ONE-LINE

- PANELBOARD
- WEATHERHEAD
- DRY-TYPE TRANSFORMER (KVA)
- PADMOUNT UTILITY TRANSFORMER
- SHORT CIRCUIT VALUE
- WIRE SIZE
- METER AND CTs
- FUSED DISCONNECT
- NON-FUSED DISCONNECT
- MOTOR (M)
- CIRCUIT BREAKER
- FUSED SWITCH
- MAGNETIC STARTER/CONTACTOR
- GENERATOR
- GROUND

POWER LEGEND

- CEILING MOUNTED JUNCTION BOX
- WALL MOUNTED JUNCTION BOX
- FLOOR MOUNTED JUNCTION BOX
- WM-I WIREMOLD SURFACE RACEWAY
- NEMA-4X GROUND FAULT RECEPTACLE
- DUPLEX RECEPTACLE
- FOURPLEX RECEPTACLE
- ABOVE COUNTER MOUNTED RECEPTACLE
- GROUND FAULT RECEPTACLE
- CEILING MOUNTED RECEPTACLE
- FLOOR MOUNTED DUPLEX RECEPTACLE
- FLOOR MOUNTED FOURPLEX RECEPTACLE
- SPECIAL RECEPTACLE
- FLOOR MOUNTED SPECIAL RECEPTACLE
- TELEPHONE OUTLET
- $\blacktriangledown_W$ WALL MOUNTED TELEPHONE OUTLET
- FLOOR MOUNTED TELEPHONE OUTLET
- COMBINATION VOICE/DATA
- TELEVISION OUTLET

CONTROLS LEGEND

- SV SOLENOID VALVE
- FM METER OR FLOW METER
- FT TRANSMITTER
- LM LEVEL METER
- GV GLOBE VALVE

COLORADO LICENSED
MICHAEL BRINGARD
62944
11/14/23
PROFESSIONAL ENGINEER

PROJECT GENERAL NOTES:

1. THE PROCESS BUILDING IS FACTORY DESIGNED, BUILT, TESTED AND DELIVERED TO THE SITE FULLY ASSEMBLED BY NEWTERRA. ALL WORK INSTALLED BY NEWTERRA SHALL MEET 2023 NEC INSPECTION CODES.
2. THE CONTRACTOR SHALL WORK WITH NEWTERRA MANUFACTURING TO PROVIDE AND INSTALL ALL ELECTRICAL AND CONTROLS COMPLETE WITH ASSOCIATED CIRCUITRY NECESSARY TO PERFORM THE INTENDED FUNCTIONS OF THE CONTRACT DOCUMENTS. ANY MATERIALS, DEVICES AND CIRCUITRY NOT SPECIFICALLY INDICATED BUT NECESSARY TO PERFORM INTENDED FUNCTIONS AND CORRECT OPERATION SHALL BE PROVIDED AND INSTALLED.
3. ELECTRICAL INSTALLATION OF POWER AND CONTROLS ON EQUIPMENT SKIDS SHALL BE BY THE MANUFACTURER.
4. ALL EQUIPMENT, DEVICE AND RACEWAY DIMENSIONS, PLANS AND ELEVATIONS INDICATED ON THE DRAWINGS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL USE SHOP DRAWINGS FOR PROPER LAYOUT, FOUNDATION AND PAD FOR FINAL INSTALLATION.
5. ALL OVERCURRENT DEVICES (CIRCUIT BREAKERS, FUSES, OVERLOADS, ETC.) SIZES INDICATED ARE ESTIMATED. THE CONTRACTOR SHALL PROVIDE AND INSTALL OVERCURRENT DEVICES SIZED AS REQUIRED BY THE NEC FOR THE CONNECTED LOAD AND ACTUAL EQUIPMENT RATING. ALL OVERCURRENT DEVICES SIZES SHALL BE APPROVED BY THE ENGINEER.

SITE WORK:

1. ALL WORK SHALL BE COORDINATED WITH OTHER UNDER GROUND UTILITIES.
2. THE CONTRACTOR SHALL FOLLOW TRENCH DETAILS FOR CONDUIT AND WIRE.

GENERATOR PAD:

1. SIZE PAD TO EXTEND A MINIMUM OF 18" PAST THE EDGE OF GENERATOR ENCLOSURE PROVIDED. COMPACT SOIL UNDER GENERATOR PADS TO 95% STANDARD PROCTOR. THE FINAL PAD THICKNESS IS A MINIMUM OF 6".
2. STEEL REINFORCING BARS: ASTM A 615/A 615M, GRADE 60 (GRADE 420), DEFORMED. ALL REINFORCING STEEL SHALL BE UNIFORMLY TIED TO REINFORCING STEEL TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT WITH BOLSTERS, CHAIRS, OR SPACERS.
3. ALL CONCRETE SHALL BE AIR PROPORTION NORMAL-WEIGHT CONCRETE MIXTURE AS FOLLOWS:
   a. MINIMUM COMPRESSIVE STRENGTH: 4000 PSI AT 28 DAYS.
   b. MAXIMUM WATER-CEMENTITIOUS MATERIALS RATIO: 0.45.
   c. SLUMP LIMIT: 5 INCHES, PLUS OR MINUS 1 INCH.
   d. AIR CONTENT: 6 PERCENT, PLUS OR MINUS 1.5 PERCENT AT POINT OF DELIVERY FOR 3/4-INCH NOMINAL MAXIMUM AGGREGATE SIZE.
4. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. COMPLY WITH ACI 306.1 FOR COLD-WEATHER PROTECTION AND ACI 301 FOR HOT-WEATHER PROTECTION DURING CURING.

