

## **SECTION 22 12 00**

### **ELECTRIC WATER HEATERS**

#### **PART 1 - GENERAL**

##### 1.1 RELATED DOCUMENTS:

- A. The Conditions of the Contract and applicable requirements of Division 1, "General Requirements", and Section 23 01 00, "Mechanical General Provisions", govern this Section.

##### 1.2 DESCRIPTION OF WORK:

- A. Work Included: Provide electric water heaters as specified, scheduled, and indicated.

##### 1.3 QUALITY ASSURANCE:

- A. Manufacturers: Provide products of the following:
  1. Rheem Mfg. Co., Water Heating Division.
  2. A. O. Smith, Corp.
  3. State Water Heaters.
  4. Bradford White, Corp.
- B. Electrical Standards: Provide electrical products which have been tested, listed, and labeled by Underwriters' Laboratories, Inc. (UL) and which comply with National Electrical Manufacturers' Association (NEMA) standards.

##### 1.4 SUBMITTALS:

- A. Shop drawing submittals shall include, but not be limited to, the following:
  1. Cut sheets on water heaters with capacities, electrical characteristics, features and options clearly indicated.
  2. Control and power wiring diagrams, sequence of operation, safety controls and FM and UL labels and listings.
  3. Manufacturers recommended installation instructions for water heater.
  4. Additional information as required in Section 23 01 00.

##### 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Deliver electric water heaters in factory-fabricated water-resistant wrapping.
- B. Handle electric water heaters carefully to avoid damage to material component, enclosure and finish.
- C. Store electric water heaters in a clean, dry space and protect from the weather.

#### **PART 2 - PRODUCTS**

##### 2.1 ELECTRIC WATER HEATERS:

- A. General: Provide electric water heaters of the size, capacities and characteristics scheduled and shown on the Drawings. Provide a three (3) year warranty for the entire unit.
- B. Elements: The heating elements shall be removable direct contact immersion type sealed in a zinc or tin-plated copper sheath or 80% nickel and 20% chromium sheath with a maximum density of 75 watts per square inch. Maximum size of individual heating element shall be 4.5 KW. Electric hot water

heaters shall have multiple elements, minimum two, and a total element quantity as required to meet the specified capacity. Elements shall be wired for non-simultaneous operation if capacity is less than 4.5 kW.

- C. Tanks: Heater shall be glass-lined steel tanks designed for a 150 psig working pressure and shall be vertical type. Heaters shall be factory insulated with polyurethane foam and jacketed. An arode rod and isolating inlet and outlet connections shall be provided for tank protection. A cold water dip tube shall be provided to replace water at the bottom of the tank
- D. Controls: Heaters shall be controlled with a thermostat through contactors if current requirements exceed thermostat capacity. Heaters shall have approved manual reset high limit thermostat to break all ungrounded conductors.
- E. Accessories: Heaters shall be complete with suitable stand, drain, ASME temperature and pressure safety relief valves, and other items as required. In addition, provide an external slip-on jacket insulation.

### **PART 3 - EXECUTION**

#### **3.1 INSPECTION:**

- A. General: Installer shall examine the conditions under which the water heaters are to be installed and notify Contractor in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

#### **3.2 INSTALLATION:**

- A. General: Pipe and install water heaters as shown on the Drawings and in accordance with the manufacturer's written installation instructions. Water heaters shall be installed on a reinforced concrete housekeeping pad as specified in Section 15100, "Basic Materials and Methods", or be suspended with auxillary drain pan installed.
- B. Relief Piping: Provide a combination pressure and temperature relief valve (ANSI-21.22) and extend full size relief discharge piping from each water heater relief valve to the nearest floor drain or other approved point of safe discharge.
- C. Space Requirements: Furnished equipment shall fit in the space provided as shown on the Drawings. A floor plan layout of the equipment installation shall be included in the shop drawing submittal.
- D. Thermostat Adjustment: Adjust water heater thermostats to provide system water temperature as shown on the drawings.

#### **3.3 IDENTIFICATION:**

- A. Refer to Section 23 03 00 for applicable painting, nameplates, and labeling requirements.

**END OF SECTION 22 12 00**