

SECTION 23 25 00 – HVAC WATER TREATMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions, Division 01 Specifications, Component Special Conditions, and addenda.

1.2 SUMMARY

A. Pre-Operational Cleaning, Passivation, Flushing and Discharge requirements.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

- A. An alkaline detergent, containing emulsifier, dispersant and polyphosphate mixture, is acceptable.
- B. Product must be non-nitrite and non-acidic.
- C. Products must be approved by a representative from Texas State University Environmental Health Safety and Risk Management (EHS&RM) office and the City of San Marcos (City). The product must clean the pipe without acid etching or causing a surface conversion or displacement of iron from the pipe.

PART 3 –EXECUTION

3.1 PIPING CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, valves, etc.

3.2 CHILLED WATER PIPE PRE-OPERATIONAL CLEAN & FLUSH

A. Chemical Treatment Vendor

1. Chemical treatment will be provided by a Vendor approved by Texas State University. Vendor will provide the following:
 - a. Responsibility for piping passivation.
 - b. Personnel to take samples of water during passivation
 - c. Water testing reports from an approved testing laboratory.
 - d. Recommendation to EHS&RM, when water is acceptable for final testing by EHS&RM.

- e. Written documentation of all cleaning and flushing procedures and results.
 - f. Calculate (based on volume of piping added) and provide to Texas State University Central Plant post-cleaning and final operational chemicals.
2. Cleaning and flushing process is summarized briefly as follows:
- a. Inject cleaning chemicals after Contractor has rinsed and re-filled piping system with approved water.
 - b. Circulate water throughout piping system for minimum 48 hours; take water samples every 4 to 6 hours; test samples for iron. Circulate water until analytical testing has confirmed that iron removal has reached its “plateau”, but a minimum of 48 hours.
 - c. EHS&RM will perform final water chemistry test to determine if the water is safe to discharge to sanitary sewer or into storage tank to hold for off-site disposal.
 1. For discharge to sanitary sewer, see Section 3.02 Discharge below.
 - d. Final operational chemicals will be injected by Texas State University.

B. Contractor

1. Coordinate with representatives of Texas State University, A/E, and Consultants regarding circulation piping installation, operation, and water quality testing.
 - a. Attend meeting(s) with representatives of Texas State University to plan and coordinate cleaning, passivation, flushing, discharge and chemical treatment activities.
2. Contractor will provide the following:
 - a. Submittals for chemicals and equipment.
 - b. Circulating pump and power for same.
 - c. All materials necessary to connect circulating pump to new chilled water system piping.
 - d. Tank for storage and proper disposal if water is unacceptable to discharge to sanitary sewer.
 - e. Cleaning will be performed in all new sections of metal piping that are 100 gallon capacity or greater. All cleaning will be performed in the presence of the Texas State University qualified representative.
 - f. Cleaning the metal piping must be performed prior to connecting the lines into a Texas State University system loop. The purpose of the cleaning is to remove any dirt or debris that was introduced during construction as well as oils and coatings on the piping left from the manufacturing process. This cleaning standard also applies to metal pipe for hot water and metal pipe for chill water system. Fill system with clean

water, approved by Texas State University, and rinse pipe for 4 hours to remove dirt and construction debris.

g. Discharge the rinse water directly to the sanitary sewer, per City of San Marcos requirements. Do not re-use rinse water.

h. Re-fill pipe with approved water; coordinate with Chemical Treatment Vendor for injection of cleaning chemicals. The cleaning process will follow the product manufacture's procedures in terms of dosing, monitoring and pH control and these procedures must be provided to FPDC. The chemical representative will be responsible for dosing the chemical at the recommended dosage rate.

i. Once the solution has circulated in the lines for 48 hours, a sample will be collected by an EHS&RM representative and sent to a laboratory for analysis of the industrial wastewater permit discharge parameters. Next day analysis will be requested. The water in the piping will continue to circulate during the analysis period. If testing confirms that the water is safe to discharge, then discharge as described in Section 3.3 Discharge. Do not re-use treated water.

j. Immediately fill pipe with approved water and circulate the water for 2 hours, then discharge as described in Section 3.3 Discharge. Do not re-use water.

k. If discharge to sanitary sewer is not allowed by test results or by the City of San Marcos, discharge to the storage tank and properly dispose of water off-site.

l. Re-fill system with approved water and coordinate with Texas State University for injection of final operational chemicals.

m. Install piping and valves, per contract drawings and specifications, in such a manner as to facilitate installation of chemicals. Use whatever temporary connections are required for cleaning, purging and circulating through each new run of pipe

n. Install, delay installation of, or temporarily remove flanges, valves, fittings, etc. as required to facilitate cleaning and flushing connections and activities. Use flanged connections to allow for connections. Re-install flanges, valves, piping, etc. to close system and prepare for service after chemical treatment is complete.

o. A piped source of city water, at local city water pressure, with shutoff valve, in convenient location to allow filling of piping system.

p. Traffic control and safety fencing if/as required for circulating pump.

3.3 DISCHARGE

1. There will be no discharge to the sanitary sewer or storm sewer without prior approval by Texas State University and the City of San Marcos.

2. ESH&RM (liaison with the City) will notify the City in writing of the volume of cleaning water (provided by contractor), date of cleaning and chemical in use. EHS&RM will notify the City of the sample results and receive approval or denial to discharge to the sanitary sewer.
3. If the discharge is approved by the City, the Director of Utilities Operations and EHS&RM, Contractor can discharge to the sanitary sewer at a rate specified by the approval. Only discharge during normal operating business hours. No overnight discharging will be allowed. Flush the lines by circulating with clean water and discharge to the sanitary sewer until the water has clarified as witnessed by the FPDC representative. Coordinate with the FPDC representative for gradual filling of the lines and preparation to tie into the campus piping loop.
4. If the City denies the discharge to the sanitary sewer, offsite disposal of this volume plus two rinse volumes will be required at the expense of the Contractor. Contractor is responsible to include an Allowance in the construction cost for disposal of the rinse volume plus two clean water rinses. If Allowance is not used or required, the Allowance returns to the Owner (Allowance to be indicated as a separate line item on the Schedule of Values). The EHS&RM representative must approve the offsite disposal method and location and receive documentation of the shipment.

END OF SECTION SS 232500