SITE (POWER) TRENCH DETAIL:

1. FOR THE CONDUIT TRENCHES TO THE INSTALL SCHEDULE 40 PVC CONDUIT WITH RIGID ELBOWS. REBAR STAKE AND TIE THE CONDUIT AT 5' INTERVALS ABOVE THE BOTTOM OF THE TRENCH AND FLOW FILL 8" WITH CONCRETE SLURRY.
2. COORDINATE TRENCH WIDTH WITH OWNER AND WHERE NEEDED CONDUITS CAN BE STACKED TO MINIMIZE TRENCH WIDTH

SERVICE:

1. ALL WORK SHALL CONFORM TO 2023 NATIONAL ELECTRIC CODE ALONG WITH ANY LOCAL BUILDING CODES.
2. ALL WORK INVOLVING THE UTILITY SHALL BE REVIEWED AND CONFIRMED, PRIOR TO ANY INSTALLATION. ALL WORK TO CONFORM TO YAMPA VALLEY ELECTRIC ASSOCIATION REQUIREMENTS.
3. ALL FEEDERS ARE TO BE COPPER.
4. PANEL SCHEDULES SHALL BE UPDATED AND TYPED PRIOR TO COMPLETION OF THE PROJECT.
5. THE E.C. SHALL SUBMIT ELECTRICAL DISTRIBUTION GEAR, AND GENERATOR SHOP DRAWINGS TO THE OWNER AND ENGINEER FOR APPROVAL PRIOR TO FINAL PURCHASE.
6. THE SERVICE EQUIPMENT SHALL BE BUILT AT THE EDGE OF THE TANK PAD WITH A RACK AS SHOWN OR MOUNTED ON THE CONTAINER EXTERIOR PER OWNER PREFERENCE.

STAND-BY GENERATOR AND ATS:

1. THE GENERATOR SHALL BE INSTALLED WITH ALL CONNECTIONS, CONDUCTORS AND CONDUITS PER THE CODE.
2. REFER TO GENERATOR SPECIFICATION TABLE FOR DETAILS ON THE PROJECT SPECIFIC GENERATOR.
3. THE CONTRACTOR SHALL PROVIDE A CONCRETE HOUSEKEEPING PAD PER DETAIL.
4. SUPPLY AUTOMATIC TRANSFER SWITCH IN THE AMPERAGE AND VOLTAGE SPECIFIED. SWITCH SHALL BE (3) POLE WITH A SOLID NEUTRAL CONNECTION.
5. GROUND GENERATOR PER NEC 250-35(B) FOR A NON-SEPARATELY DERIVED SYSTEM.
6. CONTROL CONDUCTORS FROM THE GENERATOR TO THE REMOTE CONTROL PANEL AND ATS SWITCH SHALL BE VERIFIED FROM THE MANUFACTURER AND INSTALLED PER CODE.
7. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR THE GENERATOR AND TRANSFER SWITCHES TO THE ENGINEER PRIOR TO PURCHASE.
8. THE CONTRACTOR IS RESPONSIBLE TO TEST AND SHOW PROPER OPERATION OF THE STANDBY SYSTEM TO THE OWNER.

GROUNDING:

