# SECTION 232500 - HVAC WATER TREATMENT

## PART 1-GENERAL

### 1.1 SECTION INCLUDES

A. Closed water treatment system for heating hot water and, chilled water systems.

### 1.2 SUBMITTALS

A. Submit shop drawing and product data per applicable Division I Specification.

B. Shop drawings shall include product data noting catalog data, specification data, dimensional and operational data, wiring requirements with diagram, chemical specification data, and warranty data.

### 1.3 QUALITY ASSURANCE

A. Chemicals shall meet all state and local pollution control regulations.

### 1.4 WARRANTY

A. Contractor shall warranty entire systems and equipment for a period of one (1) year.

B. Provide a 1-year chemical service program including testing and required materials and additives.

## PART 2-PRODUCTS

### 2.1 SYSTEM COMPONENTS

A. Bypass Shot Feeders: Cast iron or steel, 1.8-gallon capacity minimum, 125-psig working-pressure rating.

B. Chemical Solution Tanks: 50 gallon.

C. Chemical treatment test equipment

1. Water test kit with spare reagents.

2. Conductivity meter that compensates for differences in temperatures and analog meter.

D. Chemicals

1. Provide a minimum of 1 year supply.

2. Include all MSDS sheets for chemicals provided.

E. Pre-cleaning and flushing materials: Provide chemicals produced specifically for use in cleaning piping systems after installation and prior to being placed into operation.

## PART 3-EXECUTION

3.1 INSTALLATION

A. Install shot feeder with 2 valve bypass.

C. Hydronic systems shall not be operated for any reason prior to complete flushing and charging with appropriate chemicals.

3.2 HYDRONIC SYSTEMS FLUSHING AND PRE-CLEANING

A. The following procedures is for flushing and pre-cleaning
1. Determine the metallurgy of the system

2. By-pass all HVAC equipment

3. Determine the exact system volume. This may be accomplished by filling the system through a water meter or salt test.

4. With all areas open to flow, add system cleaner through the By-Pass Filter Feeder or pump per manufacturer's recommendations.

5. Cleaning and flush rates must be at a minimum of 6 ft/sec through the piping or maximum flow rate of the system.

6. First flush the system to remove as much suspended material as possible with clear water.

7. Second, cleaning shall maintain total alkalinity of 3000 ppm for twenty-four (24) to thirty-six (36) hours.

8. Third, flush system until pH and Alkalinity return to make-up water levels and drain.

9. Fourth, fill system with OSDM-compliant clean water with a water chemistry (pH, alkalinity, etc.) and make-up that meets equipment water quality requirements.

a. If the system is drained of water and a heat transfer solution added, a quality corrosion inhibitor shall be added to the system to protect against flash rust while the system is drained. Please consult your water treatment professional for recommendations.

10. Simply draining the loop and refilling with fresh water is not permitted. The loop needs to be flushed by adding fresh water and draining dirty water continuously. This procedure will help prevent foulants from dropping out on the pipe surfaces.

3.3 WATER SERVICE PROGRAM

A. The water treatment contractor shall provide maintenance and consulting services for 1 year from date of acceptance of system by the Owner. Minimum service requirements shall include:

1. Monthly sample and testing
2. Additional chemical if needed
3. Side stream filter change
4. Testing of: PH, alkalinity, conductance, inhibitor, microbiological dip slide, and % glycol
5. Visual check of system
6. Written report documenting all of the items above.

END OF SECTION 232500

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