SECTION 15570 - BOILER ACCESSORIES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK:

A. Extent of boiler accessories work required by this section is indicated on drawings and schedules, and by requirements of this section.

B. Refer to other Division 15 sections for boilers, piping; piping specialties; control; pump; safety and pressure relief valves; water treatment; concrete pads etc., required for installation of boiler accessories.

1.2 QUALITY ASSURANCE:

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of boiler accessories, of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Codes and Standards:

1. ASME Compliance: Construct and install boiler accessories in accordance with ASME "Boiler and Pressure Vessel Code". Install boiler accessories in accordance with ASME B31.1 "Power Piping", or ASME B31.9 "Building Services Piping", as applicable.

1.3 SUBMITTALS:

A. Product Data: Submit manufacturer's technical product data, including rated capacities of selected model clearly indicating weights (shipping, installed, and operating where applicable), furnished specialties and accessories; and installation and start-up instructions.

B. Shop Drawings: Submit manufacturer's assembly-type shop drawings indicating dimensions, weight loadings, required clearances, and methods of assembly of components.

C. Wiring Diagrams: Submit ladder-type wiring diagrams for electrically operated boiler accessories. Clearly differentiate between portions of wiring that are factory-installed and portions to be field-installed.

D. Record Drawings: At project closeout, submit record drawings of installed systems products in accordance with requirements of Divisions 1 and 15.

E. Maintenance Data: Submit maintenance data and parts lists for each boiler accessory, including "troubleshooting" maintenance guide. Include this data and product data in maintenance manual; in accordance with requirements of Divisions 1 and 15.

PART 2 PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Boiler Valves:

a. Crane Co.; Valves and Fittings Div.
b. Hammond

c. Jenkins Bros.
d. Lunkenheimer (The) Co.; Div. of Conval Corp.
e. Powell (The Wm.) Co.
f. Walworth Co.

2. Safety Valves (Steam):

a. Kunkle Valve Co., Inc.
b. Lunkenheimer (The) Co.,; Div. of Conval Corp.
c. Spirax Sarco, Inc.
d. Watts Regulator Co.

3. Pressure Relief Valves (Water):

a. Amtrol, Inc.
b. Bell & Gossett ITT.
c. Spirax Sarco Co.
d. Watts Regulator Co.

4. Boiler Blowdown Separators:

a. Cleaver Brooks; Div. Aqua-Chem, Inc.
b. Penn Separator Corp.
c. Wessels Co.

5. Boiler Economizers:

a. Kentube; Div. of Tranter, Inc.

2.2 BOILER VALVES:

A. General: Provide factory-fabricated boiler valves recommended by manufacturer for use in service indicated. Provide boiler valves of types and pressure ratings indicated for each service, or if not indicated, provide proper selection as determined by Installer to comply with installation requirements. Provide sizes as indicated, with connections which properly mate with pipe, tube, and equipment connections.

B. Stop and Check Valves: Construct body of cast iron, ASTM A 126, Grade B, pressure rated for 250 PSI at 450 degrees F (232 degrees C) steam. Provide OS&Y construction, straight or angle pattern with flanged ends, and renewable bronze disc and seat ring.

C. Y-Type Blowdown Valves: Construct body of bronze, ASTM B 62, pressure rated for 150 PSI steam. Provide Y-type globe construction, bronze seat ring, renewable composition disc, screw-in bonnet, and threaded ends.

D. Y-Type Blowdown Valves: Construct body of bronze, ASTM B 62, pressure rated for 300 PSI steam. Provide Y-type globe construction, bronze seat ring, renewable composition disc, screw-in bonnet, threaded ends.

2.3 SAFETY AND RELIEF VALVES:

A. Steam Safety Valves: Provide steam safety valves as indicated, of size and capacity as selected by Installer for proper relieving capacity, constructed in accordance with ASME Boiler and Pressure Vessel Code.

1. Bronze Safety Valves: Construct housing of cast bronze, disc and nozzle of forged copper alloy, lap seats to optical flatness. Set valve to relieve at 10 PSI above operating pressure.

2. Cast-Iron Safety Valves: Construct of cast iron, with all bronze/brass trim, and fully enclosed spring. Set valve to relieve at 10 PSI above operating pressure.

3. Drip Pan Elbows: Provide drip pan elbows on steam safety valves required to discharge to outdoors. Construct of cast iron, with bottom drain and pan drain connections.

4. Exhaust Heads: Provide exhaust heads on exhaust steam lines, constructed of cast iron, and consisting of helico-centrifugal chamber and drain.

B. Water Relief Valves: Provide water relief valves as indicated, of size and capacity as selected by Installer for proper relieving capacity, constructed in accordance with ASME Boiler and Pressure Vessel Code.

1. Pressure Relief Valves: Construct of bronze body, metallic disc, metal seat, with nonmechanically guided stem. Set valve to relieve at 10 PSI above operating pressure.

2.4 BOILER BLOWDOWN SEPARATORS:

A. General: Provide as indicated, boiler blowdown separators of size and capacity noted on drawings.

B. Tank: Construct of carbon steel, with tangential inlet pipe and stainless steel striking plate, vent opening, discharge opening with spiral formed discharge directing plate, supported on 3 support legs of indicated height.

