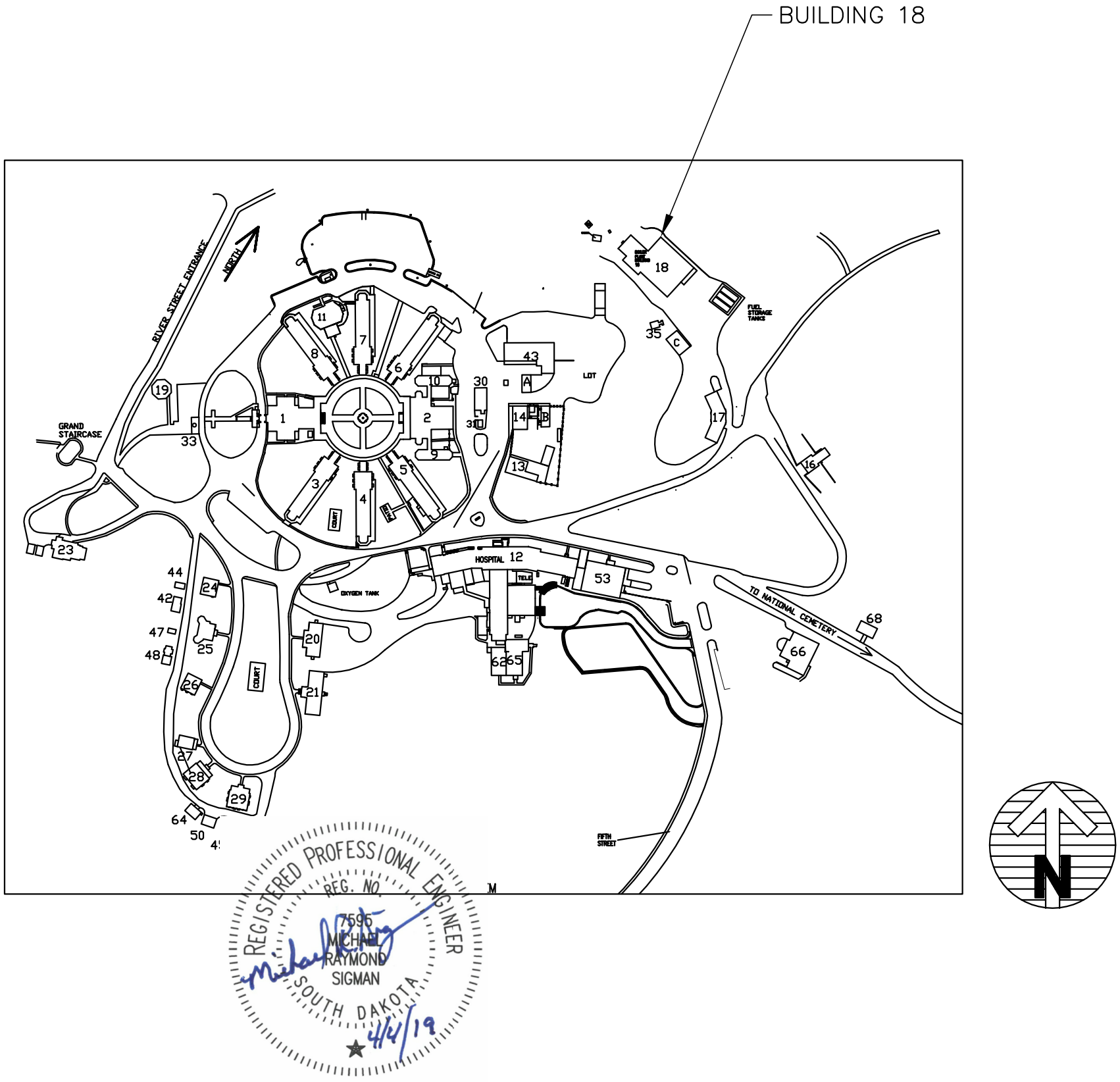

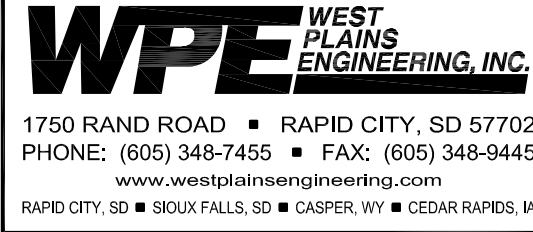


CORRECT BOILER PLANT DEFICIENCIES  
BUILDING 18  
VETERANS ADMINISTRATION  
BLACK HILLS HEALTH CARE SYSTEM  
PROJECT NO. 568A-08-206  
WPE # BR18037  
100% FOR CONSTRUCTION  
APRIL 04, 2019



SHEET NO.	DESCRIPTION
18-T1	TITLE AND INDEX SHEET (THIS SHEET)
18-MP1	MECHANICAL/ELECTRICAL BOILER PLANT SITE PLAN
18-MP2	MECHANICAL/ELECTRICAL BLDG. 18 BOILER PLANT RENOVATION PLAN
18-MP3	MECHANICAL DETAILS
18-MP4	DETAILS & SCHEDULES



		CONSULTANT		STAMP		ARCHITECTS/ENGINEERS		STAMP		Drawing Title <b>SITE PLAN</b>		Project Title CORRECT BOILER PLANT DEFICIENCIES		Project Number 568A-08-206		Office of Construction and Facilities Management  VA U.S. Department of Veterans Affairs	
		 Gator Engineering & Aquifer Restoration, Inc. 1928 Boothe Circle, Longwood, FL 32750 Ph: 407-853-4555 Ext. 24 Fx:407-853-4556 www.gearengineer.com Florida Certificate of Authorization Number: 28299				A/E: West Plains Engineering 1750 Rand Road Rapid City, SD 57702 (605) 348-7455 (605) 348-9445 (FAX)  WPE # BR18037  WEST PLAINS ENGINEERING, INC. 1750 RAND ROAD • RAPID CITY, SD 57702 PHONE: (605) 348-7455 • FAX: (605) 348-9445 www.westplainsengineering.com RAPID CITY, SD • SIOUX FALLS, SD • CARPIS, WY • CEDAR RAPIDS, IA				Approved: Project Director		Location Hot Springs, SD		Building Number BLDG. 18			
Revisions:				Date:								Issue Date 04/04/2019		Checked MSH			

