

SECTION 02514

DISINFECTION OF WATER LINES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Disinfection of potable water lines.

1.02 MEASUREMENT AND PAYMENT

- A. Unit Prices.
 - 1. No separate payment will be made for disinfection of water lines under this Section. Include cost in unit price of water lines being disinfected.
 - 2. Refer to Section 01270 - Measurement and Payment for unit price procedures.
- B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for work in this Section is included in total Stipulated Price.

1.03 REFERENCES

- A. AWWA C 651 - Standard for Disinfecting Water Mains.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.01 CONDUCTING DISINFECTION

- A. Promptly disinfect water lines constructed before tests are conducted on water lines and before water lines are connected to the City water distribution system.
- B. Water for disinfection and flushing will be furnished by the City without charge.
- C. Unless otherwise provided in Contract Documents, the Contractor will conduct disinfection operations.
- D. Coordinate chlorination operations through Public Works.

3.02 PREPARATION

- A. Provide temporary blind flanges, cast-iron sleeves, plugs, necessary service taps, copper service leads, risers and jumpers of sizes, location and

materials, and other items needed to facilitate disinfection of new water lines prior to connection to the City water distribution system. Normally, each valved section of water line requires two each 3/4-In. taps. A 2-In. minimum blow-off is required for water lines up to and including 6-In. diameter.

- B. Use fire hydrants as blow-offs to flush newly constructed water lines 8-In. diameters and above. Where fire hydrants are not available on water lines, install temporary blow-off valves and remove promptly upon successful completion of disinfection and testing.
- C. Slowly fill each section of pipe with water in manner approved by Public Works. Average water velocity when filling pipeline should be less than 1-Ft. per second and shall not, under any circumstance, exceed 2-Ft. per second. Before beginning disinfection operations, expel air from pipeline.
- D. Backfill excavations immediately after installation of risers or blow-offs.
- E. Install blow-off valves at end of water line to facilitate flushing of dead-end water lines. Install permanent blow-off valves according to drawings.

3.03 DISINFECTION BY CITY PERSONNEL

- A. City personnel will not perform disinfection work.

3.04 DISINFECTION BY CONTRACTOR

- A. Mains shall be disinfected with dry Calcium Hypochlorite (HTH) where shown on the plans or as directed by the Engineer. This method of disinfection will also be followed for main repairs. Introduce chlorinating material to water lines in accordance with AWWA C 651.
- B. Dosage: The contractor shall disinfect the new or replaced mains with Calcium Hypochlorite (HTH) of seventy (70%) percent available chlorine. Sufficient Calcium Hypochlorite (HTH) shall be used to obtain a minimum chlorine concentration of 50 ppm (mg/l).
- C. The length of time that sections of main disinfected with Calcium Hypochlorite shall be allowed to stand undisturbed will depend upon the particular job
 - 1. The required minimum detention time will be eighteen (24) hours when circumstances permit a shutdown with no customers out of service with 50 ppm Chlorine dosage.
 - 2. The required minimum detention time will be two (2) hours when customers are out of service during a shutdown with no leakage past valves with 300 ppm chlorine dosage.
 - 3. The required minimum detention time will be thirty (30) minutes when customers are out of service during a shutdown with some leakage with 500 ppm chlorine dosage.

Table 1 Chlorine dosage

Diameter of Pipe Inches	Ounces Per Foot To Obtain 50 ppm Chlorine Dosage
6	0.0138
8	0.0233
10	0.0364
12	0.0523
14	0.0708
16	0.0934
18	0.1175
20	0.1455
24	0.2080
30	0.3270
36	0.4690
42	0.6370
48	0.8330

A heaping teaspoon holds approximately 1/2 ounce, and a standard measuring cup holds approximately 8 ounces

4. Open and close valves in lines being sterilized several times during contact period.
5. After contact period of not less than 24 hours, flush system with clean water until residual chlorine is no greater than 0.3 ppm, in accordance with Section 02515 Hydrostatic Testing of Pipelines
6. Backflow prevention valve shall be required so that the strong chlorine solution in the line being tested will be flushed out of the main and will not flow back into the line supplying the water.

3.05 BACTERIOLOGICAL TESTING

- A. After disinfection and flushing of water lines, bacteriological tests will be performed by the Contractor or testing laboratory in accordance with Section 01454 - Testing Laboratory Services. One bacteriological sample per one thousand (1,000') feet of new line shall be taken, plus one set from each branch and one set from the end of the line.
- B. When test results indicate need for additional disinfection of water lines based upon the Texas Department of Health requirements, perform necessary additional disinfection operations.

3.06 COMPLETION

- A. Upon completion of disinfection and testing, remove risers except those approved for use in subsequent hydrostatic testing, and backfill excavation promptly.

END OF SECTION