

Section 02595

Disinfection of Water Mains

PART 1 - GENERAL

1.01 SCOPE

- A. Furnish all labor, materials, equipment, and incidentals necessary to disinfect the distribution system.
- B. Do not disinfect water mains until pressure and leakage testing is completed, see Section 02594.

1.02 SUBMITTALS

- A. Submittals shall be provided by the Contractor to the Owner as outlined in Section 01300 for the following items related to the disinfection of water mains as required by the specific project:
 - 1. Plan for disinfecting installed water main. Plan shall include details related to where chlorine shall be injected (i.e., location of corporation tap(s)), what disinfection product will be used, method of de-chlorination, what mains shall be disinfected, where temporary fixtures will be installed to facilitate disinfection (e.g., temporary blowoff), and what mains are proposed to be omitted from disinfection.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The Contractor shall chlorinate the new main in accordance with the continuous feed method specified in Section 5.2 of AWWA Standard C651-latest revision, using 5% to 15% sodium hypochlorite solution.

PART 3 - EXECUTION

3.01 DISINFECTION

- A. Upon satisfactory completion of the pressure and leak test, all new water mains shall be disinfected before they are placed into service in accordance with Section 5.2 of AWWA Standard C651-latest revision and the procedures specified herein.

3.02 FLUSHING

- A. Section of pipe to be disinfected shall first be flushed to remove any solids or contaminated material that may have become lodged in the pipe. If no hydrant is installed at the end of the main, then a suitably sized tap should be provided.
- B. All taps required by the Contractor for chlorination or flushing purposes, or for temporary release of air, shall be provided by him as part of the construction of the water main.
- C. Flushing shall proceed for at a flow velocity of 2.5 feet per second (where practical) for a time to be determined by the Owner.

1. Practicality of reaching 2.5 feet per second shall be judged by the Owner based on the existing topography, pipe network, and the realistic ability of the area to receive and disperse the required flow rate without causing damage.
 2. Contractor is responsible for the dispersion of water required for flushing such that it does not cause any damage to the surrounding area. Flow may be directed toward publicly owned drain manholes, catch basins, or sewer manholes if available. Contractor may not place a hose that is conveying flow directly into a publicly owned drain manhole, catch basin, or sewer manhole. Contractor shall coordinate with the public authority having jurisdiction over the receiving system prior to discharge.
- D. Chlorine residual of water being flushed from the pipe must be reduced to zero. Contractor shall utilize a de-chlorination agent as recommended by the manufacturer.

3.03 REQUIREMENTS OF CHLORINE

- A. Before being placed into service, the main shall be chlorinated so that a chlorine residual of not less than 10 parts per million remains in the water after standing 24 hours in the pipe. Chlorine residual at start of test shall be 25 parts per million.

3.04 POINT OF APPLICATION

- A. The preferred point of application of the chlorinating agent is at the beginning of the pipeline or any valved section of it and through a corporation stop inserted in the pipe. The water injector for delivering the chlorine solution water into the pipe should be supplied from a tap made on the non-pressure side of the gate valve controlling the flow into the pipeline extension. Alternate points of application may be used when accepted or directed by the Engineer.

3.05 RATE OF APPLICATION

- A. Water from the distribution system, or other source of supply as accepted by the Engineer, shall be controlled to flow very slowly into the newly laid pipeline during application of the chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the newly laid pipe that the dosage applied to the water will be sufficient to achieve 25 parts per million unless otherwise directed by the Engineer.

3.06 PREVENTING REVERSE FLOW

- A. Valves shall be operated by the Owner so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Check valves may be used, if desired.

3.07 RETENTION PERIOD

- A. Treated water shall be retained in the pipe for 24 hours +/- 4 hours. After this period, the chlorine residual at pipe extremities and at other representative points shall be at least 10 parts per million.

3.08 CHLORINATING VALVES AND HYDRANTS

- A. In the process of chlorinating newly laid pipe, all valves or other appurtenances shall be operated while the pipeline is filled with the chlorinating agent and under normal operating pressure.

3.09 FINAL FLUSHING AND TESTING

- A. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water throughout its length shows, upon tests, that the residual chlorine is not in excess of that to be carried in the system.
- B. After flushing, water samples collected from the treated piping system as directed by the Engineer, shall show satisfactory bacteriological results. Bacteriological analyses shall be performed by the Owner.
- C. Chlorine residual of water being flushed from the newly laid pipe following chlorination must be reduced to zero. Contractor shall utilize a de-chlorination agent as recommended by the manufacturer.

3.10 REPETITION OF FLUSHING AND RESULTS

- A. If the initial disinfection and flushing fail to produce satisfactory analytical results, the main shall be reflushed and resampled. If check samples show the presence of coliform organisms, then the main shall be rechlorinated by the Contractor using the continuous feed method of chlorination. If the second rechlorination attempt fails to produce satisfactory analytical results, the Contractor shall submit a plan to achieve passing results for PWD review and approval; remedies shall include but are not limited to pigging or replacement of pipe.

-- END OF SECTION --