

235200 BOILERS

Part 1 – GENERAL

1.1 Description

A. This section details the guidelines and expectations for the design and install of boiler systems on Johns Hopkins University Homewood Campus. Project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification and approval from the JHFRE Engineering and Energy Department, it is expected that these guidelines will govern the design and specifications.

B. Unless otherwise directed by JHFRE, the boiler piping installation, temperature differential and entering water temperatures shall conform to the manufacturers' recommendations.

1.2 Submittals

A. All boilers shall be tested and rated according to the Hydronics Institute's Testing and Rating Standard for Heating Boilers and include an emblem on the boiler nameplate indicating "I=B=R". Boiler performance data and piping diagram shall be submitted.

1.3 Quality Assurance

A. Warranty

1. All boilers shall be provided with a minimum 6-year warranty (Manufacturer's standard 1 year warranty plus an extended warranty for an additional 5 years) which covers the entire boiler unit, including parts and labor. Include the following additional requirements:

- a. Warranty shall be provided direct from the chiller manufacturer to JHU.
- b. Repair or replacement of any factory provided chiller component that becomes inoperative as a result of defects in material or workmanship within the warranty period.
- c. When the manufacturer determines that a boiler component requires replacement, the manufacturer shall furnish and install the new component at no additional cost to JHU.
- d. Upon notification that a component has failed under the terms of the warranty, the manufacturer shall respond in no more than 24 hours. Response shall mean having a manufacturer-qualified technician onsite to evaluate the extent of the needed repairs.

1.4 Delivery and storage

A. Material deliveries and storage areas to be approved by Owner.

B. Material storage to comply with manufacturer's recommendations.

Part 2 – PRODUCTS

- 2.1 Fuel-fired boilers with cast-iron sections set on an insulated steel base shall be factory-assembled and factory-packaged, commercial-type, sealed with high-temperature sealant and held together with tie rods with insulated extended jacket and vent connection.
- 2.2 For water wall design, provide water-backed combustion area with water circulating around firebox, access to flue passages for cleaning and flame-observation ports. Refractory chamber or separate base are not required.
- 2.3 For condensing, factory-assembled and factory-tested modules include combustion-air inlet chamber, pre-purge and post-purge blower assembly, air-gas fuel control valve, combustion chamber, heat exchanger and exhaust with insulated jacket around module and unit-mounted electrical control panel with operation sequence indicator lights. Provide air-supply and exhaust mufflers and vent terminal plates.
- 2.4 Horizontal fire-tube design (two or more flue gas passes) shall be factory-assembled and factory-tested, central fluid-backed combustion chamber with insulated jacket around outer shell and unit-mounted electrical control panel with operation sequence indicator lights.
- 2.5 Header water-tube design shall be factory-assembled and factory-tested internal or external, with insulated jacket around outer shell (and header) and unit-mounted electrical control panel with operation sequence indicator lights.
- 2.6 All boilers shall be designed with an economizer to capture the heat from the exhaust flue and return to the feedwater wherever possible in order to support JHU's commitment to sustainability.
- 2.7 To the maximum extent practical, boilers shall be full modulating type, Low NOx with VFDs and O2 Trim control. Provide temperature control with manual-reset limits boiler water temperature and meters capable of recording fuel usage of natural gas and/or fuel oil.

Part 3 – EXECUTION

- 3.1 Permits to construct fuel burning equipment shall be obtained through coordination with the JHFRE.
- 3.2 Boilers shall be connected to the JHU Building Automation System with a comprehensive list of status and alarm conditions as approved by JHFRE.
- 3.3 Boilers shall be placed on a concrete housekeeping pad at least 2" larger in plan than the base and not less than 6" above the finished floor elevation.
- 3.4 Any new boiler installation shall include a training session from a manufacturer-qualified representative for all required JHFRE personnel.