

SECTION 15486 - FUEL-FIRED DOMESTIC WATER HEATERS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Related Sections include the following:
 - 1. Division 1 Section "Closeout Procedures" for operations and maintenance manual preparation.
 - 2. Division 15 Section "Valves" for general-duty valves..

1.02 SUMMARY

- A. This Section includes the following for domestic water systems:
 - 1. Gas water heaters.
 - 2. Water heater accessories.
 - 3. Gas Tank-less Water Heaters

1.03 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: For each type and size of water heater. Include rated capacities; shipping, installed, and operating weights; furnished specialties; and accessories. Indicate dimensions, finishes and coatings, required clearances, methods of assembly of components, and piping and wiring connections.
- C. Shop Drawings: Detail water heater assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 1. Wiring Diagrams: Power, signal, and control systems. Differentiate between manufacturer-installed and field-installed wiring.
- D. Product Certificates: Signed by manufacturers of water heaters certifying that products furnished comply with specified requirements.
- E. Maintenance Data: For water heaters to include in maintenance manuals specified in Division 1.
- F. Warranties: Special warranties specified in this Section.

1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain same type of water heaters through one source from a single manufacturer.
- B. ANSI Compliance: Provide gas water heaters that comply with ANSI standards for gas water heaters and related products and that bear AGA certification label.
- C. ASHRAE Standards: Comply with performance efficiencies prescribed for the following:
 - 1. household water heaters.

1.05 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of water heaters that fail in materials or workmanship within specified warranty period.
 - 1. Failures include storage tanks and burner assemblies.
 - 2. Warranty Period: From date of Substantial Completion:
 - a. Storage Tanks: 8 years.
 - b. Parts: Five years.
 - 3. Tank-less Water Heaters
 - a. Heat Exchangers: 15 years
 - b. All other parts: 3 years

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Provide products by the following (substitutions not allowed):
 - 1. Household, Storage, Direct-Vent, Gas Water Heaters:
 - a. Apollo
 - b. Or equal
 - 2. Household, Flow-Generated, Direct-Vent, Gas Water Heater:
 - a. Bosch 520 HN or as noted in the scope of work.
 - b. Or equal

2.02.1 HOUSEHOLD, STORAGE, GAS WATER HEATERS

- A. Description: Comply with ANSI Z21.10.1.
- B. Storage Tank Construction: Steel with 150-psig working-pressure rating.
 - 1. Tappings: Factory fabricated of materials compatible with tank for piping connections, relief valve, drain, anode rod, and controls as required. Attach tappings to tank before testing and labeling. Include ASME B1.20.1, pipe thread.
 - 2. Interior Finish: Materials and thicknesses complying with NSF 61, barrier materials for potable-water tank linings. Extend finish into and through tank fittings and outlets.
 - 3. Insulation: Comply with ASHRAE 90.2. Surround entire storage tank except connections and controls.
 - 4. Jacket: Steel, with enameled finish.
- C. Burner: For use with direct-vent water heaters for natural-gas fuel.
 - 1. Temperature Control: Adjustable thermostat.
 - 2. Automatic Ignition: ANSI Z21.20, automatic gas-ignition system and components.
- D. Anode Rod: Factory installed, magnesium.
- E. Dip Tube: Factory installed, PEX polymer rated for 400 deg. F water, NSF compliant.
- F. Drain Valve: ASSE 1005, factory installed.
- G. Draft Hood: Low-profile-type, draft diverter; complying with ANSI Z21.12.
- H. Direct-Vent System: Through-wall vent assembly with outside exhaust hood and guard.
- I. GFWH-1: Apollo Carlisle Associates Inc.-40-NBDS-L.
 - 1. GFWH-2: Apollo Carlisle Associates Inc.-50-NBDS-L

2.02.2 HOUSEHOLD TANKLESS GAS WATER HEATERS

- A. Description: Comply with ANSI 223.1/NFPA 54.

- B. Storage Tank Construction: N/A
- C. Burner: For use with direct water heaters
 - 1. Temperature Control: Adjustable Thermostat
 - 2. Automatic Ignition Control: ANSI 223.1/NFPA 54, automatic gas ignition system and components.
- E. Drain Valve: ASSE 1005, factory installed.
- F. Draft Hood: Low-profile-type, draft diverter; complying with ANSI Z21.12.
- G. Direct-Vent System: Through-wall vent assembly with outside exhaust hood and guard.
- H. Bosch 520 HN or model listed in the scope of work.

2.03.1 HOUSEHOLD, FLOW-GENERATED, GAS WATER HEATERS

- A. Description: Comply with ANSI Z223.1/NFPA 54.

