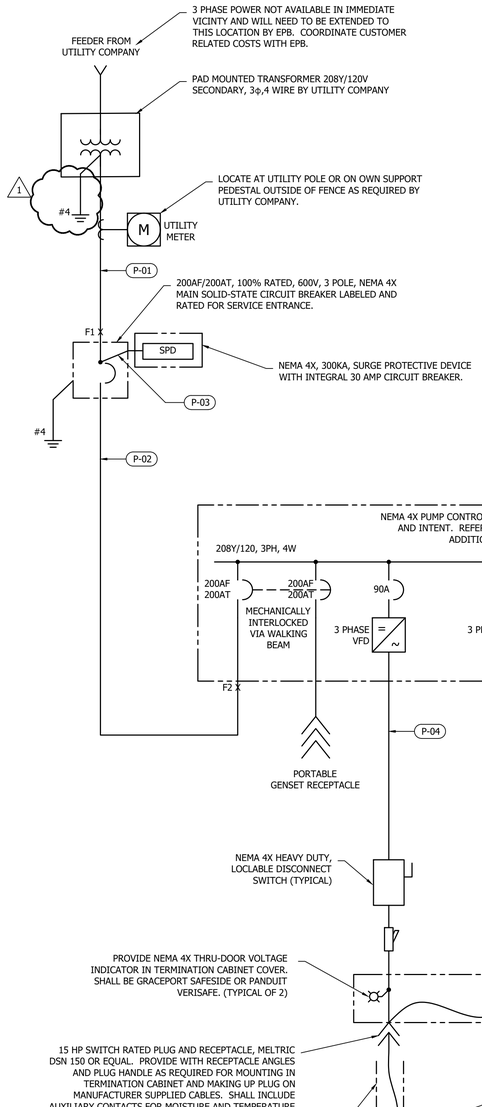

SHORT CIRCUIT CALCULATIONS SUMMARY

POINT	EQUIP.	LENGTH	VOLT	WIRE SIZE	CONDUCTOR MATERIAL	CONDUIT	VOLTAGE CLASS (V)	# OF CABLES (S or T)	C VALUE *	# OF PARALLEL RUNS	Isc AVAILABLE UPSTREAM	f *	M *	Isc (FAULT) *	LET THRU (AIC)	POINT
F1	SERVICE DISC	50	208	3X	C	N	600	S	13,923	1	10,400	0	1	7,933	N/A	F1
F2	CONTROL PANEL	10	208	3X	C	N	600	S	13,923	1	7,933	0	1	7,574	N/A	F2
* AUTOMATICALLY CALCULATED																
UTILITY TRANSFORMER SIZE: 50 KVA																
MAXIMUM AVAILABLE (SYMMETRICAL) FAULT AT THE SECONDARY: 10400 AMPS																

WIRE AND CONDUIT SCHEDULE

TAG	CONDUIT SIZE	WIRE	FROM	TO	NOTES
P-01	2"	4-#3/0 & #6G	PAD MOUNT TRANSFORMER	SERVICE DISCONNECT	ROUTE THROUGH FEED THROUTH METER SOCKET
P-02	2"	4-#3/0 & #6G	SERVICE DISCONNECT	PUMP CONTROLLER	
P-03	1"	5-#8	SERVICE DISCONNECT	SPD	LENGTH NOT TO EXCEED 10'
P-04	1 - 1/4"	3-#4 & #10G	PUMP CONTROLLER	JUNCTION BOX	SHALL BE VFD CABLE
P-05	1 - 1/4"	3-#4 & #10G	PUMP CONTROLLER	JUNCTION BOX	SHALL BE VFD CABLE
P-07	3/4"	2-#12 & #12G	PUMP CONTROLLER	FLOW TRANSMITTER	
P-08	3/4"	2-#12 & #12G	PUMP CONTROLLER	SCADA RTU	
P-09	1"	2-#12 & #12G	PUMP CONTROLLER	LIGHT POLE	
P-10	3/4"	2-#12 & #12G	PUMP CONTROLLER	GFCI RECEPTACLE	
P-11	-	2-#12 & #12G	PUMP CONTROLLER	PLC CONTROL/POWER SUPPLY	
C-001	2"	20-#14 AND 1-#16 SHIELDED TWISTED PAIR	PUMP CONTROLLER	JUNCTION BOX	
C-002	1"	COORD WITH INTEGRATOR	PUMP CONTROLLER	SCADA RTU	
C-003	1"	COORD WITH INTEGRATOR	PUMP CONTROLLER	FLOW TRANSMITTER	
C-004	1"	1-#16 SHIELDED TWISTED PAIR	FLOW TRANSMITTER	FLOW METER	

1 E200 ELECTRICAL ONE-LINE
SCALE: N.T.S.

ELECTRICAL SHEET NOTES - UN-REFERENCED

a. ALL CONDUIT ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL, THE CONTRACTOR SHALL ROUTE CONDUITS TO AVOID ALL SITE OBSTACLES.

b. ALL EXPOSED CONDUIT SHALL BE PVC COATED RIGID ALUMINUM THROUGH FIRST UNDERGROUND 90° BEND. PROTECT ALUMINUM CONDUIT WITH BITUMINOUS COATING WHERE IN CONTACT WITH CONCRETE. 1

c. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40.

d. ALL WIRING SHALL BE 600V RATED THHN/THWN STRANDED COPPER. ALL TERMINATIONS SHALL BE COATED WITH OXIDE INHIBITING COMPOUND.

