SPECIFICATION FOR AQUASTORE® TANK
GLASS COATED, BOLTED STEEL MUNICIPAL POTABLE WATER STORAGE TANK
AS MANUFACTURED BY CST STORAGE

1 GENERAL

1.1 Scope of Work

1.1.1 Furnish and erect a glass-fused-to-steel bolted water storage tank, including foundation, tank structure and tank appurtenances as shown on the submittal drawings and described herein.

1.1.2 All required labor, materials and equipment shall be included.

1.2 Qualifications of Tank Supplier

1.2.1 The Engineer's selection of factory applied glass-fused-to-steel bolted tank construction for this facility has been predicated upon specific criteria, construction methods, and an optimum coating for resistance to internal and external tank corrosion. Deviations from the specified design, construction or coating details, will not be permitted.

1.2.2 The bidder shall offer a new tank structure as supplied from a manufacturer specializing in the design, fabrication and erection of factory applied glass-fused-to-steel bolted tanks. The manufacturer shall employ a staff of full time design engineers, and shall own and operate its steel fabrication facilities and glass coating facilities.

1.2.3 The tank shown on the submittal drawings and specified herein is a model _____ Aquastore® Tank as manufactured by CST Storage.

1.2.4 Alternate glass-fused-to-steel bolted tank products, as provided by other manufacturers, will be considered for prior approval by the Engineer. Manufacturers lacking the experience requirement will be considered, if the manufacturer provides a satisfactory 5-year 100% Performance Bond in lieu of evidence of experience and long term operation.

1.2.5 Strict adherence to the standards of design, fabrication, erection, product quality, and long term performance established in this Specification will be required by the Owner and Engineer.

1.2.6 Tank suppliers wishing to pre-qualify shall submit the following to the Engineer/Owner for consideration:

1.2.6.1 Typical structure and foundation drawing(s).

1.2.6.2 List of tank materials, appurtenances and tank coating specifications.

1.2.6.3 List of 5 tanks presently in potable water service designed to AWWA D 103 Standard, of equal or greater size and character specified herein, operating satisfactorily for a minimum of 5 years, including the name and telephone number of Owner and Engineer.

1.2.7 Only bids from tank suppliers who have successfully pre-qualified will be considered.

1.2.8 The Engineer reserves the right to evaluate all bids based on long term, 30 year minimum operation, coating and maintenance costs. Values to be used in this evaluation will be at the discretion of the Engineer, as detailed in this specification and bid tabulation form. The Engineer will add such costs, dependent upon the type of tank offered, to the bidder's price to determine the effective low bid for purposes of making the award.

1.3 Submittal Drawings and Specifications

1.3.1 Construction shall be governed by the Owner's drawings and specifications showing general dimensions and construction details, after written approval by the Engineer of detailed erection drawings prepared by the tank bidder. There shall be no deviation from the Owner’s drawings and specifications, except upon written order from the Engineer.

1.3.2 The bidder is required to furnish, for the approval of the Engineer and at no increase in contract price, _____ sets of complete specifications and construction drawings for all work not shown in complete detail on the submittal drawings. A complete set of structural calculations shall be provided for the tank structure and foundation. All such submissions shall be stamped by a Licensed Professional Engineer licensed in the state of project location, as well as, by a Licensed Professional Engineer employed by the tank manufacturer's engineering staff. Where the tank manufacturer's P.E. is licensed in the state of the project location, only one stamp is required.

1.3.3 When approved, two sets of such prints and submittal information will be returned to the bidder marked "APPROVED FOR CONSTRUCTION" and these drawings will then govern the work detailed thereon. The approval by the Engineer of the tank supplier'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, which remains the bidder's responsibility.

1.3.4 The tank manufacturer's standard published warranty shall be included with submittal information.

1.3.5 The bidder shall include the tank manufacturer’s standard Operation and Maintenance Manual upon receipt of approved drawings.

2 DESIGN CRITERIA

2.1 Tank Size

2.1.1 The factory coated glass-fused-to-steel bolted tank shall have a nominal diameter of _____ feet (_____ mm), with a nominal sidewall height (to roof eave) of _____ feet (_____ mm).

2.2 Tank Capacity

2.2.1 Tank capacity shall be _____ gallons (nominal, U.S. gallons) (_____ liters) at _____ feet (_____ mm) liquid depth.

2.3 Floor Elevation

2.3.1 Finished floor elevation shall be set at Elev._____feet (_____ mm).

2.4 Tank Design Standards

2.4.1 The materials, design, fabrication and erection of the bolted steel tank shall conform to the AWWA Standard for "Factory-Coated Bolted Steel Tanks For Water Storage" - ANSI/AWWA D103, latest revision.

