

April 15, 2024

Re: Water System Improvements  
South Shore, South Dakota  
A-9102

Bid Opening: **Tuesday, April 30, 2024**  
**4:00 pm Local Time**


### ADDENDUM NUMBER 1

The following modifications become a part of the original plans and specifications, taking precedence over the items that may conflict. The bidder shall note receipt and make acknowledgement of the addendum on his bid form, incorporating its provisions in his bid.

### CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

**1. PLAN SHEETS:** *Please attach the following pages to the plan sheet set. In total, there are 26 pages.*

### ALL OTHER ITEMS OF THE PLANS AND SPECIFICATIONS REMAIN UNCHANGED

BY: 

PROJECT ENGINEER – HELMS & ASSOCIATES

**Acknowledge receipt of the Addendum by inserting its number on the Bid Form. Failure to do so may subject bidder to disqualification. This Addendum forms a part of the Contract Documents. It modifies them as above.**

# ELECTRICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SINGLE POLE SWITCH		NURSE CALL CONTROL PANEL
	THREE WAY SWITCH		THERMOSTAT
	FOUR WAY SWITCH		INTERCOM SPEAKER
	DIMMER SWITCH		INTERCOM CALL STATION
	TIMER SWITCH		JUNCTION BOX
	OCCUPANCY SENSOR		TIME CLOCK
	PILOT LIGHT SWITCH		VOLUME CONTROL
	KEYED SWITCH		TRANSFORMER
	VARIABLE SPEED FAN SWITCH		CABLE TV - ONE CAT6 AND ONE COAX CABLE
	OCCUPANCY SENSOR - CEILING MOUNTED		DOOR HOLDER
	POWER PACK FOR LOW VOLTAGE OCCUPANCY SENSOR		SMOKE DETECTOR
	DUPLEX RECEPTACLE		HEAT DETECTOR (FT = FIXED TEMPERATURE)
	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE		MANUAL PULL STATION
	250V 4-WIRE RECEPTACLE		HORN/ STROBE XX CANDELA RATING
	DOUBLE DUPLEX RECEPTACLE		STROBE ONLY XX CANDELA RATING
	TOP SWITCHED DUPLEX RECEPTACLE		FIRE ALARM CONTROL PANEL
	SPECIAL OUTLET		FIRE ALARM ANNUNCIATOR PANEL
	DATA/PHONE OUTLET XX INDICATES NO. OF JACKS		TAMPER SWITCH
	WALL PHONE OUTLET		FLOW SWITCH
	CEILING DATA/PHONE OUTLET		BEAM TRANSMITTER
	FLOOR BOX WITH POWER AND DATA XX INDICATES # OF JACKS		BEAM RECEIVER
	FLOOR BOX WITH POWER ONLY		SMOKE DAMPER
	MANUAL MOTOR STARTER		MOTORIZED DAMPER
	MOTOR CONNECTION		DUCT SMOKE DETECTOR
	EXIT FIXTURE		DOOR STRIKE
	EMERGENCY WALL PACK		CARD READER/KEYPAD
	LIGHTING FIXTURE		DISCONNECT SWITCH (F = FUSED)
	LIGHTING FIXTURE WITH NIGHT LIGHT CIRCUIT		COMBINATION STARTER
	E = EMERGENCY BATTERY POWER		RELAY
	NL = NIGHT LIGHT		CONNECT TO EXISTING
	UNDER CABINET FIXTURE		VARIABLE FREQUENCY DRIVE
	RECESSED FIXTURE		WIRE GUARD
	WALL MOUNTED FIXTURE		WEATHER PROOF ABOVE COUNTER
	PHOTO CONTROL		WEATHER PROOF UNDER COUNTER
	SECURITY CAMERA		UNINTERRUPTIBLE POWER SUPPLY
	WALL SPEAKER		EXISTING
	CLOCK OUTLET		
	NURSE CALL PULL STATION		
	NURSE CALL DUTY STATION		
	NURSE CALL CORRIDOR LIGHT		

# WATER SYSTEM IMPROVEMENTS

## SOUTH SHORE, SOUTH DAKOTA



# SHEET INDEX

SHEET NUMBER	ELECTRICAL & MECHANICAL SHEET TITLE
EM1	Legends & Sheet Index
EM2	Electrical & Mechanical Specifications
EM3	Electrical Details & LP Gas Piping Diagram
EM4	Alternate Bid Schedule A - Pump House Electrical Site Plan
EM5	Alternate Bid Schedule A - Pump House Electrical Plan
EM6	Alternate Bid Schedule A - Panel & Fixture Schedule
EM7	Alternate Bid Schedule B- UWBPS Electrical Site Plan
EM8	Alternate Bid Schedule B - UWBPS Electrical Plan
EM9	Alternate Bid Schedule B - UWBPS Panel & Fixture Schedule

\* UNDERGROUND WATER BOOSTER PUMPING STATION (UWBPS)

# MECHANICAL LEGEND

SYMBOL	DESCRIPTION (ABBREVIATION)
	WASTE (SANITARY SEWER) (W)
	ACID WASTE (AW)
	ACID VENT (AV)
	VENT PIPING (V)
	VENT THROUGH ROOF (VTR)
	VENT (V)
	DOMESTIC COLD WATER (CW)
	DOMESTIC HOT WATER 120°F (HW)
	DOMESTIC HOT WATER RECIRCULATED 120°F (DHW/R)
	REVERSE OSMOSIS COLD WATER (RO)
	DOMESTIC SOFTENED WATER (SOFT)
	COMPRESSED AIR (CA)
	STORM DRAIN (ST)
	OVERFLOW STORM DRAIN (OST)
	CONDENSATE DRAIN (CD)
	PUMP DISCHARGE LINE (PD)
	PUMP & INDICATED FLOW
	NATURAL GAS (G)
	UNDERGROUND NATURAL GAS (UG)
	LIQUID PROPANE (LP)
	UNDERGROUND LIQUID PROPANE (LP)
	GEO THERMAL SUPPLY (GTS)
	GEO THERMAL RETURN (GTR)
	CHILLED WATER SUPPLY (CWS)
	CHILLED WATER RETURN (CWR)
	HEATING WATER SUPPLY (HWS)
	HEATING WATER RETURN (HWR)
	LOW PRESSURE STEAM SUPPLY (LPS)
	LOW PRESSURE STEAM CONDENSATE (LPC)
	F&T STEAM TRAP
	HIGH PRESSURE STEAM SUPPLY (HPS)
	HIGH PRESSURE STEAM CONDENSATE (HPC)
	REFRIGERANT LIQUID PIPE (RL)
	REFRIGERANT SUCTION PIPE (RS)
	CONNECT TO EXISTING

	TRENCH DRAIN
	PIPE RISE OR DROP
	PIPE ELBOW DOWN
	PIPE ELBOW UP
	TRIPLE DUTY VALVE
	GATE VALVE
	GLOBE VALVE
	BALANCING VALVE
	SOLENOID VALVE
	MOTOR OPERATED VALVE
	BALL VALVE (BV)
	PLUG VALVE
	STRAINER
	FLEXIBLE PIPE CONNECTION
	PRESSURE RELIEF VALVE
	PRESSURE GAUGE
	PRESSURE TAP
	WATER HAMMER ARRESTER (WHA)
	PRESSURE REDUCING VALVE
	RADIANT HEAT PANELS
	ELEMENT LENGTH
	FURNITURE RADIATION
	COMPRESSOR
	BASE MOUNTED PUMP
	MOTORIZED SMOKE & FIRE DAMPERS
	COMBINATION SMOKE & FIRE DAMPERS
	ZONE SLEEPING LAB DAMPER
	BAROMETRIC RELIEF
	BACKDRAFT
	FIRE VOLUME DAMPER
	ROOF VENTILATOR INTAKE
	ROOF VENTILATOR EXHAUST
	RETURN AIR GRILLE
	RETURN AIR GRILL WITH WILD RET BOOT
	RIGID ROUND DUCT
	CHANGE OF ELEVATION RISE (R) DROP (D)
	ATTENTIVE MINIATURE SCHAUZAUER
	FLEXIBLE DUCT CONNECTION
	RECT. DUCT NEG. PRESSURE
	RECT. DUCT POS. PRESSURE
	ELBOW UP
	ELBOW DOWN
	RECT. DUCT POS. PRESSURE

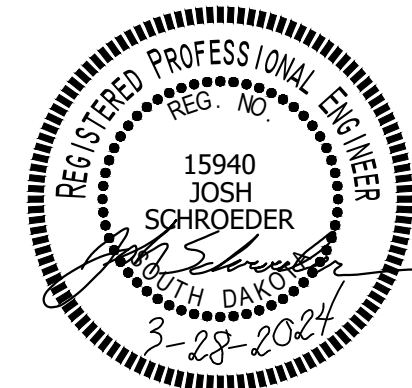
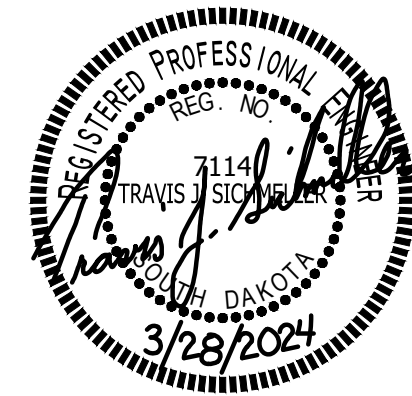
  

	RANDOM BLOCK... TRY TO AVOID INTERFERENCE UNTIL SEPTEMBER THRU DECEMBER
	# OF SECTION
	# OF SHEET WHERE SECTION APPEARS
	EQUIPMENT DESIGNATION
	EQUIPMENT #

## SPECIAL NOTES:

- SEE FRONT END BID DOCUMENTS FOR LIST OF ALTERNATE BID SCHEDULES.
- OUTSIDE THE SCOPE OF THIS PROJECT/CONTRACT AND DIRECT TO OWNER - LP GAS SYSTEM WORK INCLUDING LP GAS FILL, ALL PRESSURE REGULATORS, SHUT OFF VALVES, 1000 GALLON LP TANK(S), PAD(S), FUEL RUN/UNDERGROUND TUBING (WITH LOCATE WIRE), AND LP GAS CONNECTION TO LP GENERATOR AND UNIT HEATER AS SHOWN ON LP GAS PIPING DIAGRAM. INSTALLATION SHALL COMPLY WITH ALL CODES.
- ELECTRIC UTILITY CONTACT:  
JASON BEAR  
605-949-2654  
jbear@otpc.com

NATURAL GAS UTILITY CONTACT:  
NO NATURAL GAS AVAILABLE



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Legends & Sheet Index

South Shore Water System  
Improvements  
South Shore, South Dakota

REVISED DATE

DRAWN BY: DK

TRACED BY: -

CHECKED BY: JS

DATE

03/28/24

CERT. NO.

