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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 WORK INCLUDED

- .1 Chemical treatment of boiler hot water heating system (new with isolated flush [provide separate pump for boiler side]: water side and glycol side).
- .2 Cleaning of boiler hot heating water system (new with isolated flush [provide separate pump for boiler side: water side and glycol side]).
- .3 Provide clean softened water c/w report indicating solution parameters as installed after completion.
- .4 After Division 15600 has provided clean softened water for boiler hot water and glycol side heating system Division 15050 shall provide a report indicating solution parameters as installed after completion.
- .5 Site Visit at Commissioning stage c/w recommendations of procedure. Provide additional (1) mid winter season check c/w report and recommendations.
- .6 Provide a pot feeder and side stream filter arrangement with site glass to glycol side.

1.3 RELATED WORK

- .1 Division 15600 to provide assistance to clean and treat systems. See Division 15600 for description. Note glycol circulating pump gaskets and seals are to be replaced. All strainer screens to be removed and replaced with new.

1.4 QUALITY ASSURANCE

- .1 Provide chemical treatment, chemicals and equipment by an agency that specializes in this type of Work. Agency shall take full responsibility for providing suitable working systems.
- .2 Notify the Contract Administrator prior to commencing cleaning operation.

1.5 SUBMITTAL

- .1 Submit shop drawings including proposed chemicals, quantities and calculations, procedures and equipment to be supplied. Provide written operation instructions and system schematics.
- .2 Provide written report containing log and procedure of system cleaning giving times, dates, problems encountered and condition of water.
- .3 Submit written report containing results of tests and list of chemicals added every 14 days during temporary usage of treated systems.

PART 2 - PRODUCTS

2.1 CHEMICALS

- .1 Provide sufficient material to adequately treat systems for first year of operation of heating system.
- .2 Materials which may contact finish areas through leakage shall be colourless.
- .3 System Cleaner and Sludge Conditioner: Alkaline compound which in solution removes grease and petroleum.
- .4 Closed Systems Corrosion Inhibitor (Water): Sequestering agent to reduce deposits and adjust pH and corrosion inhibitor.

2.2 EQUIPMENT

- .1 Pot Feeder: 19 L capacity cast iron or welded steel with quick opening cap, with side stream filter c/w mounting bracket, T-Handle, ½ case 5 Micron, ½ case 10 Micron, 1 case 30 Micron filters and flow indicator.
 - .1 See Section 15010: Part 2, Schedule – Spare Parts

2.3 TEST KITS

- .1 Closed System Test Kit: To determine proper concentration of close system treatment, c/w log book.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Prevent debris, dirt and other foreign material from entering piping system during construction.
- .2 Division 15600 to provide drain connections to completely drain systems in one hour.
- .3 Division 15600 to remove strainer screens during cleaning. Terminal control valves shall be in open position during cleaning.
- .4 System (glycol side) pump may be used for cleaning provided pump is dismantled, inspected, worn parts repaired and new gaskets and seals installed. Turnover used seals.
- .5 System shall be operational, filled, started, and vented prior to cleaning.
- .6 Flush open systems for one hour minimum with clean water. Drain completely and refill.
- .7 Inspect, clean of sludge and flush low points with clean water after cleaning process is completed. Include disassembly of components as required.
- .8 Provide training in use of test equipment, establish treatment ranges, and provide log sheets with training in their use.
 - .1 See Section 15010: Part 2 Schedule – Required Instruction.
- .9 Make call-back (1 mid winter) to check on procedures being followed and report call in writing to Contract Administrator, Section 15600 and City during first year's operation.
- .10 Guarantee all mechanical equipment provided to be free of defects for one year from date of substantial performance.
- .11 Provide a complete operating manual to be provided indicating all phases of water conditioning program. Manual to include detailed schematic drawings showing all special fittings, timers, controllers, etc. for each system. Four hard cover binders to be submitted to Contract Administrator for approval.
- .12 Mechanical contractor to witness cleaning of all strainers.
- .13 If any system is to be used for temporary heat, it is to be cleaned as outlined below prior to use of temporary heat and then cleaned again before takeover by City and Contract Administrator. During temporary heat period system to be chemically treated under supervision and logs maintained on the chemical balances. Chemicals required during temporary heat period are to be in addition to the quantities required for the permanent operation.

3.2 SYSTEMS CLEANOUT

- .1 Hot water/glycol heating system to be cleaned out.
 - .1 A pump on each system may be used to circulate cleaning solution. Balancing valves on pump discharges to be regulated to ensure against operating pumps out of their normal operating range.
 - .2 Cleaner to be introduced by Division 15055 and circulated from 12 to 24 hours. System shall then be dumped by Division 15600.
 - .3 System to be flushed until conductivity of water in system is back to conductivity of make-up water.

- .1 Conduct conductivity test before, during and after cleaning each system, and report procedures followed and conductivity readings to Contract Administrator and Mechanical Contractor in writing.
- .4 System to be refilled and required amount of chemical treatment added to provide immediate protection against corrosion.
- .5 System not be used until cleaning procedure has been carried out supervised and signed off by the Contractor.

3.3 SYSTEM TREATMENT

- .1 Hot water/glycol heating system to receive system treatment.
 - .1 For corrosion control, systems to have corrosion inhibitor introduced through (through existing water side) and by-pass pot feeders installed (glycol side) after circulating pumps of each system under supervision of and according to shop drawings submitted by Contractor.
 - .2 Provide test kit, pot feeder and site glass with filter section on glycol system.
 - .3 Provide corrosion inhibitor for system.

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