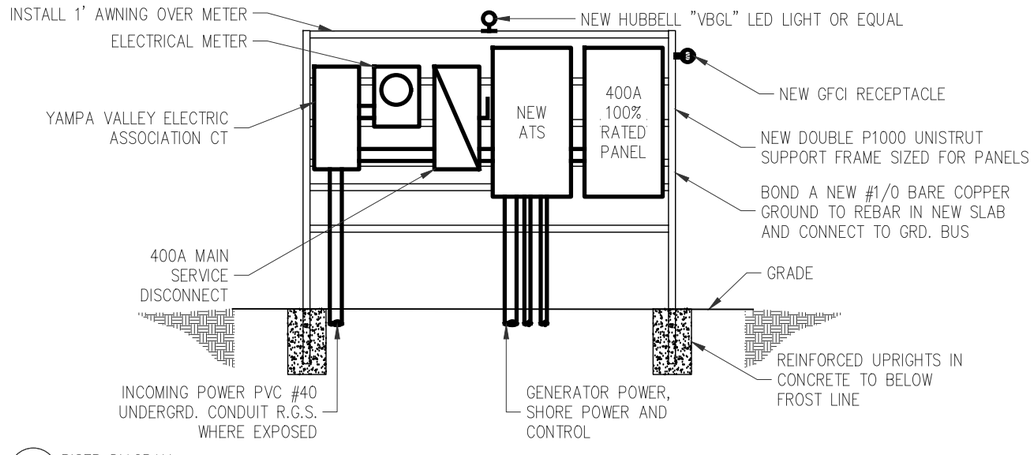
1. PROVIDE NEW MAIN SERVICE GROUNDING WITH THE FOLLOWING:
   - A WALL MOUNTED 2" X 8" X $\frac{1}{4}$" GROUND BAR MOUNTED ON WALL BY MAIN SERVICE BOND ALL CONDUCTORS HERE.
   - 2- $\frac{5}{8}$" GROUND RODS AT ENTRANCE PER NEC.
   - INSTALL 20' OF BARE GROUND WIRE IN THE TRENCH TO THE GENERATOR AND COVER WITH CONCRETE.
   - BOND BUILDING STEEL OF NEW CONTAINERIZED PLANT.

DETAIL NOTES ALL SHEETS:

1. THE CONTRACTOR SHALL VERIFY THE NUMBER OF CONTROL CABLES BETWEEN THE GENERATOR AND ATS SWITCH. THERE WILL BE A SET OF GENERATOR START CONTACTS ALONG WITH A COMMUNICATIONS CONNECTION FOR GENERATOR ALARM SIGNALS TO THE SCADA SYSTEM. COORDINATE WITH NEWTERRA ON CONNECTION TO SCADA.

CONTROL SYSTEM WORK BY ELECTRICAL:

1. ALL CONTROL DEVICES, CABLING AND CONNECTIONS INSIDE THE BUILDING WILL BE INSTALLED BY THE MANUFACTURER.
2. ALL CONTROL DEVICES AND FACTORY SUPPLIED CABLING FOR THE TANKS SHALL BE SUPPLIED BY NEWTERRA.
3. THE ELECTRICAL CONTRACTOR SHALL INSTALL CONTROL CONDUITS BETWEEN THE INTERIOR PANELS AND THE TANKS.
4. THE E.C. SHALL SUPPLY THE CONTROL CABLING FROM THE BUILDING TO THE TANKS AS LISTED IN THE NEWTERRA SUBMITTAL AND THE SCHEDULE. EC TO PROVIDE CABLING BETWEEN CONTAINERS PER THE NEWTERRA ONE-LINE.



1 RISER DIAGRAM
SCALE: NOT TO SCALE

REV. No:	DATE:	BY:	REVISION DESCRIPTION:

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DESIGNED BY: MAB
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AquaWorks DBO INC DESIGN BUILD OPERATE

PROJECT: MILNER COLORADO WWTP
COMMUNITY OF MILNER
ROUTT COUNTY, COLORADO

ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
(303) 477-5915

SHEET TITLE: ELECTRICAL NOTES & DETAILS

PROJECT NUMBER:	SCALE:	SHEET:
#2284	NOT TO SCALE	E1

COLORADO LICENSED
MICHAEL BRUNGARD
62944
11/14/23
PROFESSIONAL ENGINEER

GENERAL NOTES:

A. ALL CONDUCTORS SIZING IS BASED ON COPPER ONLY.

B. EC TO COORDINATE WITH YAMPA VALLEY ELECTRIC ASSOCIATION ASSOCIATION TO VERIFY SIZE AND AVAILABLE FAULT CURRENT FOR THE UTILITY TRANSFORMER. IF ANY VALUES EXCEED THE ONES LISTED ON THE SHORT CIRCUIT TABLE, CONTACT ENGINEER IMMEDIATELY TO REVISE DESIGN AND CALCULATIONS.