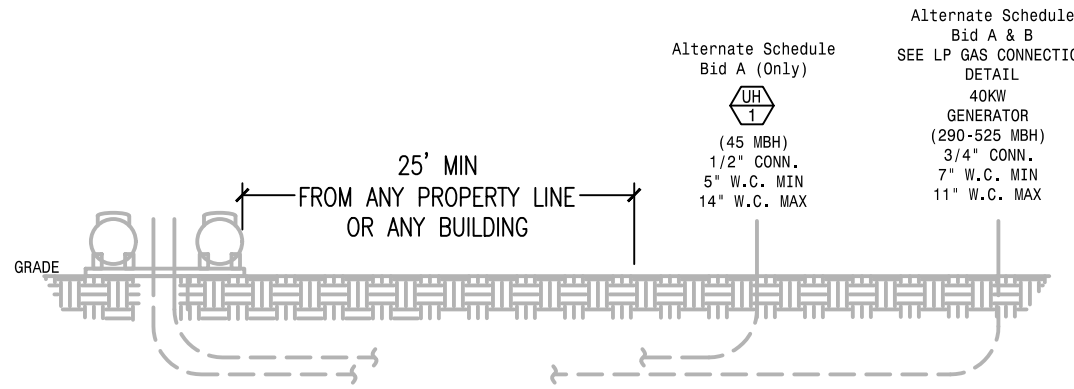
C-1608

EM1  
OF-9

PROJECT NO.

230200786

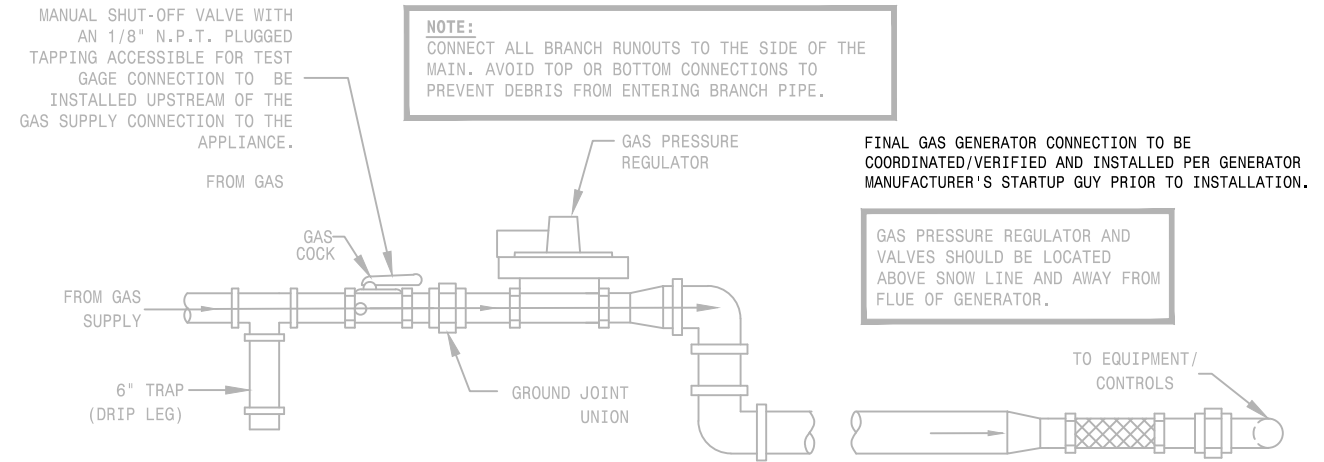




**Alternate Schedule Bid A & B LP Gas Piping Diagram**

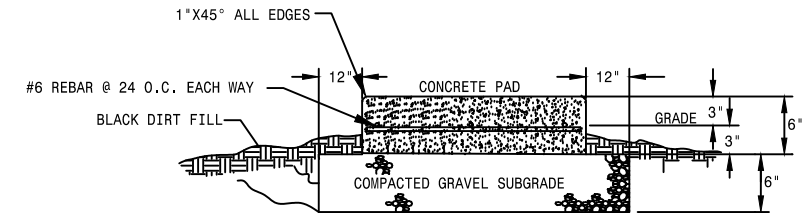
NOT TO SCALE

**AS NOTED ON SPECIAL NOTE #2 SHEET EM1:**  
 OUTSIDE THE SCOPE OF THIS PROJECT/CONTRACT AND DIRECT TO OWNER - LP GAS SYSTEM WORK INCLUDING LP GAS FILL, ALL PRESSURE REGULATORS, SHUT OFF VALVES, 1000 GALLON LP TANK(S), PAD(S), FUEL RUN/UNDERGROUND TUBING (WITH LOCATE AND LP GAS CONNECTION TO LP GENERATOR AND UNIT HEATER AS SHOWN ON LP GAS PIPING DIAGRAM. INSTALLATION SHALL COMPLY WITH ALL CODES.



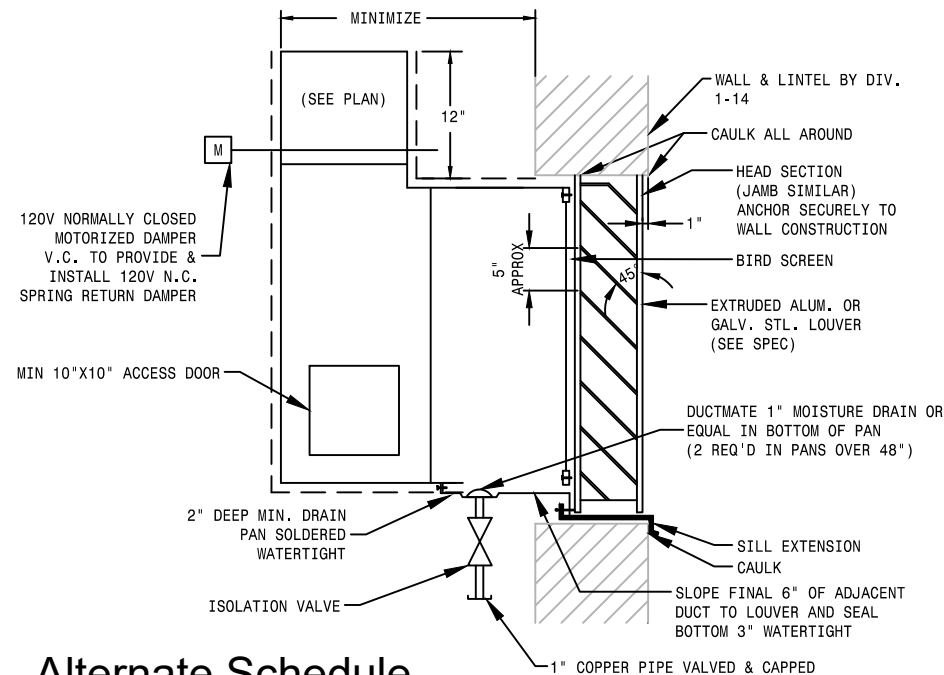
**Alternate Schedule Bid A & B Generator LP Gas Connection Detail**

NOT TO SCALE



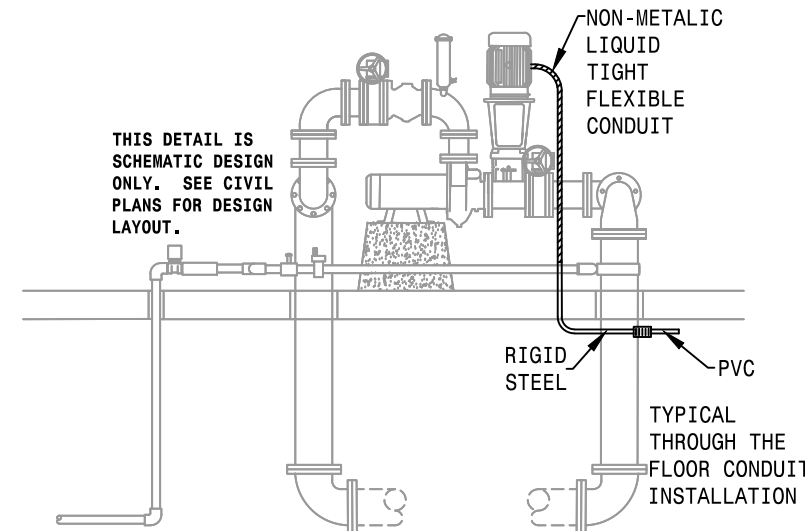
**Alternate Schedule Bid A & B Reinforced Concrete Generator Pad Detail**

