 — STATE OF UTAH
PROJECT ENGINEER

DESIGNED	MGA	3			
DRAFTED	JKN	2			
CHECKED	MEA	1			
DATE	APRIL 2024	NO.	DATE	REVISIONS	BY / APVD.

SCALE: NOT TO SCALE

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
GENERAL
SURVEY CONTROL

SHEET G-3
089.29.100

7/04

POWER ONE-LINE SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- ANTENNA
- EQUIPMENT GROUND CONNECTION
- TRANSFER SWITCH
  ATS: AUTOMATIC TRANSFER SWITCH
  MTS: MANUAL TRANSFER SWITCH
- VFD — VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER
- F — FUSED DISCONNECT SWITCH
- NON-FUSED DISCONNECT SWITCH
- COMBINATION STARTER
- MAGNETIC CONTROLLER
- HP — MOTOR (HP SHOWN)
- GENERATOR
- WIRE — CONDUCTOR WITH CALLOUT REFERENCE (SEE CONDUIT/CONDUCTOR SCHEDULE)
- POWER FACTOR CAPACITOR
- CIRCUIT BREAKER
- POWER FEED
- CONNECTION POINT
- LUG
- DELTA WYE
- M — UTILITY METERING SOCKET WITH CIRCUIT BREAKER
- M — EXISTING UTILITY METERING SOCKET
- M — UTILITY METERING SOCKET
- M — FUTURE UTILITY METERING SOCKET
- UTILITY METERING CURRENT TRANSFORMER
- MOTOR STARTER
- SURGE PROTECTOR
- TRANSFORMER
- FUSED SWITCH
- FUSE IN HOLDER
- PNL — EXISTING POWER DISTRIBUTION PANEL
- PNL — POWER DISTRIBUTION PANEL
- PNL — FUTURE POWER DISTRIBUTION PANEL

GROUNDING SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- GROUND ROD (3/4" x 10' COPPER COATED STEEL) IN WELL
- BOLTED GROUND CONNECTION (ABOVE GROUND)
- WELDED GROUND CONNECTION (BELOW GRADE)
- GROUND CONDUCTOR

MOTOR AND EQUIPMENT

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- HP — MOTOR (HP SHOWN)
- F — 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
- XXXA — DISCONNECT, NON-FUSED, 3 POLE, 100A RATED
- F — FUSED DISCONNECT SWITCH
- FIELD CONNECTION OR ELECTRICAL TERMINATION AT A FIELD DEVICE
- XXXXX — EQUIPMENT DESIGNATION

PLAN SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

EQUIPMENT

- CIRCUIT DISTRIBUTION PANELBOARD SURFACE MOUNTED
- CIRCUIT DISTRIBUTION PANELBOARD RECESSED
- POWER DISTRIBUTION PANELBOARD SURFACE OR FLOOR MOUNTED DOORS DESIGNATE FRONT OF PANEL MDP DESIGNATES MAIN DISTRIBUTION PANEL
- CONTROL PANEL ENCLOSURE
- LIGHTING CONTROL PANEL
- DISCONNECT
- COMBO STARTER/DISCONNECT

HVAC EQUIPMENT

- UNIT HEATER, WALL MOUNTED
- UNIT HEATER, CEILING MOUNTED
- CONDENSING UNIT, PAD MOUNTED, SIDE DISCHARGE
- CONDENSING UNIT, PAD MOUNTED, UP FLOW
- ROOFTOP MOUNTED EQUIPMENT

GENERAL DRAWING SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- ① — REFERENCE NOTE
- 1 — DEMOLITION NOTE
- /1 — REVISION NOTE
- 1 — IDENTIFICATION NOTE
- NO — PHOTO REFERENCE
- ## — EQUIPMENT REFERENCE
- XXX — WIRE SIZE REFERENCE
- PHOTO XXX XXXX — PHOTO REFERENCE
- # SHEET — SECTION/ELEVATION REFERENCE

LIGHT SWITCHES

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- $ — SINGLE POLE SWITCH
- $$ — GANGED SWITCHES IN COMMON BOX WITH COMMON COVER PLATE
- $a — SWITCH SUPERSCRIPT MODIFIER, LOWER CASE LETTER INDICATES CIRCUIT CONTROLLER -- a,b,c ETC. MAY BE COMBINED WITH CIRCUIT NUMBER. EXAMPLE: 1a, 3b
- $3 — 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
  - D = DIMMER
  - S = SURFACE
  - F = FLUSH

LIGHTING SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- F1 — DESIGNATES FIXTURE NUMBER – REFER TO FIXTURE SCHEDULE
- P — PHOTOCELL

LED FIXTURES

- SURFACE OR RECESSED 1X4 FIXTURE

EXTERIOR LIGHTS

- WALL PAK FIXTURE

CONDUIT AND RACEWAYS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR OR CONCEALED IN WALL OR BEHIND STRUCTURE OR EQUIPMENT OR CONDUIT ROUTED BELOW GRADE IN CONCRETE ENCASEMENT
- FLEX CONDUIT
- RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL BELOW CEILING, EXPOSED
- HOMERUN: DESIGNATIONS INDICATE A ONE-LINE DIAGRAM OR PANELBOARD SCHEDULE REFERENCE
- J — JUNCTION BOX
- 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

WIRING DEVICES

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- 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
  WP = WEATHER PROOF
- EXISTING RECEPTACLE
- 220V RECEPTACLE
- GFCI RECEPTACLE
- ELECTRICAL CONNECTION
- J — JUNCTION BOX
- P — PHOTOELECTRIC CONTROL UNIT
- T — THERMOSTAT LOCATION
- CARD READER (ENTRY KEY PAD)

POWER ONE-LINE SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- EXISTING POWER FEED
- M — EXISTING UTILITY METERING SOCKET
- EQUIPMENT GROUND CONNECTION
- XXX — CONDUCTOR WITH CALLOUT REFERENCE (SEE CONDUIT/CONDUCTOR SCHEDULE)
- PNL — POWER DISTRIBUTION PANEL
  GROUND ROD (3/4" x 10' COPPER COATED STEEL)
- CIRCUIT BREAKER
- CONNECTION POINT

CONTROL ONE-LINE SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- ENCLOSURE OR CONTROL PANEL
- A-XX — HOME RUN TO POWER PANEL "A" CIRCUIT "XX"
- R — LIGHT
  A: AMBER LENS
  G: GREEN LENS
  R: RED LENS
  W: WHITE LENS
- COMBINATION MOTOR STARTER
  F: FUSED
  BLANK: CIRCUIT BREAKER
- NUMBER — EQUIPMENT IDENTIFICATION TAG
- ELECTRICAL CONNECTION POINT
- SINGLE RECEPTACLE

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
HPE PROJECT 20.025

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES

1. 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.
2. CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS (VOLTAGE, PHASE, CONNECTION REQUIREMENTS, ETC.) OF EQUIPMENT FURNISHED BEFORE BEGINNING ROUGH-IN.
3. SEE APPLICABLE SHOP DRAWINGS FOR ROUGH-IN LOCATION OF ALL EQUIPMENT, WIRING DEVICES, ETC.
4. 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.
5. ALL PENETRATIONS OF FLOORS, WALLS AND CEILINGS SHALL BE SEALED WITH APPROVED MATERIAL.
6. 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.
7. 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.

Sheet List Table

FILE NAME:
FILE DATE:

STATE OF UTAH — REGISTERED PROFESSIONAL ENGINEER — No. 86-171214-2202 — KEITH B. HEGERHORST — 08/07/2023

HANSEN ALLEN & LUCE INC. ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH
DRAFTED	DAS
CHECKED	KBH
DATE	OCTOBER 2023

NO.	DATE	REVISIONS	BY	APVD.
3				
2				
1				

SCALE: NONE

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
LEGEND

SHEET E001

089.29.100

7/04

CONDUIT/CONDUCTOR SCHEDULE
THHN, THWN, THWN-2

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

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

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

WEST JORDAN WELL TAG LIST

HVAC EQUIPMENT

TAG	DESCRIPTION	LOCATION	SUPPLIED BY	INSTALLED BY
CU-1	CONDENSING UNIT 1	OUTSIDE	CONTRACTOR	CONTRACTOR
CU-2	CONDENSING UNIT 2	OUTSIDE	CONTRACTOR	CONTRACTOR
EF-1	EXHAUST FAN	CHLORINE ROOM	CONTRACTOR	CONTRACTOR
FC-1	FAN COIL 1	WELL ROOM	CONTRACTOR	CONTRACTOR
FC-2	FAN COIL 2	WELL ROOM	CONTRACTOR	CONTRACTOR
LA-1	EXHAUST FAN INTAKE LOUVER ACTUATOR	CHLORINE ROOM	CONTRACTOR	CONTRACTOR
LA-2	EXHAUST FAN LOUVER ACTUATOR	CHLORINE ROOM	CONTRACTOR	CONTRACTOR
UH-1	UNIT HEATER	WELL ROOM	CONTRACTOR	CONTRACTOR
UH-2	UNIT HEATER	CHLORINE ROOM	CONTRACTOR	CONTRACTOR

PUMP AND EQUIPMENT

TAG	DESCRIPTION	LOCATION	SUPPLIED BY	INSTALLED BY
ATS	AUTOMATIC TRANSFER SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR
CP-1	MAIN CONTROL PANEL	WELL ROOM	CONTRACTOR	CONTRACTOR
CP-2	EXHAUST FAN CONTROL PANEL	WELL ROOM	CONTRACTOR	CONTRACTOR
CTE	CURRENT TRANSFORMER ENCLOSURE	OUTSIDE	CONTRACTOR	CONTRACTOR
GA-1	GATE ACTUATOR	OUTSIDE	CONTRACTOR	CONTRACTOR
GEN	BACKUP POWER GENERATOR	OUTSIDE	CONTRACTOR	CONTRACTOR
MSD	MAIN SERVICE DISCONNECT	OUTSIDE	CONTRACTOR	CONTRACTOR
P-1	WELL PUMP	WELL ROOM	CONTRACTOR	CONTRACTOR
TC-1	TABLET CHLORINATOR	CHLORINE ROOM	CONTRACTOR	CONTRACTOR
RTU	REMOTE TELEMETRY UNIT	WELL ROOM	OWNER	CONTRACTOR
VFD	WELL VARIABLE FREQUENCY DRIVE	WELL ROOM	CONTRACTOR	CONTRACTOR

SWITCHES

TAG	DESCRIPTION	LOCATION	SUPPLIED BY	INSTALLED BY
LSH-1	PUMP ROOM FLOOR HIGH WATER SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR
PSH-1	WELL PUMP DISCHARGE PRESSURE SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR
ZS-1	MAN-DOOR POSITION SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR
ZS-2A	SERVICE DOOR POSITION SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR
ZS-2B	SERVICE DOOR POSITION SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR
ZS-3	WELL ROOF HATCH POSITION SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR
ZS-4	MAN-DOOR POSITION SWITCH	CHLORINE ROOM	CONTRACTOR	CONTRACTOR
ZS-5B	WV-1 IN FULL WASTE POSITION	WELL ROOM	CONTRACTOR	CONTRACTOR
ZS-5A	WV-1 IN FULL SYSTEM POSITION	WELL ROOM	CONTRACTOR	CONTRACTOR
VS-1	MOTOR VIBRATION SWITCH	WELL ROOM	CONTRACTOR	CONTRACTOR

INSTRUMENTS

TAG	DESCRIPTION	LOCATION	SUPPLIED BY	INSTALLED BY
AE-3	CHLORINE ANALYZER	CHLORINE ROOM	CONTRACTOR	CONTRACTOR
AE-2	TURBIDITY ANALYZER	WELL ROOM	CONTRACTOR	CONTRACTOR
AIT-3	CHLORINE INDICATOR/TRANSMTTER	WELL ROOM	CONTRACTOR	CONTRACTOR
AIT-2	TURBIDITY INDICATOR/TRANSMITTER	WELL ROOM	CONTRACTOR	CONTRACTOR
FE-1	WELL DISCHARGE FLOW ELEMENT	WELL ROOM	CONTRACTOR	CONTRACTOR
FIT-1	WELL DISCHARGE FLOW INDICATOR/TRANSMITTER	WELL ROOM	CONTRACTOR	CONTRACTOR
LT-1	WELL LEVEL TRANSMITTER	WELL ROOM	CONTRACTOR	CONTRACTOR
PT-1	STATION DISCHARGE PRESSURE TRANSMITTER	WELL ROOM	CONTRACTOR	CONTRACTOR
PT-2	WELL DISCHARGE PRESSURE TRANSMITTER	WELL ROOM	CONTRACTOR	CONTRACTOR
TT-1	ROOM TEMPERATURE TRANSMITTER	WELL ROOM	CONTRACTOR	CONTRACTOR
TT-2	ROOM TEMPERATURE TRANSMITTER	CHLORINE ROOM	CONTRACTOR	CONTRACTOR

VALVES

TAG	DESCRIPTION	LOCATION	SUPPLIED BY	INSTALLED BY
V-1	WASTE VALVE	WELL ROOM	CONTRACTOR	CONTRACTOR
SV-1	WELL PRE-LUBE SOLENOID VALVE	WELL ROOM	CONTRACTOR	CONTRACTOR
SV-2	TURBIDITY ANALYZER VALVE	WELL ROOM	CONTRACTOR	CONTRACTOR
SV-3	CHLORINE ANALYZER VALVE	WELL ROOM	CONTRACTOR	CONTRACTOR
V-2	SYSTEM VALVE	WELL ROOM	CONTRACTOR	CONTRACTOR

H.P.E. INC. ELECTRICAL ENGINEERS
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HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH FAX (801) 642-2154
AMERICAN FORK, UT 84003

HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH
PROJECT ENGINEER

HANSEN ALLEN & LUCE inc ENGINEERS

DESIGNED	KBH	3				
DRAFTED	DAS	2				
CHECKED	KBH	1				
DATE	OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.

SCALE: NONE

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
TABLES AND TAG LIST

SHEET E002
089.29.100

7/04

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
HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. REFER TO PANEL SCHEDULE FOR CIRCUIT ID, THEN REFER TO THE CONDUIT/CONDUCTOR TABLE FOR THE WIRE AND CONDUIT REQUIREMENTS.
2. REFER TO E602 FOR POLES, SOUND WALL AND BUILDING CCTV CONDUIT REQUIREMENTS.
3. LIGHT POLE J–BOXES NOT SHOWN ON THIS PLAN.

SHEET KEYNOTES:

1. TRENCHING, CONDUIT AND BACKFILL BY CONTRACTOR. COORDINATE CONDUIT LOCATION WITH UTILITY COMPANY PRIOR TO TRENCHING.
2. WIRE GENERATOR POWER CIRCUIT TO AUTOMATIC TRANSFER SWITCH. INSTALL JACKET WATER HEATER TO CIRCUIT L–6,8 AND BATTERY CHARGER TO CIRCUIT L–10. STUB UP CONDUIT AS REQUIRED BY GENERATOR MANUFACTURER. CIRCUITS NOT SHOWN ON THIS PLAN.
3. AUTOMATIC GATE OPENER, CARD READER PEDESTAL AND CONTROLS PROVIDED BY YAMAS CONTROLS. NOT SHOWN ON THESE PLANS ARE THE GATE PRESSURE SWITCH AND SENSING LOOPS. CONTRACTOR SHALL INSTALL ALL COMPONENTS SUPPLIED WITH GATE ACTUATOR AS REQUIRED BY SUPPLIER. COORDINATE WITH YAMAS CONTROLS FOR INSTALLATION LITERATURE DURING CONSTRUCTION AS REQUIRED.
4. 2"C W/PULL STRING FOR SITE IRRIGATION VALVE WIRING BY ELECTRICAL CONTRACTOR. VALVE WIRING PROVIDED AND INSTALLED BY LANDSCAPE CONTRACTOR.
5. RECESS CCTV J–BOX 8–IN BELOW TOP OF AND 12–IN FROM END OF WALL. CCTV PROVIDED AND INSTALLED BY OWNER.
6. PROVIDE A 1" CONDUIT FOR FUTURE CCTV CAMERA. WITH PULL STRING AND LABEL.