C. VOLTAGE DROP IS TO BE TESTED AND IF NEEDED, UPSIZED BY THE EC.

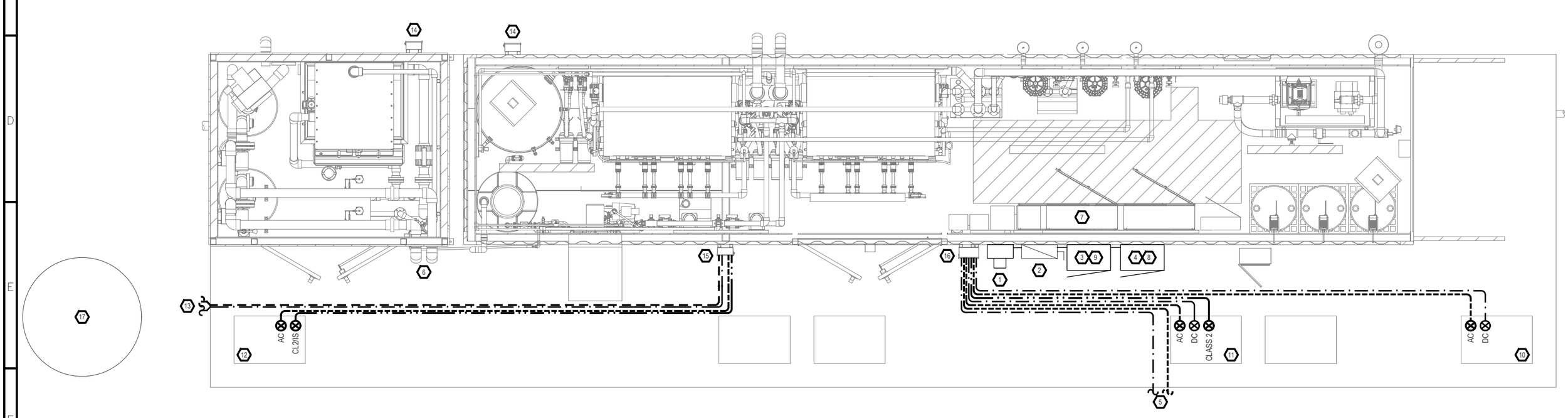
D. SEE INSTRUMENTATION TABLE ON E3 FOR POWER CONNECTION REQUIREMENTS, COMMUNICATION CABLE TYPES, CONDUIT SIZES, JUNCTION BOX ROUTING, HAZARDOUS AREA CLASSIFICATIONS AND TERMINATION INFORMATION.

E. ALL CONDUIT PATHWAYS SHOWN IN THIS DRAWING ARE DIAGRAMMATIC ONLY. EC TO DETERMINE THE BEST ROUTING FOLLOWING THE INSTRUMENTATION SCHEDULE ON PAGE E3.

F. TRANSFORMER ASSUMED TO BE NO FURTHER THAN 50' AWAY. IF THERE IS A DISCREPANCY, CONTACT ENGINEER FOR RECALCULATIONS.

KEYED NOTES: (#)

1. 320A YAMPA VALLEY ELECTRIC ASSOCIATION ASSOCIATION METER.
2. 400A YAMPA VALLEY ELECTRIC ASSOCIATION ASSOCIATION 300V NEMA 3R SERVICE DISCONNECT.
3. 400A, 120/240V, 1PHASE, 3 WIRE, NEMA 3R AUTOMATIC TRANSFER SWITCH.
4. 400A, 120/240V, 1PHASE, 3 WIRE, NEMA 3R PANEL.
5. U.G. POWER AND CONTROL CONDUITS FOR GENERATOR. SEE CIVIL PLANS FOR EXACT LOCATIONS. GENERATOR IS APPROXIMATELY 50' WEST OF THE PLANT. ATS TO RECEIVE 120V AND 24VDC CONNECTIONS.
6. EXTEND VENTILATION WHEN NEEDED TO ENSURE IT IS 3' AWAY FROM ANY ELECTRICAL EQUIPMENT.
7. PROPOSED LOCATION OF 120/240V 1PHASE PANEL. PANEL TO SUPPLY GENERATOR AND RACK'S SMALL LOADS.
8. MAINTENANCE LED LIGHT & GFI ON RACK 120V FROM NEW 120/240V PANEL.
9. COORDINATE OVERHEAD ROUTE FOR INCOMING 400A FEED FROM TRANSFER SWITCH.
10. SLUDGE HOLDING TANK TNK-0901. TANK TO RECEIVE 240V CONNECTIONS AND 24VDC CONNECTIONS. SEE E3 FOR EQUIPMENT CONNECTION SCHEDULE.
11. AERATION TANK TNK-0501. TANK TO RECEIVE 240V CONNECTIONS, CLASS 2 CONNECTIONS, AND 24VDC. SEE E3 FOR EQUIPMENT CONNECTION SCHEDULE.
12. EQUALIZATION TANK TNK-0301. TANK TO RECEIVE 120V CONNECTIONS, 24VDC, AND INTRINSICALLY SAFE. SEE E3 FOR EQUIPMENT CONNECTION SCHEDULE.
13. U.G. POWER AND CONTROL CONDUITS FOR LIFT STATION. SEE CIVIL PLANS FOR EXACT LOCATIONS.
14. PROVIDE ELECTRICAL CONNECTIONS BETWEEN THE TWO CONTAINERS PER EQUIPMENT MANUFACTURER REQUIREMENTS.
15. JUNCTION BOXES JB-TNK2-DC, JB-TNK2, AND JB-TNK2-IS.
16. JUNCTION BOXES JB-TNK1-CL2, JB-TNK1, AND KB-TNK1-DC.
17. LIFT STATION TANK TNK-0101 AND CLIENT PROVIDED PUMP CONTROLLER. CONTROLLER TO RECEIVE 20A, 240V CONNECTION, WHILE SCHEDULED DEVICES TO RECEIVE 24V CONNECTIONS. SEE E3 FOR POWER AND INSTRUMENTATION CONNECTION SCHEDULE.