NOT TO SCALE



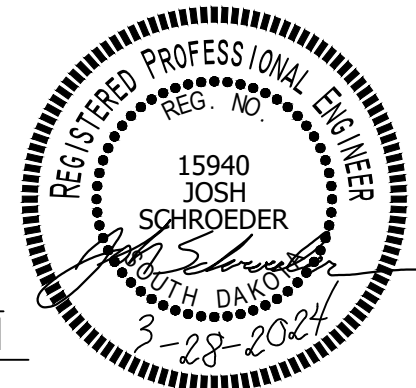
**Alternate Schedule Bid A - Louver Detail**

NOT TO SCALE



**Alternate Schedule Bid A - Typical Pump House Booster Station Detail**

NOT TO SCALE



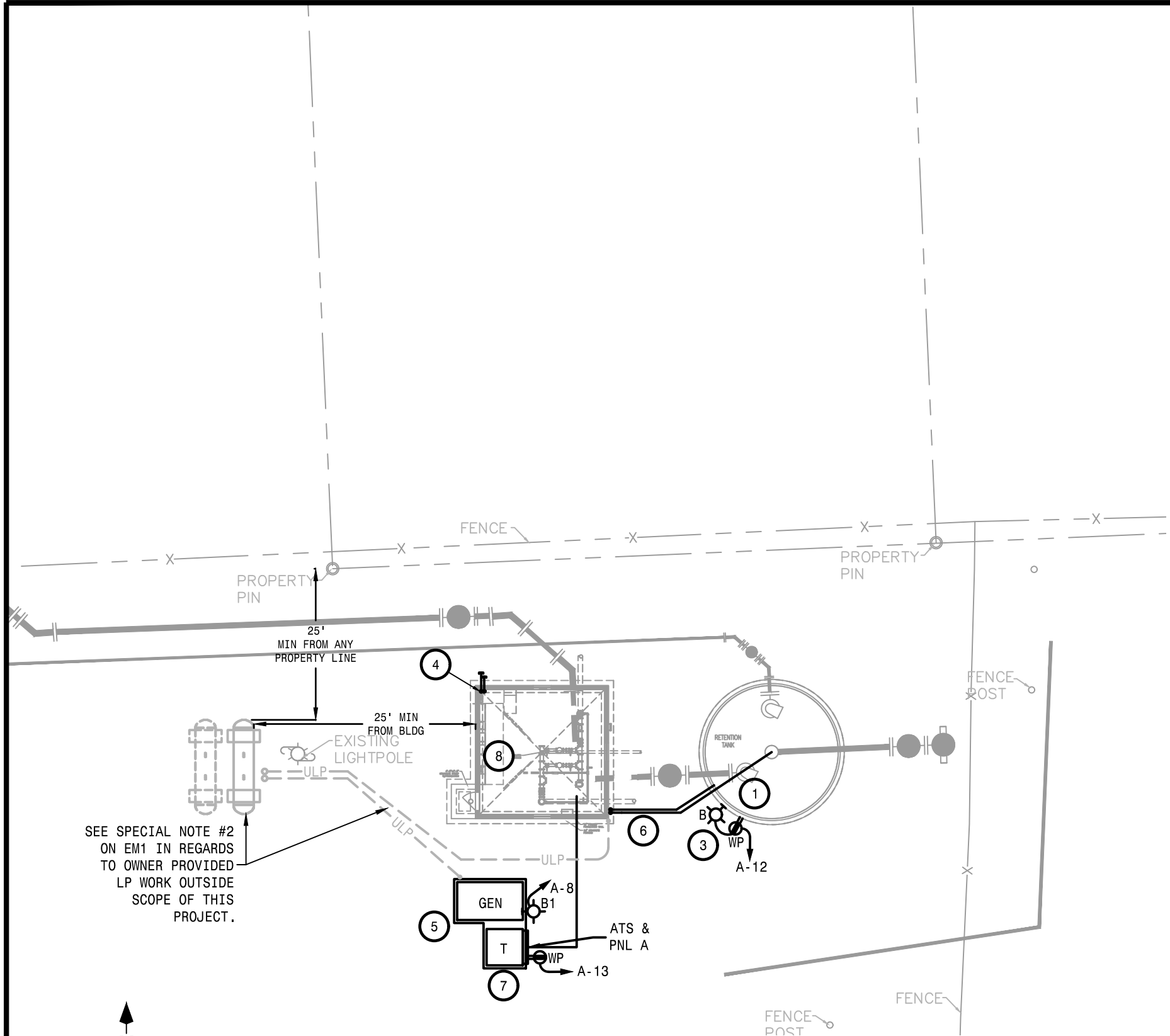
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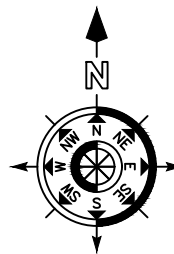
**Electrical Details & LP Gas Piping Diagram**

**South Shore Water System Improvements**  
 South Shore, South Dakota

REVISED DATE	-	CERT. NO.	C-1608
DRAWN BY	DK	DATE	03/28/24
TRACED BY	-	CHECKED BY	JS
<b>EM3</b>	PROJECT NO.	230200786	
OF-9			



SEE SPECIAL NOTE #2  
ON EM1 IN REGARDS  
TO OWNER PROVIDED  
LP WORK OUTSIDE  
SCOPE OF THIS  
PROJECT.

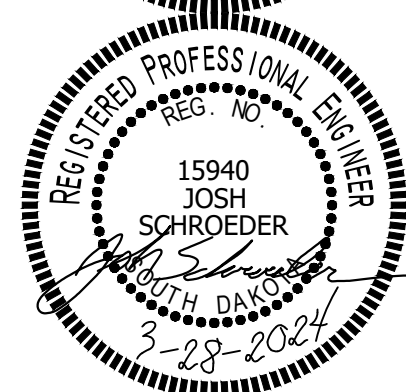


# Alternate Schedule Bid A - Pump House Electrical Site Plan

Scale: 1" = 20'-0"

## KEYNOTES:

1. PROVIDE (2) 1-1/2" CONDUITS FROM PROCESS CONTROL CONTRACTOR PUMP CONTROLLER PANEL WITHIN BUILDING TO TANK. MOUNT TO SIDE OF TANK AS PER TANK MANUFACTURER'S REQUIREMENTS & ROUTE TO TOP OF TANK FOR LEVEL CONTROL & MONITORING EQUIPMENT. COORDINATE WITH PROCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.
2. NOT USED.
3. INSTALL OUTLET NEAR THE BASE OF THE LADDER & INSTALL THE LIGHT BY PROCESS CONTROL CONTRACTOR NEAR THE TOP OF THE LADDER.
4. STUB OUT (2) 2" PVC BELOW GRADE & MARK END LOCATION ON RECORD DRAWINGS TO BE USED FOR FUTURE COMMUNICATIONS.
5. PROVIDE 40KW, PROPANE GAS FIRED GENERATOR ON REINFORCED CONCRETE PAD (SEE DETAIL) IN WEATHERPROOF SOUND REDUCTION ENCLOSURE WITH 5 KW HEATER, BATTERY CHARGER, BLOCK HEATER, ANNUNCIATOR PANEL, EMERGENCY STOP BUTTONS ON UNIT AND ANNC PANEL WITHIN BUILDING. SEE PANEL A FOR BRANCH CIRCUITS AND UTILIZE #10 AWG CONDUCTORS FOR BRANCH CIRCUITS. SEE SPECIFICATION FOR ADDITIONAL INFORMATION. SEE SPECIAL NOTE #2 ON EM1 IN REGARDS TO OWNER PROVIDED LP WORK OUTSIDE SCOPE OF THIS PROJECT.
6. PROVIDE (2) 1-1/2" CONDUITS TO TANK FROM BUILDING. ONE TO MIXER MOTOR WITH #12 AWG CONDUCTORS FROM MIX AND FILL CONTROL PANEL, CONDUIT SHALL EXTEND TO TOP OF TANK AND ENTER TANK VIA FACTORY PENETRATION IN FROST FREE VENT(COORDINATE WITH PROCESS CONTROLS CONTRACTOR). THE SECOND CONDUIT SHALL BE A SPARE FROM BASE OF TANK TO WITHIN BUILDING. LABEL ACCORDINGLY. COORDINATE WITH PROCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.
7. UTILITY METER LOCATION AND TRANSFORMER. COORDINATE LOCATION AND REQUIREMENTS WITH OTTERTAIL POWER COMPANY PRIOR TO BIDDING AND PROVIDE ALL FEES ASSOCIATED WITH UTILITY CONNECTION.
8. ROUTE THIS END OF CONDUITS TO PUMP CONTROLLER LOCATED ON THE NORTH WALL. COORDINATE WITH PROCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.



