

**SECTION 22 12 16**  
**FACILITY ELEVATED POTABLE WATER TANKS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. All work required to Clean, Inspect, and disinfect two elevated potable Water storage tanks, and the NLR VA Medical Center.
- B. Disposal of Contaminated Material from the cleaning and disinfection process is included in the work.
- C. Procedural Requirements:
  1. This work involves Two Elevated Water Tanks serving the medical Center. As such, the work at each Tank must be done independently of The other and one tank completed, and back in service prior to Work commencing on the other tank.
  2. The Contractor shall provide the VAMC, a minimum of one week's notice prior to taking a Tank out of service. During that time the VAMC will lock out any and all valves necessary to isolate that tank. Once the Tank is system isolated, the VA will drain the Tank. During the inspection process as detailed below.  
Once the tank is taken out of service, the Contractor shall inspect Access points to the Tank Interior, such as hatches, vents, etc. Any Defects Shall be brought to the attention of the COR such that Corrective Measures can be taken to prevent re-contamination of the Tank interior after cleaning.
  3. After taking a tank out of service ,A thorough Physical inspection Of the Tank's Interior shall be conducted during the draining process.

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A. Inspection Requirements:

The General Contractor shall hire the Services of a Potable Water Tank Inspection Service Co., to Conduct a thorough inspection of Both Tanks interior. The inspection Company shall have minimum of 5 Years, Experience in the inspection of Elevated Potable Water Tanks, with certified inspectors. (Submit Qualification's and List Of Previous work Experience),including work at other Federal or VA Medical Centers. The Inspection Service Co. Shall

Provide thru the General Contractor for this Project a report  
Detailing the Interior Conditions of the VA Tanks.

The Inspections shall be conducted one Tank at a time Via raft  
While the Tank is drained. The contractor shall provide a Video  
Record of the Tank Interior Structure Conditions, Paint Coatings  
And other elements of the Interior condition. An Evaluation of the  
Tanks Interior Structural Condition shall be provided. Once the  
Contractor completes the inspection. The Contractor shall commence  
With Cleaning and disinfection of the Tank Interior.

The Contractor shall thoroughly clean the tank  
interior Including all surfaces, Any and all foreign material in the  
Tank Interior, Shall be removed and be disposed of at the  
Proper Facility. No wastes from the cleaning process shall be  
Disposed of at the Medical Center. Once cleaned and inspected the  
COR or other VA Representative shall inspect the Tank.

6. After inspection, the Contractor will disinfect the tank interior  
Including the standpipe serving the tank. Disinfection must meet  
Requirements of AWWA standard C652-11. After proper disinfection  
Time, the VA will obtain bacteriological samples from the tank and  
Have them analyzed thru a testing laboratory. Should any sample(s)  
Return positive, the Contractor shall disinfect again and the  
Process repeated.
7. When the VAMC determines that the water quality, indicates proper  
Disinfection, the Tank will be placed back in service.
8. At this point in the process the VA will require one week to isolate  
The second Tank.

## **1.2 RELATED WORK**

- A. Section 01 00 00, GENERAL REQUIREMENTS.
- B. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- C. Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.

## **1.3 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the  
extent referenced. The publications are referenced in the text by the  
basic designation only.
- B. American Institute of Steel Construction (AISC):  
325-2011.....Steel Construction Manual, 14th Edition  
360-2010.....Specification for Structural Steel Buildings

- C. American Society of Civil Engineers (ASCE):  
ASCE/SEI 7-2010.....Minimum Design Loads for Buildings and Other  
Structures
- D. American Society of Mechanical Engineers (ASME):  
A112.6.3-2001 (R2007)...Floor and Trench Drains  
B16.1-2010.....Gray Iron Pipe Flanges and Flanged Fittings:  
Classes 25, 125, 250  
B16.34-2013.....Valves Flanged, Threaded and Welding End
- E. American Society for Testing and Materials (ASTM):  
A36/A36M-2014.....Standard Specification for Carbon Structural  
Steel  
A53/A53M-2012.....Standard Specification for Pipe, Steel, Black  
and Hot-Dipped, Zinc-Coated, Welded and  
Seamless  
A234/A234M-2014.....Standard Specification for Piping Fittings of  
Wrought Carbon Steel and Alloy Steel For  
Moderate and High Temperature Service
- F. American Water Works Associations (AWWA):  
B300-2010.....Hypochlorites  
B301-2010.....Liquid Chlorine  
C110-2012.....Ductile-Iron and Gray-Iron Fittings  
C115-2011.....Flanged Ductile-Iron Pipe with Ductile-Iron or  
Gray-Iron Threaded Flanges  
C151-2009.....Ductile-Iron Pipe, Centrifugally Cast  
C652-2011.....Disinfection of Water Storage Facilities  
D100-2011.....Welded Carbon Steel Tanks for Water Storage  
D102-2014.....Coating Steel Water-Storage Tanks
- G. American Welding Society (AWS):  
D1.1/D1.1M-2010.....Structural Welding Code-Steel  
D1.3/D1.3M-2008.....Structural Welding Code-Sheet Steel
- H. International Code Council (ICC)  
IBC-2012.....International Building Code  
IPC-2012.....International Plumbing Code
- I. National Fire Protection Association (NFPA):  
25-2014.....Standard for the Inspection, Testing, and  
Maintenance of Water-Based Fire Protection  
Systems  
70-2014.....National Electric Code