e. ALL PANEL ENCLOSURES SHALL BE NEMA 4X 304 STAINLESS STEEL. ENCLOSURES SHALL HAVE A MINIMUM THICKNESS OF 1/8 INCH AND A HINGED DOOR WITH LOCK. THE PUMP CONTROL PANEL IS TO SET ON LEGS AND MOUNTED TO THE CONCRETE BASE, ALL CONDUITS SHALL ENTER THE PUMP CONTROL PANEL AT THE BOTTOM WHERE FEASIBLE. USE MEYERS HUBS OR EQUAL WHEN ENTERING THE SIDE. GROUNDING BUSHINGS SHALL BE USED ON ALL METAL CONDUITS IN ENCLOSURES.

f. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL WIRING AND CONDUIT CONNECTIONS BETWEEN, MAIN BREAKER, PUMP CONTROLLER, JUNCITION BOX, WET WELL, RTU, ETC. COORDIATE WITH LOCAL UTILITY AND PUMP/CONTROL SUPPLIERS PRIOR TO ROUGH IN.

g. ALL MECHANICAL CONNECTIONS SHALL BE MADE WITH STAINLESS STEEL HARDWARE AND FASTENERS.

ELECTRICAL SHEET NOTES - REFERENCED

1 PUMP STATION CONTROL PANEL SHALL INCLUDE A DUPLEX PUMP CONTROLLER WITH ALL NECESSARY CONTROLS INCLUDING, BUT NOT LIMITED TO THE FOLLOWING (REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION):

A. PORTABLE GENERATOR RECEPTACLE
B. H-O-A SWITCHES PER PUMP
C. ELAPSED TIME METERS- ONE RESETABLE PER PUMP; ONE NON RESETABLE PER PUMP
D. STRIP HEATER AND THERMOSTAT
E. NEMA 4X RED PUMP FAULT ALARM LIGHT ON THE FRONT OF THE PANEL
F. 3 PHASE VFD PER PUMP
G. HIGH LEVEL ALARM
H. ALL RELAYS, CONTACTS, PLC, AND SWITCHES AS REQUIRED.
I. ALL PILOT LIGHTS SHALL BE PUSH-TO-TEST
J. THERMAL AND MOISTURE SENSING AND CONTROL FOR THE MOTORS/PUMPS
K. PUMP ALTERNATING PROGRAMMING FOR LEAD/LAG OPERATION AND FOR THERMAL AND MOISTURE SENSING CONTROL
L. PHASE MONITOR
M. SURGE PROTECTION DEVICES
N. NEMA 4X LEDS
O. HIGH LEVEL ALARM BEACON LIGHT
P. NEMA 4X HORN
Q. ALL FLOAT SWITCHES SHALL BE WIRED THROUGH INTRINSICALLY SAFE RELAYS. ALL 120V POWER AND ALL CONTROL VOLTAGE.
R. GUIDED WAVE RADAR FOR PUMP CONTROL WITH FLOATS FOR HIGH AND LOW ALARM
S. FLOW METER
T. BREAKERS HANDLES SHALL BE EXTEND THROUGH INNER DOOR FOR ACCESS WITH OUTER DOORS OPEN.
U. PROVIDE CABINET DIVIDER FOR COMPLETE ISOLATION BETWEEN POWER AND CONTROLS. PROVIDE PASS-THROUGH CABLE FITTINGS AS REQUIRED

2 ELECTRICAL CONTRACTOR'S SYSTEM INTEGRATOR SHALL VERIFY ALL POINTS AT PLANT SCADA AND CREATE ALL ADDITIONAL GRAPHIC SCREENS, TRENDS, ALARMS, DATABASE/HISTORICAL DATA, ETC AT CITY OF CHATTANOOGA VT SCADA SYSTEM.

CALCULATED ARC FLASH:

MAIN CIRCUIT BREAKER:
- INCIDENT ENERGY - EXCEEDS PPE (NO UPSTREAM TRIP DEVICE)
- PROTECTIVE PPE - EXCEEDS PPE
- VOLTS: 208V
- LIMITED APPROACH: 3' - 6"
- RESTRICTED APPROACH: 1' - 0"

CONTROL PANEL:
- INCIDENT ENERGY - 1.4 CAL/CM^2 @ 18"
- ARC FLASH BOUNDARY: 1' - 8"
- PROTECTIVE PPE - REFER TO NFPA 70E-2018 TABLE 130.5(G)
- VOLTS : 208V
- LIMITED APPROACH: 3' - 6"
- RESTRICTED APPROACH: 1' - 0"

NOTE: THESE VALUES ARE BASED ON ASSUMPTIONS FOR TRANSFORMER SIZE, IMPEDANCE, BREAKERS AND SETTINGS. CALCULATIONS NEED TO BE RE-RUN AFTER ACTUAL SUBMITTAL AND UTILITY DATA HAVE BEEN PROVIDED.

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BRAINERD GOLF COURSE
PUMP STATION SAFETY IMPROVEMENTS
CITY OF CHATTANOOGA, TN

REV	DATE	REVISION DESCRIPTION
1	12/21/18	ADDENDUM #1
	11/9/18	ISSUED FOR BID

THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE

THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS.

PROJECT NO: 36680-00

DATE: 11/9/2018

DISC. LEAD:	DESIGNER:	CHECKER:
ADW	ADW	HMD

SHEET TITLE
ELECTRICAL

SCHEDULES & DIAGRAMS

SHEET E200

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