

SECTION 15749

WATER TREATMENT SYSTEMS

PART 1 – DESIGN DIRECTIVE

1.1 DESIGN CRITERIA

- A. This section applies to the following building systems (Central systems serving multiple buildings may require additional equipment and testing spaces):
  - 1. Condenser water systems
  - 2. Chilled water systems
  - 3. Heating systems
  - 4. Glycol Loops
- B. Consultant shall confer with the college's water treatment contractor via FOM to determine the spatial requirements necessary for the water treatment contractor to perform their work. The area and location shall be indicated on the contract documents.
- C. Mechanical Consultant is responsible to coordinate the following items:
  - 1. With the electrical consultant to insure there is one duplex receptacle (110 volt, 20 amp circuit) dedicated for use by the water treatment contractor.
  - 2. With the plumbing consultant to insure there is a floor drain to sanitary in the immediate area of the water treatment devices.
  - 3. With the architect to insure there is a plywood panel (3/4" ACX) installed for the mounting of the various devices. Mechanical consultant to confer with the water treatment contractor via FOM to determine the board size.
  - 4. Indicate on the drawings the following appurtenances (in order of flow):
    - a. A ~~3/4~~" valved line on the condenser water return located in the mechanical room near the floor drain. The water treatment contractor shall furnish & install a normally closed solenoid valve.
    - b. A valved ~~3/4~~" line from both the suction and discharge sides of the condenser water pumps terminating at the water treatment panel. The first line shall be copper terminating at the board with a bronze ball valve. The second line shall be schedule 80 PVC with a PVC ball valve at the mounting board.

1.2 SUBMITTALS

- A. Submit manufacturer's technical product data, including rated capacities of selected equipment clearly indicated, water pressure drops, weights, installation and start-up instructions, and furnished specialties and accessories.
- B. Submit manufacturer's electrical requirements for power supply wiring to water treatment equipment

1.3 PERFORMANCE OF EQUIPMENT AND PRODUCTS

- A. Provide suitable chemicals and equipment to treat Hanover raw water. The water treatment contractor shall obtain the necessary data from the Hanover Water Company. This contractor is

responsible for insuring that all chemicals used are compatible for use with all components in the piping system.

- B. Molybdate is not permitted in Hanover, seek alternative products.

**1.4 SYSTEM TYPES**

- A. Closed systems (Chilled water, hot water, & glycol):
  - 1. Provide a five micron filter feeder for installation of chemicals into the system.
  - 2. When system flow is  $\geq 400$ gpm, the mechanical contractor shall provide a side stream filter. Refer to DC Standard, "BASIC PIPING MATERIALS AND METHODS".
- B. Open condenser water systems:
  - 1. System shall be a feed & bleed type system.

**1.5 PRODUCT RESPONSIBILITY**

- A. It is the owner's intent to clearly differentiate the various responsibilities for the proper installation of a water treatment system. Simply stated, it is the intent of this document to direct the various parties to perform the work that makes the most sense for each trade. Items that need to be installed by the contractor during construction shall be installed by the contractor. Ultimately, the contractor responsibility for the water treatment system terminates upon acceptance of a satisfactorily treated system accepted by the college's water treatment contractor.
- B. The following matrix is intended to provide clarity with regard to the responsibility of the various components necessary to provide a complete water treatment system. Where both the mechanical and water treatment contractors are indicated to 'Furnish', the mechanical contractor shall purchase the product from the water treatment contractor.

Mechanical Contractor		Water Treatment Contractor		Owner Purchase	Item
Furnish	Install	Furnish	Install		
X	X				Filter Feeder <sup>1</sup>
X	X	X			Pipe cleaner
X	X	X			Water meter
		X	X	X	Four position coupon rack
	X	X	X	X	Feed & Bleed Controller <del>Board</del> ( <del>Pulsafeeder 300</del> )
X	X				Condenser water bleed
		X	X	X	<del>Bio-2 (Brominator)</del>
X	X	X	X	X	Coupon Rack ( <i>dedicated bldg. chilled water system</i> )
		X	X	X	Pulsafeeder pumps
		X	X	X	Strainer
		X	X	X	Inhibitor (PBB system)
		X	X	X	Spill pallet
X	X	X			Corrosion inhibitor
X	X				Sand filter
	X	X	X	X	Bleed line <del>solenoid</del> -motorized valve <sup>2</sup>

