SECTION 099723.24 - CONCRETE WATER STORAGE TANK PAINTING

This Section includes preparing and painting of concrete water storage tanks for potable-water use.

This Section includes performance, proprietary, and descriptive specifications. Edit to avoid conflicting requirements.

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes:

Surface preparation.

Painting tank interior.

* + - 1. REFERENCE STANDARDS

List reference standards included within text of this Section, with designations, numbers, and complete document titles.

* + - * 1. NSF International:

NSF 61 - Drinking Water System Components - Health Effects.

* + - * 1. SSPC: The Society for Protective Coatings:

SSPC-SP 10 - Near-White Metal Blast Cleaning.

* + - 1. PREINSTALLATION MEETINGS
         1. Convene a preinstallation meeting a minimum [**one week**] prior to commencing Work of this Section.
      2. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

Only request submittals needed to verify compliance with Project requirements.

* + - * 1. Product Data: Submit manufacturer information on finishing products.

Include following paragraph for submission of physical samples for selection of finish, color, texture, and other properties.

* + - * 1. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

Include separate paragraphs for additional certifications.

* + - * 1. Manufacturer Instructions: Submit special surface preparation procedures, substrate conditions requiring special attention[**, and**] <**\_\_\_\_\_\_\_\_**>.
        2. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
        3. Qualifications Statements:

Coordinate following subparagraphs with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer and applicator.

Submit manufacturer's approval of applicator.

* + - 1. CLOSEOUT SUBMITTALS
         1. Operation and Maintenance Data: Submit data on cleaning, touchup, and repair of painted surfaces.
      2. QUALITY ASSURANCE

Include this Article to specify compliance with overall reference standards affecting products and installation included in this Section.

* + - * 1. Comply with AWWA D102.
        2. Materials in Contact with Potable Water: Certified to NSF 61.
        3. Obtain paint products from single source for Work specified in this Section.

In following paragraph insert "State of New York Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

* + - * 1. Perform Work according to <**\_\_\_\_\_\_\_\_**> standards.

Include following paragraph only when cost of acquiring specified standards is justified.

* + - * 1. Maintain <**\_\_\_\_\_\_\_\_**> [**copy**] [**copies**] of each standard affecting Work of this Section on Site.
        2. Utilize quality assurance procedures and practices to monitor all phases of surface preparation, application and inspection throughout the duration of the project. Procedures or practices not specifically defined herein may be utilized provided they meet recognized and accepted professional standards and are approved by the Director’s Representative.
        3. Coating systems shall conform to all current A.W.W.A. Standards and carry appropriate N.S.F. (National Sanitation Foundation) approval in accordance with Standard 61 for Coatings and Linings.

E. Volatile Organic Compounds (VOCs) Regulatory Requirements: Chapter III of Title 6 of the official compilation of Codes, Rules and Regulations of the State of New York (Title 6 NYCRR), Part 200 Architectural Surface Coatings.

* + - * 1. Certificate of Compliance: List each coating product to be delivered and applied. List shall include written certification stating that each coating product complies with the VOC regulatory requirements in effect at the time of job site delivery and application.
        2. Interior coatings may be modified for low temperature applications down to 35 degrees F to facilitate curing.
        3. Curing: The interior coating shall be completely cured and the solvents shall be adequately released and the tank shall not be filled with water until observed by the Director’s Representative. Contractor shall perform solvent rub tests, pencil hardness tests, or other industry recognized testing procedures recommended by the coating manufacturer to determine the coatings have cured prior to filling the tank. A letter from the Contractor certifying their testing results and that the interior coating has cured such that it is ready for immersion service shall be submitted to the Director’s Representative prior to filling the tank. The Contractor shall monitor the tank bowl and riser bottom plate temperature during the interior coating curing to verify that minimum temperature requirements are satisfied.
        4. Holiday Testing: All interior coatings, including those above the top capacity level, shall be checked with a holiday detector by the Contractor. Testing shall be done in accordance with Section 5.1.3 of AWWA D102-03 and NACE SP0188 in the presence of the Director’s Representative. Any voids indicated shall be repaired by applying more of the finish coat of paint by brush or roller. The areas shall be retested after the appropriate curing time. The coating system must pass the holiday test regardless of the existing coating thickness.
        5. Warranty Inspection: The State shall retain an independent consultant to perform the eleven-month warranty coating inspection. The Contractor shall be notified and given the opportunity to be present at the time of inspection. The Contractor shall provide the services of a company with at least five years’ experience in repairing tanks to repair all defective work found. Repairs shall made in accordance with all current AWWA and NYS Department of Health standards, this specification and to the satisfaction of the Director’s Representative. The Contractor shall then disinfect the tank according to the latest revision of AWWA C652.
      1. QUALIFICATIONS

