

**PART 1 - GENERAL**

**1.01 SCOPE**

- A. Includes:
  - 1. Cast Iron Boilers.

**1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Basic Mechanical Requirements - Section 23 0500.
- B. Basic Materials and Methods - Section 23 0500.
- C. Automatic Temperature Controls - Section 23 0923.

**1.03 SUBMITTALS**

- A. Submit shop drawings in accordance with Division 1 and Section 23 0500.
- B. Submit shop drawings indicating components, assembly, dimensions, weights and loadings, required clearances and location and size of field connections. Indicate valves, strainers, and thermostatic valves required for complete system.
- C. Submit product data indicating rating capacities, specialties and accessories, electrical requirements and wiring diagrams. Data and tabulations shall, as a minimum reflect those categories as scheduled on the drawings.
- D. If substitute boiler is not equipped with a boiler control system equal to the one specified; the Contractor shall provide all additional control components as necessary to accomplish the controls functions as provided by the specified unit at no additional cost to the Owner. Submit complete list and wiring diagrams for additive components.
- E. Submit manufacturer's installation instructions.

**1.04 QUALITY ASSURANCE**

- A. Boiler shall be constructed in accordance with A.S.M.E. Boiler and Pressure Vessel Code for heating boiler and shall be A.S.M.E. stamped.
- B. Boiler shall be tested, listed and certified in accordance with the requirements of the American Gas Association laboratories and ANSI Standards.

**1.05 OPERATION AND MAINTENANCE DATA**

- A. Submit operations and maintenance data under provisions of Section 23 0500.
- B. Include start-up instructions, maintenance data, parts lists, controls, and accessories. Include trouble-shooting guide.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURER**

- A. Peerless.
- B. Architect Approved.

### **2.02 GENERAL REQUIREMENTS**

- A. The boiler(s) shall be of a low pressure, cast iron, atmospheric gas design and shall be tested and design certified to the current ANSI Z21.13 standard and listed in the International Approval Services Directory of A.G.A. and CGA Certified Appliances and Accessories.
- B. The boiler(s) shall be capable of developing full A.G.A. listed gross output at 100% firing rate and shall include the A.G.A. Certification Seal for Appliances.
- C. The boiler(s) shall be listed in the I=B=R Ratings Directory and shall bear the I=B=R Emblem.
- D. The boiler(s) will meet or exceed capacity ratings on Drawings.
- E. The boiler(s) shall be constructed in accordance with the provisions of Section IV of the ASME Boiler and Pressure Vessel Code and shall be stamped with the required ASME symbol. Each boiler section shall be hydrostatically pressure tested for a maximum allowable working pressure of 15 PSIG for steam.
- F. The boiler(s) shall be field assembled and hydrostatically tested in accordance with the manufacturer's installation instructions. All work shall be completed in a neat and Workmanlike manner.

### **2.03 BOILER CONSTRUCTION FEATURES**

- A. The boiler sections shall be assembled using individual draw rods between each section for ease of assembly and to evenly distribute tension between the sections.
- B. Each section shall be evenly spaced with spacing pads and high temperature sealing rope shall be used to provide a permanent gas-tight seal between the sections.
- C. Flow port gaskets shall be used at each port opening to provide a permanent water-tight seal between the sections.
- D. The boiler shall be furnished with an insulated steel base. The base shall be painted with high temperature black paint and insulated with high temperature insulation.

- E. The boiler shall be furnished with a cleanout plate located on each end section for ease of inspection and cleaning of the flueways. The cleanout plates shall be sealed to the boiler with high temperature sealing rope.
- F. The boiler shall be provided with aluminized steel main burners of a one piece slotted port design. The burners shall be designed to provide quiet ignition and extinction.
- G. The boiler shall be furnished with a corrosion resistant aluminized steel flue collector and horizontal-to-vertical draft hood. The flue collector shall be sealed to the top of the boiler sections with high temperature sealing rope.
- H. The boiler shall be provided with an insulated steel flush jacket with a painted finish. The jacket shall be designed to permit installation after the supply and return piping is connected.