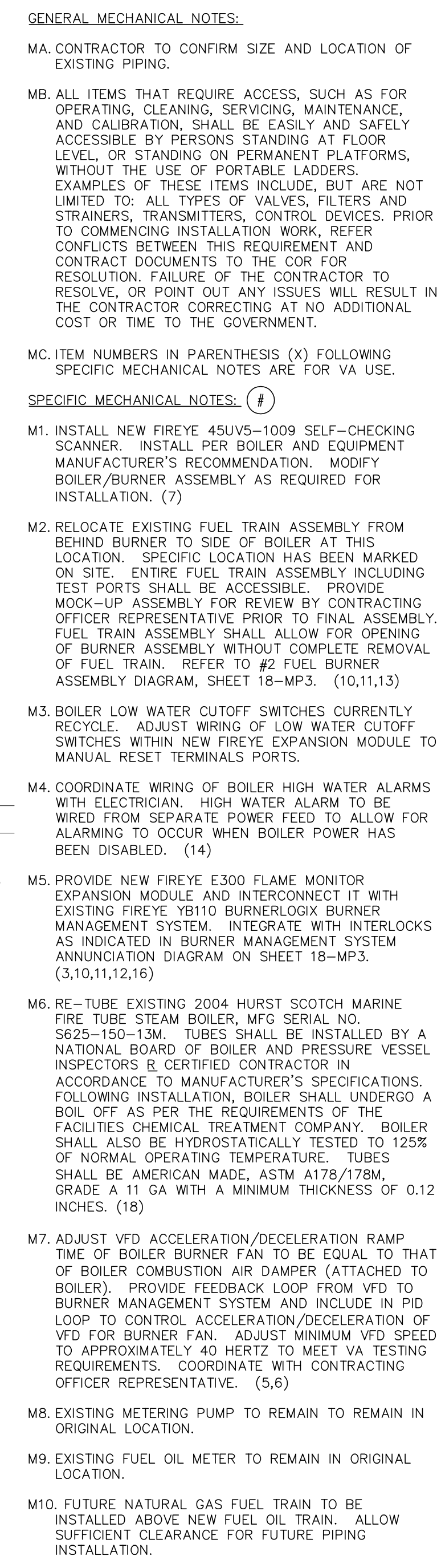


E2. PROVIDE 2-#10 AND 1-#10 GND CU. CONDUCTORS  
IN 3/4" CONDUIT FOR POWERING TANK VALVES.  
REFER TO TRENCH DETAIL ON SHEET 18-MP4. (17)

SCALE:  $3/32" = 1'-0"$

[illegible]





SCALE:  $1/4" = 1'-0"$

**GENERAL ELECTRICAL NOTES:**

4. ITEM NUMBERS IN PARENTHESIS (X) FOLLOWING SPECIFIC ELECTRICAL NOTES ARE FOR USE.

**SPECIFIC ELECTRICAL NOTES:** ①

1. PROVIDE NEW 20A/1-POLE 22kVAC CIRCUIT BREAKER FOR POWERING EXISTING TANK VALVES. PROVIDE NEW TYPE-WRITTEN CABLES FROM THE CONTROL ROOM, EXTENDING PANEL #84+ TO SURFACE MOUNTED, GENERAL ELECTRIC, 120I/208V, 3-PHASE, 4-POLE, 25KA, MAIN BUS, AND 25KVA FUSES; CATALOG #GC3241MXAX07/PANELBOARD. (1?)

2. THE INTENT OF THIS DESIGN IS TO CORRECT THE BOILER DEFICIENCIES FOR BOILERS #1 AND #2 SO THAT THE MARCI CONTROLS WILL BE ABLE TO SHUTDOWN WHEN THE POWER TO A BOILER IS SHUTDOWN. SEE EXISTING AND REVISED WIRING DIAGRAMS FOR MORE DETAILS. PROVIDE A PLUGGED CONNECTION FOR THIS PROJECT. FOR EACH BOILER, PROVIDE NEW 1/2" RATED DISCONNECT SWITCHES TO BE INSTALLED ON EXISTING BOILER DISCONNECT. FUSE NEW DISCONNECT AT 20AMPS. TAP CONDUITS FROM #27 TO #36. PROVIDE A RACEWAY WITH PLUGBOARD ON EACH EXISTING AND NEW DISCONNECTS STATING "SHUTDOWN THIS BOILER". PROVIDE A LOCKOUT KEY SHUTDOWN BOTH DISCONNECTS PRIOR TO SERVING. PROVIDE TWO LAGGED TO THREE LAYER LAMINATED ACRYLIC WAS BEVELLED EDGES, WITH A MINIMUM THICKNESS OF 1/2". ENGRAVED TEXT: (2)

3. CONTRACTOR TO PROVIDE NEW WIRING FROM EXISTING EMERGENCY SHUTDOWN TO CONTROL POWER TO NEW CONTACTOR

4. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING NEW CONTACTOR SO THAT THE DEPRESSION OF THE EMERGENCY SWITCH SHUTS DOWN ALL POWER TO NEW EXTERIOR TANK VALVES. SEE EMERGENCY BOILER SHUT-DOWN DIAGRAM ON SHEET 18-MP4. (1?)