POLE SCHEDULE

DESIGNATION	POLE	FIXTURE	CCTV MOUNTING
POLE-1	F4B	F4A	
POLE-2	F4B	F4A	BY OWNER
POLE-3	F4B	F4A	
POLE-4	F4B	F4A	BY OWNER

EXISTING RMP PAD MOUNTED SWITCH
5 E501 TYP.
POLE–2
POLE–1
POLE–3
POLE–4
L–23
CT ENCLOSURE
TO CT ENCLOSURE
IRRIGATION TIME SWITCH
3 E503
2 E503
1 E503
GEN
2 BACKUP POWER GENERATOR
GENERATOR SOUND WALL
CON–VAULT FUEL TANK
5 FOR CCTV
JB–1
TYP. 4 E503
UTILITY TRANSFORMER PAD
FRONT
J–BOX
L–13,15
TO CP–1
GA–1
3
ENTRY GATE
6
MAN GATE
AUTOMATED GATE OPENER CARD READ PEDESTAL BY YAMAS CONTROLS
8600 SOUTH STREET
P–UG
SS
50'
0 5' 10' 20' 30'
1"=10'

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

HANSEN ALLEN & LUCE INC ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH
DRAFTED	DAS
CHECKED	KBH
DATE	OCTOBER 2023

NO.	DATE	REVISIONS	BY	APVD.
3				
2				
1				

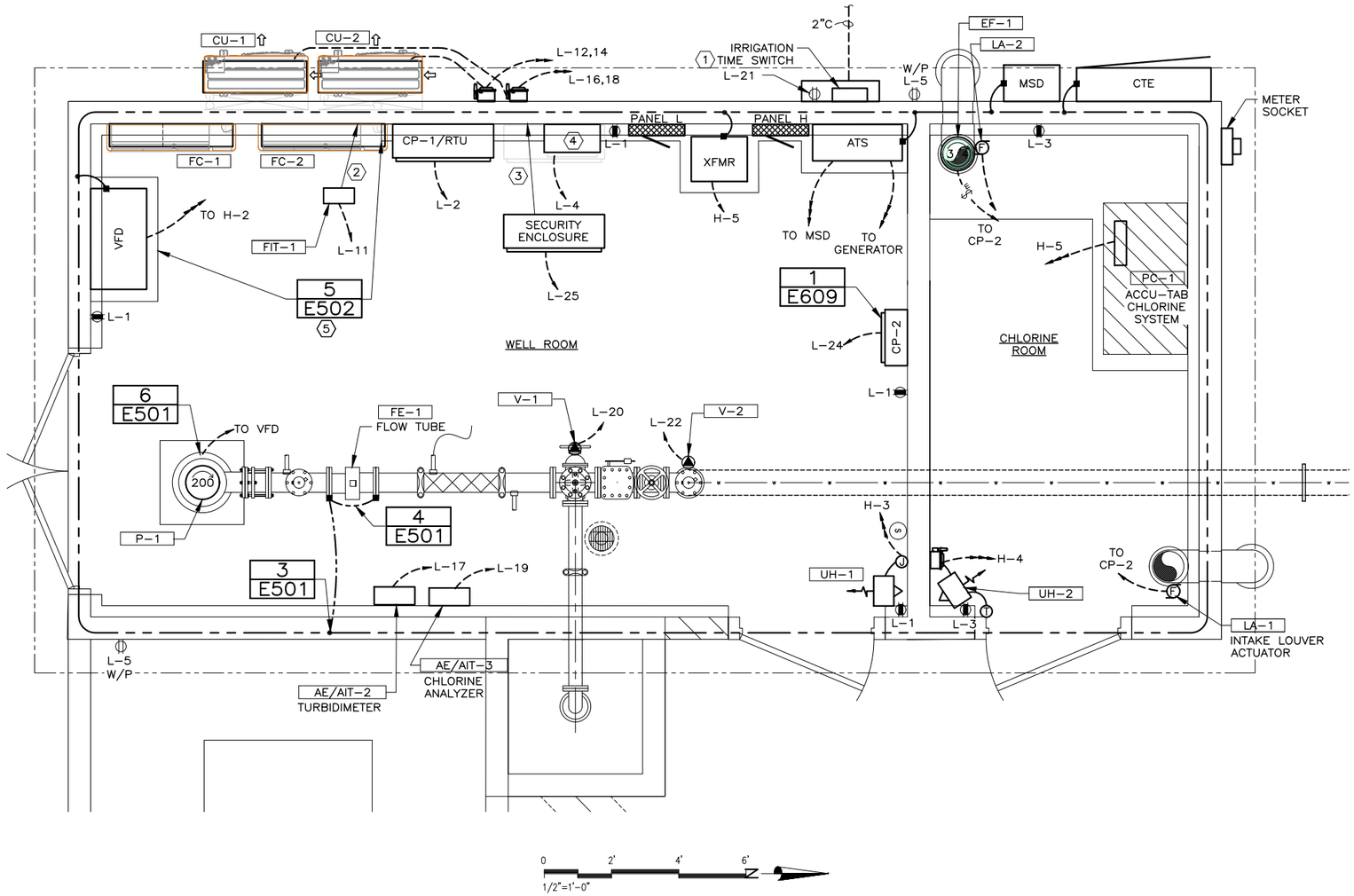
SCALE: AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING ELECTRICAL OVERALL SITE PLAN

SHEET E101
089.29.100

7/04



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
HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. FOR CONDUIT AND CONDUCTOR REQUIREMENTS REFER TO ONE-LINE DIAGRAM AND/OR THE PANEL SCHEDULES FOR THE CIRCUIT ID. WIRE AND CONDUIT REQUIREMENTS ARE ON THE CONDUIT/CONDUCTOR TABLE ON E002.
2. EQUIPMENT ARRANGEMENT SHOWN IS APPROXIMATE. CONTRACTOR SHALL ADJUST LOCATION AS REQUIRED FOR THE DIMENSIONS OF THE ACTUAL EQUIPMENT. MAINTAIN NEC CLEARANCES AS REQUIRED.
3. SPECIFIED INDOOR UNITS RECEIVE POWER FROM OUTDOOR UNITS THROUGH FIELD-SUPPLIED INTERCONNECTED WIRING. IF UNITS ARE OTHER THAN SPECIFIED, MODIFY PROVIDE POWER AS REQUIRED.
4. HEATING CONTROLS BY MECHANICAL CONTRACTOR. CHLORINE ROOM EXHAUST FAN CONTROLS BY ELECTRICAL CONTRACTOR.
5. VERIFY LOCATIONS OF ALL ELECTRICAL CONNECTIONS PRIOR TO CONDUIT ROUGH-IN.

SHEET KEYNOTES:

1. CONTRACTOR SHALL PROVIDE AND INSTALL A 24"H x 20"W x 8"D LOCKABLE NEMA 12 ENCLOSURE FOR THE LANDSCAPE TIMER AND OUTLET. COORDINATE WITH LANDSCAPE CONTRACTOR DURING CONSTRUCTION AND MODIFY DIMENSIONS AS REQUIRED FOR IRRIGATION TIMER. INSTALL A 2"C FROM THE ENCLOSURE UNDER THE PAVING TO THE LANDSCAPE AREA FOR THE IRRIGATION VALVE CONTROL WIRES.
2. INSTALL FLOW METER INDICATOR/TRANSMITTER ON THE WALL BELOW THE FAN COIL UNIT.
3. INSTALL THE SECURITY ENCLOSURE BELOW THE RTU RADIO ENCLOSURE AND AT THE SAME HEIGHT AS CP-1.
4. SCADA RADIO ENCLOSURE: 24"H X 20"W X 8"D ENCLOSURE WITH INTERNAL PANEL. DATA RADIO AND ANTENNA SURGE DEVICE PROVIDED AND INSTALLED BY SCADA CONTRACTOR.
5. FLOOR MOUNTED EQUIPMENT: EXTEND HOUSEKEEPING PAD 4-IN IN FRONT AND SIDES. WALL MOUNTED EQUIPMENT: PAD SHALL EXTEND 6-IN (MAX.) FROM WALL

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE INC ENGINEERS

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH
PROJECT ENGINEER

DESIGNED KBH	3				
DRAFTED DAS	2				
CHECKED KBH	1				
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.

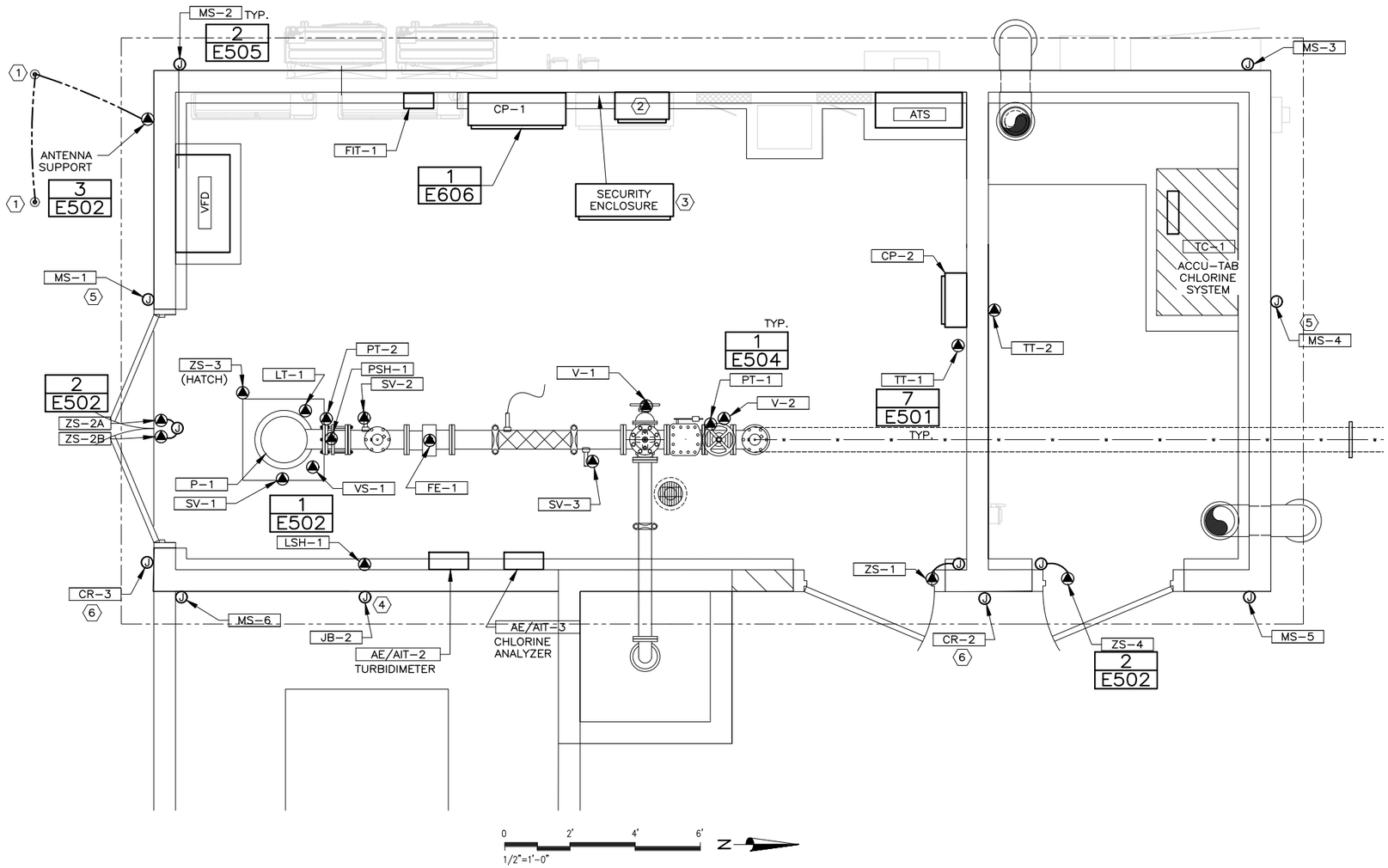
SCALE: AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
PUMP HOUSE POWER PLAN

SHEET: E102
089.29.100

7/04



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

HEGERHORST POWER ENGINEERING INCORPORATED
708 EAST 50 SOUTH
AMERICAN FORK, UT 84003
(801) 642-2051
FAX (801) 642-2154

HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. VERIFY LOCATIONS OF ALL DEVICES PRIOR TO CONDUIT ROUGH-IN.
2. FOR WIRE AND CONDUIT REQUIREMENTS, REFER TO INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAM ON E602.

SHEET KEYNOTES:

1. GROUND ANTENNA SUPPORT WITH AWG NO 6 BC. INSTALL TWO 3/4"X10' GROUND RODS APPROXIMATELY 10' APART.
2. SUPPLY AND INSTALL A 20"W x 24"H x 10"D RTU RADIO ENCLOSURE WITH A SUB PANEL. PROVIDE PANEL TO SCADA CONTRACTOR FOR ASSEMBLY OF THE RTU. RTU COMPONENTS PROVIDED AND INSTALLED BY APCO.
3. SECURITY ENCLOSURE INSTALLED BELOW RTU ENCLOSURE.
4. FOR A FUTURE CAMERA, INSTALL A RECESSED CCTV J-BOX IN THE BUILDING WALL 6-IN BELOW SOFFIT CENTERED ABOVE THE GENERATOR.
5. INSTALL BUILDING END J-BOXES AT SAME HEIGHT AS THE SIDE J-BOXES.
6. RECESS 2X4 ELECTRICAL BOX IN MASONRY FOR CARD READER. VERIFY HEIGHT AND LOCATION WITH OWNER DURING CONSTRUCTION.

FILE NAME:
FILE DATE:

7/04

HANSEN ALLEN & LUCE INC ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 08/07/2023 STATE OF UTAH

PROJECT ENGINEER

DESIGNED KBH	3					
DRAFTED DAS	2					
CHECKED KBH	1					
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.	

SCALE: AS SHOWN

WEST JORDAN UTAH

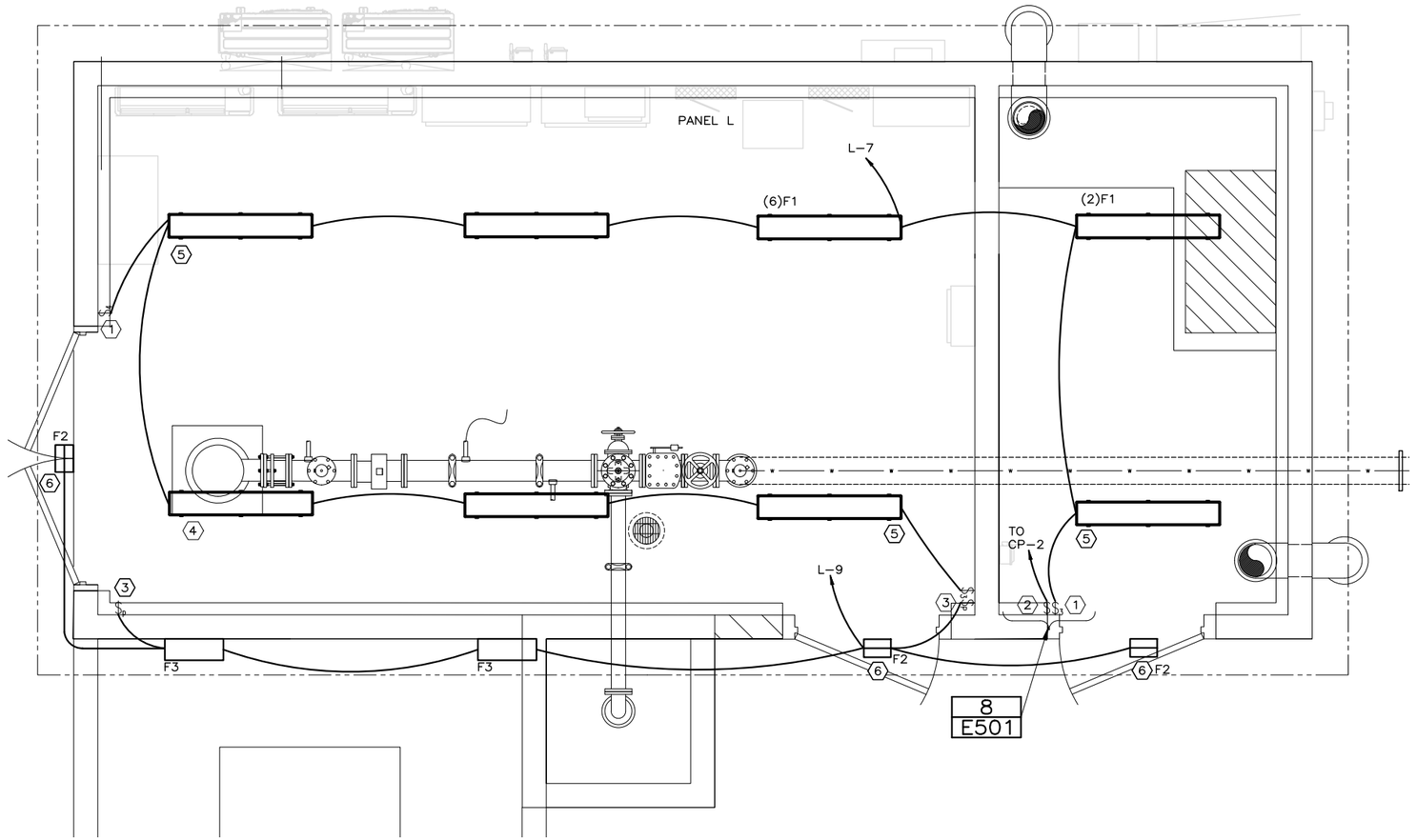
WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
PUMP HOUSE INSTR. & CONTROL PLAN

SHEET E103

089.29.100

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
HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**



GENERAL NOTES:

1. REFER TO PANEL SCHEDULE FOR WIRE AND CONDUIT SIZES.

SHEET KEYNOTES:

1. THREE-WAY SWITCHES AND FOUR-WAY SHALL CONTROL BOTH ROOM FIXTURES AT THE SAME TIME.
2. EXHAUST FAN MANUAL SWITCH (HS-1) LABEL AS CHLORINE ROOM EXHAUST FAN.
3. PROVIDE A PILOT LIGHT TOGGLE SWITCH TO CONTROL THE TWO GENERATOR FLOOD LIGHTS. LABEL "GENERATOR FLOOD LIGHTS".
4. RELOCATE FIXTURE AS REQUIRED FOR ROOF HATCH.
5. PROVIDE A 90-MINUTE BATTERY PACK IN THIS FIXTURE.
6. INSTALL FIXTURE 8-IN ABOVE DOOR.

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE inc ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 08/07/2023 STATE OF UTAH

PROJECT ENGINEER

DESIGNED KBH	3					
DRAFTED DAS	2					
CHECKED KBH	1					
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.	