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AquaWorks DBO INC
DESIGN BUILD OPERATE

PROJECT: MILNER COLORADO WWTP
COMMUNITY OF MILNER
ROUTT COUNTY, COLORADO

ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
(303) 477-5915

SHEET TITLE: ELECTRICAL LAYOUT

PROJECT NUMBER:	SCALE:	SHEET:
#2284	NOT TO SCALE	E2

TANK POWER & INSTRUMENT CONNECTION

TANK #	TAG	240V	120V	24VDC	IS/CL2	ITEM	CABLE IN CONDUIT	AREA CLASSIFICATION	JUNCTION BOX	TERMINATION
101	Pump Controller	YES	-	-	-	Pump Controller	3-#10, 1-#10 - 3/4" Rigid	General Purpose	-	MDP
	P-0101	YES	-	-	-	Lift Station - Pump #1 (Duty)	See Manufactuer Reccomendation	Cl1, Div1 Seal-Off	-	Pump Controller
	P-0102	YES	-	-	-	Lift Station - Pump #2 (Standby)			-	Pump Controller
	P-0101-LDS	-	-	YES	-	Lift Station - Pump #1 Leak Detection			-	Pump Controller
	P-0102-LDS	-	-	YES	-	Lift Station - Pump #2 Leak Detection			-	Pump Controller
	LSL-0101	-	-	-	YES	Lift Station - Level Switch Low			-	Pump Controller
	LSH1-0101	-	-	-	YES	Lift Station - Level Switch High 1			-	Pump Controller
	LSH2-0101	-	-	-	YES	Lift Station - Level Switch High 2			-	Pump Controller
	LSHH-0101	-	-	-	YES	Lift Station - Level Switch High High			-	Pump Controller
	FQI-0101 / FIT-0101	-	-	YES	-	Lift Station - Flow Indicating Transmitter & Flow Totalizer	Separate 1" Conduits for all connections. Verify the Qty of #16, pairs of #16 STP, & 24Vdc,and other pump control cables		JB-TNK2-DC	Plant MCP
	YA-0101	-	-	YES	-	Lift Station - Alarm		General Purpose		
	YI-0101	-	-	YES	-	Lift Station - Run Status				
301	P-0301	-	YES	-	-	Equalization Tank Pump #1 (Duty)	2-#12, 1-#12,-3/4" Rigid	Cl1, Div1 Seal-Off	JB-TNK2	Plant MPP
	P-0302	-	YES	-	-	Equalization Tank Pump #2 (Standby)	2-#12, 1-#12,-3/4" Rigid			
	LT-301	-	-	-	YES	Level Transmitter	Separate 1" Conduits for all connections. Verify the Qty of #16, pairs of #16 STP, & 24Vdc,and other pump control cables		JB-TNK2-IS	
	LSLL-301	-	-	-	YES	Level Switch High High				
	LSHH-301	-	-	-	YES	Level Switch High High				
501	P-0501	YES	-	-	-	Aeration Tank Pump #1 (Duty)	2-#12, 1-#12,-3/4" Rigid	General Purpose	JB-TNK1	Plant MPP
	P-0502	YES	-	-	-	Aeration Tank Pump #2 (Standby)	2-#12, 1-#12,-3/4" Rigid			
	PH-0501	-	-	YES	-	pH Transmitter Alarm	Separate 1" Conduits for all connections. Verify the Qty of #16, pairs of #16 STP, and other pump sensor cables		JB-TNK1-DC	PLANT MCP
	DO-0501	-	-	YES	-	Disolved Oxygen Transmitter				
	LSHH-0501	-	-		YES	Level Switch High High			JB-TNK1-CL2	
	LSLL-0501	-	-		YES	Level Switch Low Low				
	LT-0501	-	-		YES	Level Transmitter				
901	P-0901	YES	-	-	-	Activated Sludge Decant Pump #1 (Duty)	2-#12, 1-#12,-3/4" Rigid	General Purpose	JB-TNK1	Plant MPP
	P-0902	YES	-	-	-	Activated Sludge Decant Pump #2 (Standby)	2-#12, 1-#12,-3/4" Rigid			
	LSLL-0901	-	-	YES	-	Level Switch Low Low	Separate 1" Conduits for all connections. Verify the Qty of #16 & other sensor cables		JB-TNK1-DC	Plant MCP
	LSHH-0901	-	-	YES	-	Level Switch High High				

