



Product Specifications

Bolted Steel Water Tank Specifications

Part 1: General

1.01 Section Includes

- A. Water Storage Tank

1.02 Related Sections

- A. Section 03300 Cast in Place Concrete
- B. Section 15051 Specialized Mechanical Materials and Methods for Process Piping
- C. Section 15150 Equipment Installation

1.03 References

- A. AWWA D-103 Standards of the American Water Works Association
- B. NFPA-22 Standard for Water Tanks for Private Fire Protection 2003 Edition
- C. API 12B American Petroleum Institute Standard for Bolted Tanks
- D. Uniform Building Code

1.04 Submittals

- A. Shop drawings covering tank, anchorage, accessories, appurtenances and coatings shall be submitted.

1.05 Qualification/Experience

- A. The tank supplier shall be a specialist in the design, fabrication, and erection of factory coated bolted steel tanks. The manufacturer shall be quality certified, having an active API-Q1 and an ISO 9001 registration. Tank shall be FM Approved if required by Owner for Fire Protection applications.

1.06 Delivery, Storage and Handling

- A. All plates, supports, members, and miscellaneous parts shall be packaged for shipment in such a manner to prevent abrasion or scratching of the finish coating.

1.07 Warranty

- A. The tank manufacturer shall warrant the tank against any defects in workmanship and materials for a period of one (1) year from date of shipment. In the event a defect should appear, it shall be reported in writing to the manufacturer during the warranty period.
- B. The tank erector shall warrant the tank against any defects in workmanship for a period of one (1) year from date of shipment. In the event a defect should appear, it shall be reported in writing to the erector during the warranty period.

Part 2 – Products

2.1 Water Storage Tank

A. Acceptable Suppliers

- 1. BH Tank, Inc. p. 800-464-2951 web: www.bhtank.com

B. Bolted Tank Structure

- 1. The materials, design, fabrication, and erection of the bolted steel tank shall conform to the Principles of Standard Specification 12B of the American Petroleum Institute, American Water Works Association Standard for Bolted Tanks D-103-97 or to the manufacturer's specifications which are derived from engineering principles, industry experiences, and the aforementioned standards and specification.
- 2. Standard shell height and diameter meeting requirements for the selected capacity.
- 3. Storage Capacity: _____ Gallons (Nominal)
- 4. Tank Diameter: _____' _____"
- 5. Tank Height: _____' _____"
- 6. Floor Type: Flat Steel Bottom _____ Concrete Floor _____
- 7. Deck Type: 1:12 Sloped Conical _____ Alum. Geodesic Dome _____
Open Top _____
- 8. Steel
 - a. Steel Sheets
 - 1) Steel sheets shall conform to or shall be at least equal to hot-rolled quality per ASTM A570 Grade 33 with a minimum yield strength of 33,000 psi.
 - 2) Minimum thickness shall be 12 gauge (0.0972 in.)
 - b. Steel Plates
 - 1) Steel Plates shall conform to or at least be equal to the requirements of ASTM A36 with a minimum yield strength of 36,000 psi.
 - c. Rolled Structural Shapes
 - 1) Rolled structural shapes shall conform to ASTM A36.
- 9. Bolts/Nuts/Washers
 - a. Galvanized Bolts
 - 1) Galvanized bolts, nuts, washers used in tank joints shall be minimum ½" bolt diameter and shall meet the requirements of API 12B, Appendix A, except that bolt

heads and nuts may be other than square at the option of the tank manufacturer.

- b. Polycapped Bolts
 - 1) Polycapped bolt heads shall be used for additional corrosion protection.
 - c. Other Bolts
 - 1) Other bolts shall conform to or at least be equal to the latest revision of ASTM A307.
10. Gaskets
- a. All bolted connections shall incorporate an EPDM prefabricated gasket with a minimum width of 1-3/4".
 - b. A single piece double punched gasket shall be used at vertical seams which require two vertical rows of punching.
 - c. Field caulking will be allowed when joining a discontinuous gasket section and at certain joint connections.
 - d. Neoprene backed steel washers shall be provided at all bolts in contact with the stored liquid.
11. Multiple Row Punching
- a. All sheets in the shell of the tank that require multiple vertical row punching (double or triple) must be in a single stroke to insure proper alignment.