SCALE: AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
PUMP HOUSE LIGHTING PLAN

SHEET E104

089.29.100

7/04

H.P.E. INC. ELECTRICAL ENGINEERS
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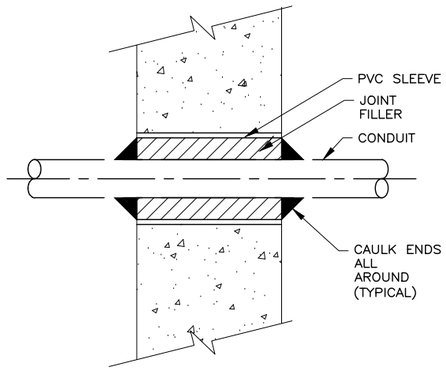
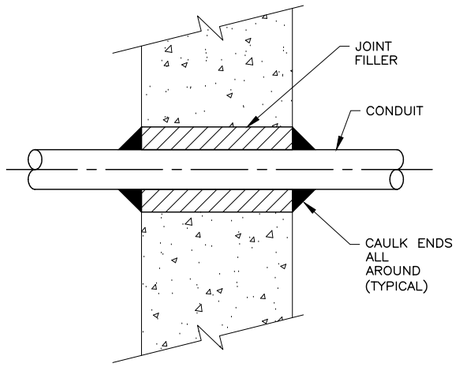
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH FAX (801) 642-2154
AMERICAN FORK, UT 84003
HPE PROJECT **20.025**

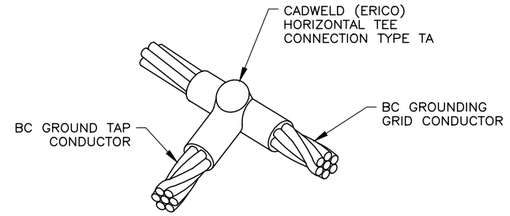
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**



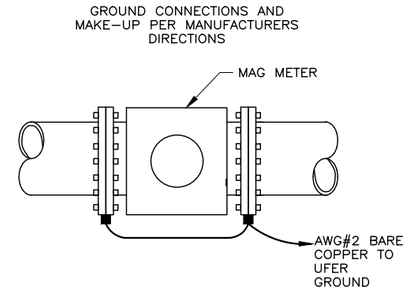
CONDUIT PENETRATION THRU NEW CONCRETE OR WALL



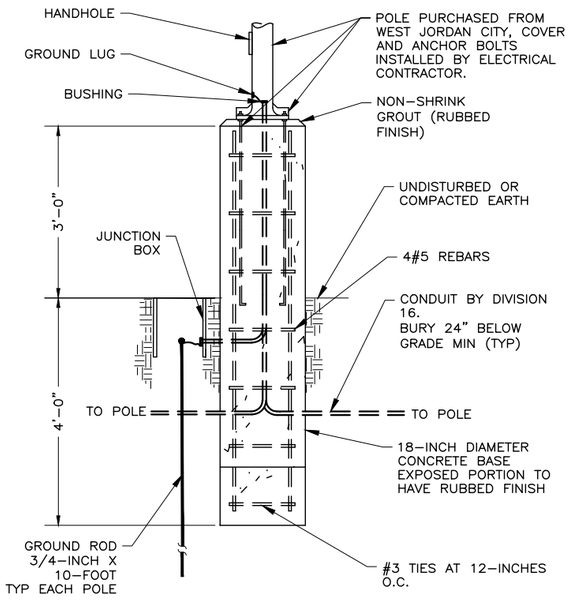
CONDUIT PENETRATION THRU EXISTING CONCRETE OR WALL



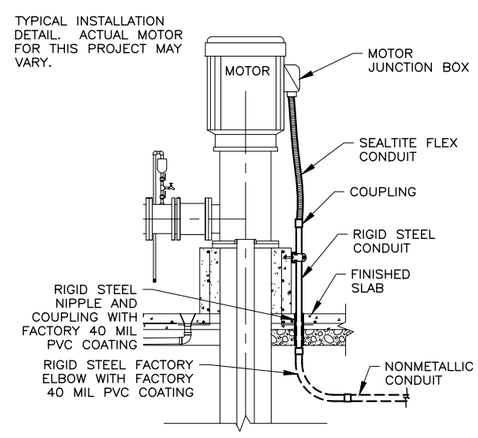
WELDED GROUND CONNECTION 3 / E102
1 1/2" = 1'-0"



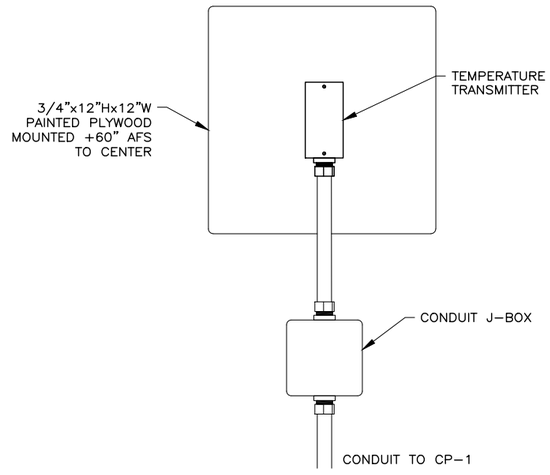
FLOW METER GROUNDING DETAIL 4 / E102
1' = 1'-0"



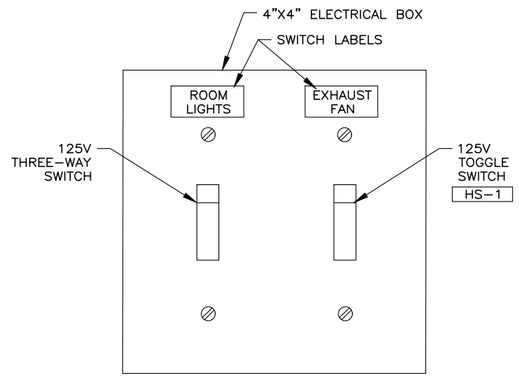
POLE BASE DETAIL 5 / E101
3/4" = 1'-0"



WELL MOTOR CONDUIT INSTALLATION 6 / E102
1/4" = 1'-0"



TEMPERATURE TRANSMITTER 7 / E103
3" = 1'-0"



CHLORINE ROOM SWITCHES 8 / E104
1' = 1'-0"

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 08/07/2023 STATE OF UTAH
PROJECT ENGINEER

DESIGNED KBH	3					
DRAFTED DAS	2					
CHECKED KBH	1					
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.	

SCALE: AS SHOWN

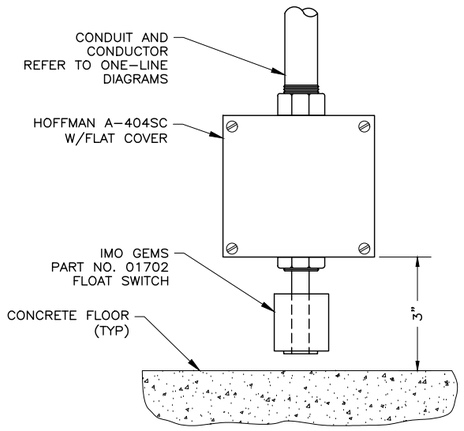
WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
DETAILS, SHT. 1

SHEET E501
089.29.100

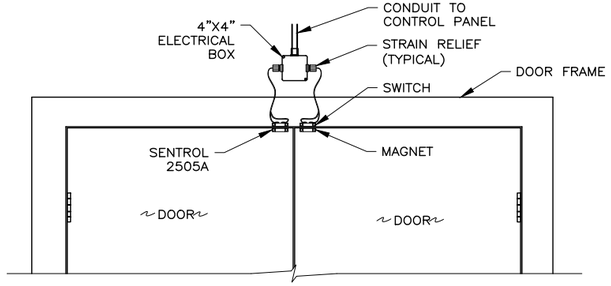
7/04

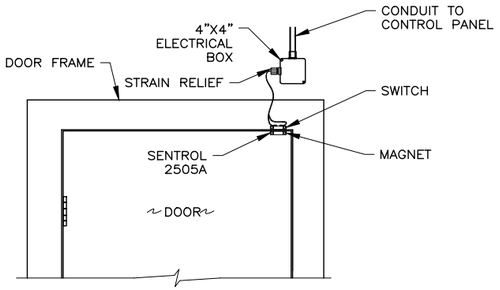
H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
708 EAST 50 SOUTH FAX (801) 642-2154
AMERICAN FORK, UT 84003
HPE PROJECT 20.025

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

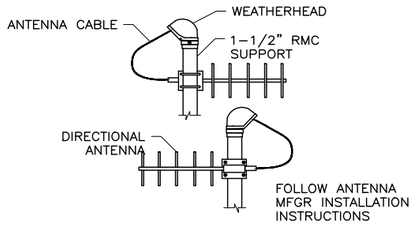


FLOOD LEVEL SWITCH INSTALLATION 1
6" = 1'-0" E103

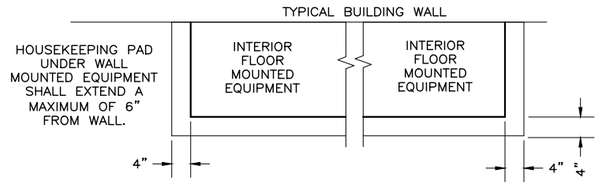




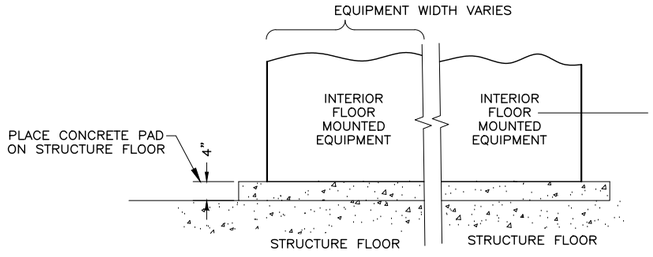
TYPICAL DOOR POSITION SWITCH 2
1" = 1'-0" E103



SUPPORT WEATHERHEAD 4
1 1/2" = 1'-0" —

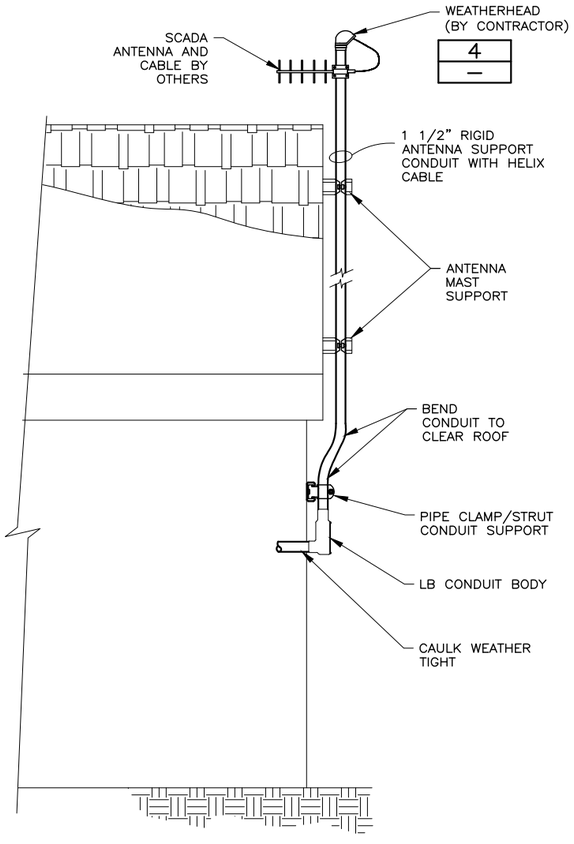


TOP VIEW



FRONT VIEW

EQUIPMENT INSTALLATION 5
3/4" = 1'-0" E102



SCADA ANTENNA SUPPORT 3
1" = 1'-0" E103

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

HANSEN ALLEN & LUCE, INC. ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH	3				
DRAFTED	DAS	2				
CHECKED	KBH	1				
DATE	OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.

SCALE: AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING ELECTRICAL DETAILS, SHT. 2

SHEET E502

089.29.100

7/04

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
HPE PROJECT **20.025**

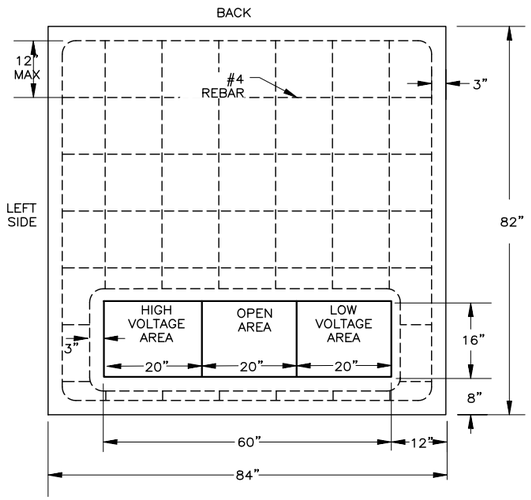
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

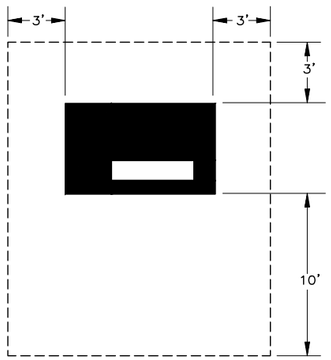
GENERAL NOTES:

1. REFER TO UTILITY STANDARD DETAILS ON-LINE FOR THE LATEST PAD AND TRENCH REQUIREMENTS.
2. NOT USED.

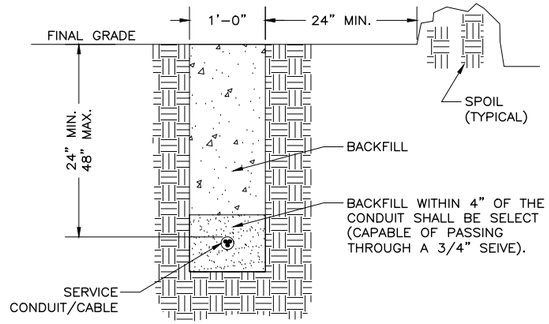
SHEET KEYNOTES:

1. NOT USED.

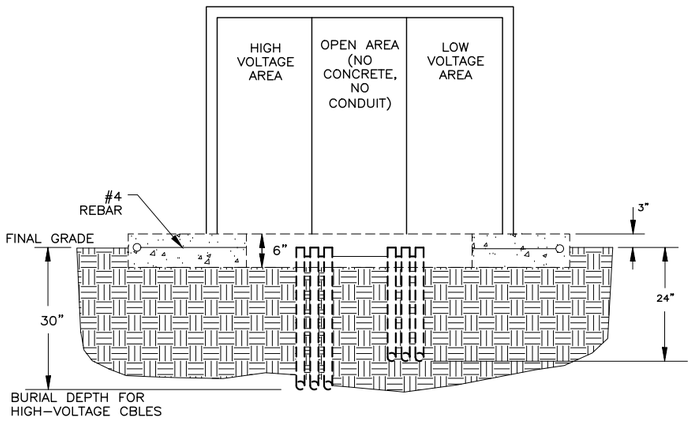


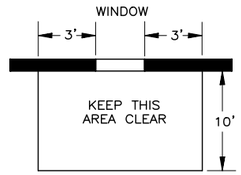


DETAIL "C"



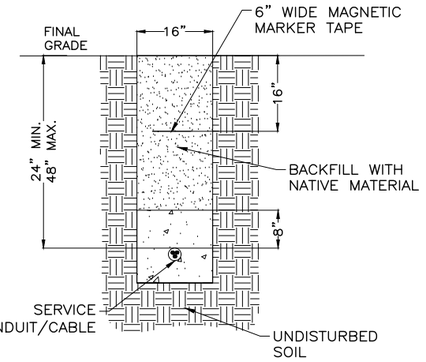
PRIMARY CONDUIT TRENCH 2
1" = 1'-0" E101





DETAIL "A"

DETAIL "B"

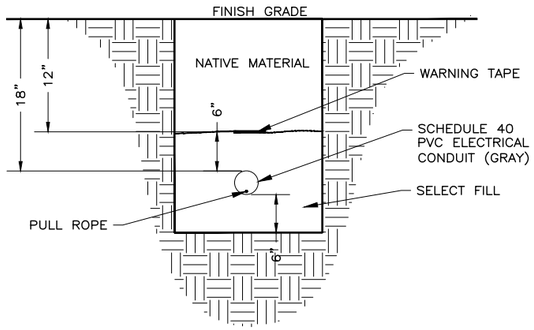


SECONDARY CONDUIT TRENCH 3
1" = 1'-0" E101

NOTES:

1. SITE PREPARATION: ALL DIRT BENEATH THE PAD SITE MUST BE COMPACTED AND LEVEL PRIOR TO SETTING OR POURING THE PAD TO PREVENT SETTLING.
2. 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.
3. PREFABRICATION: THE PAD MAY EITHER BE CONSTRUCTED ON THE SITE OR PREFABRICATED ACCORDING TO SPECIFICATIONS. PREFABRICATED PADS SHALL BE SET LEVEL AND PLUMB.
4. 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.
5. 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 UTILITY TRANSFORMER PAD 1
NTS E101



TRENCH DETAIL 4
1" = 1'-0" E101

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH
PROJECT ENGINEER

DESIGNED KBH	3					
DRAFTED DAS	2					
CHECKED KBH	1					
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.	

SCALE: AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING ELECTRICAL DETAILS, SHT. 3

SHEET E503

089.29.100

FILE NAME:
FILE DATE:

7/04

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
HPE PROJECT **20.025**

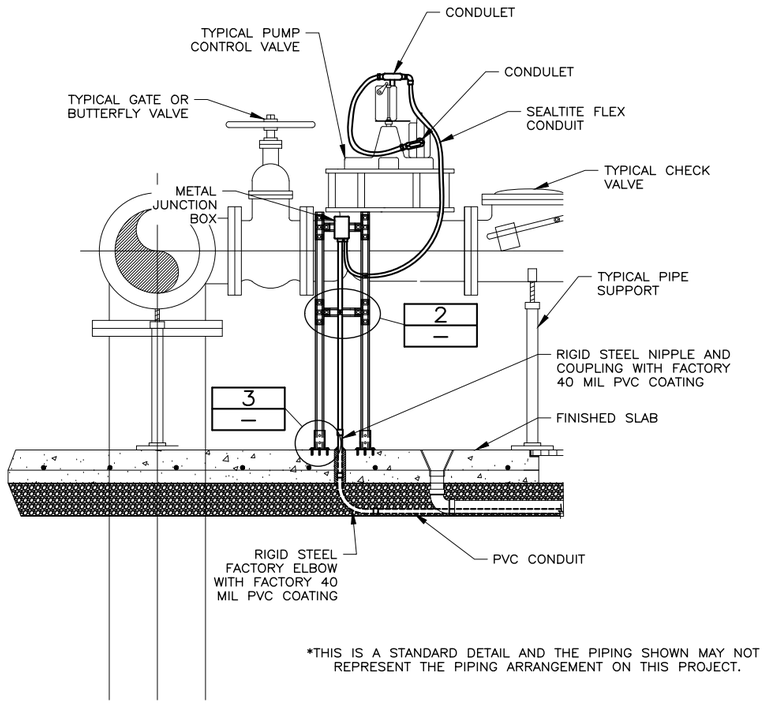
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. NOT USED.