WWTP Generator Specifications		
Manufacturer	*mtu* - Rolls-Royce	OR EQUAL
Model	DS100	OR EQUAL
Voltage	240	V
Duty	Stand-By	
Size (Rated for Site)	95/114	kW/kVA
Phase/Wire	1P, 3W	
Engine	John Deere	
Fuel	Diesel	
Site Elevation	6522	FT
Ambient Temp	104°F	Deg
Low Temp Design	-20°F	Deg
Max Starting kVA	361	kVA
Maximum Voltage Dip	35	%
Sound	Steel Weather	
Exhaust	Internal Muffler w/ Top Exhaust	
Emergency Power Off Switch	QTY (1)	
Housing		
Width	48	Inches
Length	132	Inches
Height	107	Inches
UL Base Tank	See Mechanical Contractor	
Approximate Weight	5200	Lbs
Accessories:		
Extreme Cold Weather Kit with Snow		
Block Heater	1500W 120V for (-20°F)	
Battery Charger/Heat	Yes	10A
Remote Annuciator	Yes	
Automatic Transfer Switch.	Yes	
ATS Cable/Annunciator	TBD	

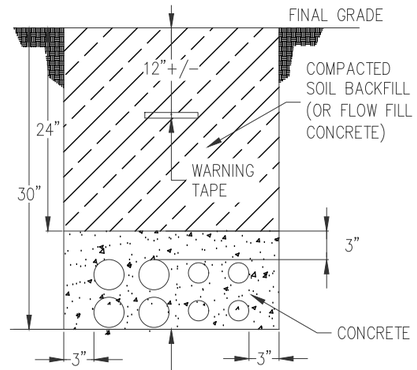
FEEDER SCHEDULE			
KEY/ AMPS	FEEDER CONDUIT AND CONDUCTORS	KEY/ AMPS	FEEDER CONDUIT AND CONDUCTORS
SERVICE ENTRANCE FEEDERS		SDS XFMR FEEDERS (NOTE 1)	
400N	2[3#3/0, 2"C]	30S	3#10, 1#8G, 3/4"C
EQUIPMENT FEEDERS			
20NG	3#12, #12G, 3/4"C	20G	2#12, #12G, 3/4"C
400NG	2[3#3/0, 1#3G, 2-1/2"C]	400G	2[2#3/0, 1#3G, 2"C]
GROUNDING CONDUCTORS		ABBREVIATIONS	
G10	1-1/0, 3/4" C		

NOTES:
1. FEEDER FOR SECONDARY OF SEPARATELY DERIVED SYSTEM (SDS). GROUND SIZE PER NEC TABLE INCLUDED IN ARTICLE 250.66.
2. ALL CONDUCTORS ARE SINGLE CONDUCTOR COPPER THWN UNLESS NOTED OTHERWISE. AMPACITY BASED ON THE NEC TABLE INCLUDED IN ARTICLE 310.
3. ALL CONDUITS ARE EMT UNLESS NOTED OTHERWISE, FILL RATIOS BASED ON NEC ANNEX C TABLE C.1.

CONTRACTOR NOTE – UTILITY XFMR:

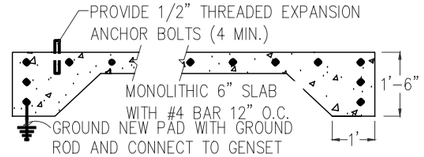
1. EC TO COORDINATE WITH YAMPA VALLEY ELECTRIC ASSOCIATION TO VERIFY SIZE AND AVAILABLE FAULT CURRENT FOR THE UTILITY TRANSFORMER. IF ANY VALUES EXCEED THE ONES LISTED ON THE SHORT CIRCUIT TABLE, CONTACT ENGINEER IMMEDIATELY TO REVISE DESIGN AND CALCULATIONS.

2. FOR DESIGN PURPOSES 75KVA XFMR USED TO CALCULATE FAULT CURRENT. EC TO COORDINATE AND CONFIRM. IF FAULT XFMR OR FAULT EXCEED VALUES LISTED, CONTACT ENGINEER IMMEDIATELY FOR REDESIGN.



2 DUCT BANK DETAIL
SCALE: NOT TO SCALE

UNDERGROUND CONDUIT SCHEDULE						
Location	Power		Control/Data		Spare	
	Size	Qty.	Size	Qty.	Size	Qty.
Service Entrance	2.5"	2			NA	NA
Generator	2.5"	2	1"	2	1-1"	
Underground Shop Drawing Needs to be Prepared						



1 GENERATOR PAD DETAIL
SCALE: NOT TO SCALE

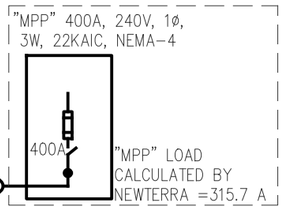
FAULT CURRENT AND VOLTAGE DROP CALCULATION TABLE