*Note 1: Filter feeder may be purchased through the water treatment contractor.*

*Note 2: Requires power (115v receptacle).*

**PART 2 – PRODUCTS**

**2.1 EQUIPMENT**

- A. Filter Feeder: Furnish filter feeders of 7.5-gal capacity or otherwise as indicated, constructed of cast iron or steel for 125 psi working pressure, for introducing chemicals into the piping system and to provide a constant filtering action with minimal flow. Provide a removable cap, drain valve on bottom, and system isolation valves on both inlet & outlet. Include twelve filter bags.
  - 1. Neptune model FTF-~~SCL-5DB~~
- B. ~~Feed & Bleed System Controller Board: A factory assembled system mounted on a 4'± x 4'± board consisting of the components to monitor and dispense water system chemistry for cooling towers. The system controller shall control a blowdown valve to maintain the desired conductivity level. The system shall meter blowdown & make-up water.~~
  - 1. Pulsafeeder ~~300~~Microtrac
- C. All open condenser water systems shall have a sand filter installed.

**2.2 PRODUCTS**

- A. Glycol: Systems containing glycol shall be classified into one of two categories. Category one are systems which, even by virtue of a leak, the glycol can come in contact with domestic water. A prime example of this category is an indirect fired domestic hot water heater heated via a glycol containing hot water system. Category two is all other systems. This category shall contain glycol with industrial corrosion inhibitors. Glycol shall be propylene based.
  - 1. Category One Systems: Dowfrost, Dow Chemical
  - 2. Category Two Systems: Dowfrost HD, Dow Chemical

**PART 3 – EXECUTION**

**3.1 EQUIPMENT INSTALLATION**

- A. Filter feeders shall be accessible and solidly anchored to the floor system and be located within 20' of a floor drain.
- B. The system controller, inhibitor pump, biocide pump(s), and other appurtenances shall be located on a plywood panel easily accessible within the mechanical room having a minimum 3' working space.
- C. In the make-up water feed serving the cooling tower the mechanical contractor shall install a 1" Hayes water meter.

**3.2 TYPICAL CONDENSER WATER INSTALLATION**

- A. *The mechanical contractor shall provide three taps in the condenser water piping system.*
  - 1. *Downstream of the condenser water pump provide a 1" copper line to the inlet of the Feed & Bleed Control Board.*
  - 2. *Install a 3/4" tap downstream of the above connection or to the tower sump piped from the discharge of the Feed & Bleed Control Panel. This pipe shall be schedule 80 PVC.*
  - 3. *Install a 3/4" tap upstream of the Feed & Bleed Control Board tap and run to drain. The motorized bleed valve shall be installed in this line.*
- B. *Coordinate with Water Treatment Contractor prior to installing system.*

- ~~A. In the condenser water return pipe, in the direction of flow from the chiller to the tower, install the following five valved taps:~~
- ~~1. The mechanical contractor shall install a four position coupon rack constructed of 1" schedule 80 PVC and (PVC) valved at the condenser water return.~~
  - ~~2. The mechanical contractor shall install a 3/4" bronze valved connection (copper pipe) for the water treatment contractor to install a solenoid valve. (This needs to be located near the floor drain.)~~
  - ~~3. The mechanical contractor shall install a 3/4" bronze valve with copper pipe to the plywood panel for connection to the controller by the water treatment contractor.~~
  - ~~4. The mechanical contractor shall install a 3/4" PVC valve with schedule 80 PVC pipe from the plywood panel for connection to the controller by the water treatment contractor.  
a. The above pipe shall have 3 or 4 taps for connection of the inhibitor, biocide 1, and either biocide 2 or brominator.~~

**3.3 CLEANING, FLUSHING, AND FILLING SYSTEMS**

- A. The mechanical contractor shall flush, clean, and final fill systems installed or modified with products purchased from the Campus water treatment contractor. Final fill shall not occur until the water treatment contractor has confirmed that the water is suitable for permanent chemical treatment.
- B. Prior to installing the cleaning agent in the system, isolate the expansion tank from the system. Add the cleaning agent, and circulate the chemical per the manufacturer's written recommended procedure. Once the system is free of cleaning chemical, open the expansion tank to the system, and add the permanent chemicals.

END OF SECTION 15749