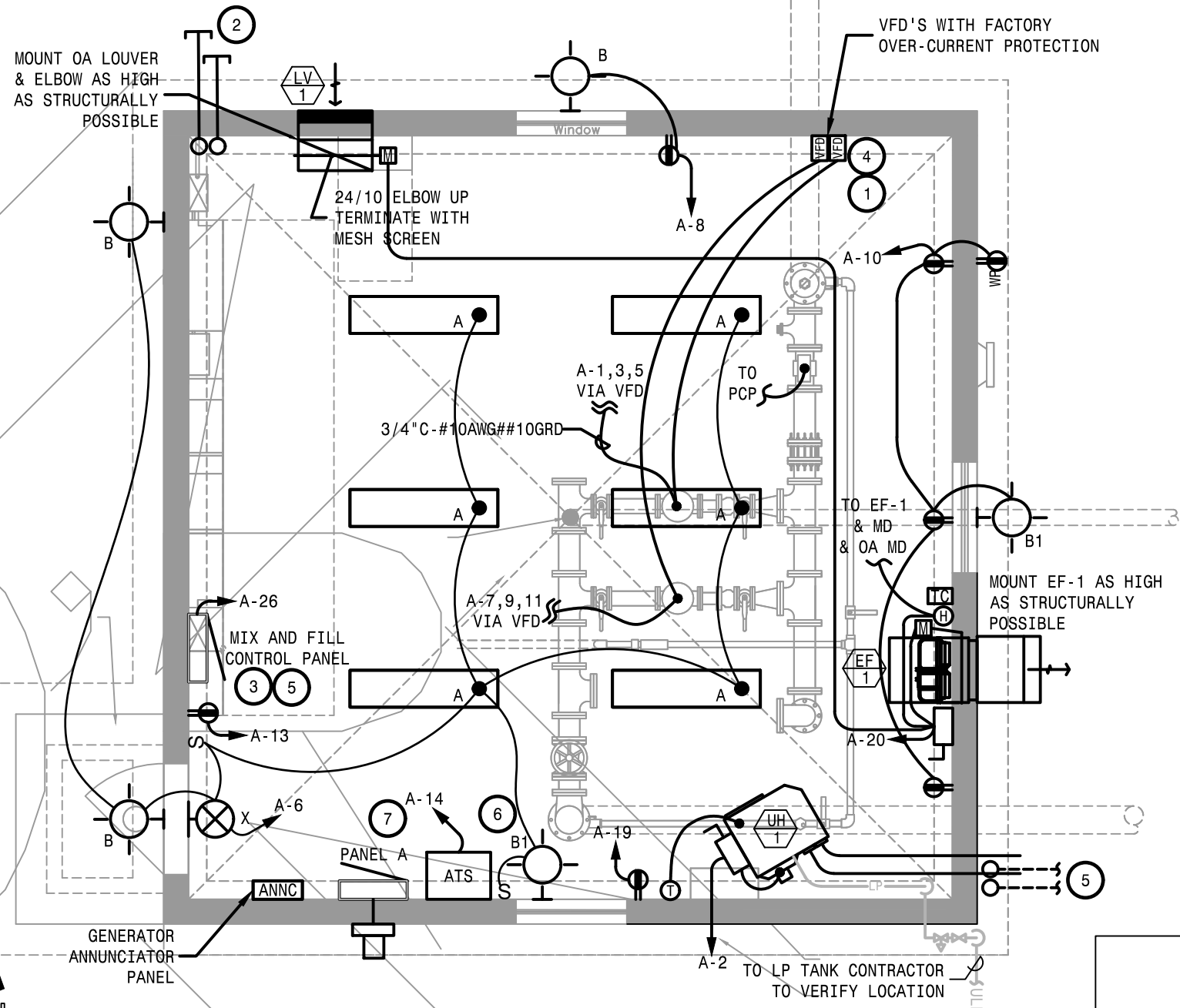
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**Alternate Bid Schedule  
A - Pump House  
Electrical Site Plan**

**South Shore Water System  
Improvements  
South Shore, South Dakota**

REVISID DATE	-	CERT. NO.	C-1608
DRAWN BY	DK	DATE	03/28/24
TRACED BY	-	CHECKED BY	JS
<b>EM4</b>	<b>OF-9</b>	PROJECT NO.	230200786



## Alternate Schedule Bid A - Pump House Electrical Plan

Scale: 1/4" = 1'-0"

### FAN SCHEDULE

EQUIP. NO.	MANUFACTURER & MODEL	SERVING	LOCATION	CFM	STATIC PRESS. (IN W.G.)	SONES	MOTOR					UNIT WEIGHT (LBS)	NOTES
							WATTS	HP	FRPM	VOLT./PH./CY.	FLA		
EF-1	COOK XPHD-EC 14XP20D17EC	EXHAUST - BUILDING	SIDE WALL	640	0.375	14.4	-	1/4	1480	120/1/60	5.8	71	1,2,3,4,5

NOTES: 1. E.C. TO PROVIDE AND INSTALL TIME CLOCK & HUMIDISTAT.  
 2. SEE EF-1 POWER/CONTROL WIRING DIAGRAM FOR CONTROL OF EF-1.  
 3. PROVIDE WITH FACTORY WIRED DISCONNECT, 120V NORMALLY CLOSED MOTORIZED SHUTTER, WALL COLLAR, MOTOR GUARD, & WEATHER HOOD WITH LORENIZED POWDER PAINT FINISH - GC & OWNER TO SELECT COLOR.  
 4. PROVIDE WALL FAN RATED FOR WET ENVIRONMENT WITH EXTRUDED ALUMINUM PROPELLER, BELT DRIVE AND MOTOR SIDE WIRE GUARD, WITH CORROSION RESISTANT FASTENERS, AND ALL UNCOATED STEEL COMPONENTS HAVING LORENIZED EPOXY POWDER COATED FINISH.  
 5. PROVIDE FAN WITH EC MOTOR WITH FAN MOUNTED SPEED CONTROLLER FOR FAN BALANCING.

### LOUVER SCHEDULE

EQUIP. NO.	MANUFACTURER & MODEL	FUNCTION	SIZE	CFM	S.P. (IN W.G.)	MIN FREE AREA (FT <sup>2</sup> )	FREE AREA VEL. (FPM)	MATERIAL	INSECT SCREEN	NOTES

NOTES: 1. LOUVER TO HAVE BAKED ENAMEL FINISH, GC & OWNER TO SELECT COLOR.  
 2. PROVIDE WITH EXTENDED SILL & BIRD SCREEN.  
 3. EC TO PROVIDE & INSTALL 120VAC NC MOTORIZED DAMPER AND INSTALL CONTROL WIRING TO OPEN WITH EF-1 FAN OPERATION.

### LP GAS FIRED UNIT HEATER SCHEDULE

EQUIP. NO.	MANUFACTURER & MODEL	SERVICE	CFM	INPUT (BTU)	OUTPUT (BTU)	EFFICIENCY A.F.U.E.	GAS CONN. SIZE	VENTING	ELECTRIC				UNIT WEIGHT (LBS)	NOTES
									HP	AMPS	V./PH./CY.	MOCP		
UH-1	REZNOR UDAS RZ-C-UH-45	SEE PLAN	629	45,000	37,350	83%	1/2"	4"	-	2.4	120/1/60	15	68	1,2

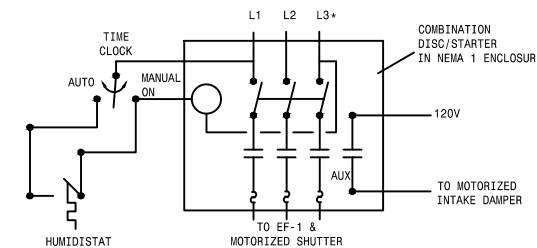
NOTES: 1. PROVIDE & INSTALL VENT AND COMBUSTION AIR PIPING AND VERTICAL CONCENTRIC ROOF TERMINATION AS PER THE MANUFACTURER'S SPECIFICATIONS.  
 2. EQUIPPED WITH BUILT-IN DISCONNECT SWITCH.

### KEYNOTES:

- EC TO INSTALL VFD'S PROVIDED BY PROCESS CONTROL CONTRACTOR CONTRACTOR.
- STUB OUT (2) 2" PVC BELOW GRADE & MARK END LOCATION ON RECORD DRAWINGS TO BE USED FOR FUTURE COMMUNICATIONS. SEE SITE PLAN, KEYNOTE #4.
- MIX AND FILL CONTROL PANEL: PROVIDE 120 VOLT, 20 AMP CONNECTION TO CONTROL PROVIDE 1" CONDUIT TO GENERATOR CONTROL PANEL ON EXTERIOR UNIT FOR INTEGRATION OF GENERATOR STATUS SIGNALS AND ATS POSITION WITH CONTROL COORDINATE REQUIREMENTS WITH GENERATOR SERVICE PROVIDER (BY EC) AND PROCESS CONTROL CONTRACTOR. SEE SITE PLAN FOR ADDITIONAL INFORMATION AND COORDINATE WITH PROCESS CONTROLS CONTRACTOR.
- VFD'S: PROVIDE 1/2" CONDUIT BETWEEN EACH VFD FOR SIGNAL AND CONTROL WIRING BY PROCESS CONTROL CONTRACTOR. PROVIDE (1) 1" C TO MIX AND FILL CONTROL PANEL FOR CONTROL WIRING BY PROCESS CONTROL CONTRACTOR. VFD'S WITH INTEGRAL OVER-CURRENT PROTECTION FURNISHED BY PROCESS CONTROLS CONTRACTOR AND INSTALLED BY EC.
- PROVIDE (4) 1-1/2" CONDUITS TO TANK FROM BUILDING PROCESS CONTROL PANEL, LABEL ACCORDINGLY. COORDINATE WITH PROCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN. SEE SITE PLAN FOR ADDITIONAL INFORMATION.
- PROVIDE SWITCH CONTROL OF FIXTURE TYPE B1 AND DISCONNECT INTEGRAL PHOTOCCELL CONTROL FOR FIXTURE(S) WITHIN BUILDING. CONNECT FIXTURE FOR AUTOMATIC CONTROL OF EMERGENCY CIRCUIT UPON POWER LOSS.
- PROVIDE CONTROL WIRING AND 3/4 INCH CONDUIT TO GENERATOR FOR ATS/GENERATOR CONTROL.

