GENERAL CONTROLS SCHEMATIC NOTES:

1. CONTROL JUNCTION BOXES SHALL BE SIZED PER THE N.E.C. AS A MINIMUM.
2. RUN ALL CONTROL CABLES IN SEPARATE CONDUITS FROM POWER CIRCUITS. RUN SHIELDED CABLES (ANALOG) AND LAN CABLES IN SEPARATE CONDUIT FROM OTHER CONTROL CABLES (DISCRETE).
3. SEE CONTROL CABLES CONDUIT SCHEDULE FOR CONTROL CABLE CONDUIT SIZING REQUIREMENTS.
4. FURNISH AND INSTALL ALL CONDUIT AND WIRING AS REQUIRED FOR COMPLETE FUNCTIONALITY OF EQUIPMENT AS SPECIFIED AND AS IDENTIFIED BY THE MANUFACTURER. COORDINATE FIELD WIRING REQUIREMENTS WITH EQUIPMENT MANUFACTURER.
5. REFER TO CIVIL DRAWINGS AND SECTIONS FOR EXACT EQUIPMENT LOCATIONS.
6. LOCATE CONTROLS CONDUIT AND JUNCTION BOXES SO AS NOT TO INTERFERE WITH EQUIPMENT OPERATION, MAINTENANCE, OR REPLACEMENT.
7. A CONDUIT FOR ANALOG CABLE SHALL TERMINATE IN EQUIPMENT ENCLOSURE AS CLOSE AS POSSIBLE TO THE TERMINALS. CABLES SHALL NOT PASS NEAR TO CABLES OR EQUIPMENT OPERATING ABOVE 24V.
8. INTERNAL AND EXTERNAL I/O SHALL BE LANDED ON TERMINAL STRIPS.
9. I/O IDENTIFIED ON CONTROL DIAGRAM SHEETS ARE FOR INPUTS & OUTPUTS EXTERNAL TO THE EQUIPMENT CONTROL PANEL. I/O NECESSARY FOR THE COMPLETE FUNCTIONALITY OF THE EQUIPMENT (INTERNAL I/O) SHALL BE PROVIDED BY THE EQUIPMENT MANUFACTURER. THE CONTRACTOR SHALL FURNISH & INSTALL CONDUIT AND WIRE REQUIRED FOR COMPLETE FUNCTIONALITY OF EQUIPMENT AS SPECIFIED AND AS IDENTIFIED BY THE MANUFACTURER. THE CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER TO DETERMINE FIELD WIRING REQUIREMENTS.

KEY NOTES:

(1) CONTROL PANEL. CIRCUIT BREAKERS, VFDS AND LEAKAGE DETECTOR TO BE MOUNTED INSIDE NEMA-3R CONTROL PANEL ENCLOSURE.