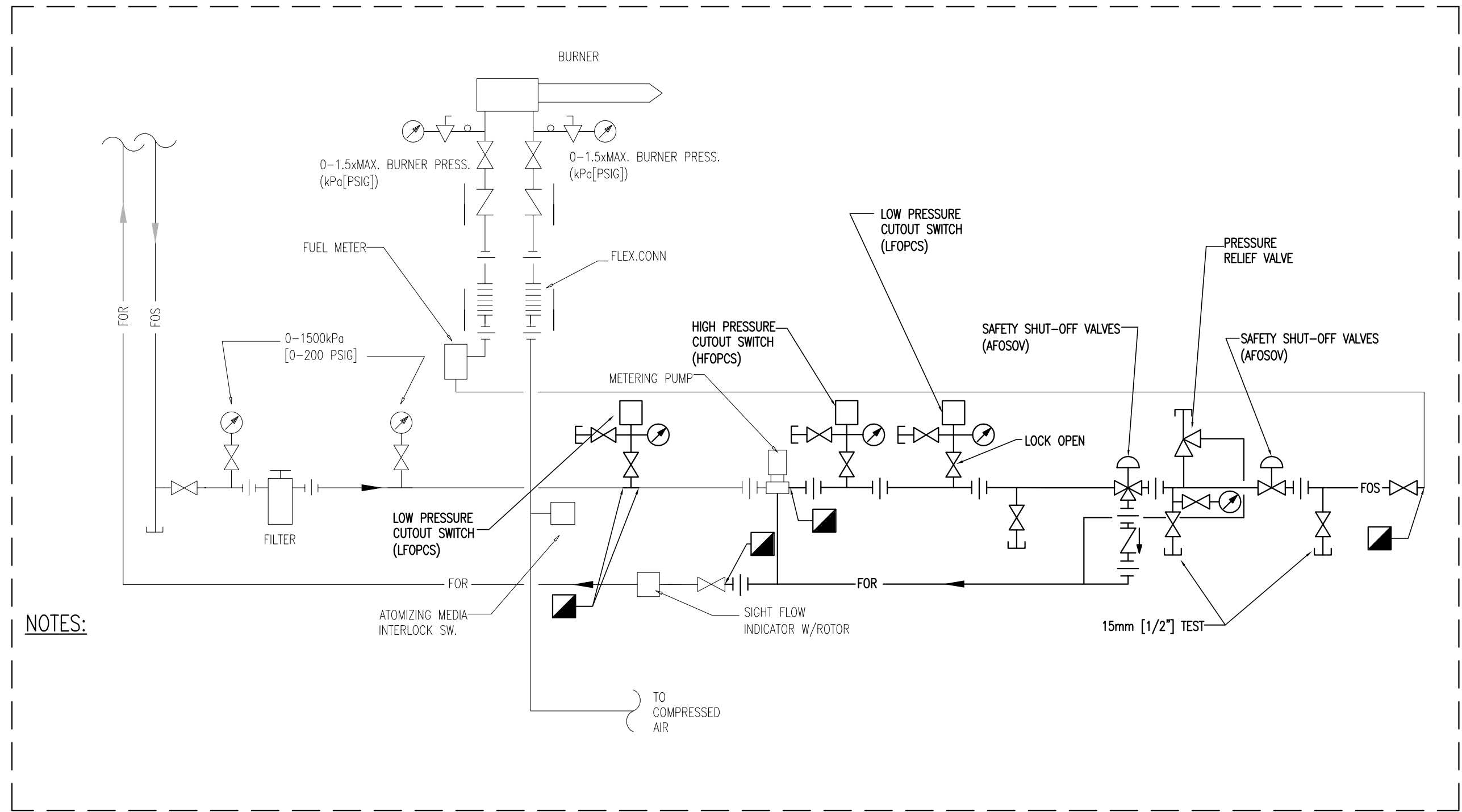
5. PROVIDE A METHOD TO INSTALL A HIGH AND LOW WATER ALARM FOR EACH BOILER. PROVIDE AN HORNS/STROBE TOWER. EACH BOILER #1 AND #2 WILL REQUIRE A SEPARATE DEDICATED METHOD OF NOTIFICATION. THE NEW CONTROL PANEL SHALL BE EQUAL TO SYSTEM SENSOR MODEL P2RHK-120-CP. PROVIDE A RELAY TO CONTROL THE HORNS/STROBE TOWER. PROVIDE TWO 120V/240V TRANSFORMERS. THE WATER AND HIGH WATER ALARM LEVELS IN EACH BOILER CONTROL PANEL SHALL BE IDENTICAL TO EACH BOILER CONTROL PANEL. INSTALL EACH HORNS/STROBE ALARM AT A HEIGHT OF 10' AT MINIMUM. PROVIDE TWO 120V/240V TRANSFORMERS. FINAL HORNS/STROBE ALARM LOCATIONS WITH THE FOLLOWING: LOWER EACH SIDE OF THE BOILER NEARLY RECEPTACLE CIRCUIT. PROVIDE A PLAQUE MOUNTED NEXT TO EACH ALARM INDICATING "HIGH WATER PLACQUAGE" OR "LOW WATER PLACQUAGE" WHERE "x" IS THE CORRESPONDING BOILER NUMBER. (14)

