

Section 02514

DISINFECTION OF WATER LINES

PART 1 GENERAL

1.01 SUMMARY

This Section includes furnishing and performing of all operations in connection with disinfection of newly installed potable water lines on the initial filling of pipe prior to being placed into service.

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. Adjusting Payment for Retesting:

Subsequent disinfection operations which may be necessary due to nonconforming or incomplete construction will be charged to Contractor. Charges will be deducted from retainage amounts when construction estimates are processed for final payment.

C. 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

This specification references the following publications in their current editions. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

- A. AWWA C651: Disinfecting Water Mains
- B. AWWA C655: Field Dechlorination
- C. Chapter 290 Sub-Chapter D: Rules and Regulations for Public Water Systems [Texas Commission on Environmental Quality (TCEQ)]
- D. Chapter 290 Sub-Chapter F: Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Supply (TCEQ)

E. Should water lines being disinfected connect to, or be onsite, of water storage facilities, water treatment plants and/or water wells, the following standards shall be used as needed.

1. AWWA C652: Disinfection of Water-Storage Facilities
2. AWWA C653: Disinfection of Water Treatment Plants
3. AWWA C654: Disinfection of Wells

1.04 SUBMITTALS

Submit the following in accordance with Section 01330 – “Submittal Procedures:”

- A. Submit list of chlorination chemicals and disinfection equipment.
- B. Sample and test requirements and include the information as further described under paragraph 3.04 of this Section.
- C. Submit plan and procedures for sample collection and testing as indicated in *Appendix A* – “Chlorine Residual Testing” of AWWA C651 and per the requirements of Chapter 290 Sub-Chapters D and F.

Submit plan for the disposal and dechlorination of heavily chlorinated water as indicated in AWWA C655 and in Section 02990 – “Dechlorination Activities.”

1.05 RELATED REQUIREMENTS

- A. Section 01270 – “Measurement and Payment”
- B. Section 01330 – “Submittal Procedures”
- C. Section 01454 - "Testing Laboratory Services"
- D. Section 01755 - “Pipeline Start-Up”
- E. Section 02515 - “Hydrostatic Testing of Pipelines”
- F. Section 02516 - “Flushing of Pipelines”
- G. Section 02516 - “Flushing of Pipelines”
- H. Section 02990 – “Dechlorination Activities”

1.06 – 1.13 (NOT USED)

PART 2 PRODUCTS

2.01 MANUFACTURERS (NOT USED)

2.02 MATERIALS

- A. Chlorination chemicals, disinfection equipment, and ancillary materials and equipment necessary for disinfection and dechlorination of the water lines shall be in accordance with AWWA C651 and AWWA C655.

2.03 - 2.04 (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. For large diameter water lines, clean the interior of the water lines and remove any and all foreign matter prior to disinfection and hydrostatic testing. Disinfect all water lines before connecting to water distribution system.
- B. Water and chlorination chemicals for disinfection shall be furnished by the Contractor.
- C. Contractor shall conduct disinfection operations.

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.
- B. Use flushing hydrants as needed to complete disinfection of water lines where flushing hydrants are not available on water lines, install temporary blow-off valves as approved by Project Manager and remove upon successful completion of disinfection and testing.
- C. Furnish pump, pipe connections, and necessary apparatus, gauges, and meters. Furnish necessary labor, assistance, and chlorinating agent for disinfection. Prevent admission of contaminated water to previously disinfected lines. If contaminated water is admitted to previously disinfected lines, disinfect those lines at no additional cost.
- D. Slowly fill each section of pipe with water in manner approved by the Project Manager. Average water velocity when filling pipeline should be less than one foot per second and shall not, under any circumstance, exceed 2 feet per second. Before beginning disinfection operations, expel air from pipeline.
- E. Backfill excavations immediately after installation of risers or blow-offs.

- F. Install blow-off valves at end of water line to facilitate flushing of dead-end water lines. Install permanent blow-off valves according to Plans.

3.03 DISINFECTION BY CONTRACTOR

- A. The following procedure shall be used for disinfection by Contractor:
 - 1. Disinfecting procedures to be in accordance with the requirements of AWWA C651 and as specified hereinafter. Minimal chlorine dosage to be 100 parts of chlorine per million parts of water.
 - 2. Introduce chlorinating material to water lines in accordance with AWWA C651 Table 4 for the size of pipe indicated.
 - 3. After contact period of not less than 24 hours, flush system with clean water until residual chlorine is no greater than 1.0 part per million parts of water.
 - 4. Open and close valves in lines being sterilized several times during contact period.
 - 5. Chemical compound used for sterilizing agent is to be placed in pipes as directed by the Project Manager.

3.04 BACTERIOLOGICAL TESTING

- A. After disinfection of water lines is completed, perform bacteriological tests by testing laboratory in accordance with Section 01454 - "Testing Laboratory Services."
- B. Samples are to be taken in accordance with requirements of AWWA C651 and Chapter 290 Sub-Chapters D and F.
- C. Bacterial analysis and other specific test requirements are to be in accordance with AWWA C651 and Chapter 290 Sub-Chapters D and F. Final test results will be submitted for final analysis and approval to the TCEQ. . Locations where samples are taken should be purged prior to taking of test samples.
- D. Acceptance and placement in service will be based on the approval of test results by the TCEQ. If additional tests are required to comply with 290 Sub-Chapters D and F, the Contractor shall develop the procedure that is to be completed in accordance with paragraph 3.03. Additional testing is to be completed at no additional cost to the Owner.
- E. When test results indicate the need for additional disinfection of water lines based upon TCEQ requirements, additional disinfection operations shall be performed by the Contractor.

3.05 DECHLORINATION OF WATER

Dechlorination operations are to be carried out in accordance with requirements of Section 02990 – “Dechlorination Activities.”

3.06 COMPLETION

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

END OF SECTION