C. Coating

- 1. All metal plates, supports, members, and miscellaneous parts, except bolts, certain accessories, and appurtenances, shall be factory coated in accordance with the provisions of these specifications.
- 2. Field coating, except for touch-up will not be permitted.
- 3. Surface Preparation
 - a. Tank parts are to be thoroughly washed and rinsed to remove grease, oil and foreign matter.
 - b. Parts are then to be immediately oven dried.
 - c. Parts are to be grit-blasted to SSPC-SP 10 (Near-White Blast Cleaning) to 2-3 mils profile.
 - d. All parts must be coated within 15 minutes after blasting, and no further processing other than coating application shall be done.
- 4. Interior Coating
 - a. Thermally cured modified epoxy powder, Trico-Bond EP (includes underside of the steel floor)
 - b. First coat is to be a powder application of NSF approved modified epoxy Trico-Bond EP, 5.0 mils average dry film thickness.
 - c. Coating system to have 5.0 mils average dry film thickness.
- 5. Exterior Coating
 - a. Thermally cured modified epoxy powder, Trico-Bond EP and acrylic polyurethane in color standard color "tan".
 - b. First coat is to be a powder application of modified epoxy Trico-Bond EP, 2.5 mils average dry film thickness.
 - c. Second coat of acrylic polyurethane, 1.5 mil average dry film thickness. Custom colors to be as specified by Owner.
 - d. 1.0 mil clear coat of polyurethane for gloss retention and additional resistance to UV
- 6. Curing
 - a. Baking ovens to be used after each coat
 - b. Final coat is to be cured in the baking oven for at least 15 minutes.

7. **Preparation for Transport**
 - a. Material to be marked or tagged with part number for ease of field assembly.
 - b. Tank materials to be placed in racks or on pallets to facilitate transportation to jobsite.
 - c. Touch-up paint with instructions for application by erection personnel.

D. Appurtenances

1. The contractor shall furnish and install the appurtenances as shown in the contract drawings and as specified below. Unless otherwise noted, standard appurtenances shall be as follows:
2. **Hatch**
 - a. The tank roof hatch shall have a curbed, upward opening 24" square.
 - b. The curb shall extend at least 4" above the roof surface.
 - c. The hatch cover shall be hinged and have provisions for locking.
 - d. The hatch cover lip shall extend 2" below the top of the 4" curb.
3. **Inlet and Outlet Connections**
 - a. Inlet, outlet, and overflow connections shall conform to the sizes and locations specified on the contract drawings.
4. **Vent**
 - a. A mushroom screened vent shall be furnished above maximum water level of sufficient size to accommodate normal inlet and outlet flow.
 - b. The overflow pipe shall not be considered to be a tank vent.
 - c. The vent shall be stainless steel and so designed and constructed as to prevent the entrance of birds, animals, or insects.
5. **Flush Cleanout Door/Shell Manway (Optional)**
 - a. The flush cleanout door shall measure 24" x 46" and be located as shown on the contract drawings.
 - b. The shell manway shall have a 24" opening complete with hinged cover, and shall be located as shown on the contract drawings.
6. **Outside Ladder**
 - a. An outside galvanized ladder, meeting OSHA specifications, shall be furnished at the location shown on the contract drawings.
7. **Guardrail and Toeboards**
 - a. Galvanized guardrail with toeboard shall be furnished as shown on the contract drawings.

Part 3 – Execution

3.1 Installation

A. Erection

1. Field erection of factory coated bolted steel tanks shall be in strict accordance with the tank manufacturers recommendations.
2. Particular care shall be exercised in handling and bolting of the tank plates, supports, and members to avoid abrasion or scratching of the coating.

3. **Touch-up coating shall be done in accordance with the tank manufacturer's recommendations where and as directed.**

B. Testing

1. **Following completion of erection and cleaning of the tank, the tank shall be tested for liquid tightness by filling the tank to its' overflow elevation.**
2. **Any leaks disclosed by this test shall be corrected by the erection contractor in accordance with the tank manufacturer's recommendations.**
3. **The Owner shall provide clean water free of charge at the time of erection completion, for hydrostatically testing the tank.**
4. **Filling and emptying the tank shall be the responsibility of the Contractor.**