

SECTION 22 30 00

PLUMBING EQUIPMENT

PART 1 GENERAL

1.1 SCOPE

- A. This section specifies the supply, testing and performance verification of plumbing equipment.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section.
1. Canadian Standards Association (CSA International)
 - a. CSA B51-09, Boiler, Pressure Vessel, and Pressure Piping Code.
 - b. CAN/CSA C22.2No.110 94(R2014), Construction and Test of Electric Storage Tank Water Heaters.
 - c. CAN/CSA C191 Series-13, Performance of Electric Storage Tank Water Heaters for Household Service.
 - d. CAN/CSA C309 M90(R2014), Performance Requirements for Glass Lined Storage Tanks for Household Hot Water Service.
 2. National Plumbing Code of Canada.
 3. Manitoba Plumbing Code

1.3 SUBMITTALS

- A. Action Submittals:
1. Shop drawings indicating equipment, including connections, fittings, control assemblies and ancillaries, identifying factory and field assembled.
 2. Complete specifications, descriptive drawings, catalog cuts, and descriptive literature that include make, model, capacity, dimensions, weight of equipment, and electrical schematics for products specified.
 3. Recommended procedures for protection and handling of equipment and materials prior to installation.
 4. Installation instructions.
 5. Special tools.
- B. Informational Submittals:
1. Operation and Maintenance Data: As specified in Section 01 78 23, Operation Maintenance Manuals.
 2. Complete description of operation together with general arrangement and detailed drawings, wiring diagrams for power and control schematics, part catalogues with complete list of repair and replacement parts with section drawings, illustrating the connections and the part Manufacturer's identifying numbers.

PART 2 PRODUCTS

2.1 WATER HEATERS

- A. Electric Water Heater:
 - 1. Type: Automatic, vertical, electric storage type.
 - 2. To CAN/CSA C22.2 No.110, CAN/CSA C191 and CAN/CSA C309 for glass lined storage tanks, with immersion type elements, and surface mounted or immersion type adjustable thermostats.
 - 3. Tank:
 - a. 246 L;
 - b. Glass or combination glass / porcelain enameled lined steel;
 - c. 75 mm mineral wool or fibreglass insulation, with enamelled steel jacket; and
 - d. Minimum three (3) year warranty certificate.
 - 4. Heating Elements: 3,380 W input
 - 5. Acceptable Manufacturers:
 - a. Rheem-Ruud Commercial
 - b. Bradford White
 - c. AO Smith.

2.2 TRIM AND INSTRUMENTATION

- A. Drain valve: with hose end.
- B. Thermometer: 100 mm dial type with red pointer and thermowell filled with conductive paste.
- C. Pressure gauge: 75 mm dial type with red pointer and shut off cock.
- D. Thermowell filled with conductive paste for control valve temperature sensor.
- E. ASME rated temperature and pressure relief valve sized for full capacity of heater control valve, having discharge terminating over floor drain and visible to operators.
- F. Magnesium anodes adequate for 20 years of operation and located for easy replacement.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install, arrange, and connect equipment as shown on Drawings and in accordance with manufacturer's recommendations and authority having jurisdiction.

3.2 FIELD QUALITY CONTROL

A. Startup:

1. In accordance with Section 01 91 14, Equipment Testing and Facility Startup.

3.3 EXTENDED WARRANTY

- A. Electric Water Heaters: Provide a minimum of 3-year Manufacturer's warranty covering the water tank.

END OF SECTION

SECTION 22 40 00

PLUMBING FIXTURES

PART 1 GENERAL

1.1 SCOPE

- A. The City will supply the Contractor with the combination safety shower and eyewash unit and a mixing valve as indicated in Section 01 64 00, City-Furnished Products.
- B. The Contractor is responsible for installing the combination safety shower and eyewash unit and mixing valve and installing and supplying all piping, fittings, and additional valves required to complete the installation.

1.2 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
 - 1. American Society of Mechanical Engineers (ASME).
 - 2. CSA/CSA Label on Fixtures.
 - 3. Plumbing and Drainage Institute (PDI):
 - a. Code Guide 302 and Glossary of Industry Terms.
 - b. WH-201, Water Hammer Arrester Standard.
 - 4. Underwriters Laboratories (UL).
 - 5. Underwriters Laboratories of Canada (ULC).
 - 6. National Plumbing Code of Canada.
 - 7. Manitoba Plumbing Code

1.3 REGULATORY REQUIREMENTS

- A. Comply with the Plumbing Code and the requirements of provincial and local authorities having jurisdiction.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 PREPARATION

- A. Drawings do not attempt to show exact details of fixtures. Changes in locations of fixtures, advisable in opinion of Contractor, shall be submitted to Contract Administrator for review before proceeding with the Work.

3.2 INSTALLATION

- A. Safety Equipment:

1. System Shutoff Valves:
 - a. Shutoff valves shall give visual indication of position (open or closed).
 - b. Shutoff valves shall be lockable valves and locked in open position.
 2. Each safety shower, eyewash, combination safety shower/eyewash shall have red safety signoff tag. After completing requirements listed below, Contractor and the City shall sign red safety signoff tag. Requirements are as follows:
 - a. Visually check safety shower/eyewash piping for leaks.
 - b. Verify that upon operation, stay-open valves remain open.
 - c. Showerheads to be between 2.1 m and 2.5 m above standing surface.
 - d. Shower spray pattern, when valve is full open, shall be a minimum 500 mm in diameter at 1500 mm above standing surface.
 - e. Water arcs from eyewash spray heads must cross. Test with eyewash gauge; Haws, Model 9015.
 - f. Minimum flow rates for safety showers shall be 1.3 L/s.
 - g. Minimum flow rates for eyewashes shall be 0.2 L/s.
 - h. Tempered water shall be temperature indicated on Drawings.
- B. Adjust water flows in domestic water systems for reasonable water flows at each plumbing fixture, terminal device, and recirculation loop. Flush valve fixtures shall be adjusted for proper flush cycle time and water quantity.

3.3 FIELD QUALITY CONTROL

- A. Perform visual inspection for physical damage, blocked access, cleanliness, and missing items.
- B. Notify the City and Contract Administrator 48 hours prior to shower testing. The City and Contract Administrator reserve the right to witness all tempered water and safety shower testing.
- C. Test safety shower and eyewash units. Water flow must be tested at both showerhead and eyewash/face ring.
 1. Shower Flow:
 - a. Test with tube-type water gauge (Haws, Model 9010) and 20 litres container.
 - b. Container shall fill in 10 seconds or less, with a minimum 1.3 L/s flow.
 2. Eyewash Flow:
 - a. Test with tube-type water gauge (Haws, Model 9010) and 4 litres container.
 - b. Container shall fill in 20 seconds or less.
 3. Contractor shall log, date, and initial inspection upon passing flow tests.
- D. Verify alarm operation both locally and system wide. Notify security prior to test if alarm is connected system wide.

END OF SECTION