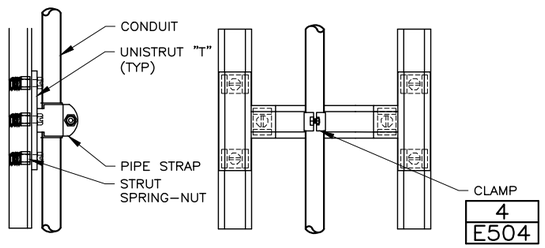
SHEET KEYNOTES:

1. NOT USED.

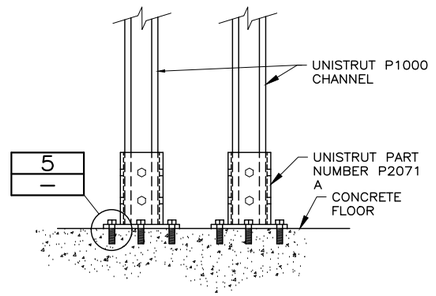


*THIS IS A STANDARD DETAIL AND THE PIPING SHOWN MAY NOT REPRESENT THE PIPING ARRANGEMENT ON THIS PROJECT.

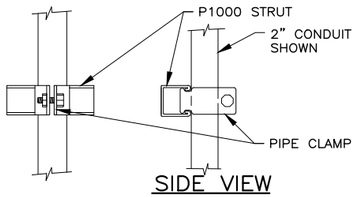
CONDUIT SUPPORT INSTALLATION 1
1" = 1'-0" E103



SUPPORT BRACE INSTALLATION 2
3" = 1'-0" —



SUPPORT BASE INSTALLATION 3
3" = 1'-0" —

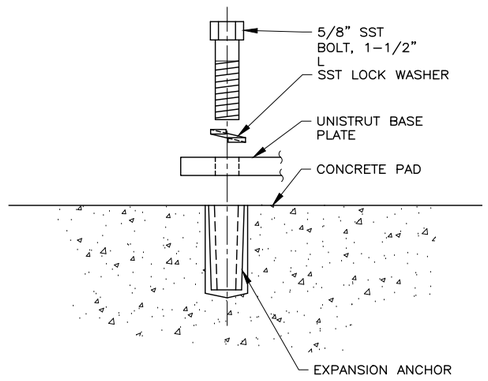


SIDE VIEW

CONDUIT PIPE CLAMPS*			
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

TYPICAL CONDUIT SUPPORT



BASE ANCHOR INSTALLATION 5
6" = 1'-0" —

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE INC ENGINEERS

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

PROJECT ENGINEER

DESIGNED KBH	3					
DRAFTED DAS	2					
CHECKED KBH	1					
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.	

SCALE: AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING ELECTRICAL DETAILS, SHT. 4

SHEET E504

089.29.100

7/04

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
HPE PROJECT **20.025**

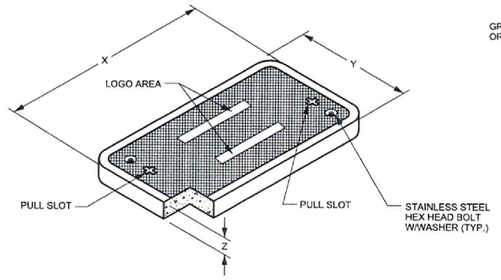
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

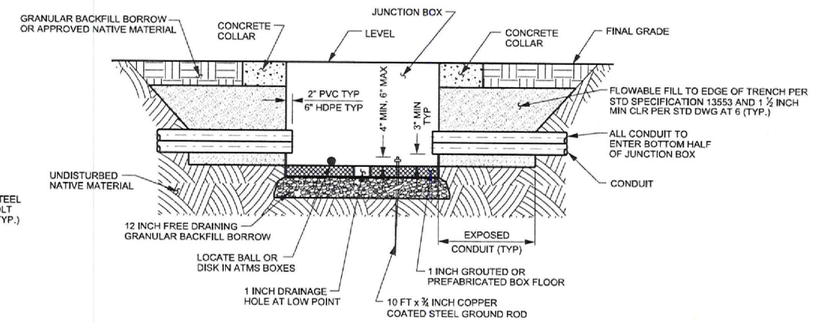
GENERAL NOTES:

1. NOT USED.

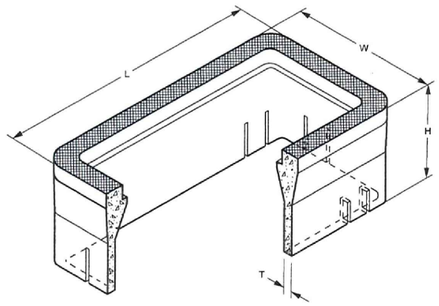
SHEET KEYNOTES:

1. NOT USED.



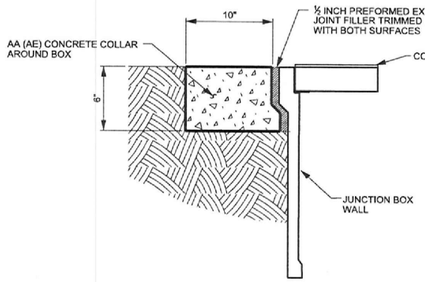


JUNCTION BOX CONDUIT PENETRATION DETAIL



BOX AND LID DIMENSIONS

BOX TYPE	"H" inch	"L" inch	"T" inch	"W" inch	"X" inch	"Y" inch	"Z" inch
I-PC	24	25	1 ½	16	23 ¼	13 ¾	2
II-PC	24	37 ⅜	1 ½	26	35 ⅜	24	3
III-PC	24	49 ⅜	2	32 ⅜	47 ⅜	30 ⅛	3

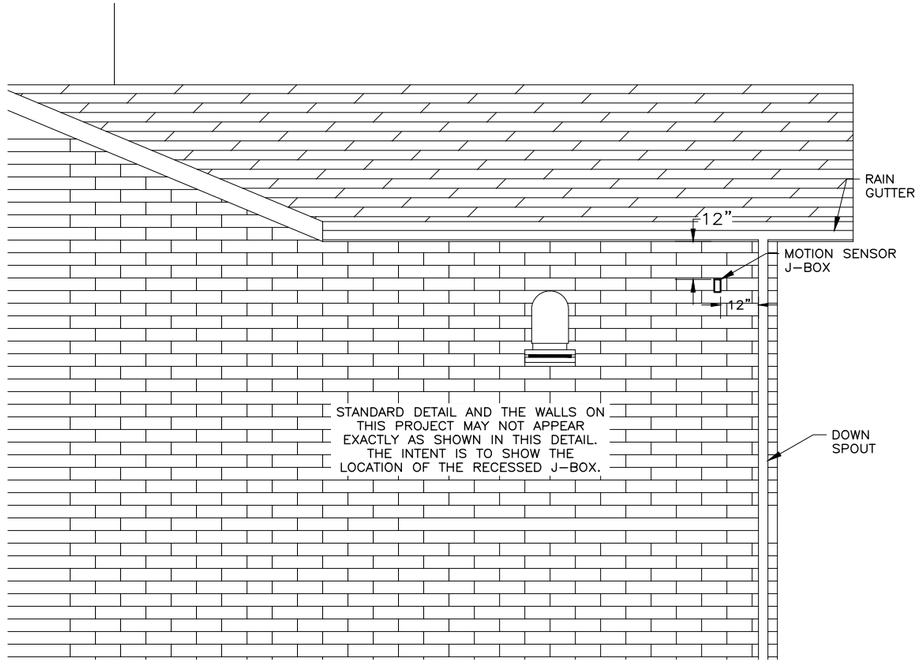


JUNCTION BOX CONCRETE COLLAR DETAIL

NOTES:

1. STAMP BOX LOGO INTO THE LID FROM THE FACTORY. (SEE STANDARD SPECIFICATION 13554).
2. DO NOT PLACE JUNCTION BOXES IN THE TRAVELED WAY OR ON FREEWAY SHOULDERS.
3. CONCRETE COLLAR WIDTH VARIES WHEN ADJACENT TO ATMS CABINETS. REFER TO AT AND SL SERIES STD DWGS.
4. PROVIDE CONCRETE COLLARS EXCEPT WITHIN CONCRETE PAVED AREAS.
5. INSTALL CONDUIT PLUG PER STANDARD SPECIFICATION 13554.
6. ALIGN ATMS CONDUIT BY COLOR ON EACH SIDE OF THE JUNCTION BOX.
7. PROVIDE TYPE III-PC JUNCTION BOXES WITH A SPLIT LID.
8. CONFORM TO ANSI/SCTE-77 2007 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY" TIER 22 LOADING FOR ALL JUNCTION BOXES.
9. EXTEND GROUND ROD A MINIMUM OF 4 INCHES AND A MAXIMUM OF 6 INCHES ABOVE BOTTOM OF JUNCTION BOX.
10. USE A SPLIT BOLT TO ATTACH GROUND WIRES TO GROUND ROD. ATTACH NOT MORE THAN TWO WIRES PER BOLT.
11. DO NOT CUT GROUND RODS.

UG ELECTRICAL BOX 1
N/A E101



MOTION SENSOR J–BOX INSTALLATION 2
1/2" = 1'–0" E103

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

PROJECT ENGINEER

DESIGNED KBH	3					
DRAFTED DAS	2					
CHECKED KBH	1					
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.	

SCALE AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING ELECTRICAL DETAILS, SHT. 5

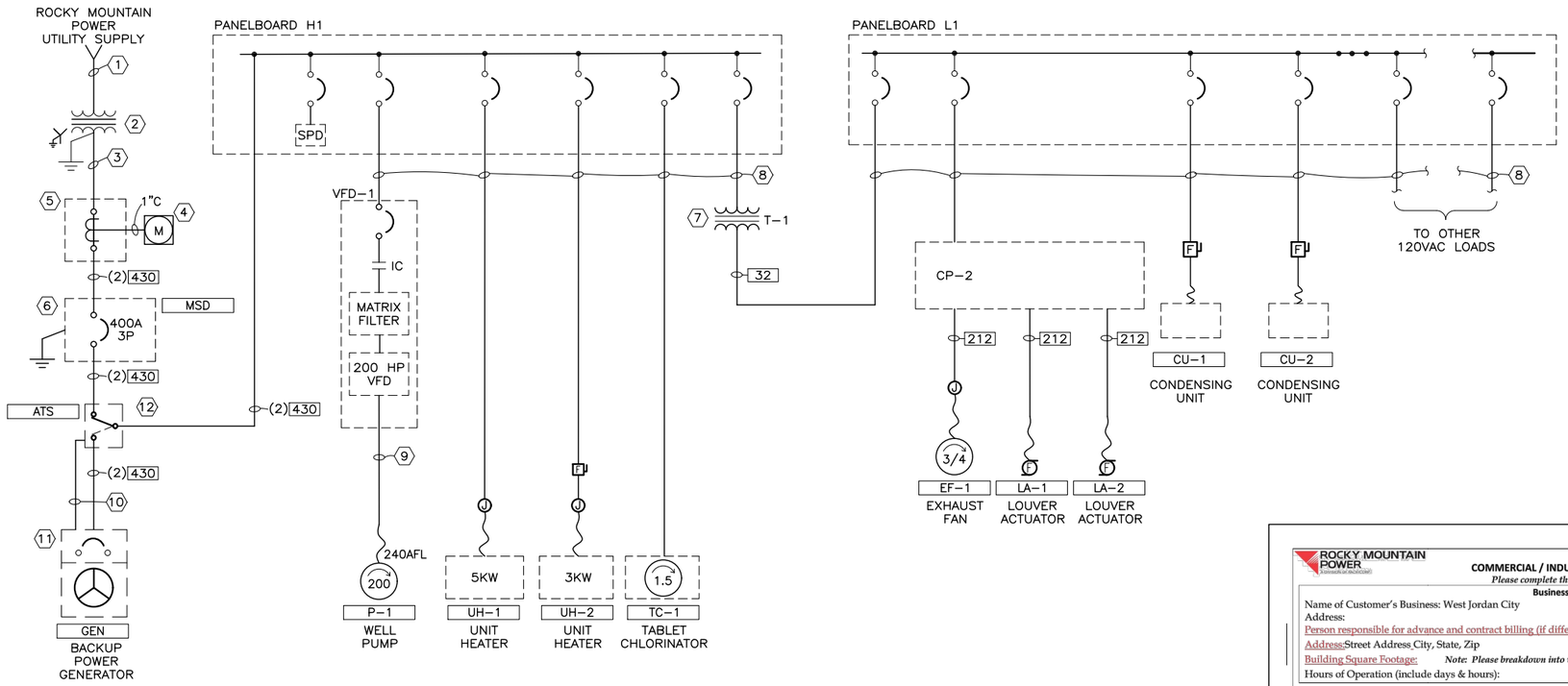
SHEET E505

089.29.100

7/04

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
HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**



POWER ONE-LINE DIAGRAM

ELECTRICAL UTILITY INSTALLATION

UTILITY INFORMATION

UTILITY COMPANY:	ROCKY MOUNTAIN POWER
UTILITY COMPANY CONTACT:	AUBREY RASMUSSEN
CONTACT INFORMATION:	PHONE: 801-576-6247
WORK ORDER NUMBER:	6845352

	SUPPLIED BY:	INSTALLED BY:
SERVICE PRIMARY		
PRIMARY TRENCHING/BACKFILL	-	CONTRACTOR
PRIMARY CONDUIT	CONTRACTOR	CONTRACTOR
PRIMARY CONDUCTOR	UTILITY COMPANY	UTILITY COMPANY
SERVICE TRANSFORMER		
TRANSFORMER PAD	CONTRACTOR	CONTRACTOR
TRANSFORMER	UTILITY COMPANY	UTILITY COMPANY
SERVICE SECONDARY		
SECONDARY TRENCHING/BACKFILL	-	CONTRACTOR
SECONDARY CONDUIT	CONTRACTOR	CONTRACTOR
SECONDARY CONDUCTOR	UTILITY COMPANY	UTILITY COMPANY
METERING EQUIPMENT		
METER	UTILITY COMPANY	UTILITY COMPANY
METER SOCKET	CONTRACTOR	CONTRACTOR
COMBO METER/MAIN	-	-
CURRENT TRANSFORMER ENCL.	CONTRACTOR	CONTRACTOR
CT ENCL. TO METER SOCKET WIRING	UTILITY COMPANY	UTILITY COMPANY
CT ENCL. TO METER SOCKET CONDUIT	CONTRACTOR	CONTRACTOR
MAIN SERVICE DISCONNECT		
CIRCUIT BREAKER	CONTRACTOR	CONTRACTOR
FUSED DISCONNECT SWITCH	-	-

ROCKY MOUNTAIN POWER

COMMERCIAL / INDUSTRIAL CUSTOMER INFORMATION SHEET

Please complete this form and return to the Estimator assigned to your job

Business Information

Name of Customer's Business: West Jordan City Phone No.: Request Number:
Address: Fax No.:
Person responsible for advance and contract billing (if different than monthly billing customer):
Address: Street Address, City, State, Zip E-mail Address:
Building Square Footage: *Note: Please breakdown into warehouse, office and manufacturing if applicable*
Hours of Operation (include days & hours):

Service Description

Desired Secondary Voltage: 3 Phase 277/480 V If 'other' list here *Note: Not all voltages may be available*
Panel Size *(in Amps)*:400 Number of Meters: 1 *List addresses for each above*
Nearest Pole or Equipment number: Type of Service Desired: Underground
Electrical Contractor: Phone #:

Load List *(attach additional sheets if necessary)*

Description	Phase and Voltage	New Load to be added	Load to be removed	Total Connected Load after changes	Unit
HVAC (name plate rating)	1 Phase 120/240 V	1.8	-	1.8	Tons*
Refrigeration Equipment	1 Phase 120/240 V	-	-	-	Tons*
Total connected Tons				1.8 Tons	
Exhaust Fans	1 Phase 120/240 V	0.75	-	0.75	HP
Gas/Fuel/Sump Pump	1 Phase 120/240 V	-	-	-	HP
Small Motors (include motor codes)	1 Phase 120/240 V	1.5	-	1.5	HP
Air Compressor	1 Phase 120/240 V	-	-	-	HP
Swimming Pool	1 Phase 120/240 V	-	-	-	HP
Largest Motor (not included above) & code	3 Phase 277/480 V	200	-	200	HP
Total connected HP				202.25 HP	
Electric Heat	3 Phase 277/480 V	9.08	-	9.,08	kW
Water Heating	1 Phase 120/240 V	-	-	-	kW
Lighting	1 Phase 120/240 V	0.6	-	0.6	kW
Outlets	1 Phase 120/240 V	1.62	-	1.62	kW
Office Equipment	1 Phase 120/240 V	-	-	-	kW
Kitchen Equipment	1 Phase 120/240 V	-	-	-	kW
Computers, Magnetic Power Supplies	1 Phase 120/240 V	1.0	-	1.0	kW
Machinery	1 Phase 120/240 V	-	-	-	kW
Thermoplastic Injection Equipment	1 Phase 120/240 V	-	-	-	kW
Elevators	1 Phase 120/240 V	-	-	-	kW
Boiler	1 Phase 120/240 V	-	-	-	kW
Snow Melting	1 Phase 120/240 V	-	-	-	kW
Signs	1 Phase 120/240 V	-	-	-	kW
X-Ray Equipment	1 Phase 120/240 V	-	-	-	kW
Washer/Dryer	1 Phase 120/240 V	-	-	-	kW
Miscellaneous	1 Phase 120/240 V	1.0	-	1.0	kW
Heat Exchanger	1 Phase 120/240 V	-	-	-	kW
Humidifier	1 Phase 120/240 V	-	-	-	kW
Future	1 Phase 120/240 V		-	0	kW
Total connected kW				20.22 kW	

It is important to provide the most accurate information available, as it is used by the Estimator to design PacifiCorp's facilities and determine the customer's costs. Please sign and date this form before giving it to your estimator.