Coordinate following paragraphs with requirements specified in SUBMITTALS Article.

* + - * 1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum [**three**] <**\_\_\_\_\_\_\_\_**> years' [**documented**] experience.

In following paragraph list applicators acceptable for Project. Only use this paragraph if Owner wishes to limit potential applicators.

* + - * 1. Applicators:

<**\_\_\_\_\_\_\_\_**>.

<**\_\_\_\_\_\_\_\_**>.

<**\_\_\_\_\_\_\_\_**>.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Applicator: Company specializing in performing Work of this Section with minimum [**three**] <**\_\_\_\_\_\_\_\_**> years' [**documented**] experience [**and approved by manufacturer**].
        2. Performance Certification: Submit a performance affidavit certifying to the State that:

1. The Contract documents have been fully examined.

2. Coating systems of the type specified herein have been applied by the firm on at least 5 similar tanks within the recent 10 years.

3. The Workmen and their Supervisor have knowledge of and are familiar with the coating systems specified herein from the standpoints of required environmental, safety and health conditions during application and curing.

* + - 1. DELIVERY, STORAGE, AND HANDLING
         1. Section 016500 - Materials and Equipment: Requirements for transporting, handling, storing, and protecting products.
         2. Container Labeling: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
         3. Inspection:

Accept materials on Site in manufacturer's sealed and labeled containers.

Inspect for damage and to verify acceptability.

Do not use coating and paint materials until the Director’s Representative has inspected the contents and has obtained data from information on the containers or labels.

Reject materials exceeding storage life recommended by the manufacturer.

* + - * 1. Protection:

Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

Protect materials from excessive heat or cold, and in a ventilated area.

Protect materials from freezing.

Store flammable materials in conformance with State and Federal safety codes for flammable coating and paint materials.

Provide additional protection according to manufacturer instructions.

* + - 1. AMBIENT CONDITIONS

Specifiers are cautioned regarding specifying VOC containing or other volatile materials, their acceptability to authorities having jurisdiction, and their environmental impact.

* + - * 1. Apply paint only when temperature of steel or paint is greater than 60 degrees F.
        2. Do not apply paint in rain, snow, fog or mist, or when steel surface temperature is below dew point resulting in condensation.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Do not apply materials when surface and ambient temperatures are outside temperature ranges indicated by paint product manufacturer.
        2. Prevent rapid changes in temperature during curing and thermal shock cracks in finish material.
      1. Safety and Health Requirements
         1. Furnish and require use of personnel protective equipment for persons working in or about the project Site, all in accordance with requirements set forth by regulatory agencies applicable to the construction industry, the coating manufacturer’s printed instructions, and appropriate technical bulletins and manuals.

Protective helmets shall be worn by all persons while in the vicinity of the Work.

Workers engaged in or near the Work during sandblasting shall wear eye and face protection devices, and air purifying half mask or mouthpiece respirator with appropriate filter.

Furnish protective clothing, gloves and barrier creams in accordance with the coating manufacturer’s recommendations to prevent injury to workmen from strong chemicals during their application.

* + - 1. WARRANTY

This Article extends warranty period beyond one year. Extended warranties may increase construction costs and Owner enforcement responsibilities. Specify warranties with caution.

* + - * 1. Section 017716 - Contract Closeout: Requirements for warranties.
        2. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for paints.

