

Dry Bulk Bolted Specifications

TecTank FP™ and Chime



Scope

This section covers purchase and installation of (quality) coated bolted steel (name usage – i.e. lime, bulk cement) tank(s), including accessories and appurtenances required for the work.

Performance Requirements

The bolted steel tank will be installed on a (reinforced concrete foundation/structural support) as shown on the drawings, furnished by the owner. The shell and anchoring system shall be designed to withstand loads as noted in the Design Requirements.

General

The material furnished and installed under this section shall be fabricated, assembled, erected and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions and recommendations of the manufacturer.

The steel tank and accessories furnished under this section shall be as manufactured by CST Storage or approved equal, Manufacturer shall be ISO 9001 Quality System Certified.

Design Requirements

The bolted steel tank shall conform to the following requirements:

Location of jobsite: _____
Product to be stored in the tank: _____
Loose density of products: _____ lbs./cu.ft.
Maximum compacted density of product _____ lbs./cu.ft.
Angle of repose: _____ degrees
Required working capacity each tank: _____ cu.ft.
Suggest tank diameter and straight sidewall height: _____
Hopper slope (45%) (80%) (Other): _____
Clearance from foundation to hopper discharge: _____ ft.
Hopper discharge diameter : _____ (ft.) _____ (in.)



(Mass Flow) (Funnel Flow) design loads: _____
Operating pressuring and vacuum _____ oz./sq.in.
Dust collector and/or equipment load _____ lbs.
Roof live load: _____ PSF
Earthquake: Seismic Zone _____ per 1997 UBC
Wind: (90) (____) MPH per ASCE 7-98

Appurtenances in accordance with attached listing. (On structural steel) (Skirted design) (Drive through skirted design) support.

The manufacturer shall be a specialist in the design and fabrication of factory coated bolted steel tanks and shall submit, upon request of Engineer, a list of five (5) comparable tanks now in service in the United States.



Design Criteria

- 1) Vendor to quote on the nearest standard size bolted steel tanks of manufacturer.
- 2) Standard wind design is 90 mph wind velocity using ASCE-7-98 Exposure "C" Importance II.
- 3) Seismic design (if applicable) is to be based on the 1997 edition of the Uniform Building Code. When designing a tank in seismic zone, the load producing the higher stresses comparing wind and seismic will control the dynamic portion of design.
- 4) Combined live and dead roof load shall be uniformly distributed with all nozzle, manhole, and filler locations designed for 200 lbs. each. Live and dead loads to be combined minimum of 25 psf. Roof to have 1:12 slope for water drainage. Roof is not designed as a working platform.
- 5) Tank wall design is to be based on the critical buckling formula from the book. Structural Analysis of Shells by Baker, Kovalsky & Rish, page 230. The tank product area is to be designed using Janssen's formula or cylindrical bins.
- 6) Tank shall be designed for (center fill) (off-center fill) and (center discharge) (off-center discharge) of product.
- 7) Tank shall be designed for (mass) (funnel) flow loads.
- 8) Tank operating pressure shall be 0.5 oz. per square inch negative and 2.0 oz. per square inch positive. (Design tank for atmospheric pressure.)
- 9) Tank design to be based on a working capacity using the maximum compacted density of product and 25° angle of repose.
- 10) Owner solicits recommendations that may improve the price, delivery, or performance of tanks. As an alternate, Vendor is invited to quote changes. In physical dimensions, modifications to the design, fabrication, or stock of Vendor's standard equipment that would reduce the initial cost of the equipment as specified without changing the design premise.