VA FORM 08-6231



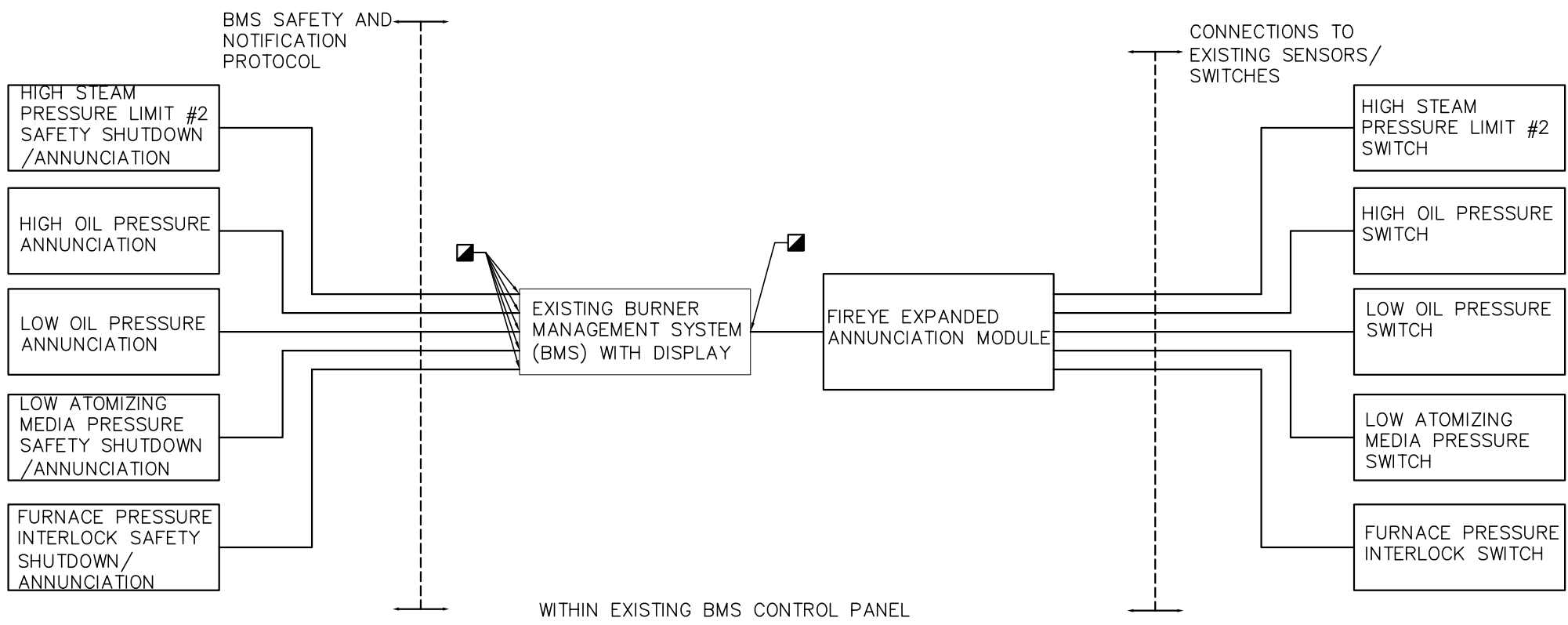
one eighth inch = one foot  
0 4 8 16  
one quarter inch = one foot  
0 4 8  
three eighths inch = one foot  
0 4 8  
one half inch = one foot  
0 4  
one half inch = one foot  
0 4  
three quarters inch = one foot  
0 4  
one inch = one foot  
0 6  
one and one half inches = one foot  
0 6  
three inches = one foot  
0 6