2.03.1 WATER HEATER ACCESSORIES

- A. Combination Temperature and Pressure Relief Valves: According to the following:
 - 1. Gas Water Heaters: ANSI Z21.22, combination temperature and pressure relief valve.
- B. Vacuum Relief Valves: According to the following:
 - 1. Gas Water Heaters: ANSI Z21.22.
- C. Gas Shutoff Valves: ANSI Z21.15, manually operated. Furnish for installation in piping.
- D. Gas Control Valve: ANSI Z21.18, appliance type, factory installed.
- E. Sediment Protection: Self-cleaning, corrosion resistant turbulence coil on end of dip tube which wraps partially around bottom of heater.
- F. Piping Manifold Kits: Water heater manufacturer's factory-fabricated inlet and outlet piping arrangement for multiple-unit installation. Include piping and valves for field assembly that is capable of isolating each water heater and of providing balanced flow through each water heater.
- G. Piping-Type Heat Traps: Field-fabricated piping arrangement according to ASHRAE 90.1 or ASHRAE 90.2.

2.03.2 WATER HEATER ACCESSORIES

- A. Combination Temperature and Pressure Relief Valves: According to the following:
 - 1. Gas Water Heaters: ANSI Z21.22, combination temperature and pressure relief valve.
- B. Vacuum Relief Valves: According to the following:
 - 1. Gas Water Heaters: ANSI Z21.22.
- C. Gas Shutoff Valves: ANSI Z21.15, manually operated. Furnish for installation in piping.
- D. Gas Control Valve: ANSI Z21.18, appliance type, factory installed.
- E. Piping Manifold Kits: Water heater manufacturer's factory-fabricated inlet and outlet piping arrangement for multiple-unit installation. Include piping and valves for field assembly that is capable of isolating each water heater and of providing balanced flow through each water heater.
- F. Piping-Type Heat Traps: Field-fabricated piping arrangement according to ASHRAE 90.1 or ASHRAE 90.2.

PART 3 EXECUTION

3.01 WATER HEATER INSTALLATION

- A. Install water heaters, level and plumb, according to layout drawings, original design, and referenced standards. Maintain manufacturer's recommended clearances and locations for suitable conditions. Arrange units so controls and devices needing service are accessible.
- B. Install and connect gas water heaters according to ANSI Z223.1/NFPA 54.
- C. Storage, Gas:
 - 1. Extend relief valve outlet with water piping in continuous downward pitch and discharge outdoors.
 - 2. Install expansion tank and vacuum relief valves in cold-water-inlet piping.
 - 3. Assemble and install inlet and outlet piping manifold kits for multiple water heaters. Fabricate, modify, or arrange manifolds for balanced water flow through each water heater. Include shutoff valve in each water heater outlet. Refer to Division 15 Section "Valves" for General-Duty Valves.
 - 4. Install piping-type heat traps on inlet piping of water heater storage tanks.
 - 5. Fill water heaters with water.
- B. Flow-Generated, Gas:
 - 1. Install in accordance with

3.02 CONNECTIONS

- A. Install piping adjacent to heater to allow service and maintenance.
- B. Connect hot- and cold-water piping with shutoff valves and unions.
- C. Connect gas piping to gas burner with drip leg, tee, shutoff valve, and union; minimum size same as inlet connection.
- D. Make connections with dielectric fittings where piping is made of dissimilar metal.
- E. Gas, Water Heater Vent Connections: Install direct vent system in accordance with the manufacturer's instructions.

3.03 FIELD QUALITY CONTROL

- A. Engage a factory-authorized service representative to perform startup service.
- B. In addition to manufacturer's written installation and startup checks, perform the following:
 - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment and retest until satisfactory results are achieved.
 - 2. Verify that piping system tests are complete.
 - 3. Check for piping connection leaks.
 - 4. Check for clear relief valve inlets, outlets, and drain piping.
 - 5. Test operation of safety controls, relief valves, and devices.
 - 6. Adjust operating controls.
 - 7. Adjust hot-water-outlet temperature settings. Do not set above 140 deg F unless piping system application requires higher temperature; refer to drawings and air handler specifications.
 - 8. Balance water flow through manifolds of multiple-unit installations.

3.04 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain water heaters.
 - 1. Train Owner's maintenance personnel on procedures for starting and stopping troubleshooting, servicing, and maintaining equipment.
 - a. Review data in maintenance manuals. Refer to Division 1 Section "Closeout Procedures."
 - b. Schedule training with Owner, through Architect, with at least seven days' advance notice.

END OF SECTION 15486

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