### SPECIAL NOTES:

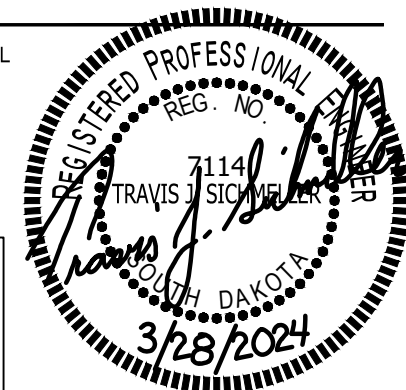
- FOR MECHANICAL WORK, SEE MECHANICAL SPECIFICATION SHEET EM2.



NOTE: 1. HUMIDISTAT, TIME CLOCK AND RELAY ARE PROVIDED BY EC AND INSTALLED BY EC

### EF-1 Power/Control Wiring Diagram

NOT TO SCALE



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**Alternate Bid Schedule A - Pump House Electrical Plan**

**South Shore Water System Improvements South Shore, South Dakota**

REVISED DATE: -  
 DRAWN BY: DK  
 TRACED BY: -  
 CHECKED BY: JS  
 DATE: 03/28/24  
 PROJECT NO: 230200786  
 CERT. NO: C-1608

**EM5 OF-9**

# FIXTURE SCHEDULE

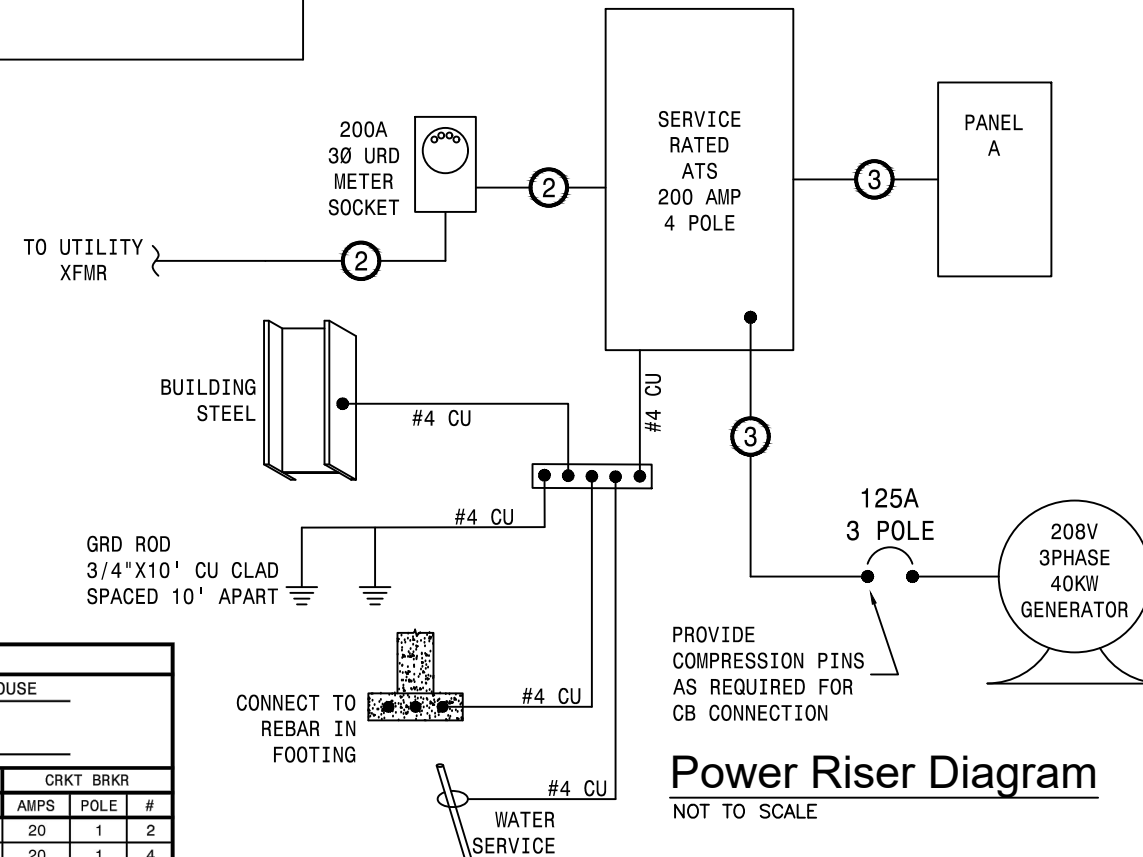
TYPE	MANUFACTURERS	CAT. NO.	LAMPS	REMARKS
A	COLUMBIA, LITHONIA, METALUX, LSI	LITHONIA CSVT L48 4000LM MVOLT	36W LED 4000K	
B	COLUMBIA, LITHONIA, METALUX, LSI	EVENLITE WLAC BZ CT	11W LED 5000K	
B1	DUAL-LITE, SURE-LITES, LITHONIA, LSI, MULE LIGHTING	EVENLITE WLEM BZ CT	11W LED 5000K	GENERAL AND WITH BATTERY BACKUP
X	DUAL-LITE, SURE-LITES, LITHONIA, LSI, MULE LIGHTING	LITHONIA EXRG EL	LED	EXIT SIGN, NO BATTERY BACKUP

## SPECIFICATIONS:

- A. PROVIDE GENSET WITH WEATHER PROOF ENCLOSURE AND ALL NECESSARY ACCESSORIES FOR WINTER OPERATION WHICH WILL INCLUDE, BUT NOT LIMITED TO, ENGINE HEATER, BATTERY CHARGER, ENCLOSURE HEATER (IF REQUIRED BY MANUFACTURER TO GUARANTEE WINTER PERFORMANCE)
- B. TO BE MOUNTED ON CONCRETE PAD THAT IS 6" THICK AND 6" LARGER THAN GENERATOR SET ON ALL SIDES.
- C. INCLUDE ALL REQUIRED 120V CIRCUITS FROM EXISTING PANEL FOR GENSET AND ALL NECESSARY CONTROL WIRING FROM GENSET TO ATS.
- D. GENERATOR WILL BE FUELED BY LP GAS, GENERATOR TO BE SUPPLIED WITH FLEX CONNECTION. GENERATOR START-UP REPRESENTATIVE TO PROVIDE EXACT GAS PIPING REQUIREMENTS (FOR SUPPLY SUFFICIENT PIPE VOLUME REQUIRED BY GENERATOR START-UP REQUIRED FOR PROPER OPERATION) TO OWNER FOR OWNER'S LP SUPPLIER OUTSIDE OF THIS CONTRACT, SEE SPECIAL NOTE #2 SHEET EM1.
- E. INCLUDE REMOTE MONITORING EQUIPMENT TO NOTIFY CITY PERSONNEL OF GENSET STATUS AND ATS POSITION. THIS SHALL BE CAPABLE OF COMPUTER WORKSTATION AND SMART PHONE VIEWING. PROVIDE COMMUNICATION INTERCONNECT WITH PROCESS CONTROL CONTRACTOR CONTROL PANEL FOR MONITORING AND CONTROL.
- F. GENSET SHALL PERFORM AN AUTOMATIC WEEKLY LOAD TEST FOR NO LESS THAN 30 MINUTES.
- G. INCLUDE GENERATOR EMERGENCY SHUTDOWN AT GENSET ENCLOSURE AND INSIDE THE PUMP HOUSE.
- H. INCLUDE ON-SITE FACTORY TECHNICIAN STARTUP AND TESTING. ON-SITE TRAINING OF OWNER REPRESENTATIVE SHALL HAPPEN AT THIS TIME AND BE DOCUMENTED.
- I. DESIGN BASIS: MTU MODEL 4R0063 GS40 WITH ENCLOSURE.

### FEEDER SIZES

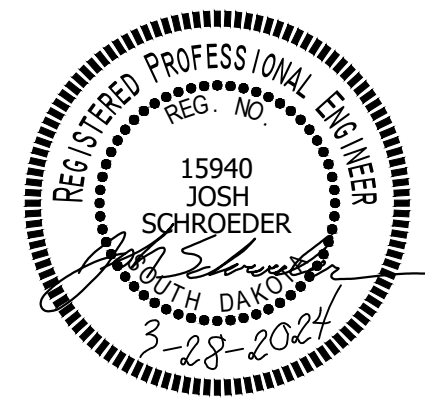
- ① STUB DOWN TWO 3" SCH 80 PVC FOR UTILITY CONDUCTORS.
- ② 3" SCH 80 PVC WITH 4-250MCM AL.
- ③ 3" SCH 80 PVC WITH 4-250MCM AL AND ONE #4CU GRD.