User:VICKI Spec:ASD-NCMWD File:4/25/2019 12:02:10 Plot Date: 4/25/2019 Time:12:05 Scale:1/4"=1'-0" Saved:4/25/2019 12:05:10 Plot Date: 4/25/2019 Time:12:05 Scale:1/4"=1'-0" Saved:4/25/2019 12:05:10



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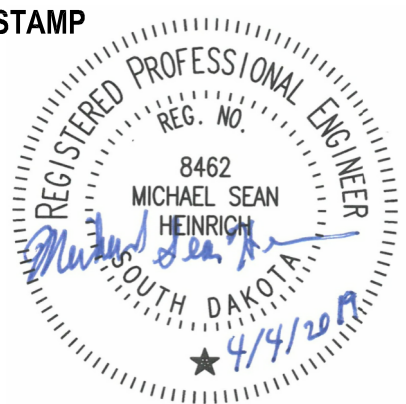
#2 FUEL BURNER ASSEMBLY DIAGRAM  
NO SCALE



BURNER MANAGEMENT SYSTEM ANNUNCIATION DIAGRAM  
NO SCALE

MECHANICAL SYMBOLS		
—●— COLD WATER PIPE	—MPS— MEDIUM PRESSURE STEAM	—LPS— LOW PRESSURE STEAM
- - - - UNDERGROUND COLD WATER PIPE	—MPR— MEDIUM PRESSURE RETURN	—LPR— LOW PRESSURE RETURN
—HPS— HIGH PRESSURE STEAM	—LP— LIQUEFIED PETROLEUM GAS	—CA— COMPRESSED AIR PIPE
—HPR— HIGH PRESSURE RETURN	—FOR— FUEL OIL RETURN	—PG— PRESSURE GAUGE
—PC— PUMPED CONDENSATE PIPE	—FOG— FUEL OIL GAUGE	—PS— STATIC PRESSURE SENSOR
—FOS— FUEL OIL SUPPLY	—EXP— EXPANSION JOINT, PIPE GUIDE	—T— THERMOMETER
—FOV— FUEL OIL VENT	—C— CAPPED OUTLET	—S— STRAINER
—PC— PIPE CONNECTION	—S— SHUT OFF VALVE	—ST— STEAM TRAP
—E— ELBOW DOWN	—C— CONTROL VALVE	—BFP— BACK FLOW PREVENTER
—E— ELBOW UP	—3— 3-WAY CONTROL VALVE	—FCV— FLOW CONTROL VALVE
—T— TEE DOWN	—PR— PRESSURE REDUCING VALVE	—SV— STRAINER VALVE
—P— PIPE PITCH DOWN	—PRV— PRESSURE RELIEF VALVE	—PSD— PRESSURE SENSOR DIFFERENTIAL
—D— DIRECTION OF FLOW	—DWT— DOMESTIC WATER TEMPERING VALVE	—T— THERMOSTAT
—A— PIPE ANCHOR	—C— CHECK VALVE	
—R— REDUCER OR INCREASER		
—U— UNION		
—F— FLEXIBLE PIPE CONNECTION		
—C— CONNECT TO EXIST. SERVICE		
	/// DEMOLITION HATCHING	

