

SECTION 223300

ELECTRIC WATER HEATERS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following electric water heaters:
 - 1. Commercial Light-duty Electric Water Heaters
 - 2. Water heater accessories.

1.3 SUBMITTALS

- A. Product Data: For each type and size of water heater indicated. Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Diagram power, signal, and control wiring.
- C. Operation and Maintenance Data: For electric water heaters to include in emergency, operation, and maintenance manuals.
- D. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain same type of electric water heaters through one source from a single manufacturer.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of electric water heaters and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9," for all components that will be in contact with potable water.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of electric water heaters that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Structural failures including storage tank and supports.
 - b. Faulty operation of controls.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal use.
 2. Warranty Period(s): From date of Substantial Completion:
 - a. Commercial Light-Duty Electric Water Heaters:
 - 1) Storage Tank: Minimum of (5) five years.
 - 2) Controls and Other Components: Minimum of (3) three years.

PART 2 PRODUCTS

2.1 COMMERCIAL ELECTRIC WATER HEATERS

- A. Description:
1. Storage-Tank Construction: Glass-Lined, vertical arrangement.
 2. Following is based on technical information provided by A.O. Smith (Model No. Del-20)
 - a. Tappings: ASME B1.20.1 pipe thread.
 - b. Pressure Rating: 150 psig.
 - c. Interior Finish: Comply with NSF 61 barrier materials for potable-water tank linings, including extending lining material into tappings.
 3. Factory-Installed Storage-Tank Appurtenances:
 - a. Anode Rod: Replaceable magnesium.
 - b. Drain Valve: ASSE 1005.
 - c. Insulation: Comply with ASHRAE/IESNA 90.1 or ASHRAE 90.2.
 - d. Heat Trap Fittings: Inlet type in cold-water inlet and outlet type in hot-water outlet.
 - e. Heating Elements: One electric, screw-in immersion type; wired for non-simultaneous operation.
 - f. Temperature Control: Adjustable thermostat for each element.
 - g. Safety Control: High-temperature-limit cutoff device or system.
 - h. Relief Valve: ASME rated and stamped and complying with ASME PTC 25.3 for combination temperature and pressure relief valves. Include relieving capacity at least as great as heat input, and include pressure setting less than water heater

working-pressure rating. Select relief valve with sensing element that extends into storage tank.

4. Capacity and Characteristics:

- a. Basis of Design: AO Smith DEL-10
- b. Capacity: 10 gal.
- c. Heating Element: 1.5 kw
- d. Temperature Setting: 120 deg F
- e. Electrical Characteristics:
 - 1) Volts: 120
 - 2) Phases: Single.

2.2 WATER HEATER ACCESSORIES

- A. Combination Temperature and Pressure Relief Valves: ASME rated and stamped and complying with ASME PTC 25.3. Include relieving capacity at least as great as heat input, and include pressure setting less than water heater working-pressure rating. Select relief valves with sensing element that extends into storage tank.
- B. Pressure Relief Valves: ASME rated and stamped and complying with ASME PTC 25.3. Include pressure setting less than water heater working-pressure rating.
- C. Drain Pans: Corrosion-resistant metal with raised edge. Include dimensions not less than base of water heater and include drain outlet not less than NPS 3/4.

2.3 SOURCE QUALITY CONTROL

- A. Hydrostatically test water heater storage tanks before shipment to minimum of one and one-half times pressure rating.
- B. Prepare test reports.

PART 3 EXECUTION

3.1 WATER HEATER INSTALLATION

- A. Install water heaters level and plumb, according to layout drawings (P.1 of 1), original design, and referenced standards. Maintain manufacturer's recommended clearances. Arrange units so controls and devices needing service are accessible.
- B. Install combination temperature and pressure relief valves in top portion of storage tanks. Use relief valves with sensing elements that extend into tanks. Extend commercial-water-heater relief-valve outlet, with drain piping same as domestic water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain.

- C. Install water-heater drain piping as indirect waste to spill by positive air gap into open drains or over floor drains. Install hose-end drain valves at low points in water piping for water heaters that do not have tank drains. Refer to Division 15 Section "Plumbing Specialties" for hose-end drain valves.
- D. Install thermometer on outlet piping of water heaters. Refer to Division 15 Section "Meters and Gages" for thermometers.
- E. Install pressure gage(s) on inlet and outlet of commercial electric water- heater piping. Refer to Division 15 Section "Meters and Gages" for pressure gages.
- F. Fill water heaters with water.

3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to water heaters to allow service and maintenance. Arrange piping for easy removal of water heaters.

END OF SECTION 223300