PANEL 'A' ALTERNATE BID SCHEDULE A									
VOLTAGE: 208/120, 3P, 4W		BUS RATING: 225 AMP		ENCL. TYPE: NEMA 1		LOCATION: PUMP HOUSE			
TYPE: MCB 200A		AIC RATING: 35,000		MOUNTING: SURFACE		FED FROM: ATS			

CRKT BRKR		CONNECTED LOAD (VA)							CONNECTED LOAD (VA)							CRKT BRKR		
#	AMPS	POLE	LIGHTING	MOTORS	HVAC	HEAT	RECPT	DESCRIPTION	PH	DESCRIPTION	RECPT	HEAT	HVAC	MOTORS	LIGHTING	AMPS	POLE	#
1				1320				PUMP #1	A	HEATER						20	1	2
3	20	3		1320					B	SPARE						20	1	4
5				1320					C	LIGHTS					600	20	1	6
7				1320				PUMP #2	A	OUTLETS/EM LT	400					20	1	8
9	20	3		1320					B	E RECP	800					20	1	10
11				1320					C	LHT/RECP TANK	200				100	20	1	12
13	20	1					200	RECPTACLE	A	ATS CONTROL	250					20	1	14
15	20	1					200	RECPTACLE	B	GEN BLK HTR		1500				20	1	16
17	20	1				1500		TANK HTR	C	GENERATOR BATT	200					20	1	18
19	20	1						SPARE	A	EF-1				720		20	1	20
21	20	1						SPARE	B	MIX/FIL CNTRL	500					20	1	22
23	20	1						SPARE	C	UH-1		5000				60	2	24
25								SPARE	A			5000						26
27	30	3							B	GEN ENCL HTR		2500				30	2	28
29									C			2500						30
31								SPARE (NOTE 2)	A	SPARE					50	1	32	
33	60	3							B	SPARE					30	1	34	
35									C	SPARE					20	2	36	
37								SPARE	A									38
39	20	3							B	SPARE					20*	1	40	
41									C	SPARE					20*	1	42	
									AMPS: 64			CONNECTED VA: 30090			CALCULATED VA: 23103			

- NOTES:
1. BREAKERS NOTED WITH \* SHALL BE GFCI
  2. GENERATOR ENCLOSURE MAY INCLUDE PANEL FOR ENCLOSURE LOADS, PROVIDE APPROPRIATE FEEDER AND COORDIATE CB SIZE.
  3. PROVIDE DEDICATED BRANCH CIRCUITS TO GENERATOR AND TANK AS SHOWN IN DISCRIPTION COORDINATE FINAL REQUIREMENTS IN FIELD WITH SUPPLIERS.



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Phone: 701-951-9177

**Alternate Bid Schedule A - Panel & Fixture Schedule**

**South Shore Water System Improvements**  
South Shore, South Dakota

REVISED DATE: -

DRAWN BY: DK

TRACED BY: -

CHECKED BY: JS

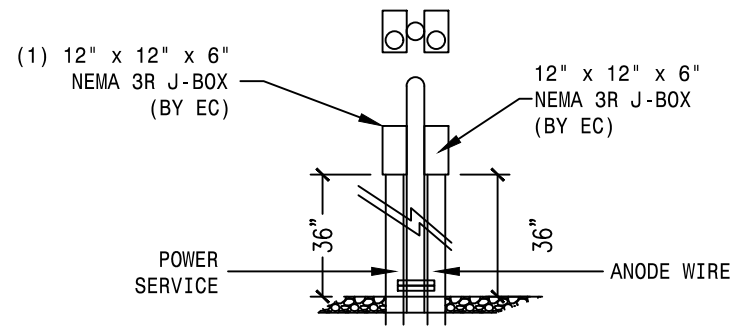
DATE: 03/28/24

PROJECT NO: 230200786

CERT. NO: C-1608

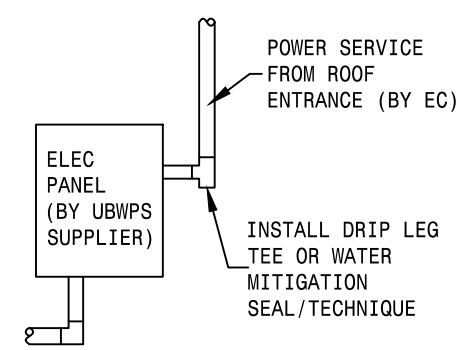
EM6

OF-9



### Junction Box Position Detail

Not to Scale

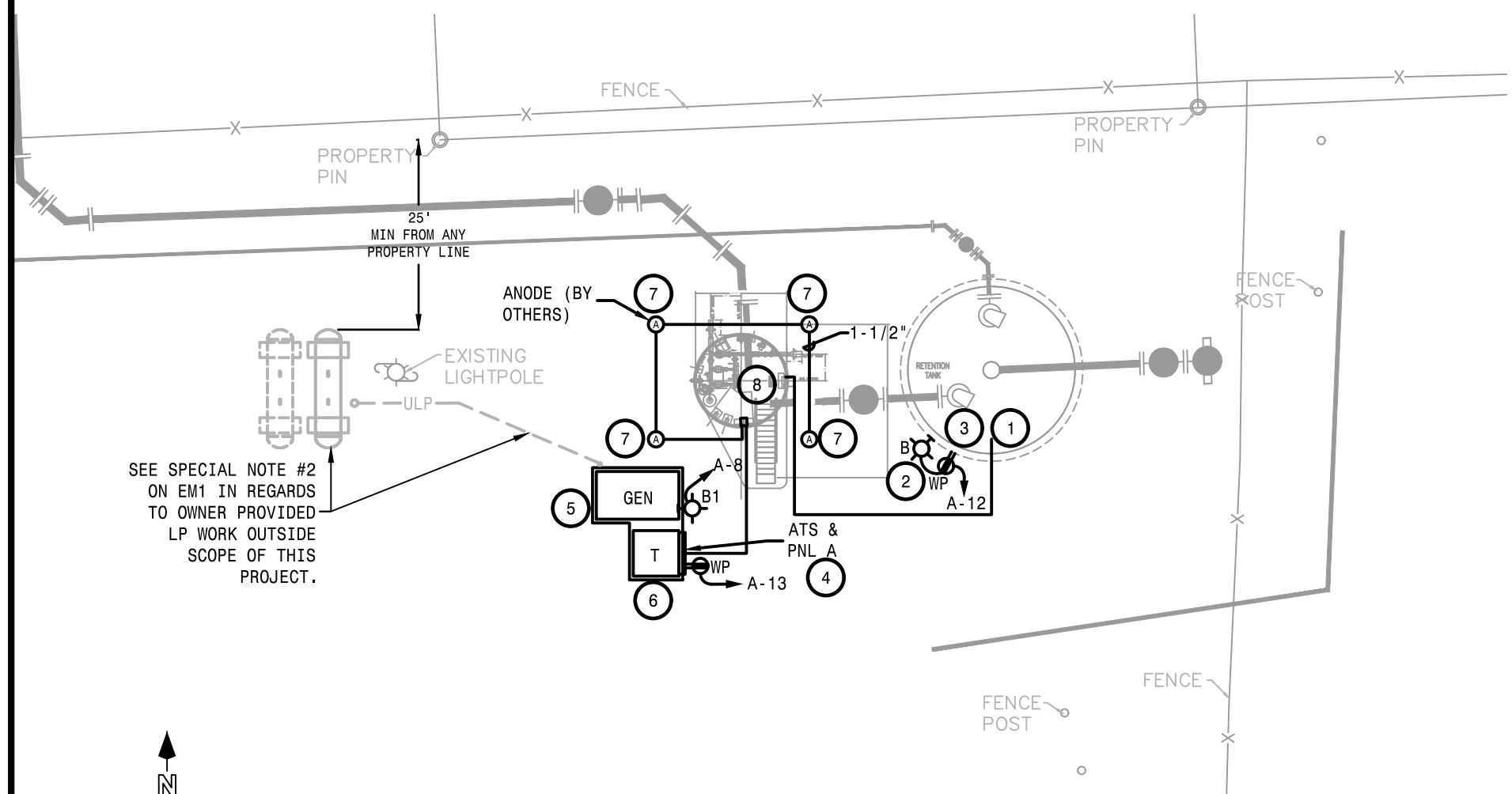


### Electrical Service Detail

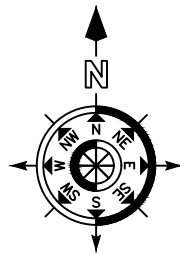
Not to Scale

### KEYNOTES:

1. MOUNT CONDUITS TO SIDE OF TANK AS PER TANK MANUFACTURER'S REQUIREMENTS & ROUTE TO TOP OF TANK FOR LEVEL CONTROL & MONITORING EQUIPMENT. COORDINATE WITH PROCESS CONTROL CONTRACTOR PRIOR TO ROUGH-IN.
2. INSTALL OUTLET NEAR THE BASE OF THE LADDER & INSTALL THE LIGHT BY PROCESS CONTROL CONTRACTOR NEAR THE TOP OF THE LADDER.
3. PROVIDE (2) 1-1/2" CONDUIT TO TANK FROM VAULT. PROVIDE ONE TO MIXER MOTOR WITH #12 AWG CONDUCTORS FROM MIX AND FILL CONTROL PANEL, CONDUIT SHALL EXTEND TO TOP OF TANK AND ENTER TANK VIA FACTORY PENETRATION IN FROST FREE VENT (COORDINATE WITH PROCESS CONTROLS CONTRACTOR). PROVIDE ONE AS SPARE AND LABEL ACCORDINGLY.
4. PROVIDE STRUCTURE FOR MOUNTING ATS, PANEL A AND METER NEAR UTILITY TRANSFORMER.
5. PROVIDE 40KW, PROPANE GAS FIRED GENERATOR ON REINFORCED CONCRETE PAD (SEE DETAIL) IN WEATHERPROOF SOUND REDUCTION ENCLOSURE WITH 5 KW HEATER, BATTERY CHARGER, BLOCK HEATER, ANNUNCIATOR PANEL, EMERGENCY STOP BUTTONS ON UNIT AND ANNC PANEL WITHIN BUILDING. SEE PANEL A FOR BRANCH CIRCUITS AND UTILIZE #10 AWG CONDUCTORS FOP BRANCH CIRCUITS. SEE SPECIFICATION FOR ADDITIONAL INFORMATION. SEE SPECIAL NOTE #2 ON EM1 IN REGARDS TO OWNER PROVIDED LP WORK OUTSIDE SCOPE OF THIS PROJECT.
6. UTILITY METER LOCATION AND TRANSFORMER. COORDINATE LOCATION AND REQUIREMENTS WITH OTTERTAIL POWER COMPANY PRIOR TO BIDDING AND PROVIDE ALL FEES ASSOCIATED WITH UTILITY CONNECTION.
7. MAGNESIUM ANODES: PROVIDE 1 1/2 INCH PVC CONDUIT WITH #6 AWG CONDUCTOR WITH HMW-PE INSULATION AND EXOTHERMIC WELD TO ANODE FURNISHED BY PROCESS CONTROL CONTRACTOR.
8. UNDERGROUND WATER BOOSTER PUMP STATION (UWBPS): ELECTRICAL, ANODE AND TELEMETRY CONNECTION. SEE DETAILS AND UWBPS ELECTRICAL DETAIL FOR ADDITIONAL INFORMATION; COORDINATE WITH PROCESS CONTROL CONTRACTOR AND UWBPS SUPPLIER.