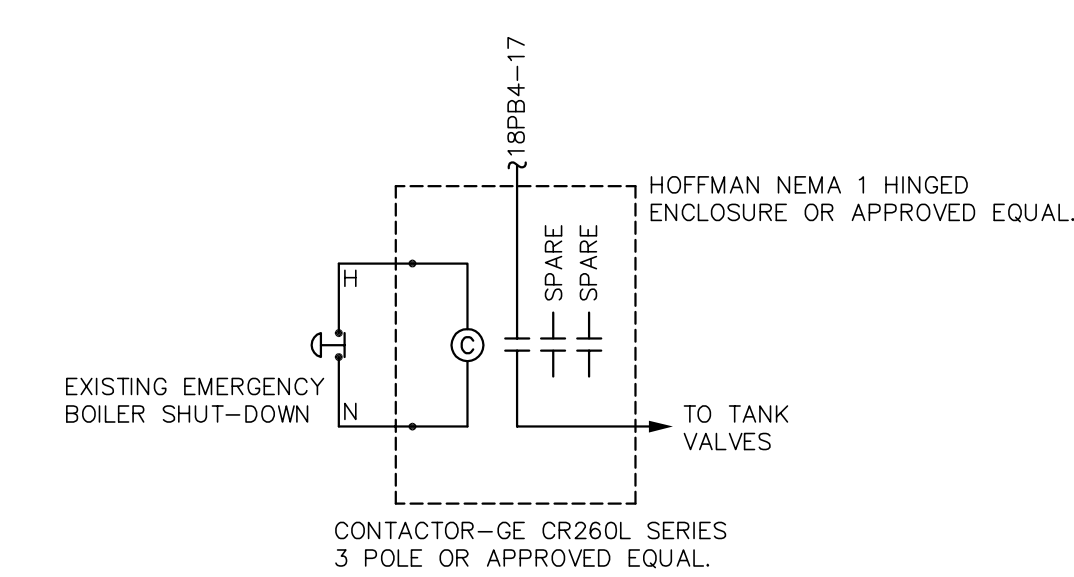


<b>Revisions:</b>		<b>Date:</b>	
CONSULTANT		STAMP	
 Gator Engineering & Aquifer Restoration, Inc. 1928 Boothe Circle, Longwood, FL 32750 Ph: 407-853-4555 Ext. 24 Fx: 407-853-4556 www.gearengineer.com Florida Certificate of Authorization Number: 28299		ARCHITECTS/ENGINEERS	
		WPE# BR18037	
		 WEST PLAINS ENGINEERING, INC. 1750 RAND ROAD • RAPID CITY, SD 57702 PHONE: (605) 348-7455 • FAX: (605) 348-9445 www.westplainsengineering.com RAPID CITY, SD • BROOK PALMS, SD • CARPIS, WY • CEDAR RAPIDS, IA	
		STAMP	
			
Drawing Title		Project Title	
MECHANICAL DETAILS & SYMBOLS		CORRECT BOILER PLANT DEFICIENCIES	
Approved: Project Director		Location	
		Hot Springs, SD	
Issue Date		Checked	
04/04/2019		MSH	
		Drawn	
		TAT	
Project Number		Drawing Number	
568A-08-206		18-MP3	
Building Number			
BLDGS. 18			
Office of Construction and Facilities Management		U.S. Department of Veterans Affairs	