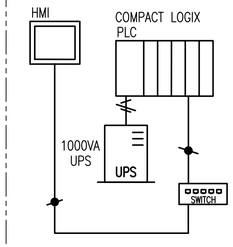
(2) RADIO MODEM

CONTROL PANEL CP-1

LOCATION: UNISTRUT

CIRCUIT NO.	EQUIPMENT SERVED/ MARK	CONNECT: DEVICE	CONNECT: CTL. PNL.	CONNECT: STARTER	CONNECT: VFD	DESCRIPTION/FUNCTION	CONDUCTORS IN CABLE	DISCRETE	ANALOG	DIGITAL INPUT	DIGITAL OUTPUT	REMARKS
1	P-1/P-2	X	–	–	–	STOP	2	X	–	–	X	–	
2	P-1/P-2	X	–	–	–	LEAD START	2	X	–	–	X	–	
3	P-1/P-2	X	–	–	–	LAG START	2	X	–	–	X	–	
4	P-1/P-2	X	–	–	–	HIGH LEVEL ALARM	2	X	–	–	X	–	
5	P-1	–	–	–	X	P-1 RUN	2	X	–	–	X	–	
6		–	–	–	X	P-1 FAIL	2	X	–	–	X	–	
7		–	–	–	X	P-1 HAND/OFF/AUTO	2	X	–	–	X	–	
8		–	–	–	X	P-1 OVERLOAD	2	X	–	–	X	–	
9		–	–	–	X	P-1 SEAL FAIL	2	X	–	–	X	–	
10		–	–	–	X	P-1 RESET	2	X	–	–	X	–	
11	P-2	–	–	–	X	P-2 RUN	2	X	–	–	X	–	
12		–	–	–	X	P-2 FAIL	2	X	–	–	X	–	
13		–	–	–	X	P-2 HAND/OFF/AUTO	2	X	–	–	X	–	
14		–	–	–	X	P-2 OVERLOAD	2	X	–	–	X	–	
15		–	–	–	X	P-2 SEAL FAIL	2	X	–	–	X	–	
16		–	–	–	X	P-2 RESET	2	X	–	–	X	–	
17	ALTERNATOR	–	X	–	–	SELECTOR 1-2 ALT 2-1	2	X	–	–	X	–	
18	ALARM	–	X	–	–	HIGH LEVEL ALARM LIGHT	2	X	–	–	–	X	
19	ALARM	–	X	–	–	HIGH LEVEL ALARM SOUND	2	X	–	–	–	X	
20	VFD	–	–	–	X	MOTOR WINDAGE LEAKAGE DETECTOR	2	X	–	–	X	–	
21	PD	X	–	–	–	PRESSURE TRANSDUCER	TSPR	–	X	–	X	–	LOCATED IN WELL
22	REMOTE GRINDER PANEL	–	X	–	–	HIGH LEVEL ALARM	2	X	–	–	–	X	VIA EXISTING RADIO TO SCADA
23		–	–	–	X	P-1 RUN	2	X	–	–	–	X	VIA EXISTING RADIO TO SCADA
24		–	–	–	X	P-1 FAIL	2	X	–	–	–	X	VIA EXISTING RADIO TO SCADA
25		–	–	–	X	P-2 RUN	2	X	–	–	–	X	VIA EXISTING RADIO TO SCADA
26		–	–	–	X	P-2 FAIL	2	X	–	–	–	X	VIA EXISTING RADIO TO SCADA

CONTROL PANEL 'CP-1' (1)



SYMBOL LIST

SYMBOL	DESCRIPTION
	PLC (COMPACT LOGIX)
UPS	DESK TYPE 1000VA UPS #BRG1000G WITH USB INTERFACE
FIBER PATCH PANEL	FIBER PATCH PANEL
	MEDIA CONVERTER
SWITCH	ETHERNET SWITCH (MANAGED)
	ENCLOSURE OR EQUIPMENT BOUNDARY
CONTROL PANEL 'RP-SBP'	CONTROL CABINET
	HMI

CONTROL CABLES CONDUIT SCHEDULE

# OF CABLES	ESTIMATED CONDUIT SIZE
1	1/2"
2	3/4"
3	1"
5	1 1/4"
7	1 1/2"
13	2"
18	2 1/2"
29	3"
38	3 1/2"

NOTE:
ABOVE CONDUIT SIZES DEPEND ON ACTUAL CABLES INSTALLED. VERIFY CABLE SIZES & ADJUST CONDUIT AS REQUIRED. RUN ALL CONTROL CABLES IN SEPARATE CONDUIT FROM POWER CIRCUITS. ALSO RUN SHIELDED & LAN CABLES IN SEPARATE CONDUIT FROM OTHER CONTROLS. CONTRACTOR CAN SIZE CONDUITS FOR ACTUAL CABLE SIZE, PER N.E.C. FILL TABLE WITH 25% SPARE CAPACITY. SUBMIT CALCULATIONS.

PEC
PROFESSIONAL ENGINEERING CONSULTANTS
400 S. KANSAS AVE. SUITE 200
TOPEKA, KS 66603
785-233-8300 www.pec1.com

CITY OF WICHITA

SEAN PATRICK GERETY LICENSED 28753 12/14/2023 KANSAS PROFESSIONAL ENGINEER

SANITARY SEWER IMPROVEMENTS
COWSKIN FORCE MAIN AND LIFT STATION 60 IMPROVEMENTS

PAUL GUNZELMAN, P.E. - INTERIM CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-2022-040654

Issue:		

JOB NO.	35-210602-001-042
DATE	DECEMBER 2023
PM	TBK
DESIGNED BY	SPG
DRAWN BY	JAB
CHECKED BY	RWW

ELECTRICAL CONTROLS SCHEMATIC

E-002

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