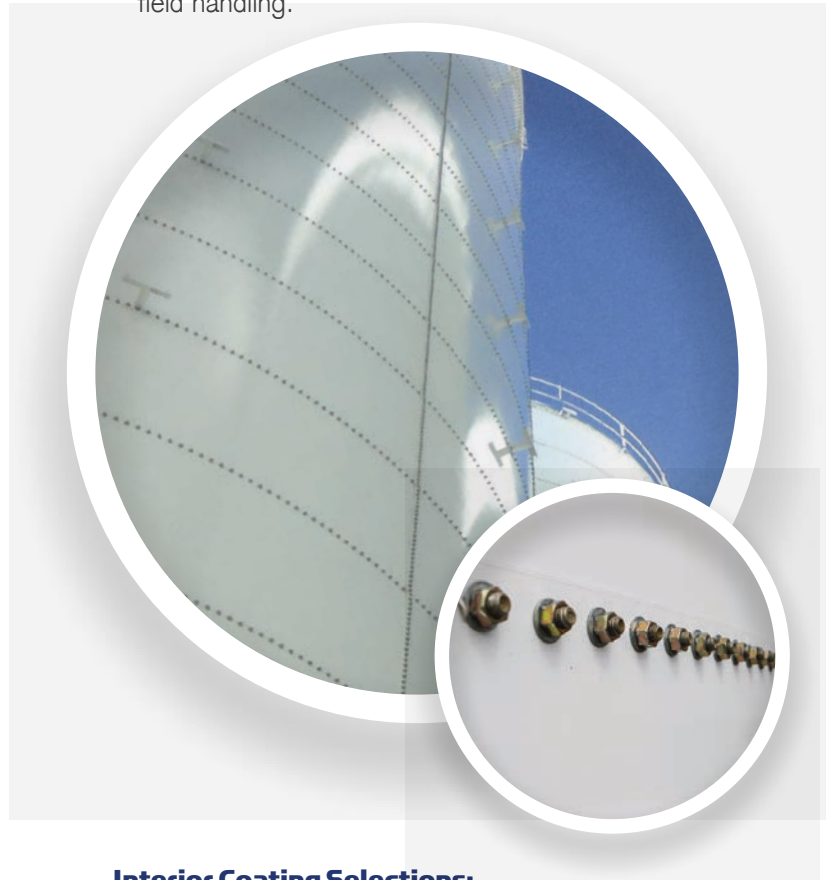
Alternate quotations shall be listed as such in the proposal specifying the alternate and the price and delivery for the alternate.

Surface Preparation (Interior & Exterior Coatings)

- Tank parts are thoroughly power-washed and rinsed to remove grease, oil and foreign matter.
- Cleaned parts are oven-dried.
- Parts are steel grit blasted to a near-white finish. (SSPC-SP10) with a nominal 2 mil surface profile.

Curing & Shipping (Interior & Exterior Coatings)

- Baking oven to be used after each coat.
- Material to be marked or tagged with part mark and order number for field assembly requirements.
- All coated parts shall be inspected prior to shipment.
- Tank staves to be placed in disposable storage and handling racks to facilitate transportation to jobsite. Racks also minimize coating damage during transit and field handling.



Interior Coating Selections:

- NO COATING
- RED OXIDE PRIMER
- POLYAMIDE EPOXY PRIMER
- FDA EPOXY
- AR-LON 6100°

Exterior Coating Selections:

- RED OXIDE PRIMER
- POLYAMIDE EPOXY PRIMER
- POLYAMIDE EPOXY PRIMER with WHITE ACRYLIC ENAMEL FINISH
- POLYAMIDE EPOXY PRIMER with WHITE ALIPHATIC ACRYLIC POLYURETHANE FINISH
- INORGANIC ZINC PRIMER

Drawings & Submittals

After receipt of order, the Bidder shall furnish, upon request of the Engineer, complete specifications and construction drawings for all work shown on the bidding drawings. When approved, one set of such prints will be returned to the Bidder marked "Approved," and these drawings will then govern the work detailed thereon. The approval by the Engineer of the Contractor's drawings shall be an approval relating only to their general conformity with the bidding drawings and specifications and shall not guarantee detail dimensions and quantities.

