



Part 1 General

1.1 DESCRIPTION OF WORK

- .1 The Contractor shall furnish all necessary labour, materials, tools, water, equipment and services necessary for carrying out the disinfection and testing of reinforced concrete reservoirs.

1.2 STANDARDS

The following organizations publish Standards which have been referred to in this Section:

- .1 AWWA – American Water Works Association
 666 W. Quincy Avenue
 Denver, Colorado 80235 U.S.A.

The Standards referred to shall be the most recent edition.

Part 2 Products

2.1 DISINFECTANT

- .1 Calcium hypochlorite used for disinfectant shall meet the requirements of the current AWWA Standard B300, Standard for Hypochlorites.

2.2 WATER

- .1 Water used for filling and testing the reservoir shall be potable and from a source approved by the Engineer.

Part 3 Execution

3.1 HYDRAULIC TEST

- .1 After the specified curing time has elapsed, as provided in Section 03 30 00 Cast in Place Concrete, and when all work has been completed on the reservoir, including

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cleaning, scrubbing and pressure washing, but prior to backfilling, dampproofing and waterproofing, the Contractor shall test the reservoir hydraulically. The Contractor shall provide water for filling the reservoir at his own expense. The reservoir shall be filled with water up to the overflow level. The water level in the reservoir shall be maintained for a period of 24 hours to permit absorption by the concrete. Any leakage shall be noted. The reservoir will be topped up to overflow level and the leakage test shall commence. The leakage from the reservoir shall not exceed a 4 mm drop in water level during the 24 hour test period. The Contractor shall repair all visible leaks both inside and exterior of the reservoir and areas of dampness, as directed by the Engineer, as soon as possible after emptying the reservoir. This test shall thereafter be repeated as necessary until leakage has been eliminated to the satisfaction of the Engineer.

3.2 DISINFECTION

- .1 Disinfection may proceed after hydraulic testing, waterproofing and dampproofing. The disinfection shall be required to meet the requirements of the current AWWA Standard C652 in accordance with the Public Health Act.
- .2 The reservoir shall be cleaned by pressure washing, removing any debris remaining in the reservoir after construction, prior to disinfection of the reservoir. The Contractor shall give the Engineer twenty-four (24) hours notice of his intention to disinfect the reservoir. Approved methods of disinfection include:
 - .1 **Method 1** - The reservoir shall be disinfected, using calcium hypochlorite to obtain a chlorine dosage of 50 mg/l. After a contact period of twenty-four (24) hours the residual chlorine count shall not be less than fifteen milligrams per litre. Should the chlorine residual after the contact period be less than fifteen milligrams per litre, disinfection shall be repeated until a satisfactory result is obtained.
 - .2 **Method 2** – A solution of 200 mg/l available chlorine shall be applied directly (brush or spray) to the surfaces of all parts of the storage tank or reservoir that is in contact with water. The disinfected surfaces shall be in contact with the strong chlorine solution for at least 30 minutes, after which the facility can be filled with potable water. This method is preferred, as Method 1 typically requires de-chlorination prior to disposal of the chlorinated disinfection water. With Method 2, the disinfection water is typically diluted enough to introduce the water directly to the

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distribution system, provided the chlorine residual meets the minimum requirements.

- .3 Testing of the chlorine dosage and chlorine residual shall be done by the Engineer.
- .4 BACTERIOLOGICAL TESTS - After disinfection and reservoir filling, the Contractor shall be responsible for taking samples from each cell which shall be subjected to bacteriological analysis by an accredited laboratory. Samples that cannot be submitted within 1 hour after collection will be stored in an iced cooler and submitted to laboratory no more than 30 hours after obtaining. Disinfection shall be acceptable when laboratory bacteriological test results show total Coliform and total E. Coli results are <1 colony forming unit (cfu) per 100 mL, Heterotrophic Plate Count (HPC) does not exceed 500 cfu per mL and total chlorine residual does not exceed 2 mg/l, The Manitoba Office of Drinking Water shall provide written approval prior to putting reservoir into operation.
- .5 REPETITION OF PROCEDURE - If initial disinfection fails to produce satisfactory samples, the disinfection process shall be repeated until satisfactory samples are obtained. Contractor is responsible for all costs, including water for re-filling any or all of the reservoir cells and all re-sampling and testing.

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