Customer Signature Date

Note:
- You may wish to consult a trained professional (electrician, engineer, etc.) prior to providing the information to your estimator.
- Commercial metering can have many restrictions that should be discussed with the estimator prior to the purchase and installation of your metering equipment. There are also restrictions regarding master metering. If your plans call for master metering, please discuss this with your estimator.
- Motors larger than 35hp three phase or 5hp single phase will require approval by our engineering department prior to installation in order to determine the acceptable starting current.

* Tons = BTUs/12,000

RMP LOAD SHEET

GENERAL NOTES:

1. REFER TO CONDUIT/CONDUCTOR TABLE FOR WIRE AND CONDUIT REQUIREMENTS.
2. REFER TO ELECTRICAL PLANS FOR ELECTRICAL EQUIPMENTS LOCATIONS.

SHEET KEYNOTES:

1. CONDUIT SIZE 4". COORDINATE WITH UTILITY COMPANY AS AS REQUIRED.
2. TRANSFORMER: PROVIDED AND INSTALLED BY UTILITY COMPANY. PAD BY CONTRACTOR.
3. 4"C, CONDUCTORS BY UTILITY COMPANY.
4. METER SOCKET: PROVIDED AND INSTALLED AS REQUIRED BY UTILITY COMPANY.
5. CT METERING ENCLOSURE: PROVIDED AND INSTALLED AS REQUIRED BY BY UTILITY COMPANY.
6. MAIN SERVICE DISCONNECT: 480VAC, 400A, 3-POLE CIRCUIT BREAKER IN NEMA 3R ENCLOSURE. LABEL AS "MAIN SERVICE DISCONNECT" AND AS REQUIRED BY NEC 110.24.
7. TRANSFORMER T-1: 30KVA, 480VAC PRIMARY, 208Y/120V SECONDARY.
8. REFER TO PANELBOARD SCHEDULE FOR WIRE IDENTIFICATION.
9. VFD CONDUCTORS: 1EA 3C-350, IN 3"C (BELDEN 29534 OR APPROVED EQUAL).
10. 1"C, CONDUCTORS AS REQUIRED FOR ATS TO START/STOP THE GENERATOR.
11. BACKUP POWER GENERATOR: 230KW, 480VAC, 3-PH, 4-W DIESEL GENERATOR.
12. AUTOMATIC TRANSFER SWITCH: 480VAC, 400A, 3-PH, 4-W.

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE INC ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH	3				
DRAFTED	DAS	2				
CHECKED	KBH	1				
DATE	OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.

SCALE: NONE

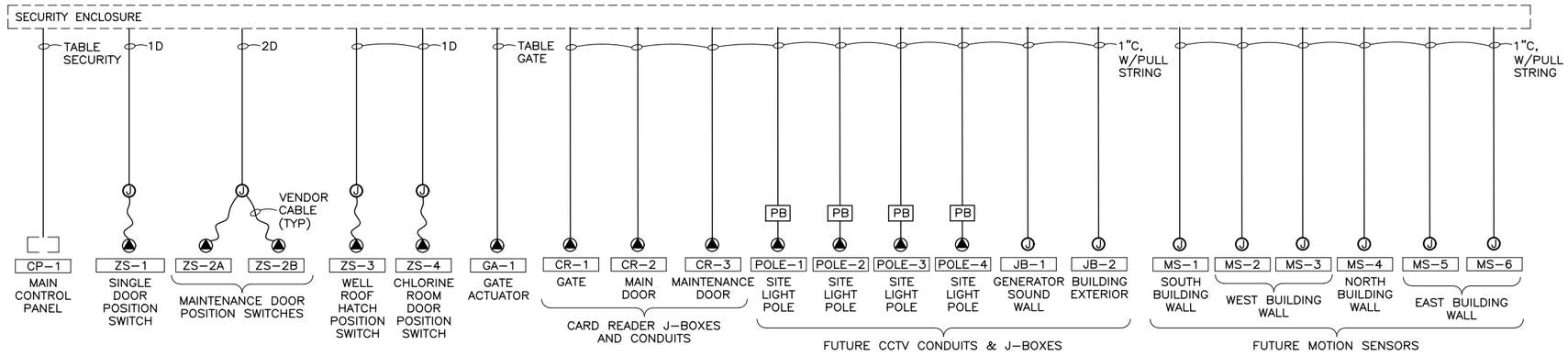
WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
POWER ONE-LINE DIAGRAM

SHEET E601

089.29.100

7/04



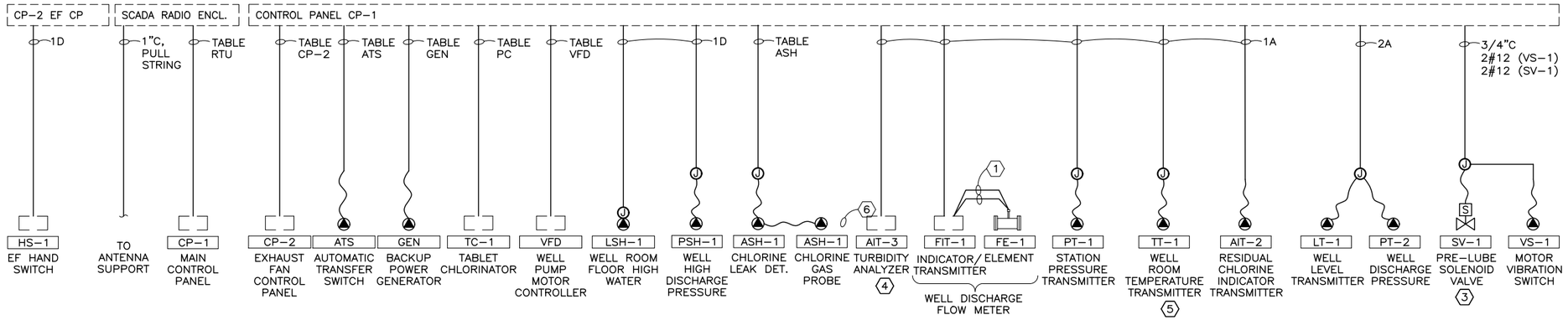


TABLE VFD

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO VFD SIGNAL DESCRIPTION
1"	1	#14	COMMON INPUT
	1	#14	COMMON OUTPUT
	1	#14	120 VAC FUSED COMMON
	1	#14	120 VAC NEUTRAL
	1	#14	BACKSPIN TIME DELAY
	1	#14	SHUTDOWN RESET
	1	#14	VFD CALL RUN
	3	#14	VFD CP-1 START LIGHT
	2	#14	VFD CP-1 START PUSHBUTTON
	1	#14	VFD FAULT
	1	#14	VFD FILTER HIGH TEMP.
	1	#14	VFD HIGH PRESSURE SHUTDOWN
	1	#14	VFD HS IN AUTO MODE
	1	#14	VFD HS IN HAND MODE
	1	#14	VFD LOW LEVEL SHUTDOWN
	1	#14	VFD ON
	1	#14	VFD READY TO START
	1	#14	WASTE VALVE HS IN AUTO POS.
	1	#14	WASTE VALVE HS IN WASTE POS.
	1	#14	MOTOR HIGH VIBRATION SHDN
1"	1	CAT 6U	VFD ETHERNET
	1	CAT 6U	MOTOR RTD TEMPERATURES
	1	CAT 6U	POWER MONITOR
3/4"	1	#18TSP	VFD COMMAND SPEED
	1	#18TSP	VFD RUNNING SPEED
3/4"	-	P. STRING	SPARE CONDUIT

TABLE GATE

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO GATE ACTUATOR SIGNAL DESCRIPTION
1"C	1	#14	COMMON INPUT
	1	#14	COMMON OUTPUT
	1	#14	CLOSE COMMAND
	1	#14	GATE OPEN STATUS
	1	#14	GATE CLOSED STATUS
	1	#14	OPEN COMMAND

TABLE CP-2

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO CP-2 SIGNAL DESCRIPTION
3/4"C	1	#14	COMMON OUTPUT
	1	#14	COMMON INPUT
	1	#14	EXHAUST FAN ON
	1	#14	EXHAUST FAN RUN

TABLE RTU

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO RTU
3/4"C	1	CAT 6U	ETHERNET

TABLE ASH

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO ASH-1 SIGNAL DESCRIPTION
3/4"C	1	#14	COMMON OUTPUT
	1	#14	COMMON INPUT
	1	#14	CHLORINE LEAK ALARM
	1	#14	CHLORINE ALARM RESET

TABLE VA

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO WASTE VALVE SIGNAL DESCRIPTION
3/4"C	1	#14	COMMON INPUT
	1	#14	COMMON OUTPUT
	3	#14	VALVE FULL CLOSED/NOT FULL CLOSED
	1	#14	VALVE FULL OPEN/NOT FULL OPEN
	1	#14	VALVE CLOSE COMMAND
	1	#14	VALVE OPEN COMMAND

NOT ALL POSITION CONTACTS MAY BE USED IN CP-1

TABLE GEN

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO GENERATOR SIGNAL DESCRIPTION
3/4"C	1	#14	COMMON INPUT
	1	#14	GENERATOR RUNNING
	1	#14	GENERATOR FAULT

TABLE ATS

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO ATS SIGNAL DESCRIPTION
3/4"C	1	#14	COMMON INPUT
	1	#14	ATS IN GENERATOR POSITION
	1	#14	ATS IN UTILITY POSITION

I&C WIRE/CONDUIT TABLE

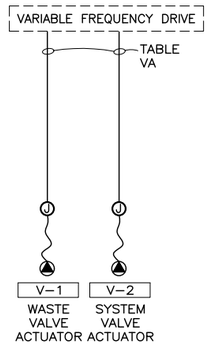
IDENT.	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
1A	3/4"	1	#18TSP	1 ANALOG SIGNAL
2A	3/4"	2	#18TSP	2 ANALOG SIGNALS
3A	3/4"	3	#18TSP	3 ANALOG SIGNALS
IDENT.	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
1D	3/4"	2	#14	1 SIGNAL
2D	3/4"	3	#14	1 COMMON, 2 DISCRETE SIG.
3D	3/4"	4	#14	VARIES
4D	3/4"	5	#14	VARIES

TABLE TC

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO TABLET CHLORINATOR SIGNAL DESCRIPTION
3/4"C	1	#14	COMMON INPUT
	1	#14	COMMON OUTPUT
	1	#14	CHLORINATOR REMOTE RUN
	1	#14	PUMP RUNNING
	1	#14	SOLUTION TANK HIGH LEVEL
	1	#14	SOLUTION TANK LOW LEVEL
	1	#14	SPARE
	1	#14	WEIGHT SCALE ALARM
3/4"C	1	#18TSP	WELL FLOW

TABLE SECURITY

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	CP-1 TO SECURITY ENCLOSURE SIGNAL DESCRIPTION
1-1/2C	1	#14	COMMON INPUT
	1	#14	COMMON OUTPUT
	1	#14	CHLORINE ROOM DOOR POS.
	1	#14	CLOSE COMMAND
	1	#14	GATE CLOSED STATUS
	1	#14	GATE OPEN STATUS
	1	#14	OPEN COMMAND
	1	#14	SITE MOTION SENSOR ALARM
	2	#14	WELL ROOM MAINT. DOOR POS.
	1	#14	WELL ROOM MAN DOOR POS.
	1	#14	WELL ROOM ROOF HATCH POS.
1"C	-	-	FUTURE ETHERNET



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
HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. LOCATIONS OF INSTRUMENTS AND DEVICE SHOWN ON THE INSTRUMENTATION AND CONTROL PLAN. SEE E103.

SHEET KEYNOTES:

1. INSTALL SUPPLIED DATA AND SIGNAL WIRE IN CONDUIT AS REQUIRED BY THE METER MANUFACTURER. DO NOT COMBINE SIGNAL AND DATA CONDUCTORS IN THE SAME CONDUIT.
2. INSTALL A 4"X4" ELECTRICAL BOX IN THE CHLORINE ROOM. PROVIDE A THREE-WAY SWITCH FOR THE BUILDING LIGHTS AND A TOGGLE SWITCH FOR THE EXHAUST FAN.
3. SHOWN FOR PRE-LUBE SOLENOID VALVE SV-1. DUPLICATE FOR TURBIDITY ANALYZER VALVE SV-2 AND CHLORINE ANALYZER VALVE SV-3.
4. SHOWN FOR TURBIDITY AHALYZER AIT-1. DUPLICATE FOR RESIDUAL CHLORINE ANALYZER AIT-2
5. SHOWN FOR WELL ROOM TEMPERATURE TRANSMITTER TT-2. DUPLICATE FOR CHLORINE ROOM TEMPERATURE TRANSMITTER TT-2.
6. CABLE SUPPLIED BY PROBE MANUFACTURER.

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

PROJECT ENGINEER

DESIGNED KBH	3					
DRAFTED DAS	2					
CHECKED KBH	1					
DATE OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.	

SCALE: NONE

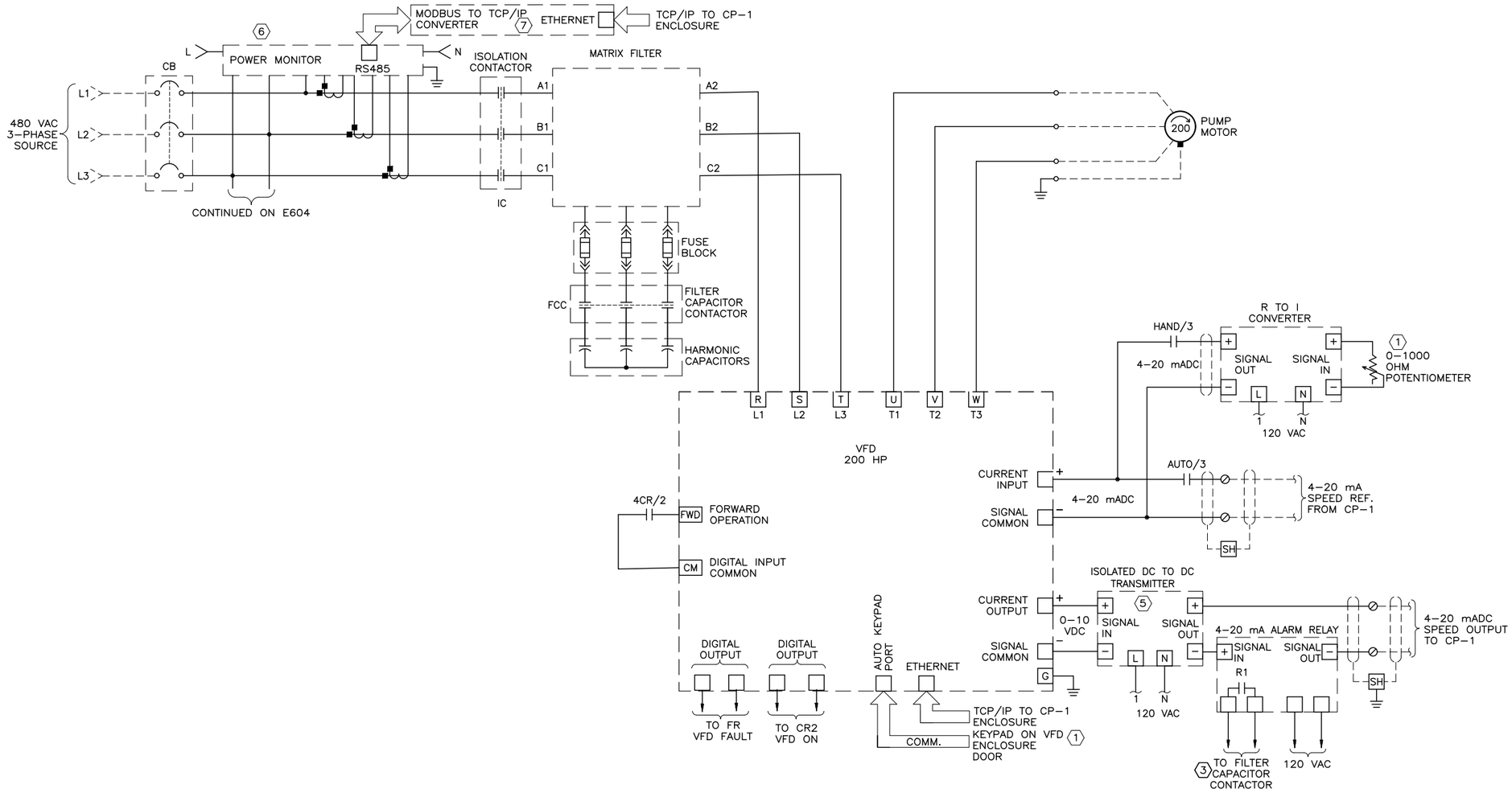
WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING ELECTRICAL INST. & CONTROL ONE-LINE DIAG.

