

SECTION 15450

PLUMBING EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Water Heaters.
2. Circulating pumps.
3. Sump pumps.
4. Sewage ejectors.
5. General use air compressors.

B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15050 - Basic Mechanical Materials and Methods.
3. Section 15240 - Mechanical Sound and Vibration Control.
4. Section 15410 - Plumbing Piping.
5. Section 15430 - Plumbing Specialties.
6. Section 15460 - Special Plumbing Equipment Systems.

1.02 SYSTEM DESCRIPTION

A. Design Requirements:

1. General:

- a. Energy conservation is an essential design consideration for all systems.
- b. Design parameters for equipment selection shall conform with ASHRAE, ASPE, ASME and UPC.

2. Hot Water Generators:

- a. Design domestic hot water systems using "instantaneous" or "semi-instantaneous" steam to water heaters wherever possible.

- b. Where continuous water supply is necessary, design system with two or more hot

water generators to provide stand-by operation. Design stand-by to maintain two-thirds capacity with one unit down.

- c. Specify inlet and outlet pressure gages on water, compound gages on inlet and outlet of steam valve, and linear thermometers on hot water outlet and hot water recirculating inlet.
 - d. In steam supply to generator, provide in line an isolation valve, strainer, union, temperature regulating valve, union, and gate valve with a globe valve by-pass around assembly.
 - e. In condensate return, provide an isolation valve, strainer, union, trap, union, test tee with test valve, check valve, and gate valve.
 - f. Design generator piping with isolation valves and unions at all unit connections for removal of entire unit or tube-pull without dismantling connecting piping.
 - g. Gas-fired water heaters shall have power-burners as a minimum and shall have forced draft if sharing a flue with a forced-draft boiler, in which case the water heater's positive pressure at the collar shall be specified.
 - h. Include an expansion tank if DHW system has a backflow preventer .
3. Domestic Hot Water Circulating Pumps:
- a. Specify all-bronze construction.
 - b. Specify aquastat control in return line near each pump if building is expected to have extended operating hours; otherwise, specify a timer.
 - c. Provide one pump (isolation valves before and after with union or flanged connections).
4. Sump Pumps and Sewage Ejectors, specify:
- a. Duplex, submersible.
 - b. Mechanical float switches.
 - c. Remote-mounted pump panels with H.O.A. switch for each pump.
 - d. Alternator.
 - e. High-water audible and visual alarms, and dry contacts if connected to remote alarm (DDC or other).
 - f. Two-pump run control.
 - g. Three phase protection for three phase motors.
 - h. NEMA 12 enclosure.

- i. Gas-tight gasketed cover with grommeted openings for piping and wiring.
- j. Gas tight manhole.
- k. Vent through dedicated vent stack. Label as such throughout.
- l. Quick-removal system for pumps .
- m. For any pit deeper than 5 feet, require a stainless steel guide rail system.

5. General Use Air Compressor, specify:

- a. Duplex.
- b. Energy efficient motors.
- c. ASME Code and Labeled reviewer.
- d. Automatic float type receiver condensate drain with isolation valve.
- e. Refrigerated air dryer.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Instantaneous or semi-instantaneous anticipating type steam-source water heater (with 10-year warranty) with feed-forward control, admiralty tubing and provided with insulation condensate cooler and supporting frame.

Ace-Boiler with feed-forward control
 Armstrong "Flo-Rite-Temp"
 Patterson-Kelley
 Thermalflo
 Housing – Armstrong “Flo-Rite-Temp”

- B. Copper-tube water heaters, fuel-fired semi-instantaneous, power burner.

Ace Boiler
 Aerco
 Ajax
 A.O. Smith
 Rite
 Weil-McLain

- C. Domestic hot water circulating pumps (connected to 24-hour timer), (Cartridge pumps wherever possible):

Armstrong

Bell and Gossett

Grundfos
Laing (available with built-in timer)
Taco
Housing – Grundfos

D. Sump pumps:

Weil
Zoeller

E. Sewage ejectors:

Weil Pump Company
Federal Pump Corporation

F. General-Use Air Compressor:

Ingersoll Rand
Quincy
Atlas Copco
Gardner-Denver
Worthington

PART 3 - EXECUTION

3.01 INSTALLATION

- A. In general, for project specifications, remove "Design Requirements" in Part 1, sub-paragraph A, paragraph 1.02, "System Description" of this Design Guide and use list to expand on specific requirements of installation for each product specified.
- B. Vacuum pumps and air compressors need to be installed with limit switches and alternating switches.

END OF SECTION