C. Water Inlet: Provide cold water inlet in discharge pipe, and 2 thermometer wells.

D. Specialties: Provide temperature regulating valve in water inlet with temperature sensing bulb in lower thermometer well; bi-metallic thermometer in upper thermometer well; and Y-type strainer in cold water inlet line upstream of temperature regulating valve. Provide backflow prevention device in water inlet.

2.5 BOILER WATER TREATMENT FEEDERS:

A. See Division 15, Section 15456, "WATER TREATMENT".

2.6 BOILER ECONOMIZERS:

A. General: Provide finned tube boiler economizers of sizes and having capacities and performance characteristics as indicated, and as specified herein.

B. Type: Provide horizontal tube, counter-current flow arrangement, designed, manufactured, and tested in accordance with ASME Boiler and Pressure Vessel Code. Provide ASME Stamp.

C. Construction: Construct economizer heating surface of 2inch O.D. boiler tubes with smooth carbon steel fins, not less than 0.07inches thick, attached by continuous high-frequency resistance welding. Provide maximum fin density (pitch) of 60 fins/ft.

D. Tube Arrangement: Provide square pitch for lane blowing of sootblowers.

E. Headers: Provide schedule 40 carbon steel pipe with minimum 300 PSI flanged connections. Provide 3/4inch drain connection on lower header, and 3/4inch vent connection in upper header.

F. Enclosure: Provide gas-tight, hot structure design allowing unrestricted flow of hot gas over internal parts. Allow fin tips only, not tube walls, to be in contact with tube sheets. Construct inner casing of enclosure of 3/16inches thick carbon steel. Furnish enclosure with minimum of 2inches thick, factory-installed, high temperature insulation covered with corrugated, galvanized, carbon steel jacket. Paint exterior surfaces not covered with galvanized jacket with high temperature aluminum paint. Provide 16inches x 16inches carbon steel insulated access door for inspection and cleaning.

G. Sootblowers: Furnish economizer with one or more sootblowers as required to obtain full coverage of heating surfaces. Install sootblowers transverse to axis of finned tubes for lane blowing.

1. Provide manually operated sootblowers.
2. Provide motor-operated sootblowers with remote pushbutton control.

H. Drainage: Provide economizers that are completely drainable by gravity after installation.

I. Feedwater Control System: Provide feedwater corrosion control system to prevent cold-end corrosion of economizer, and to control exit gas temperatures. Design system to elevate entering water temperature to control exit gas temperature and tube metal temperature; and to automatically maintain or adjust feedwater temperature to provide corrosion protection under all boiler operating loads. Provide factory-assembled system consisting of the following:

1. Heat exchanger mounted on steel supporting skid.

2. Self-contained dual piloted tight shutoff temperature control valve with integral temperature adjustment to control flow of steam to preheater.

3. Feedwater preheater outlet water vapor tension thermostat with well and flexible armored tubing connected to temperature regulator. Install thermostat in preheater leaving water piping.

4. Exit gas temperature vapor tension thermostat with flexible armored tubing connected to temperature regulator. Install thermostat in exit flue gas duct.

PART 3 EXECUTION

3.1 INSPECTION:

A. Examine areas and conditions under which boiler accessories are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 INSTALLATION OF BOILER ACCESSORIES:

A. Install boiler accessories as indicated, in accordance with manufacturer's installation instructions, and with recognized industry practices, to ensure that boiler accessories comply with requirements and serve intended purposes. Comply with requirements of state and local boiler codes, applicable portions of ASME Boiler and Pressure Vessel Code, and applicable portions of ASME B31.1 or ASME B31.9.

B. Coordinate with other work as necessary to interface installation of boiler accessories with other components of heat generation systems.

3.3 BOILER VALVES:

A. Stop-and-Check Valves: Install as indicated on top of boiler steam nozzles. Install additional chain operated stop valve between stop-and-check valve and boiler header.

B. Y-Type Blowdown Valves: Install as indicated on blowdown piping. Connect discharge to blowdown separator. Install additional stop valve between blowdown valve and boiler.

3.4 SAFETY AND RELIEF VALVES:

A. Steam Safety Valves: Install as indicated on top of boilers. Pipe discharge to floor drain for low-pressure service. Pipe discharge to outdoors for high-pressure service, pipe drain outlets of drip pan elbow to floor drain. Pipe drain outlets of exhaust heads full size to floor drain or sewer.

B. Water Relief Valves: Install as indicated on top of boilers. Pipe discharge to floor drain.

3.5 BOILER BLOWDOWN SEPARATORS:

A. General: Install boiler blowdown separators as indicated, on concrete pad. Connect drain to sewer, and vent to outdoors. Connect boiler blowdown inlet piping, and cold water supply piping with shutoff valve, strainer, and temperature regulator valve. Install temperature regulator valve bulb and thermometer in thermometer wells in blowdown separator discharge.

3.6 BOILER ECONOMIZERS:

A. Install as indicated, and in accordance with manufacturers installation instructions. Pipe header drains to floor drain.

3.7 FIELD QUALITY CONTROL:

A. Flush and clean boiler accessories upon completion of installation, and in accordance with manufacturer's installation instructions.

B. Hydrostatically test, if required, assembled boiler accessories and piping in accordance with applicable sections of ASME Boiler and Pressure Vessel Code.

END OF SECTION 15570