#### **2.04 BOILER FOUNDATION**

- A. A concrete housekeeping pad shall be provided as recommended by the boiler manufacturer if the boiler room floor is not level or if additional structural support is needed.

#### **2.05 INSPECTION TAPPINGS**

- A. All intermediate sections shall be provided with 1-1/2" NPT inspection tappings located in front at the bottom. The tappings shall be plugged with (brass plugs) (nipples and caps).

#### **2.06 BOILER TRIM AND CONTROLS**

- A. The boiler shall be provided with a safety valve set to relieve at 15 PSIG. The valve shall conform to Section IV of the ASME Boiler and Pressure Vessel Code.
- B. The boiler shall be provided with a compound steam gauge to indicate boiler pressure.
- C. The boiler shall be provided with a water gauge glass and gauge cocks.
- D. The boiler shall be provided with an operating pressure control and a manual reset high limit pressure control.
- E. The boiler shall be provided with one (1) float type and one (1) probe type low water cut-off.

## **2.07 STANDARD GAS CONTROL TRAIN**

- A. The gas control train shall be factory assembled and shall include a manual shut-off gas valve, gas pressure regulator and two (2) diaphragm gas valves. A high gas pressure switch shall be furnished with each gas train. *Note: 211A-11 thru 37 furnished with one (1) diaphragm gas valve and one (1) solenoid gas valve per gas train. 211A-19 thru 37 includes two (2) gas trains.*
- B. Inlet gas pressure to the gas train under full flow conditions shall be a minimum of 7.0' W.C. and a maximum of 14.0" W.C. for natural gas.
- C. If the inlet gas pressure exceeds 14.0" W.C., a lock-up type gas pressure regulator shall be installed in the main gas supply to the boiler(s) to provide a maximum lock-up gas pressure of 14.0" W.C.  
**Contact factory for information and specifications on 211A-38 thru 46.**

## **2.08 COMBUSTION CONTROLS FOR NATURAL GAS**

- A. The boiler shall be provided with an E1-EP E4-E\* Ignition System, which shall include four (4) Honeywell RM7890A Flame Safeguard Controls and three (3) constant burning electronically supervised safety pilots with 100% shut-off.
- B. Furnish one (1) prewired MSP Electronic Control Panels, which shall be constructed of heavy gauge metal with a baked enamel finish and have gasketed doors for dust resistance. The panels shall include color-coded wiring, RM7890 Flame Safeguards with alarm contacts, Q7800A subbases, and numbered terminal strips for ease of field wiring. Also included shall be a 10 ampere fuse, switches for "Power", "Pilot" and "Main Valve", and signal lamps for "Power On" (Clear), "Pilot On" (Amber), "Main Valve On" (Green) and "Flame Failure" (Red).

## **2.09 OPTIONAL BOILER CONTROLS**

- A. The boiler shall be provided with a Hi-Lo Firing System to modulate boiler input at 100% or 50% according to changes in the heating load requirements. The system shall maintain a fixed steam pressure using pressure controllers located in the main system supply header.

## **PART 3 - EXECUTION**

**3.01** Set boiler and level.

**3.02** Make all necessary piping connections and control interlocks.

**3.03** Insure that boiler has an adequate supply of combustion air, make-up water and fuel supply.

**3.04** Strictly follow the boiler manufacturer's installation instructions.

- 3.05** Provide sensor wells as required in piping.
- 3.06** Boiler shall be thoroughly cleaned after piping has been completed and prior to start-up.
- 3.07** Install flue piping and breeching and make final connection to boiler.
- 3.08** Ensure flue piping is properly supported and that all horizontal piping slopes upward toward vertical stack.
- 3.09** Provide start up by factory-trained personnel.
- 3.10** Provide wiring from control panel to boiler.

**END OF SECTION 23 52 13**