This master should be used by designers working on Port of Portland construction projects and by designers working for PDX tenants (“Tenants”). Usage notes highlight a few specific editing choices, however the entire section should be evaluated and edited to fit specific project needs.

SECTION 232500 - HVAC WATER TREATMENT

1. GENERAL
	* + 1. DESCRIPTION
				1. This section describes treatment of closed HVAC water systems.
			2. SUBMITTALS
				1. For items specified herein, submit product/material data; shop drawings; operation and maintenance data; as-constructed data; installation, startup, and testing manuals; operation and maintenance manuals; and as-constructed drawings.

Use only if Commissioning Section 019100 is included in the project manual.

* + - * 1. For the items specified below, submit water treatment plans; commissioning plans and schedules; checkout, startup, operational, functional and final acceptance test plans, procedures, checklists, and reports; and operation and maintenance training plans.

Chilled Water System: Water treatment and treatment equipment.

Heating Water System: Water treatment and treatment equipment.

1. PRODUCTS
	* + 1. ACCEPTABLE CHEMICAL TREATMENT MANUFACTURER/SUPPLIER
				1. Mount Hood Chemical, Nalco, Mogul, Chemax, Chemcoa, or equal.
			2. WATER TREATMENT
				1. Closed Loop Hot Water System Chemicals: 75 ounces of Nalco 8338 per 100 gallons of water, or Mogul No. 7174 borate nitrite of required dosage.
				2. Closed Loop Chilled Water System Chemicals: Chemical treatment to match that currently used in the chilled water system.
				3. Chemicals: Furnish sufficient chemicals to leave systems fully treated and ready for operation, to make adjustments, and to maintain required concentrations for a period of one year following substantial completion.
			3. TREATMENT EQUIPMENT
				1. One-Shot Feeder:

Furnish and install temporary one-shot chemical bypass feeders on new portions of chilled and hot water systems.

Each feeder shall be 2 quart, 4 quart, 10 quart or maximum of 5 gallon volume as required to initially treat the system served in two shots. Pressure rating shall be 150 psig or 300 psig to match other valve and pressure vessel ratings. Provide fill funnel and valve, air vent cock, and drain valve and plug.

1. EXECUTION
	* + 1. SYSTEM ISOLATION
				1. Isolate new portions of hot and chilled water systems from existing systems until cleaning, system treatment, and final adjustments are complete and approved.
				2. Do not fill new portions of chilled water and heating water systems from existing closed loop systems. Rather, fill new portions of chilled water and heating water systems from an independent potable water source.
				3. Obtain Port approval to open isolation valves between new portions of hot and chilled water systems and existing systems. Provide a minimum of 24 hours’ notice.
			2. SYSTEM CLEANING AND INITIAL WATER TREATMENT
				1. System cleaning and initial chilled and heating water treatment shall be in accordance with the following procedure:

With strainers in place and all control valves open, circulate water for 2 hours at a minimum velocity of 5 to 6 fps. Provide temporary circulation pumps with fine mesh strainers of sufficient capacity to achieve the required velocities.

Clean all strainers and repeat step one. Continue to repeat the process until all strainers are clean and completely free of debris.

Drain enough water to add cleaner to system. Add Nalco 8910 cleaner, or equal, in quantities in accordance with manufacturer’s recommendations.

Circulate cleaner solution for 24 hours. Completely drain to waste tanks and follow applicable local, state, and federal regulations for waste disposal.

Fill new portions of system with water. Open piping to existing central heating and chilled water piping. Allow to circulate for 48 hours.

Monitor heating and chilled water system and add Nalco 2833, or equal, in accordance with the manufacturer’s instructions. Monitor system chemical treatment for several days.

Clean all strainers prior to placing in service.

* + - 1. FINAL ADJUSTMENT
				1. When the systems are accepted by the Port, make final adjustments in the required concentrations.
			2. FOLLOW-UP SERVICE
				1. Check required concentration at intervals of 3, 6, 9, and 12 months after final adjustment, make further adjustments if necessary, and submit written report of water condition to the Port.

Choose one of the following two articles. Use Commissioning if Section 019100 is included in the project manual; otherwise use Testing.

* + - 1. COMMISSIONING
				1. Commission items specified herein.
			2. TESTING
				1. Check out, start up, and test items specified herein.

END OF SECTION 232500