

PART1 GENERAL

1.1 Related Work

- .1 Mechanical General Provisions 15010
- .2 Liquid Cooling 15700

1.2 Description of Work

- .1 Retain services of water treatment specialist who shall:
 - .1 Conduct a water treatment analysis.
 - .2 Supervise initial start-up of treatment procedures.
 - .3 Provide training in the use of test equipment.
 - .4 Establish treatment ranges.
 - .5 Provide log sheets with training in their use.
 - .6 Supply water treatment chemicals for use in existing system..
 - .7 Coordinate requirements with the Owner's water treatment technician until conditions are acceptable to the Contract Administrator.
 - .8 Provide piping diagrams.
 - .9 The water treatment specialist shall be referred to as the "Specialist" in this section.
- .2 Provide cleaning and degreasing for the following systems:
 - .1 Chilled water system.
 - .2 Condenser water system.

1.3 Reference Standards

- .1 Conform with the requirements of the plans Standards and specifications, the local authorities having jurisdiction and the National Building Code. In the case of conflicting requirements, be governed by the most severe regulations.
- .2 Use the latest edition of all referenced codes, standards, regulations, etc.

1.4 Requirements of Regulatory Agencies

- .1 Electrical equipment shall bear CSA and ULC labels attesting to have met test standard of agencies and having been listed.
- .2 Tanks shall bear approval the Department of Labour and when applicable shall bear label of Underwriters' Laboratories of Canada.

1.5 Shop Drawings

- .1 Submit shop drawings in accordance with Section 01000.
- .2 In addition to items noted in Section 01000, clearly indicate:
 - .1 Service proposal.
- .3 Shop drawings are required for:
 - .1 Valves and piping specialties.
 - .2 Chemicals.
 - .3 Location of water treatment equipment in relation to piping and equipment to which it connects.
- .4 Proposals and recommendations of specialist.

1.6 Maintenance Data

- .1 Provide data for incorporation into maintenance manual.

1.7 Standard of Acceptance

- .1 Standard of Acceptance: Dearborn Chemical Company Ltd. or approved equal. Dearborn model numbers have been used as standard unless otherwise noted.

PART2 PRODUCTS

2.1 Chemicals

- .1 Chemicals
 - .1 Provide sufficient chemicals for systems cleaning, start-up and one year maintenance.
 - .2 Provide the equipment and chemicals listed below for the various treatment requirements.

- .2 Clean and de-grease closed circulating systems (Chilled water).
 - .1 Utilize system cleaner equal to Dearborn Dearsol 11.
 - .2 Dispersant 690 all in accordance with instruction provided by the chemical "Specialist".
- .3 Chemical Treatment closed circulating systems (Chilled water).
 - .1 Provide Dearborn 2809 nitrite borate residual test kit.
 - .2 Provide Dearborn type HV pot feeders on each system.
 - .3 Introduce Dearborn 537 corrosion inhibitor in accordance with recommendations.
- .4 Condenser water treatment.
 - .1 Provide a 114 litre (25 gallon) polyethylene solution tank with timer controlled Dearborn Blue and White chemical pump. Solution tank to have cover. Pump c/w foot valve and suction and discharge tubing.
 - .2 Provide Anderson blowdown controller c/w flow through probe and flow switch. Provide 19mm (3/4") Asco solenoid valve and strainer.
 - .3 Provide 114 litres (25 gals.) of Dearborn 921 scale and corrosion inhibitor.
 - .4 Provide 23 litres (5 gals.) of Dearborn 722 biocide.
 - .5 Provide 23 litres (5 gals.) of Dearborn 702 biocide.
 - .6 Provide one Dearborn 2808 phosphonate residual test kit.
 - .7 Provide one Dearborn 2410 Easicult TTC total bacterial count test kit.

PART3 EXECUTION

3.1 Cleaning and De-greasing

- .1 General
 - .1 Specialist to supply chemicals, accessories and to conduct water treatment analysis; supervise installation of equipment and initial start-up of treatment procedures. If, from analysis, other treatment is required, provide same but submit proposed treatment to Contract Administrator for approval prior to start—up of any system.
 - .2 Supplier to provide training in use of test equipment, establish treatment ranges, and provide log sheets with training in their use.

- .3 Supplier to make regular call-backs to check on procedures being followed and report each call in writing to Contract Administrator during first year*s operation. Call-backs to be in accordance with the following:
 - .1 Chilled water and condenser water systems - at the beginning, mid-point and end of the cooling season.
 - .2 Supplier to guarantee all mechanical equipment provided to be free of defects for one year from date of start-up.
 - .3 Provide operating manual indicating all phases of water conditioning program. Include detailed schematic drawings showing all special fittings, timers, controllers, etc. for each system. Three (3) hard cover binders to be submitted to Consultant for approval.
 - .4 Supplier to witness cleaning of all strainers.
- .4 Operate equipment only after securing the approval of the Contract Administrator.
- .5 Operate system under supervision of the specialist.
- .6 Remove strainers and clean them during the flushing procedures.
- .7 Submit a written signed report on the procedures followed. The specialist shall prepare the report.
- .8 Ensure that all disposal processes are done in an environmentally safe manner.
- .2 Chilled Water Systems Cleanout
 - .1 Clean and de-grease each closed circulating system with Dearborn #11 new system cleaner and #690 dispersent according to instructions provided by the specialist.
 - .2 Introduce cleaner to system and circulate.
 - .3 Introduce dispersent to system.
 - .4 Circulate cleaner and dispersent for 12-24 hours.
 - .5 Dump cleaner and dispersent from system.
 - .6 Flush system until the conductivity of the water in the system equals the conductivity of the make-up water.
 - .7 Conduct a conductivity test before, during and after cleaning.
 - .8 Specialist shall provide a written test report of the procedures followed

conductivity reading and shall submit report to the Contract Administrator.

.9 Do not use the system until this cleaning procedure has been carried out and supervised by the water treatment specialist.

.10 Once the system is cleaned and de-greased, provide sufficient Dearborn #537 corrosion inhibitor to bring levels to recommended range.

.3 Condenser Water Treatment.

.1 For corrosion and scale control, solution to be pumped into system from solution tank with timer controlled chemical pump.

.2 For control of algae and slime, liquid biocides to be "shock" fed directly to cooling tower basins as required. The two biocides to be alternated to prevent bacteria from building up an immunity to a single biocide.

.3 Bleed-off to be automatically controlled according to load and make—up rate by blowdown controller.