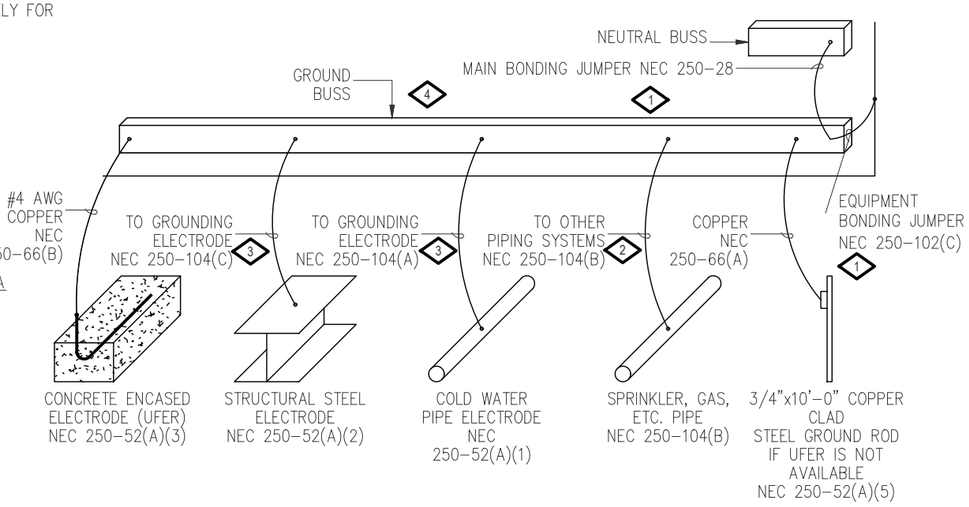
POINT	LOCATION DESCRIPTION	LENGTH (L) (ft)	LOAD ON FEEDER (Amps)	POWER FACTOR (%)	VOLTAGE (E$_{LL}$)	PHASE	WIRE SIZE	CONDUCTOR MATERIAL	CONDUCTOR TYPE	CONDUIT MATERIAL	VOLTAGE CLASS	CONDUCTO VOLT LOSS	C VALUE	# OF PARALLEL RUNS	Isc AVAILABLE UPSTREAM (SEE NOTE 5)	Isc AT EQUIP (I$_{3\phi}$) OR (I$_{L-L}$)	% OF VOLTAGE DROP	VOLTAGE AT START (V$_{LL}$)	VOLTAGE AT END (V$_{LL}$)	TOTAL % VD	POINT
F0	XFMR	--	--	--	--	--	--	--	--	--	--	--	--	--	--	34,100	--	480	--	--	F0
F1	METER	60	400	90%	240	1	3X	COPPER	THREE SINGLE CONDUCTORS	NONMAGNETIC	600V	175	13923	2	34,100	21,150	0.9%	480	476	0.9%	F1
F2	DISCONNECT	5	400	90%	240	1	3X	COPPER	THREE SINGLE CONDUCTORS	NONMAGNETIC	600V	175	13923	2	21,150	20,501	0.1%	476	475	0.9%	F2
F3	ATS	5	400	90%	240	1	3X	COPPER	THREE SINGLE CONDUCTORS	NONMAGNETIC	600V	175	13923	2	20,501	19,891	0.1%	475	475	1.0%	F3
F4	MDP	5	400	90%	240	1	3X	COPPER	THREE SINGLE CONDUCTORS	NONMAGNETIC	600V	175	13923	2	19,891	19,316	0.1%	475	475	1.1%	F4
F5	MPP	15	400	90%	240	1	3X	COPPER	THREE SINGLE CONDUCTORS	NONMAGNETIC	600V	175	13923	2	19,316	17,775	0.2%	475	474	1.3%	F5

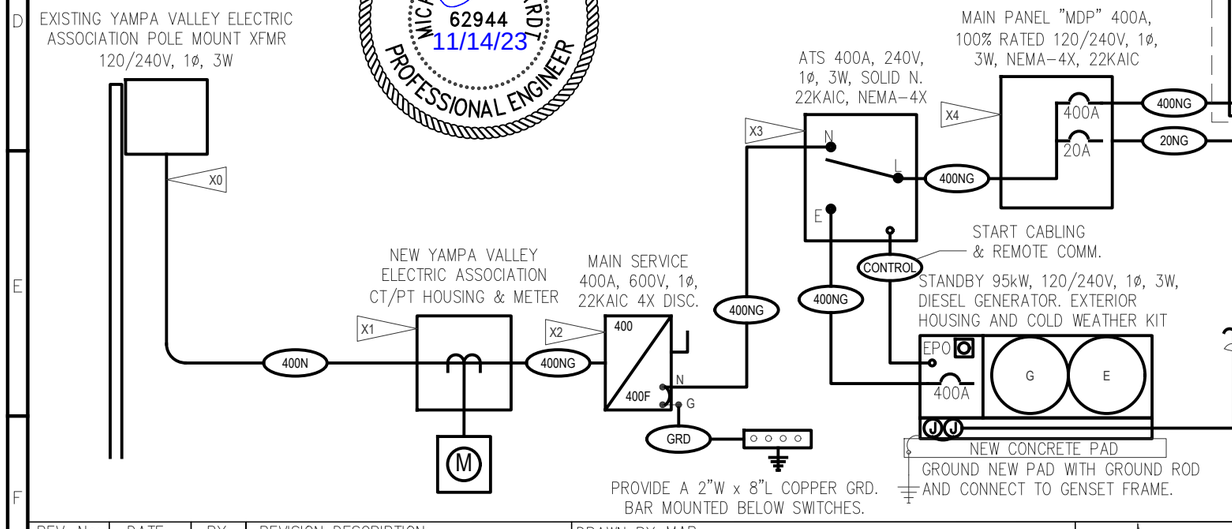
NOTES:
1. ALL CALCULATIONS WERE DONE USING BUSSMAN "POINT-TO-POINT" METHOD.
2. REFER TO PLANS FOR ASSUMED UTILITY TRANSFORMER SIZE UTILIZED FOR CALCULATIONS.
3. TRANSFORMER IMPEDANCES USED IN THE CALCULATIONS WERE TAKEN FROM EATON'S PUBLISHED IMPEDANCES FOR DOE 2016 DRY-TYPE TRANSFORMERS.
4. CONDUCTOR LENGTHS INDICATED IN THIS SCHEDULE ARE FOR THE PUROPOSES OF FAULT CURRENT CALCULATIONS ONLY. THESE LENGTHS ASSUME WORST CASE SHORTEST DISTANCE CONDITIONS AND SHOULD NOT BE UTILIZED BY THE ELECTRICAL CONTRACTOR FOR BIDDING PURPOSES. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ESTIMATING AND MEASURING ACTUAL FIELD CONDITION LENGTHS AS PART OF THE BID PROCESS.