J. NSF INTERNATIONAL (NSF):

61-2014a.....Drinking Water System Components-Health Effects  
372-2011.....Drinking Water System Components-Lead Content

K. Department of Labor:

29 CFR PART 1910.....Occupational Safety and Health Standards

**1.4 SUBMITTALS**

A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Information and material submitted under this section shall be marked "SUBMITTED UNDER SECTION 22 12 16, CLEANING, INSPECTION AND DISINFECTION OF FACILITY ELEVATED, POTABLE-WATER STORAGE TANKS", with applicable paragraph identification.

C. Manufacturer's Literature and data, Work Procedures and Methods:

1. Tank Cleaning methods, and materials, manufacturers product Data sheets, including (MSDS safety sheets)
2. Cleaning equipment, descriptions, manufacturers product Data and operational parameters.
3. OSHA approved climbing equipment for contractor personnel.
4. Contractors' personnel shall meet OSHA 30 hour training certification.
5. Work schedule, including estimated time for the work at each Tank, and time for tanks to be brought back to service.
6. Physical inspection report of Tank Interiors.

**1.5 QUALITY ASSURANCE**

A. Criteria:

1. Manufacturer regularly and presently manufactures the item submitted as one of their principal products.
2. Installer, or supplier of a service, shall have the technical qualifications, experience, trained personnel, and facilities to perform the specified work. Tank Cleaning/Disinfection Contractor shall have met all Required State and Federal Requirements for the accomplishment Of the work for this project. Said Contractor shall be a company, Specializing in this type of work and been in business for a minimum of 5 years and licensed to work in the State of Arkansas. Contractor shall have demonstrated, thru a combination of Licensing, certifications, and previous work that he is qualified to Perform the work requested.

3. Submit a list of five completed previous projects of similar type and size with, Description of work performed, references and Contacts. Contacts shall include Company or Organization, Company position, address, telephone number, and e-mail.

#### **1.6 AS-BUILT DOCUMENTATION**

- A. Submit manufacturer's literature and data updated to include submittal review comments and any equipment substitutions.
- B. Certification documentation shall be provided to COR 10 working days prior to submitting the request for final inspection. The documentation shall include all test results, the names of individuals performing work for the testing agency on this project, detailed procedures followed for all tests, and certification that all results of tests were within limits specified.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Material or equipment containing a weighted average of greater than 0.25 percent lead is prohibited in any potable water system intended for human consumption, and shall be certified in accordance with NSF 61 or NSF 372.
- B. Shall be in accordance with AWWA, NSF , Arkansas Dept. of Health And other Applicable State and Local codes or requirements.
- C. All equipment used to perform the work under this specification Shall Comply with OSHA requirements.
- F. All materials, equipment and work methods are subject to the approval Of VA Engineering offices of Safety and Health.

### **PART 3 - EXECUTION**

#### **3.1 TANK CLEANING, INSPECTIONS AND DISINFECTION**

- A. Cleaning and Disinfection shall conform with applicable AWWA standards specifically The requirements of AWWA652-11. Interior tank cleaning shall be accomplished thru a combination of pressure washing, and chemical cleaning. Chemical cleaning methods and materials shall comply with NSF and Arkansas Dept. of health requirements. Chemical Cleaning methods shall remove organic (bio-film) and other contaminants, Including inorganic residues such as metallic oxides and others normally detrimental to water quality.

#### **3.2 TANK INTERIOR INSPECTION**

- A. Comply with AWWA, OSHA and local Engineering Office safety requirements.

- B. Interior surfaces and all interior components, including structural Components shall be inspected for overall condition, and report submitted. In the report. Tank Conditions, and compliance deficiencies shall be identified and recommended corrective actions noted.

### **3.3 TANK EXTERIOR**

- A. Inspection of Tank Exterior structure, components, and paint coatings Are not part of this work, with the exception of tank entry points, as Noted above.

### **3.4 DISINFECTION/ STERILIZATION**

- A. After flushing, thoroughly disinfect and sterilize the tank and connecting piping with a chlorine and hypochlorite solution as required by AWWA C652. Following a contact period of 24 hours, flush the system with clean water until the residual chlorine content is not greater than that of the water supply. All valves in water line being disinfected shall be opened and closed several times during the 24 hour period. Hypochlorite material shall comply with Fed Spec O-C-114 or Fed Spec O-S-602, grade B.
- B. Hypochlorite material shall comply with AWWA B300.
- C. COR shall witness flush and disinfection/sterilization. Contractor shall coordinate schedules with the COR.

### **3.9 TESTING**

- A. After cleaning, inspection and disinfection, water samples shall be Taken and submitted to the VA for testing thru the Arkansas Department of Health. Results of this testing will be provided to the Contractor.

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