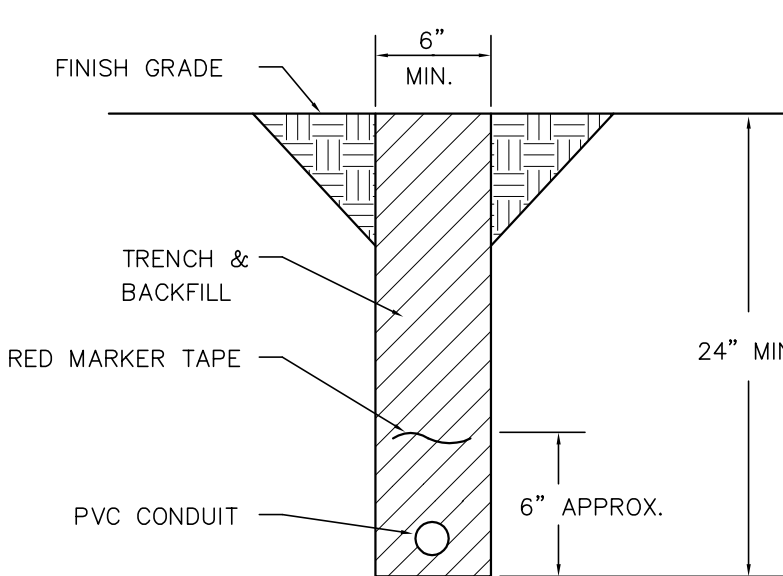


EXISTING CONTROL PANEL WIRING DIAGRAM  
NO SCALE

# REVISED CONTROL PANEL WIRING DIAGRAM



EMERGENCY BOILER SHUT-DOWN DIAGRAM



TRENCH DETAIL  
NO SCALE

STARTER AND DISCONNECT SCHEDULE									
UNIT	MOTOR			STARTER		KEY FEATURES	DISCONNECT		REMARKS/NOTES
	HP	VOLT PHASE	TYPE	NEMA SIZE	ENCLOSURE TYPE		SWITCH SIZE	FUSE SIZE	
SUPPLY/RETURN VALVES (2 EACH)	FRAC.	120/1	-	-	-	-	MTS	-	NOTE 1, 2
BOILER CONTROL PANEL (2 EACH)	FRAC.	208/3	-	-	-	-	30A/2P/F	PER NEC	
NOTES:									
1 MOTOR THERMAL SWITCH TO SERVE AS DISCONNECTING MEANS.									
2 PROVIDE NEMA 4 ENCLOSURE									
<b>KEY:</b> BH= HAND-OFF-AUTO SELECTOR SWITCH FT = CONTROL VTRM 120V FUSED FVNR= FULL VOLTAGE NON-REVERSING VFD= VARIABLE FREQUENCY DRIVE PROVIDE ALL MOTORS OVER 3 HP WITH SOLID STATE OVER-OVERDRIVE PROTECTION (VFD OR VFD-DRIVE) AND COORDINATE EXIST REQUIREMENTS WITH MECHANICAL. SHOP DRAWINGS REQUIRED TO ORDER EQUIPMENT OR RUNNING FEEDERS									
G= GREEN "OFF" PLOT LIGHT SPC= SINGLE POINT CONNECT IN FVNR= FULL VOLTAGE REVERSING MTS= MOTOR THERMAL SWITCH						R= RED "ON" PLOT LIGHT RS= REDUCED VOLTAGE START			

- SPECIFIC ELECTRICAL NOTES:**
- E1. FOR EACH BOILER PANEL, EXISTING LOAD SIDE WIRING (SHOWN WITHIN BUBBLE) IS TO BE REROUTED AS SHOWN IN REVISED CONTROL WIRING DIAGRAM.
- E2. FOR EACH BOILER, REROUTE EXISTING LOAD SIDE WIRING (SHOWN WITHIN BUBBLE) TO THE LINE SIDE OF EACH PANEL. DISCONNECT THE 30A/2P FUSED DISCONNECT TO PROTECT REROUTED CIRCUIT. FUSE NEW DISCONNECT AT 20AMPS. TAP CONDUCTORS TO BE #12AWG.
- E3. PROVIDE A METHOD TO ANNUNCIATE A HIGH AND LOW WATER ALARM FOR EACH BOILER BY WAY OF A HORN/STROBE UNIT. PROVIDE A RELAY TO CONTROL HORN/STROBE USING THE LOW CONTROL SIGNAL FROM THE LOW WATER AND HIGH WATER ALARM LEVELS IN EACH BOILER CONTROL PANELS. VERIFY EXISTING VOLTAGE IN EACH BOILER CONTROL PANEL PRIOR TO INSTALLATION.



# ELECTRICAL SYMBOLS

	PUSH BUTTON STATION
	EMERGENCY SHUTDOWN PUSHBUTTON
	LOADCENTER OR ELECTRICAL PANEL
	DISTRIBUTION PANEL
	SPECIAL EQUIPMENT CABINET-AS NOTED
	SPECIAL PURPOSE OUTLET OR CONNECTION
	DISCONNECT SWITCH
	MOTOR THERMAL SWITCH
	HORN/STROBE ALARM
	TYPE OF EQUIP EQUIP. NO. SEE SCHEDULES
	CONDUIT IN WALL OR CEILING SPACE. ARROWS INDICATE HOW RUNS TO PANEL. NUMBER INDICATE PANEL AND CIRCUIT IN PANEL

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