SECTION 15450– PLUMBING EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish labor, equipment, materials, and tools and perform operations in connection with the installation of equipment and interconnection to the plumbing system. Comply with Codes and authorities having jurisdiction, preparation of Record Drawings and Owner's Manuals, guarantees and warranties, protection of work and quality assurance of workmanship.

B. Section Includes:
1. Water heaters.
2. Expansion Tank.
3. Tempering valves
4. Electric Heat Trace.

C. Related Sections:
1. Section 15010: Mechanical General Requirements.
2. Section 15410: Plumbing - General Purpose.
3. Division 16 - Electric.

1.2 SUBMITTALS

A. Shop Drawings:
1. Prepare and submit Shop Drawings in accordance with the requirements of Section 01330, and obtain the Architect's approval before proceeding with the fabrication and work.
2. Show plans, elevations, details and job conditions, relationship to other work, and indicate finishes.
3. Shop Drawings and catalog cuts shall indicate Specification Section and paragraph requiring equipment submitted.
a. Water heater.
b. Expansion Tank.
c. Tempering valves.
d. Electric Heat Trace.

B. Samples: Submit samples as requested by the Architect of materials specified herein in accordance with requirements of the Conditions of Contract, and before ordering materials, obtain written approval from the Architect.

C. Product Guarantees and Warranties: Provide manufacturers standard guarantee/warranty for all products provided in this section. In addition, provide extended guarantees/warranties on the following items:

D. Water heaters shall have a five year non-prorated guarantee.

E. Provide shut-off valves and unions on inlets and outlets to equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Product model numbers used reference the first manufacturer listed for the appropriate item.

A. Water Heaters:
   1. Main Gas Fired Water Heater (WH-1): A. O. Smith or State.
   2. Expansion Tank: Amtrol.

B. Combination Flow Measuring, Shut-off and Balancing Valve: Armstrong, Bell & Gossett or approved equal.

C. Tempering Valve:
   1. Central: Powers, Leonard, Symmons or Lawler.
   2. Local: Powers, Leonard, Symmons or Lawler.
   3. Emergency Eyewash: Powers, Leonard, Symmons or Lawler.

D. Electric Heat Trace: Raychem or approved equal.

2.2 WATER HEATING SYSTEM

A. WH-1: Water Heater shall be BTH-120, seamless glass lined steel tank construction, for natural gas, 60 gallon storage. Recovery rate shall be 142 gallons per hour at 100 degree temperature rise.
   1. The heater shall be suitable for sealed combustion direct venting using a 3” diameter PVC air intake and a 3” diameter exhaust pipe. The combustion air direct vent shall extend up through the roof to a gooseneck 24" above the roof with a bird screen.
   2. The power burner shall be of a design that requires no special calibration on start up. The heater shall be approved for 0” clearance to combustibles.
   3. The control shall be integrated solid state temperature and ignition control device with integral diagnostics, LED fault display capability and a digital display of temperature settings.
   4. The tank shall be foam insulated and equipped with ASME rated temperature relief valve. The water heater shall be UL listed and exceed the minimum efficiency requirements of ASHRAE.
   5. Water temperature to be set to 130 degrees F.

2.3 EXPANSION TANK

A. EXP-1: Model ST-30V-C, Therm-X-Trol, in accordance with ASME specification, NSF listed, 14 gallon, 10.5 gallon acceptance, pre-charged to 55 psi, floor mounted with 3/4" NPTF connection.

2.4 TEMPERING VALVE

A. MXV-1: Master Mixing Valve: Model SH1434 Hi-Lo Master Mixing, pressure balancing and thermostatic tempering valve, integral combination strainer checkstops, ball valves and fittings to complete the assembly, rough bronze finish. Unit shall be capable of providing a stable 120•F outflow between 5 gpm and 66 gpm with a pressure drop no greater than 20 psi at 66 gpm. Set to deliver 120•F. Also provide service shut-offs and a bi-metal thermometer, shut-off and union on outlet.

B. MXV-2: Located at EEW-1, Model ES150, thermostatic mixing valve capable of compensating

for temperature variations due to changes in temperature or pressure, dual internal cold water bypass, and integral checkstops, exposed installation, rough bronze finish. Provide a thermometer on the outlet of the tempering valve.

C. MXV-3: Filling station for whirlpool tub, Model e427, thermostatic mixing valve, integral thermometer, checkstops and ball valve, exposed installation, polished chrome finish.

2.5 ELECTRIC HEAT TRACE

A. Circuit HT-1
   1. Temperature Setting: 120 Degrees Fahrenheit
   2. Voltage: 208
   3. Amperage: 30 amp breaker with 30 mil amp ground fault
   4. Maximum Circuit length: 800 feet
   5. Master Controller: HWAT-ECO located in the mechanical room.
      a. Alarm to signal power, temperature or communication problem

B. Installation: Cable shall be installed by a licensed plumbing contractor with final electrical connections performed by the electrical subcontractor.

C. Cable shall be installed on all domestic hot supply water lines to within 20 feet of each fixture unless otherwise indicated on drawings.

D. Product shall be tested per manufacturer's instructions during installation and testing documented to qualify final installation for manufacturer's 10 year warranty.

E. HWAT info is available from Stratford Associates 1-800-338-2154.

F. Insulation Table

Table 5.1 Insulation Thickness

Copper pipe size (in)	IPS insulation size (in)	Insulation thickness (in)
1/2	3/4	1/2
3/4	1	1
1	1 1/4	1
1 1/4	1 1/2	1 1/2
1 1/2	1 1/2	1 1/2

PART 3 - EXECUTION

A. INSTALLATION

B. Provide 3'-0" minimum service space in front of control panels, access panels, motors and equipment which requires periodic maintenance and/or adjustment.

C. Ensure that balancing valves are installed with minimum upstream length of straight pipe as recommended by the manufacturer.

D. Ensure that balancing valves are installed with the readout valves fully accessible, including space

required for insertion of metering probes.

E. Comply with requirements described in Part 3 of Section 15410, Plumbing - General Purpose.

END OF SECTION 15450