

Design Standard

Heating Boilers and Accessories

Purpose:

The boiler systems are an essential element of the mechanical space heating systems. This design standard has the purpose of creating a consistent application of boiler requirements throughout the East Side Union High School District, therefore achieving a standard of quality for maintenance, energy efficiency, and reliability throughout all renovation and new building projects.

Design Standard:

Design and specify work to include materials, installation, and testing of hot water boilers for building heating, and associated accessories for a complete and operable system.

- Boilers shall be located under cover for protection from tree debris and rain. It is preferable for all boilers to be located indoors.
- Boilers shall be located at grade level at a point accessible by hand truck from a service vehicle.
- Condensing boilers are not acceptable due to high maintenance cost.
- Furnish with trim per California Fired Pressure Vessel Safety Order (Title 17) including dual low water cut outs, dual gas valves.
- Automatic reset low water cut out shall include automatic feed for increased safety (McDonald-Miller or equal).
- Provide line pressure manual quick fill valve.
- Boilers 100,000 BTUH and smaller
 - Cast iron or steel tube
 - 80% minimum thermal efficiency
- Boilers 100,000 BTUH to 2,000,000 BTUH
 - Copper fin or steel tube with atmospheric burners
 - 80% minimum thermal efficiency
 - Access required to fire box, control panel, Low Water Cut Outs.
- Boilers 2,000,000 BTUH and Greater
 - Boiler permit required from air pollution control district as required.
 - Provide Powered Burners If low NOX is required.

- Provide Best Available Control Technology (BACT) for NOX emissions.
 - Steel or fire tube design acceptable.
 - 80% minimum thermal efficiency
- Positive pressure gas vents:
 - Double-walled insulated piping system. Construct the inner wall of at least 0.035-inch-thick Type 304 stainless steel. Construct the outer wall of at least 0.025-inch-thick aluminized steel. Fabricate duct to provide space between the inner and outer walls of at least 1 inch. List system by UL as 1400F Factory Built Chimneys with 2-inch clearance to combustibles for use with No. 2 fuel oil-fired equipment. Join sections by means of a system, capable of sealing gastight to pressure up to at least 60-inch w.g. for temperatures up to 600F. Fittings of the same manufacture and construction as the straight sections.
- Gravity gas vents:
 - Type "B" factory fabricated, UL listed, double-wall flue, with aluminum inner wall, galvanized steel outer wall and 1/2-inch air space between unless noted otherwise. Provide twist-lock connectors, tall cone flashing, storm collar, and round birdproof/weatherproof top.

Approved Manufacturers:

- Boilers
 - Cleaver Brooks
 - Kawahnee
 - Ajax
 - Rite
 - Lochinvar
 - Raypack
- Positive pressure gas vents
 - Ampco
 - Selkirk
 - Metalbestos IPS

Substitutes Allowed:

Yes, if performance and quality equivalency can be evidenced.

Associated Design Standards and Construction Specifications

- Division 23 HVAC Design Standards
- 23 05 00 – HVAC Piping Design Standard
- 23 05 53 - Identification for HVAC Piping and Equipment Design Standard
- 23 21 13 - Hydronic Piping Systems Design Standard

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