Bolted Tank Erection Specification

Field erection of factory-coated bolted steel tanks shall be in the strict accordance with the Manufacturer's recommendations. Particular care shall be exercised in handling and bolting of the tank plates, supports and members to avoid abrasion or scratching of the coating. Touch up coating shall be done in accordance with Manufacturer's recommendations.

General:

Erection of the following CST Storage tank(s):

Quantity: _____

Size: _____

Ladder and crossovers: _____

Sketch or general description of accessories and coatings:

Approximate start date, 20 Labor (union) (nonunion)
(prevailing wage (union, or nonunion)

Erector To Furnish / Conduct:

1. All scaffolding, labor and tools unless otherwise specified.
2. Supervision at the jobsite for duration of the project.
3. Labor to touch up erection scratches in the field per CST Storage procedures.
4. Certificate of Insurance prior to commencing construction.
5. Exterior water spray test to ensure silo construction is weather tight.

Owner To Furnish:

1. Any applicable state or local taxes on the equipment.
2. Building permits, fees, licenses, etc.
3. Foundations and any required grouting.
4. Builders' Risk Insurance
5. 120 Volt/AC 60 Amp current within 50 feet of work area.
6. Water supply, hose and nozzle for exterior water spray test conducted by erector.
7. Adequate storage space adjacent to foundation for staging of materials and equipment.
8. Unloading of materials at jobsite adjacent to foundation.
9. Operating engineer if union installation is required.
10. Dumpster/sanitary facilities.



Bolted Tank Coating Specification

General:

All labor and equipment furnished in this proposal to be guaranteed against defects in workmanship for a period of one year after delivery. This warranty excludes maintenance and repairs caused by normal usage and wear of abuse.

Material Specifications

Shell Structure:

The materials, design and fabrication of the bolted steel shell shall conform to the principles of API Specification 12B of the American Petroleum Institute, except as herein after modified:

Materials:

Carbon Steel Sheets shall meet or exceed ASTM A570 Grade 40. Minimum thickness shall be 14 gauge. Carbon steel plates shall meet or exceed the requirements of ASTM A36. Carbon steel structural shapes shall conform to ASTM 36.

Bolts used in shell joints shall be ½ inch diameter and shall meet or exceed API Specification 12B. CST Storage standard bolt coating is mechanically galvanized per ASTM B695, Class 50, Anchor bolts conform to the ASTM A36 or ASTM A307. Other bolts shall meet or exceed ASTM A307 or ASTM A325.

Bolted connections shall incorporate a nitrile prefabricated gasket MIL-G-1086D (or equal) (while EPDM for FDA) (Viton, high temperature) minimum width (1.0 inch) (1.875 inch).

Coating Systems

1. Interior coating (product zone) shall be _____ Interior coating (skirt area) shall be _____
2. Exterior coating shall be _____
3. Exclusive coating system for enhanced edge protection of fabricated steel sidewall sheets.

Handling & Storage

All tank components and miscellaneous parts shall be prepared for shipment in such a fashion to minimize damage of furnished coating system. The Contractor is responsible for receiving materials and properly storing them. It is the responsibility of the receiving contractor to promptly report any materials damaged in shipment to the delivery driver and the Manufacturer.

Materials stored on-site for extended periods shall be elevated and protected with a waterproof covering ventilated to prevent condensation. Small fiberboard carbons, buckets, etc., shall be stored in elevated pallets or skids and covered with waterproof material.



Certifications and Capabilities:

- ISO 9001: 2008
- API ISO/TS 29001: 2007
- API 12-B
- API Monogram 12F-0069
- UL 142 & ULC S601
- CSA Standard W 47.1 & W59
- Canadian Welding Bureau Certification (CWB)
- Certified Welding Inspectors (CWI) at Every Facility
- FM Certified Product Line and Facility in Parsons
- All Facilities EPA Compliant
- NFPA-68/69
- FM Approved

Call +1 913.621.3700 or visit us online at cstindustries.com to find an authorized dealer near you.