1. PRODUCTS
   * + 1. PAINT
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13645&mf=04&src=wd):

Approved equivalent.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

In following paragraph insert "New York State Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

* + - * 1. Furnish materials according to <**\_\_\_\_\_\_\_\_**> standards.
      1. MATERIALS
         1. Paint: High-solids, amine-cured epoxy paint for interior tank surfaces including piping.
         2. Thinner: As recommended by paint manufacturer for intended application.

1. EXECUTION
   * + 1. EXAMINATION
          1. Verify that [**surfaces**] [**substrate conditions**] are ready to receive Work as indicated by product manufacturer.
          2. Examine surfaces scheduled to be finished prior to commencement of Work, and report conditions capable of affecting proper application.
          3. Test shop-applied primer on piping for compatibility with subsequent cover materials.
       2. PREPARATION
          1. Patch or repair imperfections in concrete surfaces to eliminate honeycombs, form marks, tie holes, and concrete droppings.
          2. Brush-off blast concrete interior.
          3. Prepare metal surfaces according to SSPC-SP 10.
          4. Protection:

Cover miscellaneous tank openings, except as required for ventilation, to avoid accumulation of cleaning residue and paint material in overflows, inlet and outlet piping[**, and**] <**\_\_\_\_\_\_\_\_**>.

Protect equipment from abrasion and paint damage.

* + - * 1. Tank Interior Work Requirements:

Ventilate tank interior to remove dust, fumes, and volatile gases as required by authorities having jurisdiction.

Provide minimum lighting level of [**80**] <**\_\_\_\_\_\_\_\_**> fc measured at substrate surface.

Keep manholes and other vent openings open during cleaning, surface preparation, painting and curing operations.

Provide Director’s Representative and laboratory personnel required to enter tank during cleaning or painting operations with safety equipment as required by authorities having jurisdiction.

* + - 1. APPLICATION
         1. According to manufacturer instructions.
         2. Thinning:

Do not thin paint except if approved by director’s representative.

Thin paint according to manufacturer instructions.

* + - * 1. Coats:

Apply paint at manufacturer's recommended application rate.

Build up paint film for each coat to specified thickness.

Apply additional coats as necessary to achieve specified thickness.

Ensure that each coat of paint is cured according to manufacturer instructions before application of succeeding coat.

Allow minimum 24 hours between coats.

* + - * 1. Modify tint or color between coats to aid in obtaining complete coverage.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

In following paragraph insert "New York State Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

* + - * 1. Installation Standards: Install Work according to <**\_\_\_\_\_\_\_\_**> standards.
      1. FIELD QUALITY CONTROL
         1. Section 017716 - Contract Closeout: Requirements for contract closeout inspections.
         2. Notify Director’s Representative a minimum [**three**] <**\_\_\_\_\_\_\_\_**> days in advance, to permit observation of cleaned surfaces prior to application of each coat of paint prior to subsequent paint applications.
         3. Perform wet film thickness test.
      2. CLEANING
         1. Section 017716 - Contract Closeout: Requirements for cleaning.
         2. Collect waste material capable of constituting fire hazard, place in closed metal containers, and remove daily from Site.
         3. Remove scaffolding, ladders, or other facilities upon completion of Work.
         4. Remove temporary heating and ventilating facilities.
      3. ATTACHMENTS

When relying on separate schedules, tables, illustrations, or forms to specify product requirements, include list of each attachment. Include identical list of attachments in Project Manual table of contents.

Consider including schedule if necessary to specify paint systems and film thicknesses for various substrates. Include color schedule as required.

Insert attachments following END OF SECTION. Consider following examples when developing Project schedule.

* + - * 1. Exterior Surfaces of Piping within Tank:

First Coat: High-solids epoxy at 6.0- to 8.0-mil dry film thickness.

Second Coat: High-solids epoxy at 6.0- to 8.0-mil dry film thickness.

<**\_\_\_\_\_\_\_\_**>, as manufactured by <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Interior Concrete Tank Surface:

First Coat: High-solids epoxy at 6.0- to 8.0-mil dry film thickness.

Second Coat: High-solids epoxy at 6.0- to 8.0-mil dry film thickness.

<**\_\_\_\_\_\_\_\_**>, as manufactured by <**\_\_\_\_\_\_\_\_**>.

END OF SECTION 099723.24