

**1. GENERAL**

**1.1 Work Included**

- .1 Disinfection of piping.

**1.2 Related Work**

- .1 General Process Provisions: Section 13005

**1.3 Related Codes**

- .1 AWWA C651-99 Disinfecting Water Mains.
- .2 City of Winnipeg Standard Construction Specifications, Division 2 – CW2125 - R1.

**1.4 Coordination**

- .1 Coordinate with other Divisions to ensure there are no conflicts in the Work.

**1.5 Schedule of Items To Be Disinfected**

- .1 The Contractor shall disinfect all items which will be used for the conveyance or storage of potable water, these include but are not limited to the following structures and piping:
  - .1 All pipework conveying potable water, including but not necessarily limited to:
    - .1 Suction piping to all pumps.
    - .2 Discharge pipework from distribution pumps.

**2. MATERIALS**

**2.1 Water**

- .1 Water for disinfection shall be provided by the Contractor. The water shall be free from all suspended and deleterious material. The water can be obtained at no charge from the existing City supply under direction from the Contract Administrator/City.

**2.2 Calcium Hypochlorite**

- .1 Calcium hypochlorite shall comply with ANSI/AWWA B-300.

**2.3 Sodium Hypochlorite**

- .1 Sodium hypochlorite shall comply with ANSI/AWWA B-300.

### **3. EXECUTION**

#### **3.1 Applicable Standards**

- .1 Except as otherwise specified, the work shall be undertaken in accordance with the following codes:
  - .1 AWWA C651-99 Disinfecting Water Mains.
  - .2 City of Winnipeg Standard Construction Specifications, Division 2 – CW2125 - R1
  - .3 If these codes conflict, the most stringent clause will apply.

#### **3.2 Cleaning**

- .1 All pipework to be disinfected shall be thoroughly cleaned prior to disinfection.
- .2 All construction material not part of the permanent structure shall be removed.
- .3 Pipes shall be flushed to remove all dirt prior to disinfection. If necessary, the pipe shall be cleaned by swabbing or other mechanical means as directed by the Contract Administrator.

#### **3.3 Disinfection of Piping**

- .1 The Contractor shall disinfect both discharge and suction header tees with 200 mg/l chlorine water solution to allow them to be installed and the station be available for use.
- .2 All branch line pipework shall be disinfected according to City of Winnipeg Standard Construction Specifications, Division 2 – CW2125 - R1, clause 3.3 Disinfection.

#### **3.4 Disposal of Chlorinated Water**

- .1 After the disinfection process is complete, the heavily chlorinated water shall be drained and disposed of in an approved manner.
- .2 Heavily chlorinated water shall not be discharged to local sewers or surface drains without first obtaining the permission of the Contract Administrator.
- .3 If other disposal methods are impractical, dechlorinate the chlorinous water using methods outlined in AWWA C651-99.

#### **3.5 Filling of Piping**

- .1 Immediately following the disposal of the heavily chlorinated water, the piping shall be filled with potable water.
- .2 It is recommended that the potable water used for refilling of the piping be sampled to ensure that no bacteriological contamination exists in the fill water prior to placement in the pipes.

### **3.6 Bacteriological Testing**

- .1 Bacteriological testing shall follow the procedure specified in City of Winnipeg Standard Construction Specifications, Division 2 – CW2125 - R1, clause 3.4 Bacteriological Samples, except that after the chlorination procedure is complete and the piping has been refilled with potable water, two consecutive sets of samples will be taken 24 hours apart.
- .2 Bacteriological testing is to be performed at the nearest available laboratory that is able to perform the tests.

### **3.7 Disinfection**

- .1 Disinfection will be acceptable when bacteriological test results from both samples show the total Coliform result is < 1 colony forming unit (cfu) per 100 millilitres, the Heterotrophic Plate Count (HPC) does not exceed 500 cfu per millilitre, and the total chlorine residual does not exceed 2 milligrams per litre after flushing.
- .2 If either of the initial disinfection tests fail, the pipes may be reflashed and resampled.
- .3 If either of the check samples fail, then the pipes shall be re-disinfected until satisfactory results are obtained.
- .4 All costs associated with the re-disinfection and testing shall be borne by the Contractor.

### **3.8 Placing into Service**

- .1 No piping that is required to be disinfected shall be placed into service until bacteriological samples pass.

### **3.9 Entry Into Existing or Previously Disinfected Potable Watermains**

- .1 Where entry is required either into existing piping or into previously disinfected piping, the Contractor shall assure that the following measures are taken:
  - .1 All personnel shall wear clean, dirt free protective overalls and disinfected, clean rubber footwear. Such footwear shall be reserved solely for use within the affected areas and shall not be worn in undisinfected areas.
  - .2 All tools and equipment shall be clean, grease free and spray disinfected before use. Equipment, which shows evidence of fuel, oil or grease leakage, shall not be used.
  - .3 The immediate area surrounding the access point for the piping concerned shall be cleaned and spray disinfected prior to the start of work. All previously disinfected footwear, tools or equipment removed outside this area or the affected piping shall be re-disinfected on return.
  - .4 Disinfection of footwear, tools, equipment and access areas shall be by spraying with a 200 mg/l concentrated chlorine/water solution.

- .5 Workmen who show signs of illness shall not work within the affected structures or surrounding access area.

**END OF SECTION**