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## **PART 1 - GENERAL**

### **1.1 GENERAL**

- .1 All drawings and all sections of the specifications shall apply to and form an integral part of this section.

### **1.2 REFERENCE**

- .1 ANSI B16.18-1984, Cast Copper Alloy Solder Joint Pressure Fittings.
- .2 ANSI B16.22-1980, Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
- .3 ANSI B16.24-1979, Bronze Pipe Flanges and Fittings, Class 150 and 300.
- .4 MSS-SP-80-1979, Bronze Gate, Globe, Angle and Check Valves.
- .5 ASTM B32-89, Specification for Solder Metal.
- .6 ASTM B306-88, Specification for Copper Drainage Tube (DWV).
- .7 CAN/CSA-B125-M89, Plumbing Fittings.
- .8 CAN/CSA-B45 Series-88, CSA Standards on Plumbing Fixtures.
- .9 CAN3-B79-M79, Floor Drains and Trench Drains.
- .10 PDI-WH201-77, Water Hammer Arrestors.

### **1.3 WORK INCLUDED**

- .1 Modify existing domestic water supply and provide glycol feed make-up to mixing tank.
- .2 Provide drip/relief to drain within area for each plate heat exchanger set up.
- .4 Provide low point with shut off piped back to mix tank for glycol capture.
- .5 Provide back flow prevention using high hazard type.
- .6 Carry the cost for all sprinkler work to be done by Fire Protection Company. Sprinkler work to be done under engineer's seal Letter of Intent and Letter of Certification c/w inspection reports as required by City.

### **1.4 RELATED WORK SPECIFIED ELSEWHERE**

- .1 Mechanical General Provisions: Section 15010
- .2 Insulation: Section 15100
- .3 Electrical General Provisions: Section 16000

## PART 2 - PRODUCTS

### 2.1 PIPE AND FITTING

- .1 General: Pipe and fittings shall conform to the standard listed in the applicable Building Code (latest Revision).
  
- .2 Water:
  - .1 Domestic Water System Above Ground:
    - .1 Piping:
      - .1 Type L Copper to ASTM B88M.
      - .2 Solder/brazing:
        - .1 Lead Free to suit application. 12mm  $\varnothing$  (1/2"  $\varnothing$ ) – 50mm  $\varnothing$  (2"  $\varnothing$ )
    - .2 Fittings/Joints:
      - .1 Bronze Flanged joints must have suitable gasket and bolts:
        - .1 Class 150 and 300 to ANSI B-16.24
      - .2 Cast bronze flanges and fittings:
        - .1 Class 125 and 250 to ANSI B16.15
      - .3 Cast bronze threaded fittings solder type pressure fittings:
        - .1 ANSI B16.18
      - .4 Wrought copper and copper alloy solder joint pressure fitting:
        - .1 ANSI B16.22
      - .5 Use brass nipples between copper piping and flush valves or c.p. brass goods.
      - .6 Where alternate piping materials or jointing area specified a uniform type of pipe and fittings shall be used throughout each system.
      - .7 Bolts, nuts, hex head and washer:
        - .1 ASTM A 307, heavy series.
  
  - .3 Drains and Vents:
    - .1 Drains and vent pipes shall be in accordance with local or provincial regulations with the following exceptions, unless otherwise specified.
      - .1 Effluent Gravity:
        - .1 Piping:
          - .1 All cast iron soil pipe shall be class 4000:
            - .1 CAN3-B70
        - .2 Fittings/Joints:
          - .1 Gaskets:
            - .1 ASTM C564
          - .2 Mechanical joint couplings shall have a corrugated stainless steel sleeve over the joint with stainless steel worm drive securing bands tack welded to the sleeve were exposed.
            - .1 Titan, St. Croix
        - .3 Wrought copper vent type DWV:
          - .1 ASTM B 306.
        - .4 Cast Brass:
          - .1 CAN/CSA B 125.
        - .5 Wrought copper:
          - .1 CAN/CSA B 125.

### 2.2 VALVES

- .1 General:
  - .1 Valve parts must be of a material recommended for the service. All valves must be installed with the stems upright or horizontal, not inverted. Any valves not specifically covered herein shall be of comparable quality to those specified.

- .2 Domestic Cold:
  - .1 Gate valves:
    - .1 Up to 50 mm  $\varnothing$  (2"  $\varnothing$ ):  
MSS SP-80 Class 125, 860 kPa bronze body to ASTM B32 Alloy Grade 95TA, non rising stem, screwed over bonnet, solid wedge disc, solder joint ends.
      - .1 Crane, Nibco, Toyo

### 2.3 WATER PRESSURE REGULATOR

- .1 Bronze body construction:
  - .1 Adjustable setting 172 kPa (25 Psi) to 516 kPa (75 Psi)
  - .2 Renewable stainless steel seat
  - .3 Stainless steel integral strainer
  - .4 High temperature resisting nylon insert diaphragm for hot or cold water.
  - .5 Gauge tapping and gauge

## **PART 3 - EXECUTION**

### **3.1 GENERAL INSTALLATION**

- .1 All pipe shall be cut accurately to measurements taken at the site and shall be installed without springing or forcing. All changes in direction shall be made with fittings.
- .2 All connections to equipment shall be made with unions or flanges.
- .3 Valve working parts shall be removed during installation to prevent damage from heat where brazing, soldering or welding is used.
- .4 Comply with C.S.A. Standard W117.2 "Code for Safety in Welding and Cutting".
- .5 All piping in accessible pipe spaces shall be run in such a way that it does not interfere with free access into the pipe space.

### **3.2 WATER SUPPLY SYSTEM**

- .1 Install shut off valves at all connections to major pieces of equipment, and in all branches to fixtures or groups of fixtures.
- .2 Install dielectric insulating couplings between all pipes or apparatus constructed of dissimilar metals. Use brass nipples at flush valves, etc.
- .3 Install pressure gauge each side of back flow preventer.

### **3.3 JOINTS**

- .1 All joints shall be made in accordance with manufacturer's recommendations.

### **3.4 TESTING**

- .1 All piping systems shall be pressure tested as follows:
  - .1 Plumbing and drainage system (*new*) - in accordance with local regulations.
  - .2 Water supply piping - test with water to 690 kPa (100 Psi) at the highest point of the system. Maintain pressure without loss for 4 hours. Contractor to witness and sign off.
- .2 General:
  - .1 All systems and equipment will be subject to operating tests to verify that they operate properly as directed by the Contract Administrator.
  - .2 The Contract Administrator's representative shall witness tests. Give 48 hours notice in advance of all tests. All tests shall be witnessed by the Contractor with written confirmation.

**PART 4 – SCHEDULES**

TABLE 10 - PLUMBING FIXTURES

Mark	Description
WWPR-1A	Water Pressure Regulator: Zum. Size: (1/2").
WBFP-1A	Backflow Preventer: Zum High Hazard Application Reduced Pressure application. To City of Winnipeg Backflow Prevention Approval. (1/2"). Pipe discharge to drain c/w test valves, two check valve assembly arrangement with isolation valve each side.

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