SHEET E602

089.29.100

7/04



H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED
708 EAST 50 SOUTH
AMERICAN FORK, UT 84003
(801) 642-2051
FAX (801) 642-2154
HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. THIS IS A TYPICAL WIRING DIAGRAM. CONTRACTOR SHALL MODIFY AS REQUIRED FOR THE VFD AND OTHER COMPONENTS PROVIDED.
2. CONTRACTOR SHALL PROVIDE TERMINAL NUMBERS AND WIRE NUMBERS AS REQUIRED.
3. COORDINATE WITH PROVIDER OF CP-1 FOR RELAY DESIGNATIONS IN CP-1.
4. VFD MANUFACTURER SHALL PROVIDE POWER FOR POWER MONITOR AND MODBUS TO TCP/IP CONVERTER AS REQUIRED.

SHEET KEYNOTES:

1. DEVICE SHALL BE LOCATED ON ENCLOSURE DOOR AVAILABLE TO THE OPERATOR.
2. FUSES SIZED BY EQUIPMENT MANUFACTURER.
3. CONTACT TO CONTROL FILTER CAPACITOR CONTACTOR. DE-ENERGIZE CAPACITORS WHEN VFD IS LESS THAN 30%.
4. T-STAT SHALL CONTROL ENCLOSURE FAN.
5. PROVIDE SIGNAL CONVERTER AS REQUIRED.
6. POWER MONITOR SHOWN WITHOUT FUSING. CONTRACTOR SHALL PROVIDE FUSING AS REQUIRED BY MANUFACTURER.
7. PROVIDE RS485 TO ETHERNET CONVERTER AND POWER SUPPLY AS REQUIRED.
8. PROVIDE A FLIP-FLOP TIMER, WITH CONTACTS ON FOR 0.5 SEC, OFF FOR 0.5 SECONDS.
9. FOR THE PUMP-TO-WASTE DELAY TIMER, PROVIDE A STANDARD TIME DELAY RELAY. CONTACTS TO CLOSE IN APPROXIMATELY 30 SEC, TO 600 SECONDS. ACTUAL TIME DELAY TO BE DETERMINED DURING WELL STARTUP.

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

HANSEN ALLEN & LUCE INC
ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH	3			
DRAFTED	DAS	2			
CHECKED	KBH	1			
DATE	OCTOBER 2023	NO.	DATE	REVISIONS	BY / APVD.

SCALE: NONE

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
TYPICAL VFD CONTROL DIAGRAM, SHT. 1

SHEET: E603
089.29.100

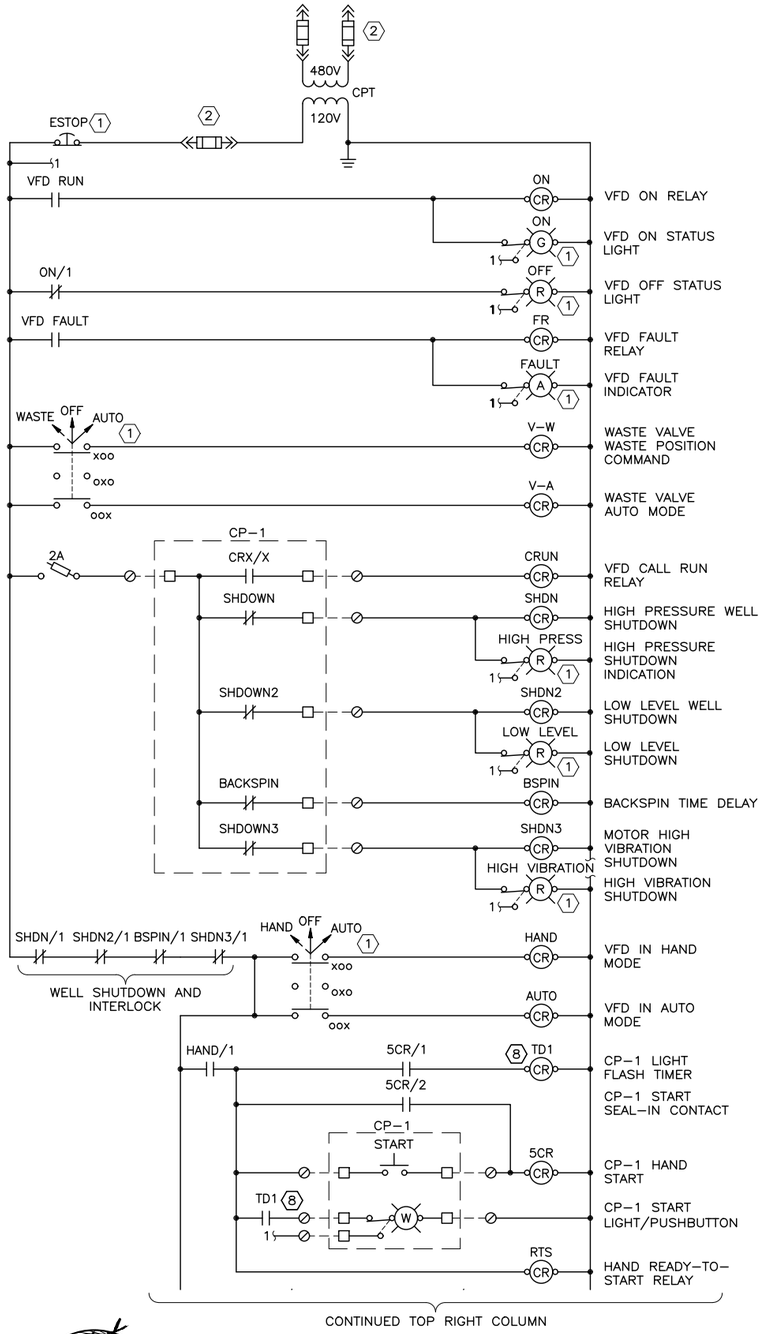
7/04

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
HPE PROJECT **20.025** © 2020
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

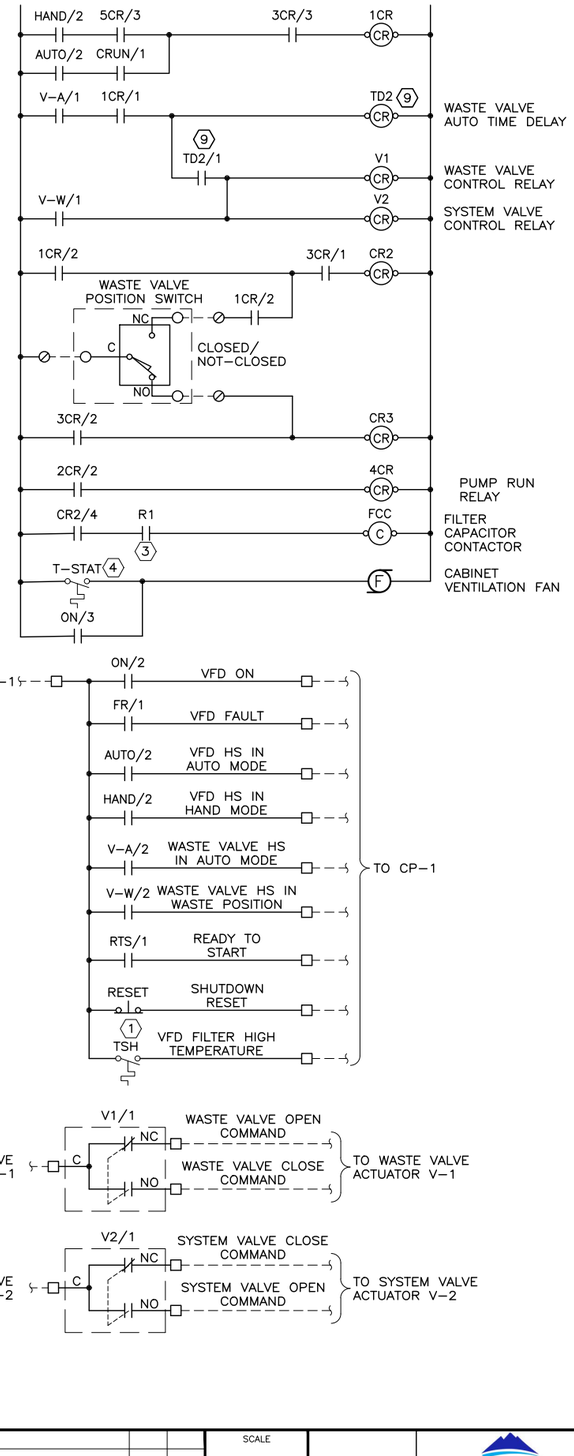
1. FOR GENERAL AND KEYNOTES, REFER TO E603.

CONTINUED FROM SHEET E603



CONTINUED TOP RIGHT COLUMN

CONTINUED FROM LOWER LEFT COLUMN



FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH
PROJECT ENGINEER

DESIGNED KBH	3						
DRAFTED DAS	2						
CHECKED KBH	1						
DATE OCTOBER 2023	NO.	DATE	REVISIONS		BY	APVD.	

SCALE: NONE

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
TYPICAL VFD CONTROL DIAGRAM, SHT. 2

SHEET E604

089.29.100

7/04

EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	EQUIPMENT RATING						DISCONNECT						STARTER		
		VOLTS	PH	HP	WATTS	FLA	MCA	AMPS	VOLTS	POLES	NEMA	FUSE	CONNECTION	TYPE	NEMA SIZE	NOTES
AIT-2	CHLORINE ANALYZER	120	1	-	10	0.08		-	-	-	-	-	HARD-WIRED	-	-	
AIT-3	TURBIDITY ANALIZER	120	1		150	1.25		-	-	-	-	-	HARD-WIRED	-	-	
ATS	AUTOMATIC TRANSFER SWITCH	480	3	-	-	400	-	-	-	-	-	-	HARD-WIRED	-	-	
CP-1	MAIN CONTROL PANEL	120	1	-	800	-	-	-	-	-	-	-	HARD-WIRED	-	-	
CP-2	EXHAUST FAN CONTROL PANEL	120	1	-	-	-	-	-	-	-	-	-	HARD-WIRED	-	-	
CTE	CURRENT TRANSFORMER ENCLOSURE	480	3	-	-	-	-	-	-	-	-	-	-	-	-	
FE-1	FLOW ELEMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
FIT-1	FLOW INDICATOR/TRANSMITTER	120	1	-	50	0.4										
GA-1	GATE ACTUATOR	240	1	1	1,920	8	-	-	-	-	-	-	-	-	-	
GEN	BACKUP POWER GENERATOR	480	3	-		-	-	-	-	-	-	-	HARD-WIRED	-	-	
LT-1	WELL LEVEL TRANSMITTER	24	-	-	-	-	-	-	-	-	-	-	-	-	-	
MSD	MAIN SERVICE DISCONNECT	480	3	-	-	-	-	-	-	-	-	-	-	-	-	
P-1	WELL PUMP	480	3	200	199,296	240	-	-	-	-	-	-	HARD-WIRED	VFD	200 HP	
PC-1	TABLET CHLORINATOR	120	1	-	1,656	-	-	-	-	-	-	-	-	-	-	
RTU	REMOTE TELEMETRY UNIT	120	1	-	-	-	-	-	-	-	-	-	HARD-WIRED	-	-	
SV-1	PRE-LUBE SOLENOID VALVE	120	1	-	5			-	-	-	-	-	HARD-WIRED	-	-	
SV-1	CHLORINE RESIDUAL SOLENOID VALVE	120	1	-	5			-	-	-	-	-	HARD-WIRED	-	-	
SV-3	TURBIDITY SOLENOID VALVE	120	1	-	5			-	-	-	-	-	HARD-WIRED	-	-	
TT-1	PUMP ROOM TEMPERATURE SENSOR	24	-	-	-	-	-	-	-	-	-	-	-	-	-	
TT-2	CHLORINE ROOM TEMPERATURE SENSOR	24	-	-	-	-	-	-	-	-	-	-	-	-	-	
V-1	WASTE VALVE ACTUATOR	120	1	1/6	528	4.4		-	-	-	-	-	-	-	-	
V-2	SYSTEM VALVE ACTUATOR	120	1	1/6	528	4.4		-	-	-	-	-	-	-	-	
VFD	WELL VARIABLE FREQUENCY DRIVE	480	3	200	-	-		-	-	-	-	-	HARD-WIRED	-	-	

NOTES: 1)

FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER		FIX	LAMP	LUMENS	TEMPERATURE (KELVIN)	MOUNTING	NOTES:
		NAME	CATALOG NO.	VA					
F1	4' LED ENCLOSED INDUSTRIAL, FIBERGLASS HOUSING, DAMP LOCATION, MVOLT	METALUX	4VT2 LD5-4-DR-UNV-L840-CD1-WL-U	38	LED	4000	4000	SURFACE	
F2	LED WALL MOUNTED FULL CUTOFF MINI AREA WALL PACK FOR WET LOCATIONS	LUMARK	XTOR2B-W-PC1	18	LED	1,472	4000	WALL	1)
F3	FLOOD LIGHT, WIDE DISTRIBUTION, 120 VAC, 4000 DEG K LED	EATON	URLD-C25-E-U-66-Y-BZ	128	LED	15,530	4000	WALL	2)
F4A	WEST JORDAN STANDARD POLE LIGHT	-	-	129	LED	13,748	4999	POLE	3)
F4B	WEST JORDAN STANDARD LIGHT POLE	-	-	-	-	-	-	-	3)

NOTES:
1) FIXTURE SHALL BE MOTION SENSOR CONTROLLED.
2) AIM TOWARD GENERATOR SIDE AISLE.
3) POLE AND FIXTURE SHALL BE PURCHASED FROM WEST JORDAN CITY.

HVAC MECHANICAL EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	EQUIPMENT RATING						DISCONNECT						STARTER		
		VOLTS	PH	HP	WATTS	FLA	MCA	AMPS	VOLTS	POLES	NEMA	FUSE	CONNECTION	TYPE	NEMA SIZE	NOTES
CU-1	CONDENSING UNIT	208	1	-	3,162	15.2	19	30	240	3	3R	25	HARD-WIRED	INCL.	N/A	
CU-2	CONDENSING UNIT	208	1	-	3,162	15.2	19	30	240	3	3R	25	HARD-WIRED	INCL.	N/A	
EF-1	EXHAUST FAN	120	1	F	150	1.25	-	-	125	1	-	-	HARD-WIRED	N/A	N/A	2)
FC-1	AIR HANDLER	208	1		-	-	-	-	-	-	-	-	-	-	-	1)
FC-2	AIR HANDLER	208	1		-	-	-	-	-	-	-	-	-	-	-	1)
LA-1	CHL. ROOM INTAKE LOUVER	120	1	F	50	0.4	-	-	-	-	-	-	-	-	-	
LA-2	CHL. ROOM EXHAUST LOUVER	120	1	F	50	0.4	-	-	-	-	-	-	-	-	-	
UH-1	UNIT HEATER	480	3	F	5,000	6.02	-	-	-	-	-	-	HARD-WIRED	INCL.	N/A	
UH-2	UNIT HEATER	480	3	F	3,300	3.97	-	30	600	3	4X	-	HARD-WIRED	N/A	N/A	

NOTES: 1) INDOOR UNIT RECEIVES POWER FROM OUTDOOR UNIT. REFER TO MANUFACTURER'S LITERATURE.
2) MANUAL STARTER AS DISCONNECT MEANS.

PANELBOARD H

LOCATION: WELL ROOM | MFGR: SQUARE D COMPANY | 400 AMPS | VOLTS: 480Y/277
DIMENSIONS: 20"Wx 6"Dx 26"H | TYPE: I-LINE | X M.L.O | PHASE: 3
MOUNTING: SURFACE | NEMA: 1 | 22,000 A.I.C. | WIRES: 4
FEED: TOP | X SURGE PROTECTION | FED FROM: UTILITY

BRKR A	BRKR P	DESCRIPTION	CIRCUIT ID	CONT. WATTS	N-CONT. WATTS	NO	PHASE LOADS A CONT.	A N-CONT.	B CONT.	B N-CONT.	C CONT.	C N-CONT.
20	3	CP-1 SURGE DEVICE	312			1	0	0	0	0	0	0
350	3	WELL PUMP (200 HP)	310	199,296		2	66,432	0	66,432	0	66,432	0
20	3	WELL ROOM HEATER	312	5,000		3	1,667		1,667		1,667	
20	3	CHLORINE ROOM HEATER	312	3,300		4	1,100		1,100		1,100	
20	3	TABLET CHLORINATOR	312	2,491		5	830		830		830	
50	3	TRANSFORMER L	38	5,182	14,718	6	1,754	5,099	860	4,429	2,568	5,191
		SPACE				7						
		TOTAL WATTS:		215,269	14,718		71,783	5,099	70,889	4,429	72,597	5,191
		CONTINUOUS LOAD:		215,269								
		CONTINUOUS LOAD * 125%:		269,087								
		NON-CONTINUOUS LOAD:		14,718								
		DESIGN WATTS:		283,805								
		MIN. RATING (AMPS):		342								

TRANSFORMER L

LOCATION: WELL ROOM | 25.5 PRIMARY AMPS | PRIMARY VOLTS: 480
DIMENSIONS: 14.75"W x 9.00"D x 14.75"H | 58.9 SECONDARY AMPS | SECONDARY VOLTS: 208Y/120
MOUNTING: WALL | KVA: 30
FEED: SIDE | FED FROM: PNL H

		CONT. WATTS	N-CONT. WATTS	PHASE LOADS A CONT.	A N-CONT.	B CONT.	B N-CONT.	C CONT.	C N-CONT.
	PANELBOARD L	5,182	14,718	1,754	5,099	860	4,429	2,568	5,191
	TOTAL WATTS:	5,182	14,718	1,754	5,099	860	4,429	2,568	5,191
	CONTINUOUS LOAD:	5,182							
	CONTINUOUS LOAD * 125%:	6,478							
	NON-CONTINUOUS LOAD:	14,718							
	DESIGN WATTS:	21,196							