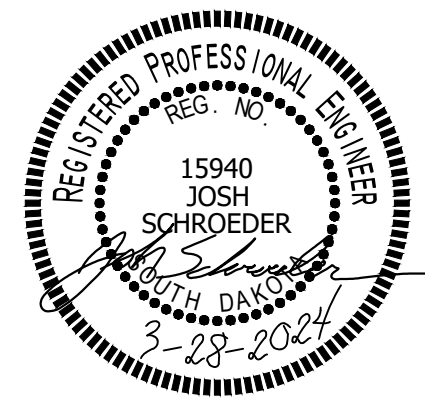


NO MECHANICAL WORK ON THIS SHEET



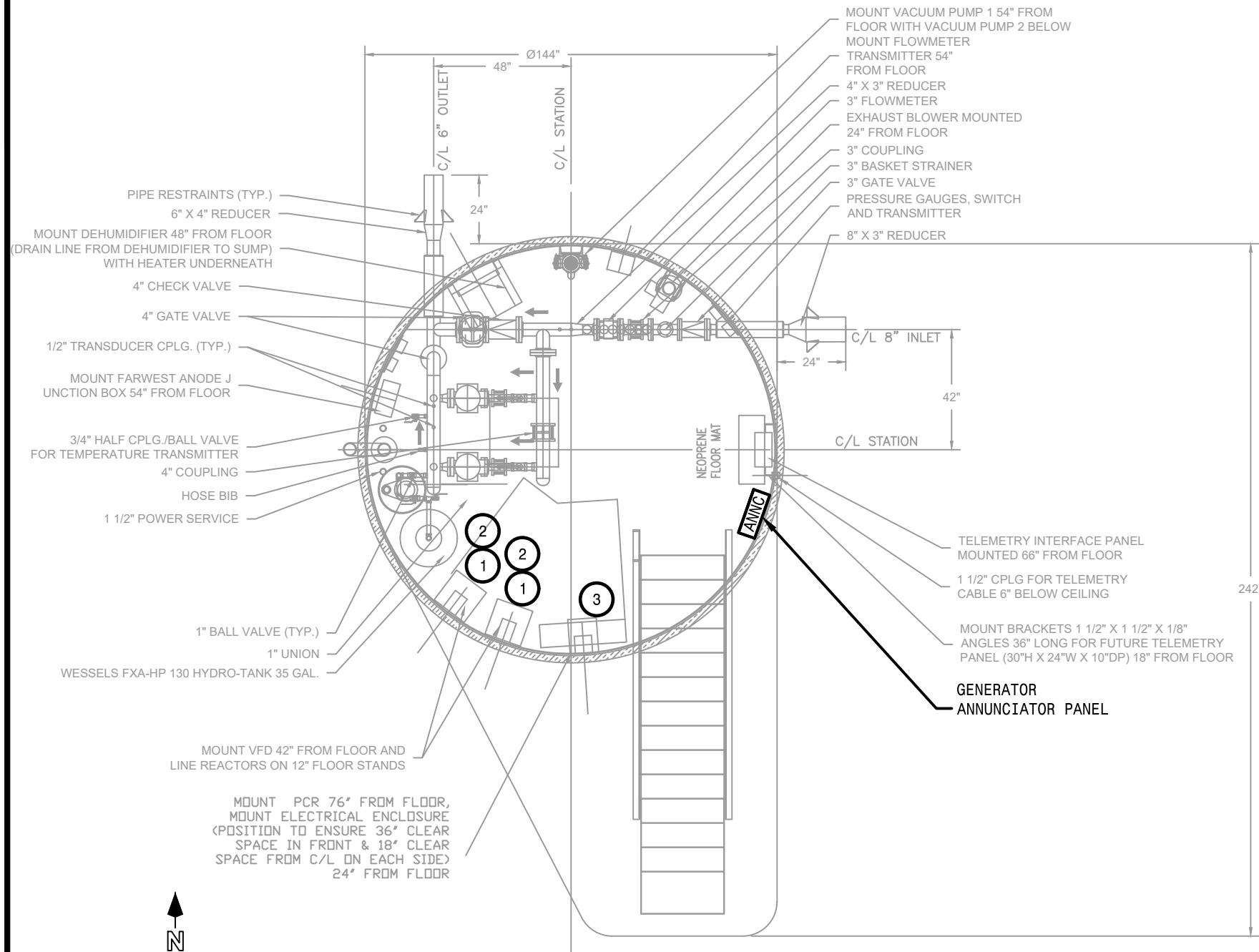
## Alternate Bid Schedule B - UWBPS Electrical Site Plan

Scale: 1" = 20'-0"



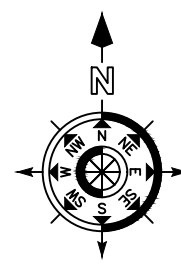
 <b>SICHMELLER ENGINEERING</b> Mechanical and Electrical Engineering 801 Railroad Ave. SE Aberdeen, S.D. Phone: 605-225-4344 www.siceng.biz
 <b>SCHROEDER ENGINEERING and Consulting</b> Electrical Engineering and Consulting WEST FARGO, ND Phone: 701-951-9177
<b>Alternate Bid Schedule B - UWBPS Electrical Site Plan</b>
<b>South Shore Water System Improvements South Shore, South Dakota</b>
REVISED DATE: - DRAWN BY: DK TRACED BY: - CHECKED BY: JS DATE: 03/28/24 PROJECT NO.: 230200786 CERT. NO.: C-1608
<b>EM7 OF-9</b>





### KEYNOTES:

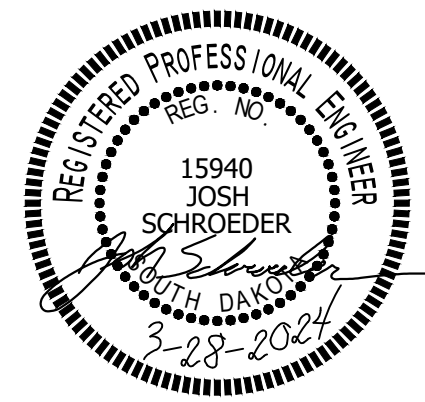
1. EC TO INSTALL VFD PROVIDED BY PROCESS CONTROL CONTRACTOR.
2. VFD'S: PROVIDE 1/2" CONDUIT BETWEEN EACH VFD FOR SIGNAL AND CONTROL WIRING BY PROCESS CONTROL CONTRACTOR. PROVIDE (1) 1" C TO MIX AND FILL CONTROL PANEL FOR CONTROL WIRING BY PROCESS CONTROL CONTRACTOR. VFD'S WITH INTEGRAL OVER-CURRENT PROTECTION FURNISHED BY PROCESS CONTROLS CONTRACTOR AND INSTALLED BY EC. COORDINATE WITH UWBPS SUPPLIER FOR REQUIREMENTS.
3. UWBPS ELECTRICAL CONNECTION: PROVIDE ELECTRICAL FEEDER PER RISER DIAGRAM TO PANEL FURNISHED WITH UWBPS.
4. PROVIDE 1" CONDUIT TO GENERATOR CONTROL PANEL ON EXTERIOR UNIT FOR INTEGRATION OF GENERATOR STATUS SIGNALS AND ATS POSITION WITH CONTROL PANEL. COORDINATE REQUIREMENTS WITH GENERATOR SERVICE PROVIDER (BY EC) AND PROCESS CONTROL CONTRACTOR.




## Alternate Bid Schedule B - UWBPS Electrical Plan

Scale: 1/4" = 1'-0"

NO MECHANICAL  
WORK ON THIS  
SHEET



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<b>Alternate Bid Schedule B - UWBPS Electrical Plan</b>	
<b>South Shore Water System Improvements</b> <b>South Shore, South Dakota</b>	
REVISED DATE: -	CERT. NO.: C-1608
DRAWN BY: DK	DATE: 03/28/24
TRACED BY: -	CHECKED BY: JS
<b>EM8 OF-9</b> PROJECT NO.: 230200786	PROJECT NO.: 230200786

# FIXTURE SCHEDULE

TYPE	MANUFACTURERS	CAT. NO.	LAMPS	REMARKS
B	COLUMBIA, LITHONIA, METALUX, LSI	EVENLITE WLAC BZ CT	11W LED 5000K	
B1	DUAL-LITE, SURE-LITES, LITHONIA, LSI, MULE LIGHTING	EVENLITE WLEM BZ CT	11W LED 5000K	GENERAL AND WITH BATTERY BACKUP