MAIN SERVICE CALCULATION			240 Volts
Computed Loads		*Demand Factor*	
Lighting	kVA	125% =	0.3 kVA
Receptacle (1st 10 kW)	kVA	100% =	1.4 kVA
Receptacle (Over 10 kW)	kVA	50% =	0.0 kVA
Motor Loads	kVA	100% =	35.6 kVA
Largest Motor	kVA	125% =	17.5 kVA
Fixed Electric Heat	kVA	100% =	15.0 kVA
Other Load	kVA	100% =	6.0 kVA
	TOTAL DEMAND		75.8 kVA
On 320A Service	**1Φ Load**		315.7 Amps

PROCESS SERVICE INSTALLED BY NEWTERRA







GENERAL NOTES – GROUNDING DETAIL:

1. THE GROUNDING ELECTRODE CONDUCTOR CONNECTION POINT IS NOT NECESSARILY A PHYSICAL CONNECTION. IT IS PROVIDED TO ILLUSTRATE THE INTERCONNECTION OF THE GROUNDING ELECTRODE SYSTEM. IT COULD, FOR EXAMPLE, BE THE WATER PIPE.
2. NEC REFERENCES ARE FROM 2023 NATIONAL ELECTRIC CODE.
3. BONDS SHALL BE MECHANICAL TYPE. INTERIOR BONDS MAY BE EXOTHERMIC.
4. BOND SIZE SHALL MATCH CONDUCTORS SHOWN ON FEEDER SCHEDULE.
5. GROUND CONDUCTORS SHALL BE STRANDED COPPER INSULATED CABLE, U.N.O.

DETAIL NOTES – GROUNDING DETAIL:

1. SIZE PER TABLE 250-66 UP TO 1100 KCMIL. SIZE TO 12.5% OF FEEDERS WHEN OVER 1100 KCMIL. MAIN BONDING JUMPER FOR SERVICES GREATER THAN 1000A, PROVIDED WITH SERVICE ENTRANCE SWITCHGEAR ARE ACCEPTABLE.
2. SIZE PER TABLE 250-122. ASSUMES MAIN DEVICE RATING IS EQUAL TO FEEDER SIZE.
3. SIZE PER TABLE 250-66.

BONDING CONDUTOR SIZE				
SES SIZE	MBJ/EBJ 1	PIPING 2	GE 3	ISB 4
100A	6	8	6	4
200A	4	6	4	4
400A	1/0	3	1/0	6
600A	2/0	1	2/0	6
800A	2/0	1/0	2/0	6

REV. No:	DATE:	BY:	REVISION DESCRIPTION:

DRAWN BY: MAB
DESIGNED BY: MAB
FILE PRINTED ON: 11/14/2023 3:56:58 PM

0 1 IF THIS BAR DOES NOT READ 1" DRAWING IS NOT LABELED TO SCALE

AquaWorks DBO INC
DESIGN BUILD OPERATE

PROJECT: MILNER COLORADO WWTP
COMMUNITY OF MILNER
ROUTT COUNTY, COLORADO

ENGINEER: AQUAWORKS DBO, INC.
3252 WILLIAMS STREET
DENVER, COLORADO 80205
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SHEET TITLE: ELECTRICAL ONE LINE & DETAILS

PROJECT NUMBER:	SCALE:	SHEET:
#2284	NOT TO SCALE	E3