PANELBOARD L

LOCATION: WELL ROOM | MFGR: SQUARE D | 225 AMPS | VOLTS: 208Y/120
DIMENSIONS: 20"W x 5.75"D x "H | TYPE: NQ | 90 M.C.B. | PHASE: 3
MOUNTING: SURFACE | NEMA: 1 | 10,000 A.I.C. | WIRES: 4
FEED: TOP | X SPD | FED FROM: XFMR L

BRKR A	BRKR P	DESCRIPTION	CIRCUIT ID	CONT. WATTS	N-CONT. WATTS	NO	PHASE LOADS A CONT.	A N-CONT.	B CONT.	B N-CONT.	C CONT.	C N-CONT.	NO	N-CONT. WATTS	CONT. WATTS	CIRCUIT ID	DESCRIPTION	BRKR A	BRKR P
20	1	CO, PUMP ROOM	212		1,080	1	800	1,080					2			800	212 CP-1/RTU	20	1
20	1	CO, CHLORINE ROOM	212		360	3			500	360			4			500	212 RTU RADIO ENCLOSURE	20	1
20**	1	CO, EXTERIOR	212		360	5					0	1,110	6	750		212	GENERATOR JACKET WATER HEATER	20	2
20**	1	LTS, INTERIOR	212	304		7	304	750					8	750		-	-	-	-
20	1	LTS, EXTERIOR	212	310		9			310	1,000			10	1,000		212	GENERATOR BATTERY CHARGER	20	1
20	1	FLOW METER	212	50		11					50	1,581	12	1,581		20	WELL ROOM EXTERIOR A/C UNIT-1	30	2
20	2	SITE GATE ACTUATOR	212		960	13	0	2,541					14	1,581		-	-	-	-
-	-	-	-		960	15			0	2,541			16	1,581		20	WELL ROOM EXTERIOR A/C UNIT-2	30	2
20	1	TURBIDIMETER	212	150		17					150	1,581	18	1,581		-	-	-	-
20	1	RESIDUAL CHLORINE ANALYZER	212	150		19	150	528					20	528		212	V-1 ACTUATOR	20	1
20**	1	CO, IRRIGATION CONTROLLER	212	50		21			50	528			22	528		212	V-2 ACTUATOR	20	1
20	1	LTS, POLES & CCTV CO	212	512	720	23					2,368	920	24	200	1,856	20	CP-2 CONTROL PANEL	30	1
20	1	SECURITY ENCLOSURE	212	500		25	500	200					26				SPARE	20	1
20	1	SPARE				27			0	0			28				SPARE	20	1
	1	AVAILABLE SPACE				29					0	0	30				SPARE	20	1
		TOTAL WATTS:		2,026	4,440		1,754	5,099	860	4,429	2,568	5,191		10,078	3,156				
		CONTINUOUS LOAD:		5,182															
		CONTINUOUS LOAD * 125%:		6,478															
		NON-CONTINUOUS LOAD:		14,518			** PROVIDE A GFC CIRCUIT BREAKER												
		DESIGN WATTS:		20,996															
		MIN. RATING (AMPS):		58															

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

HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. GATE SUPPLIED 208V, 1-PHASE. IF GATE REQUIRES 240V 1-PHASE PROVIDE APPROPRIATE BUCK/BOOST TRANSFORMER IN WELL BUILDING AS REQUIRED. COORDINATE WITH GATE ACTUATOR SUPPLIER DURING CONSTRUCTION.

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE inc ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 08/07/2023 STATE OF UTAH
PROJECT ENGINEER

DESIGNED	KBH	3			
DRAFTED	DAS	2			
CHECKED	KBH	1			
DATE	OCTOBER 2023	NO.	DATE	REVISIONS	BY APVD.

SCALE: NONE

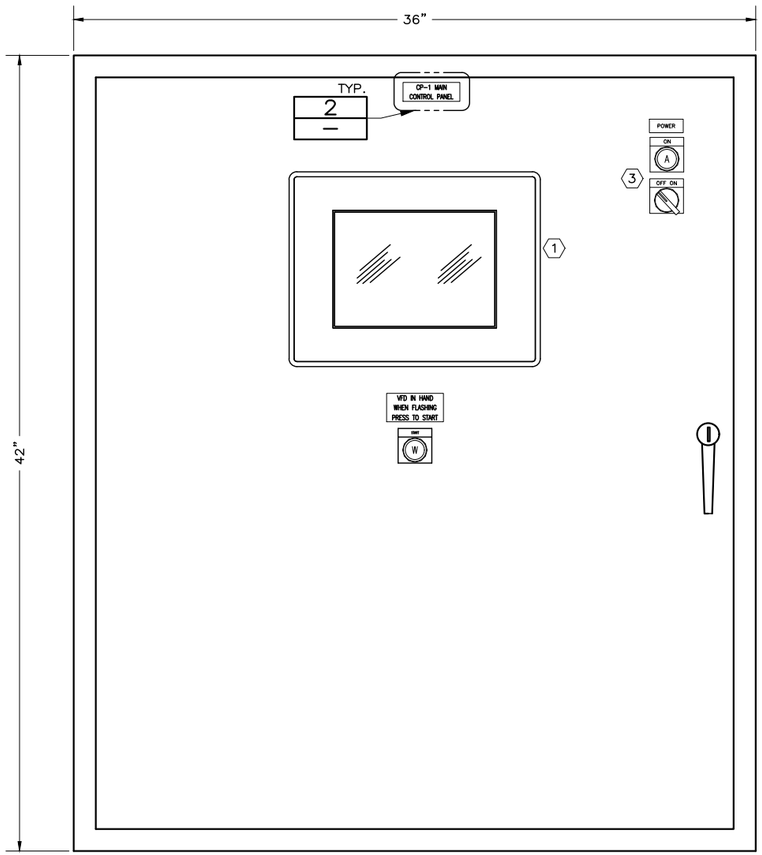
WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
SCHEDULES

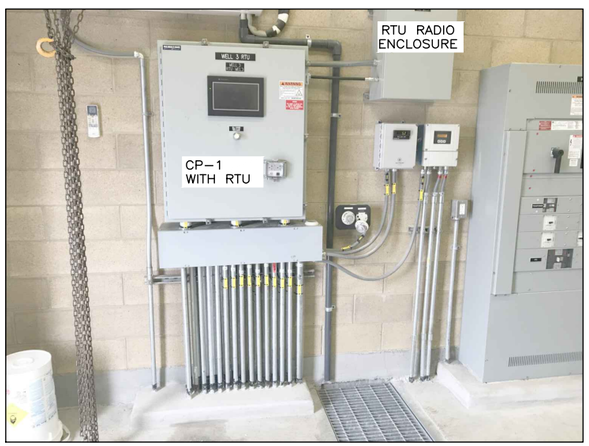
SHEET E605

089.29.100

7/04

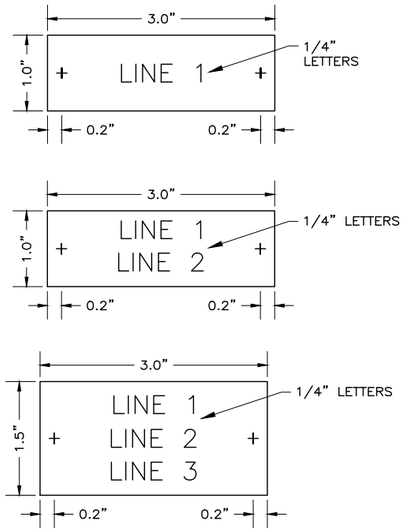


CONTROL PANEL CP-1 WITH RTU 1
3" = 1'-0" E103



(TYPICAL CONTROL PANEL)

PHOTO 1 2
—



NAMEPLATE DETAIL 2
1' = 1'-0" —

SCADA COORDINATION

SCADA CONTRACTOR:	APCO, INC.
CONTACT INFORMATION:	(801) 519-9500

RTU ENCLOSURE	SUPPLIED BY:	INSTALLED BY:
ENCLOSURE	CONTRACTOR	CONTRACTOR
INTERNAL PANEL	CONTRACTOR	CONTRACTOR
INTERNAL COMPONENTS	SCADA CONTR.	SCADA CONTR.
INTERNAL COMPONENT WIRING	SCADA CONTR.	SCADA CONTR.
WIRING TO/FROM RTU ENCLOSURE	**SUPPLIED BY:**	**INSTALLED BY:**
POWER SOURCE	CONTRACTOR	CONTRACTOR
FIELD I/O TO ENCLOSURE TERMINALS	CONTRACTOR	CONTRACTOR
FIELD DEVICE TERMINATIONS	CONTRACTOR	CONTRACTOR
RTU COMPONENT	**SUPPLIED BY:**	**INSTALLED BY:**
PROGRAMMABLE LOGIC CONTROLLER	SCADA CONTR.	SCADA CONTR.
SEPARATE RTU CONTROLLER	-	-
	-	-
INTERNAL WIRING INSIDE RTU	**SUPPLIED BY:**	**INSTALLED BY:**
FIELD DEVICE WIRING TERMINATION	-	SCADA CONTR.
RTU SIGNAL	**SUPPLIED BY:**	**INSTALLED BY:**
1" CONDUIT FOR SCADA RADIO	CONTRACTOR	CONTRACTOR
DATA RADIO COAXIAL CABLE	SCADA CONTR.	SCADA CONTR.
ANTENNA SUPPORT (SEE PLANS)	CONTRACTOR	CONTRACTOR
DATA RADIO ANTENNA	SCADA CONTR.	SCADA CONTR.

CP-1 MAIN CONTROL PANEL I/O LIST

DISCRETE INPUTS

DESCRIPTION	FROM	TO	NOTES
ATS IN GENERATOR POSITION	ATS	CP-1	
ATS IN UTILITY POSITION	ATS	CP-1	
CHLORINE PUMP ON	PC-1	CP-1	
CHLORINE RM. EF RUNNING	CP-2	CP-1	
CHLORINE ROOM DOOR OPEN	SEC. PNL.	CP-1	
CHLORINE SOLUTION TANK HIGH LEVEL	PC-1	CP-1	
CHLORINE SOLUTION TANK LOW LEVEL	PC-1	CP-1	
CHLORINE SYSTEM FLOW	PC-1	CP-1	
CHLORINE WEIGHT SCALE ALARM	PC-1	CP-1	
CP-1 POWER LOSS	CP-1	CP-1	
GATE CLOSED STATUS	SEC. PNL.	CP-1	
GATE OPEN STATUS	SEC. PNL.	CP-1	
GENERATOR FAULT	GEN	CP-1	
GENERATOR ON	GEN	CP-1	
TABLET CHLORINATOR ALARM	TC-1	CP-1	
TABLET CHLORINATOR ON	TC-1	CP-1	
SYSTEM VALVE FULL CLOSED POSITION	V-2	CP-1	
SYSTEM VALVE FULL SYSTEM POSITION	V-2	CP-1	
VFD ALARM RESET	VFD	CP-1	
VFD FAULT	VFD	CP-1	
VFD FILTER HIGH TEMPERATURE	VFD	CP-1	
VFD HOA IN AUTO MODE	VFD	CP-1	
VFD HOA IN HAND MODE	VFD	CP-1	
VFD ON	VFD	CP-1	
VFD READY-TO-START	VFD	CP-1	
VFD SHUTDOWN RESET	VFD	CP-1	
WASTE VALVE FULL CLOSED POSITION	V-1	CP-1	
WASTE VALVE FULL WASTE POSITION	V-1	CP-1	
WELL HIGH DISCHARGE PRESSURE	PSH-1	CP-1	
WELL ROOM FLOOR HIGH WATER	LSH-3	CP-1	
WELL ROOM MAINTENANCE DOOR A OPEN	SEC. PNL.	CP-1	
WELL ROOM MAINTENANCE DOOR B OPEN	SEC. PNL.	CP-1	
WELL ROOM MAN DOOR OPEN	SEC. PNL.	CP-1	
WELL ROOM ROOF HATCH OPEN	SEC. PNL.	CP-1	
WELL STOP	RTU	CP-1	
MOTOR HIGH VIBRATION	VS-1	CP-1	

NOTES:
1)

DISCRETE OUTPUTS

DESCRIPTION	FROM	TO	NOTES
CHLORINE RM EXHAUST FAN RUN	CP-1	CP-2	
CHLORINE SOLENOID VALVE OPEN	CP-1	SV-3	
GATE CLOSE COMMAND	CP-1	SEC. PNL.	
GATE OPEN COMMAND	CP-1	SEC. PNL.	
PRE-LUBE SOLENOID VALVE OPEN	CP-1	SV-1	
SYSTEM VALVE OPEN COMMAND	CP-1	V-2	
TABLET CHLORINATOR REMOTE RUN	CP-1	TC-1	
TURBIDITY SOLENOID VALVE OPEN	CP-1	SV-2	
VFD BACKSPIN TIME DELAY	CP-1	VFD	
VFD HP SHUTDOWN & INDICATION LIGHT	CP-1	VFD	
VFD LOW LEVEL SHDN & INDICATION LIGHT	CP-1	VFD	
VFD RUN	CP-1	VFD	
VFD SHUTDOWN	CP-1	VFD	
WASTE VALVE CLOSE COMMAND	CP-1	V-1	
HIGH VIBRATION SHUTDOWN	CP-1	VFD	

NOTES: 1)

ANALOG INPUTS

DESCRIPTION	FROM	TO	NOTES
CHLORINE ROOM TEMPERATURE	TT-2	CP-1	1)
RESIDUAL CHLORINE	AIT-3	CP-1	1)
STATION DISCHARGE PRESSURE	PT-1	CP-1	1)
VFD RUNNING SPEED	VFD	CP-1	1)
WELL DISCHARGE FLOW	FIT-1	CP-1	1)
WELL LEVEL	LT-1	CP-1	1)
WELL DISCHARGE PRESSURE	PT-2	CP-1	1)
WELL ROOM TEMPERATURE	TT-1	CP-1	1)
WELL TURBIDITY	AIT-2	CP-1	1)

NOTES:
1) SIGNAL SHALL BE REPEATED AS PLC ANALOG OUTPUT TO RTU.

ANALOG OUTPUTS

DESCRIPTION	FROM	TO	NOTES
CHLORINE DOSE RATE (WELL FLOW)	CP-1	TC-1	
VFD COMMAND SPEED	CP-1	VFD	

NOTES: 1)

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
HPE PROJECT **20.025**

FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. INTERNAL COMPONENTS AND ARRANGEMENT NOT SHOWN ON THESE DRAWINGS AND SHALL BE PROVIDED BY APCO, THE CITY'S SCADA CONTRACTOR. APCO SHALL PROVIDE ALL INTERNAL COMPONENTS AND ALL PLC AND HMI PROGRAMMING.

SHEET KEYNOTES:

1. 10" OPERATOR TOUCH SCREEN SHOWN. PROVIDED AND INSTALLED BY SCADA CONTRACTOR.
2. TYPICAL MAIN CONTROL PANEL SHOWN. MODIFY AS REQUIRED BY OWNER.
3. CONTROL POWER INDICATION AND OFF/ON SELECTOR SWITCH.

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 08/07/2023 STATE OF UTAH
PROJECT ENGINEER

DESIGNED KBH
DRAFTED DAS
CHECKED KBH
DATE OCTOBER 2023

NO.	DATE	REVISIONS	BY	APVD.
3				
2				
1				

SCALE AS SHOWN

WEST JORDAN UTAH

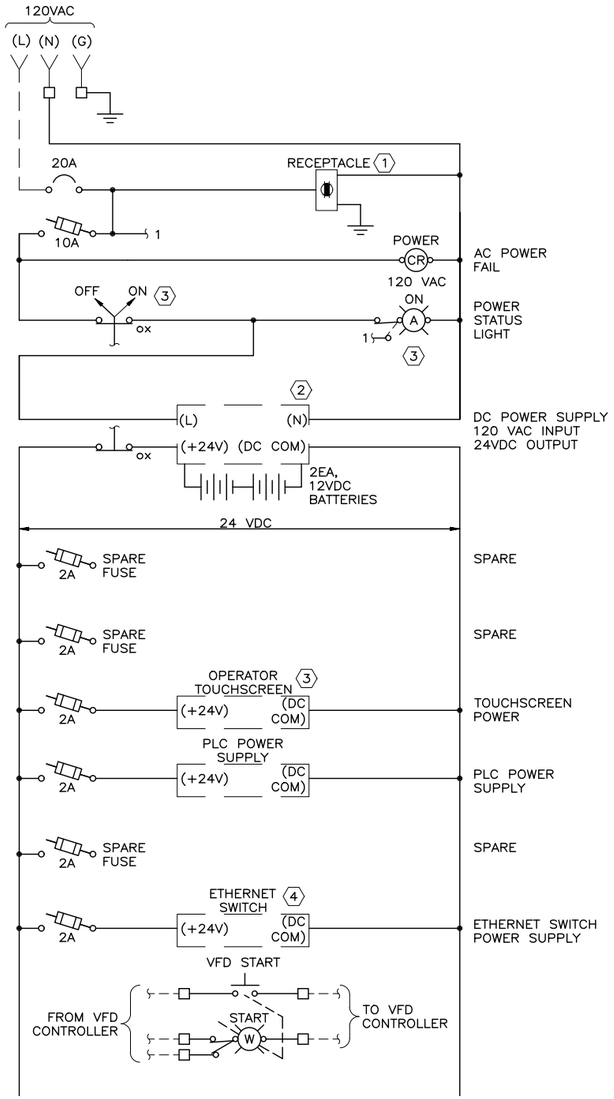
WELL NUMBER 8 PUMP BUILDING ELECTRICAL
CP-1 MAIN CONTROL PANEL