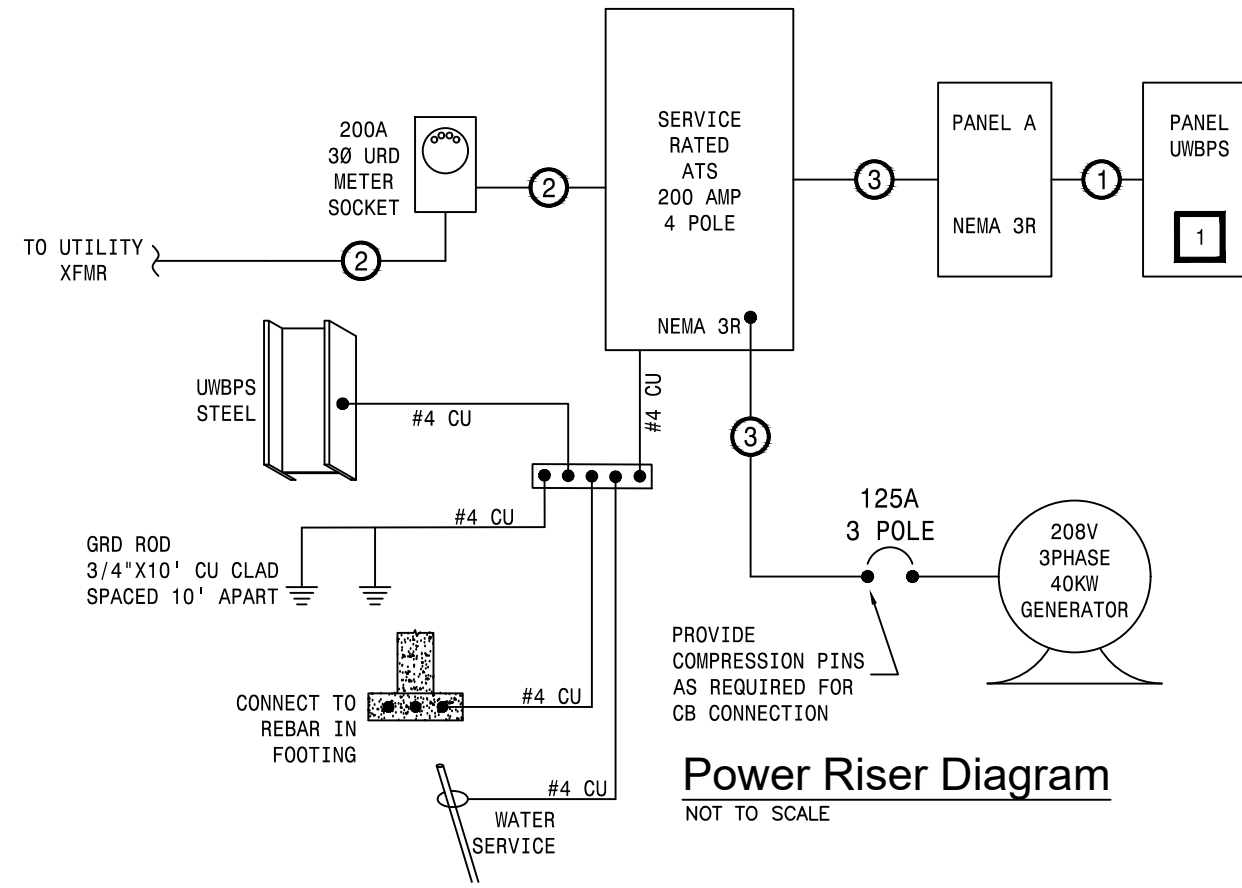
## KEYNOTES:

- PANEL FURNISHED BY UNDERGROUND SUBSTATION SUPPLIER. COORDINATE REQUIREMENTS FOR PANEL OVER-CURRENT DEVICE WITH UWBPS SUPPLIER PRIOR TO ORDERING AND VERIFY FIELD REQUIREMENTS WITH UWBPS AND PROCESS CONTROLS CONTRACTOR PRIOR TO ROUGH-IN OF ELECTRICAL FEEDED.

## SPECIFICATIONS:

- PROVIDE GENSET WITH WEATHER PROOF ENCLOSURE AND ALL NECESSARY ACCESSORIES FOR WINTER OPERATION WHICH WILL INCLUDE, BUT NOT LIMITED TO, ENGINE HEATER, BATTERY CHARGER, ENCLOSURE HEATER (IF REQUIRED BY MANUFACTURER TO GUARANTEE WINTER PERFORMANCE)
- TO BE MOUNTED ON CONCRETE PAD THAT IS 6" THICK AND 6" LARGER THAN GENERATOR SET ON ALL SIDES.
- INCLUDE ALL REQUIRED 120V CIRCUITS FROM EXISTING PANEL FOR GENSET AND ALL NECESSARY CONTROL WIRING FROM GENSET TO ATS.
- GENERATOR WILL BE FUELED BY LP GAS, GENERATOR TO BE SUPPLIED WITH FLEX CONNECTION. GENERATOR START-UP REPRESENTATIVE TO PROVIDE EXACT GAS PIPING REQUIREMENTS (FOR SUPPLY SUFFICIENT PIPE VOLUME REQUIRED BY GENERATOR START-UP REQUIRED FOR PROPER OPERATION) TO OWNER FOR OWNER'S LP SUPPLIER OUTSIDE OF THIS CONTRACT, SEE SPECIAL NOTE #2 SHEET EM1.
- INCLUDE REMOTE MONITORING EQUIPMENT TO NOTIFY CITY PERSONNEL OF GENSET STATUS AND ATS POSITION. THIS SHALL BE CAPABLE OF COMPUTER WORKSTATION AND SMART PHONE VIEWING. PROVIDE COMMUNICATION INTERCONNECT WITH PROCESS CONTROL CONTRACTOR CONTROL PANEL FOR MONITORING AND CONTROL.
- GENSET SHALL PERFORM AN AUTOMATIC WEEKLY LOAD TEST FOR NO LESS THAN 30 MINUTES.
- INCLUDE GENERATOR EMERGENCY SHUTDOWN AT GENSET ENCLOSURE AND INSIDE UWBPS.
- INCLUDE ON-SITE FACTORY TECHNICIAN STARTUP AND TESTING. ON-SITE TRAINING OF OWNER REPRESENTATIVE SHALL HAPPEN AT THIS TIME AND BE DOCUMENTED.
- DESIGN BASIS: MTU MODEL 4R0063 GS40 WITH ENCLOSURE.

FEEDER SIZES	
①	1 1/2" SCH 80 PVC with 4-#1AWG CU and #6 GRD.
②	3" SCH 80 PVC WITH 4-250MCM AL.
③	3" SCH 80 PVC WITH 4-250MCM AL AND ONE #4CU GRD.



**Power Riser Diagram**  
NOT TO SCALE

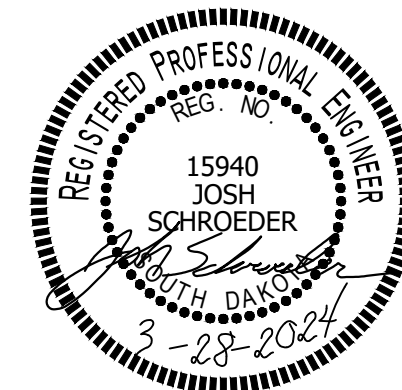
### PANEL 'A' ALTERNATE BID SCHEDULE B

<b>VOLTAGE:</b> 208/120, 3P, 4W		<b>BUS RATING:</b> 225 AMP		<b>ENCL. TYPE:</b> NEMA 3R		<b>LOCATION:</b> EXTERIOR													
<b>TYPE:</b> MCB 200A		<b>AIC RATING:</b> 35,000		<b>MOUNTING:</b> SURFACE		<b>FED FROM:</b> ATS													
CRKT BRKR		CONNECTED LOAD (VA)							CONNECTED LOAD (VA)							CRKT BRKR			
#	AMPS	POLE	LIGHTING	MOTORS	HVAC	HEAT	RECPT	DESCRIPTION	PH	DESCRIPTION	RECPT	HEAT	HVAC	MOTORS	LIGHTING	AMPS	POLE	#	
1				5000		7500	4000	UWBPS (NOTE 6)	A							60	3	2	
3	125	3	1000	5000		7500	4000		B	SPARE (NOTE 5)									4
5			1000	5000			4000		C										6
7								SPARE	A	LIGHT					100	20	1	8	
9	30	3							B	TANK HEATER	800					20	1	10	
11									C	LHT/RECP TANK	200				100	20	1	12	
13	20	1					200	RECPTACLE	A	ATS CONTROL	250					20	1	14	
15	20	1					250	GEN DAMPERS	B	GEN BLK HTR		1500				20	1	16	
17	30	2				2500		GEN ENCL HTR	C	GENERATOR BATT	200					20	1	18	
19						2500			A	SPARE					20*	1	20		
AMPS: 116										CONNECTED VA: 52600				CALCULATED VA: 41600					

**NOTES:**

- BREAKERS NOTED WITH \* SHALL BE GFCI
- PROVIDE LOCKABLE FRONT COVER.
- PROVIDE GALVANIZED STEEL UNISTRUT STRUCTURE FOR PANEL AND ATS MOUNTING.
- PROVIDE DEDICATED BRANCH CIRCUITS TO GENERATOR AND TANK AS SHOWN IN DISCRIPTION COORDINATE FINAL REQUIREMENTS IN FIELD WITH SUPPLIERS.
- GENERATOR ENCLOSURE MAY INCLUDE PANEL FOR ENCLOSURE LOADS, PROVIDE APPROPRIATE FEEDER AND COORDINATE CB SIZE.
- COORDINATE OVER-CURRENT SIZE WITH UWBPS SUPPLIER PRIOR TO ORDERING.

NO MECHANICAL  
WORK ON THIS  
SHEET



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**Alternate Bid Schedule B  
- UWBPS Panel & Fixture  
Schedule**

**South Shore Water System  
Improvements  
South Shore, South Dakota**

REVISED DATE	DRAWN BY: DK	PROJECT NO: EM9 OF-9	DATE: 03/28/24
	TRACED BY: -	CERT. NO: C-1608	
	CHECKED BY: JS	PROJECT NO: 230200786	