SHEET E606
089.29.100

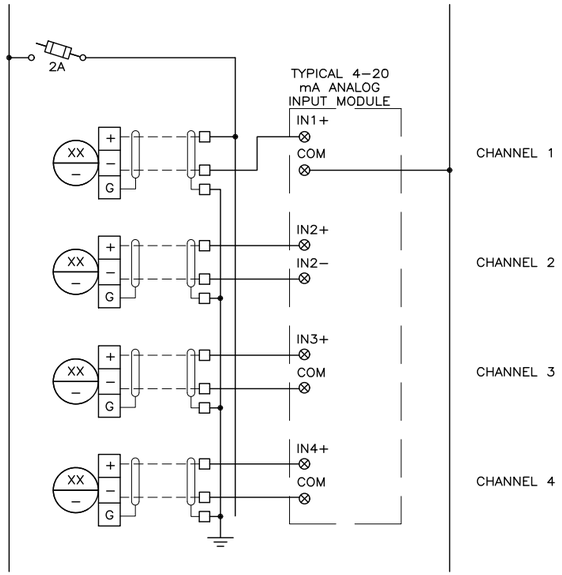
FILE NAME:
FILE DATE:
7/04

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
HPE PROJECT **20.025**

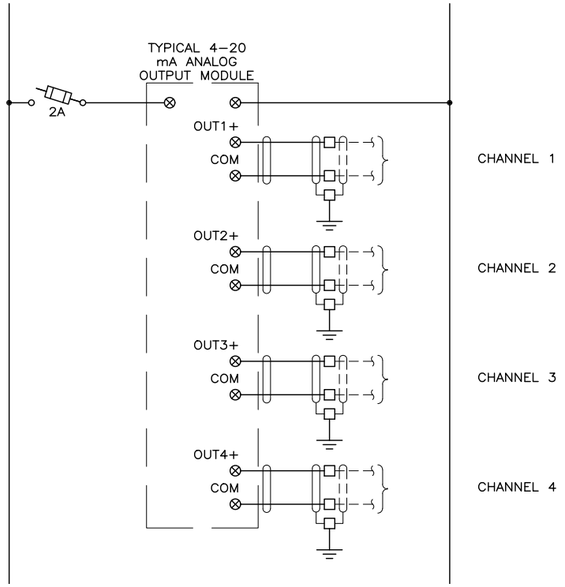
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**



TYPICAL POWER LOGIC WIRING



TYPICAL ANALOG INPUT MODULE WIRING



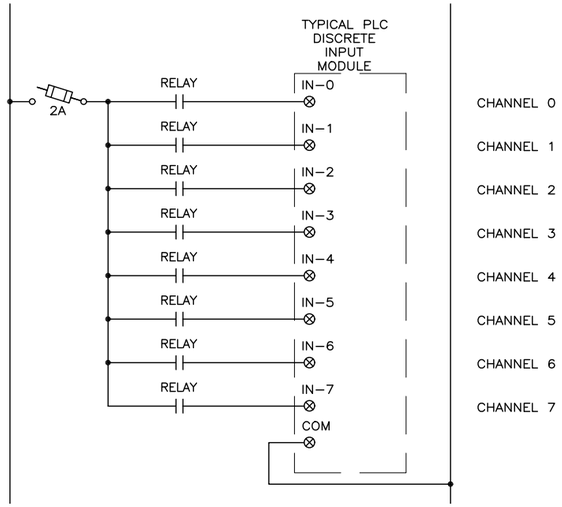
TYPICAL ANALOG OUTPUT MODULE WIRING

GENERAL NOTES:

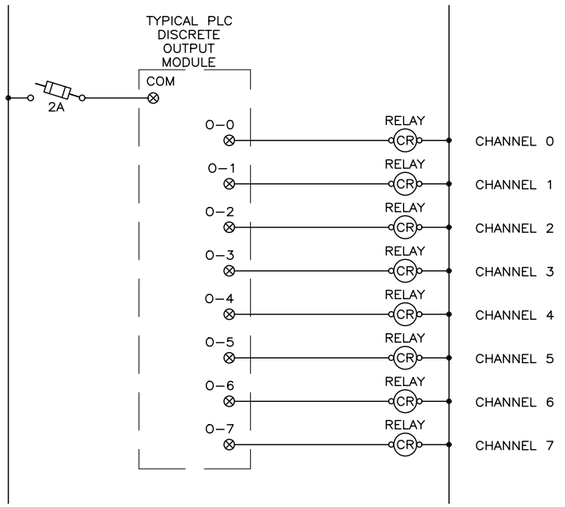
1. THIS DIAGRAM IS TYPICAL AND INDICATES THE BASIC CONTROL PANEL CONTROL DIAGRAM. THE CONTRACTOR SHALL MODIFY AS REQUIRED FOR THE DEVICES AND PLC MODULES USED.
2. CONTRACTOR SHALL PREPARE A CONTROL DIAGRAM BASED ON THE DEVICES SUPPLIED, INCLUDING WIRE, FUSE AND TERMINAL NUMBERS AS REQUIRED. THE PLC I/O SHOWN IS GENERIC.

SHEET KEYNOTES:

1. PROVIDE A DUPLEX GFCI RECEPTACLE IN THE ENCLOSURE.
2. PROVIDE A 120VAC:24VDC POWER SUPPLY/BATTERY CHARGER COMPLETE WITH BATTERY CAPACITY TO PROVIDE 2 HOURS OF PANEL OPERATION UPON THE LOSS OF UTILITY POWER OR PROVIDE 120VAC UNINTERRUPTIBLE POWER SUPPLY.
3. DEVICE SHALL BE INSTALLED IN THE ENCLOSURE DOOR AND AVAILABLE TO THE OPERATOR.
4. PROVIDE MIN. OF 8 ETHERNET PORTS.



TYPICAL DISCRETE INPUT MODULE WIRING



TYPICAL DISCRETE OUTPUT MODULE WIRING

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
08/07/2023
STATE OF UTAH

PROJECT ENGINEER

DESIGNED	KBH	3					
DRAFTED	DAS	2					
CHECKED	KBH	1					
DATE	OCTOBER 2023	NO.	DATE	REVISIONS		BY	APVD.

SCALE: AS NOTED SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
CP–1 CONTROL DIAGRAM SHT. 1

SHEET E607
089.29.100

7/04

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
HPE PROJECT **20.025**

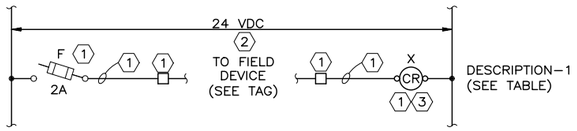
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

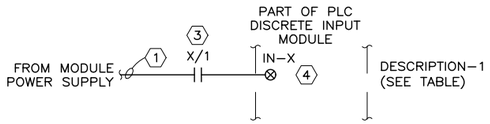
1. REFER TO E605 FOR TYPICAL CONTROL PANEL ARRANGEMENT.
2. KEYNOTES SHOWN AT EACH PLC MODULE DIAGRAM.

NOTES:

1. CONTRACTOR SHALL ASSIGN FUSE, RELAY, TERMINAL AND WIRE NUMBERS AS REQUIRED.
2. CONTRACTOR MAY COMBINE CONDUCTORS IN COMMON CONDUIT TO DEVICES IN SAME PROXIMITY.
3. PROVIDE AN INTERPOSING RELAY AND WIRE RELAY CONTACT TO PLC INPUT AS INDICATED.
4. CONTRACTOR SHALL ASSIGN PLC MODULE AND CHANNEL.



INTERPOSE RELAY LOGIC

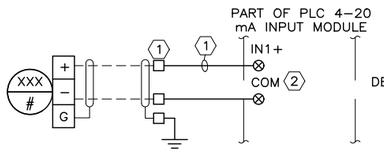


PLC DISCRETE INPUT LOGIC

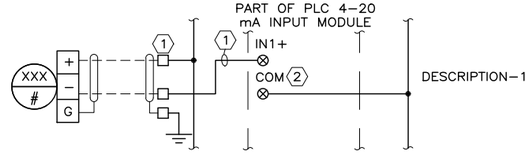
PLC DISCRETE INPUT WIRING

NOTES:

1. CONTRACTOR SHALL ASSIGN FUSE, RELAY, TERMINAL AND WIRE NUMBERS AS REQUIRED.
2. CONTRACTOR SHALL ASSIGN PLC MODULE AND CHANNEL.



PLC ANALOG INPUT TYPE 1

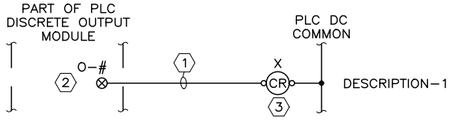


PLC ANALOG INPUT TYPE 2

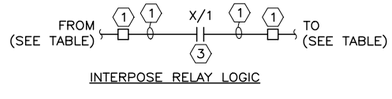
PLC ANALOG INPUT WIRING

NOTES:

1. CONTRACTOR SHALL ASSIGN FUSE, RELAY, TERMINAL AND WIRE NUMBERS AS REQUIRED.
2. CONTRACTOR SHALL ASSIGN PLC MODULE AND CHANNEL.
3. PROVIDE AN INTERPOSING RELAY AND WIRE RELAY CONTACT TO PLC INPUT AS INDICATED.



PLC DISCRETE OUTPUT LOGIC

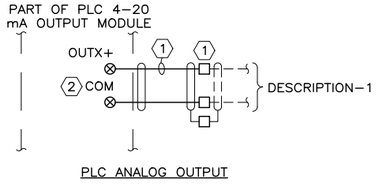


INTERPOSE RELAY LOGIC

PLC DISCRETE OUTPUT WIRING

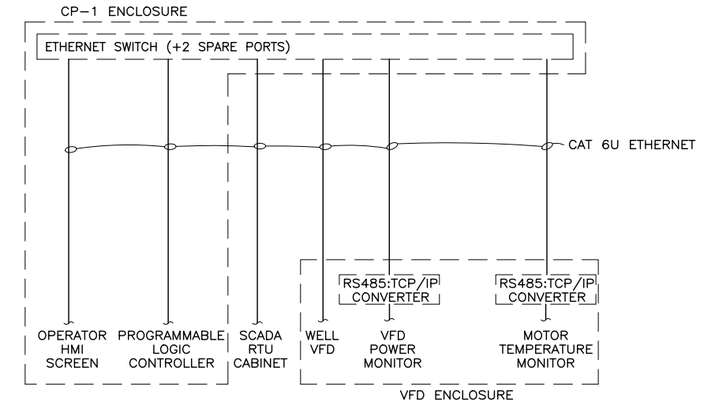
NOTES:

1. CONTRACTOR SHALL ASSIGN FUSE, RELAY, TERMINAL AND WIRE NUMBERS AS REQUIRED.
2. CONTRACTOR SHALL ASSIGN PLC MODULE AND CHANNEL.



PLC ANALOG OUTPUT

PLC ANALOG OUTPUT WIRING



ETHERNET SIGNAL WIRING

FILE NAME:
FILE DATE:

7/04

HANSEN ALLEN & LUCE, Inc. ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 08/07/2023 STATE OF UTAH

PROJECT ENGINEER

DESIGNED	KBH	3				
DRAFTED	DAS	2				
CHECKED	KBH	1				
DATE	OCTOBER 2023	NO.	DATE	REVISIONS	BY	APVD.

SCALE: NONE

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING ELECTRICAL
CP–1 CONTROL DIAGRAM SHT. 2

SHEET E608

089.29.100

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

HPE PROJECT **20.025**

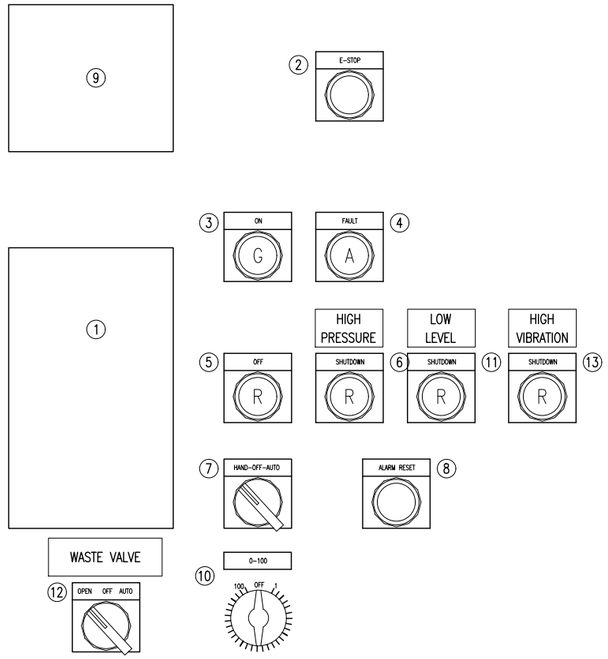
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: **KEITH HEGERHORST**

GENERAL NOTES:

1. ENCLOSURE DIMENSIONS SHOWN ARE TYPICAL AND SHALL BE MODIFIED BY THE CONTRACTOR AS REQUIRED FOR THE DEVICES USED.
2. WIRING DIAGRAM IN TYPICAL. MODIFY AS REQUIRED.

SHEET KEYNOTES:

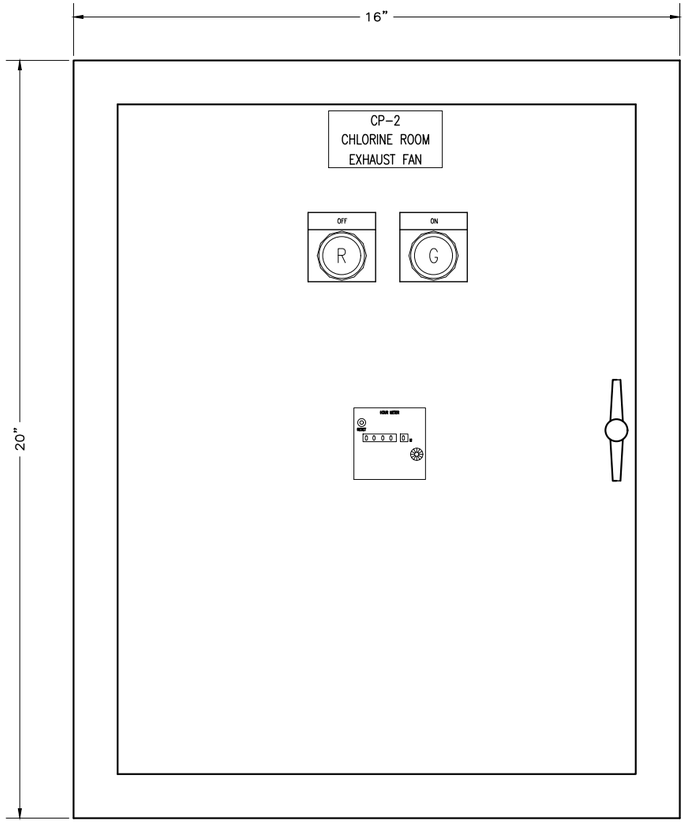
1. OFF–ON TOGGLE SWITCH ADJACENT TO ROOM LIGHT SWITCH.
2. INSTALL DEVICE IN ENCLOSURE DOOR AND AVAILABLE TO THE OPERATOR.



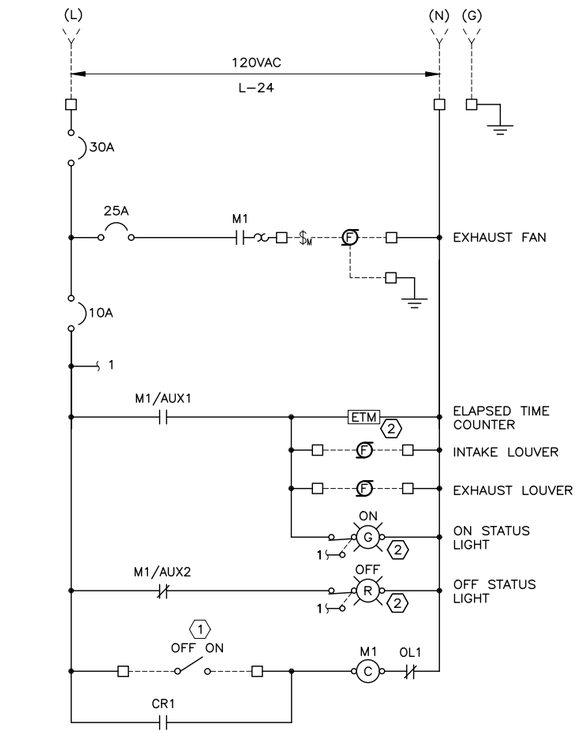
VFD CONTROL LEGEND

1. VFD MEMBRAIN KEYPAD
2. VFD E–STOP MUSHROOM HEAD LATCHING PUSHBUTTON
3. VFD STATUS INDICATION LIGHT
4. VFD FAULT INDICATION LIGHT
5. VFD OFF INDICATION LIGHT
6. HIGH DISCHARGE PRESSURE SHUTDOWN INDICATION LIGHT
7. HAND–OFF–AUTO SELECTOR SWITCH
8. ALARM RESET PUSHBUTTON
9. POWER AND ENERGY METER (COMPTON INTEGRA 1530)
10. VFD SPEED POTENTIOMETER
11. LOW LEVEL SHUTDOWN INDICATION LIGHT
12. WASTE VALVE POSITION SWITCH
13. HIGH VIBRATION SHUTDOWN INDICATION LIGHT

TYPICAL VFD CONTROLS ARRANGEMENT



CP–2 EXHAUST FAN CONTROL PANEL 1
6" = 1'–0" E102



CP–2 CONTROL DIAGRAM

FILE NAME:
FILE DATE:

PROJECT ENGINEER

DESIGNED	KBH	3					
DRAFTED	DAS	2					
CHECKED	KBH	1					
DATE	OCTOBER 2023	NO.	DATE	REVISIONS		BY	APVD.

SCALE: AS SHOWN

WEST JORDAN UTAH

WELL NUMBER 8 PUMP BUILDING
ELECTRICAL
CP–2 EXHAUST FAN CONTROL PANEL

SHEET E609
089.29.100

7/04