2.4.2 The tank coating system shall conform solely to Section 10.4 of ANSI/AWWA D103 latest revision.

2.4.3 All materials furnished by the tank manufacturer, which are in contact with the stored water shall be certified and listed by the National Sanitation Foundation (NSF) to meet ANSI/NSF Additives Standard No. 61. Certification of a coating type alone will not be sufficient to meet this requirement.

2.5 Design Loads (Complete the blanks)

2.5.1 Specific Gravity _____(Min. design shall be 1.0)

2.5.2 Design Freeboard _____(inches) (_____ mm)

2.5.3 Wind Velocity_____mph (_____kph)(AWWA D103 Std. 100

mph [161 kph])

2.5.4 Allowable Soil Bearing Capacity _____psf (_____KPa) (Per Eng.'s Soils Report)

2.5.5 Roof Snow Load _____psf (_____KPa)

2.5.6 Earthquake Seismic Zone, AWWA D103.

2.5.6.1 AWWA D103, latest revision, Zone _____.

2.5.6.1.1 Site Amplification Factor, S, ____.

2.5.6.1.2 Use (Importance) Factor, I, _____

3 MATERIALS SPECIFICATIONS

3.1 Plates and Sheets

3.1.1 All steel shall be smelted and produced in the United States of America.

3.1.2 Steel plates and sheets used in the construction of the tank shell, tank floor (when supplied) and tank roof, shall comply with the minimum standards of AWWA D103, latest edition.

3.1.3 Design requirements for mild strength steel shall be ASTM A1011 Grade 30 with a maximum allowable tensile stress of 14,566 psi (100 MPa).

3.1.4 Design requirements for high strength steel shall be ASTM A1011 Grade 50 with a maximum allowable tensile stress of 26,000 psi (179 MPa).

3.1.5 The annealing effect created from the glass coated firing process shall be considered in determining ultimate steel strength. In no event shall a yield strength greater than 50,000 psi (345 MPa) be utilized for calculations detailed in AWWA D103, Sections 3.4 and 3.5.

3.1.6 When multiple vertical bolt line sheets and plates of ASTM A1011 Grade 50 are used, the effective net section area shall not be taken as greater than 85% of the gross area.

3.2 Rolled Structural Shapes

3.2.1 Material shall conform to minimum standards of ASTM A36 or ASTM A992.

3.3 Horizontal Wind Stiffeners

3.3.1 Design requirements for intermediate horizontal wind stiffeners shall be of the "web truss" type with an extended tail creating multiple layers of stiffener, permitting wind loads to be distributed around the tank.

3.3.2 Web truss stiffeners shall be of steel with hot dipped galvanized coating.

3.3.3 Rolled steel angle stiffeners are not permitted for use as intermediate horizontal wind stiffeners.

3.4 Bolt Fasteners

3.4.1 Bolts used in tank lap joints shall be ½" - 13 UNC- 2A rolled thread, and shall meet the minimum requirements of AWWA D103, Section 2.2.

3.4.2 Bolt Material

3.4.2.1 SAE J429 Grade 2 (1inch [25 mm] bolt length)

3.4.2.1.1 Tensile Strength - 74,000 psi (510 MPa) Min.

3.4.2.1.2 Proof Load - 55,000 psi (379 MPa) Min.

3.4.2.1.3 Allowable shear stress with threads excluded from the shear plane - 18,163 psi (125 MPa) Min.

3.4.2.2 SAE J429 Grade 5 (1 ¼ inch [32 mm] bolt length)

3.4.2.2.1 Tensile Strength - 120,000 psi (827 MPa) Min.

3.4.2.2.2 Proof Load - 85,000 psi (586 MPa) Min.

3.4.2.2.3 Allowable shear stress with threads excluded from the shear plane – 29,454 psi (203 MPa) Min.

3.4.2.3 SAE J429 Grade 8 (>1 ¼ inch [32 mm] bolt length)

3.4.2.3.1 Tensile Strength - 150,000 psi (1034 MPa) Min.

3.4.2.3.2 Proof Load - 120,000 psi (827 MPa) Min.

3.4.2.3.3 Allowable shear stress with threads excluded from the shear plane – 36,818 psi (254 MPa) Min.

3.4.3 Bolt Finish - Zinc, mechanically deposited.

3.4.3.1 2.0 mils (0.002 inches) Min. - under bolt head, on shank and

threads.

3.4.4 Bolt Head Encapsulation

3.4.4.1 High impact polypropylene copolymer encapsulation of entire bolt head up to the splines on the shank.

3.4.4.2 Resin shall be stabilized with an ultraviolet light resistant material such that the color shall appear black.

3.4.4.3 The bolt head encapsulation shall be certified to meet the ANSI/NSF Standard 61 for indirect additives.

3.4.5 All bolts on the vertical tank wall shall be installed such that the head portion is located inside the tank, and the washer and nut are on the exterior.

3.4.6 All lap joint bolts shall be properly selected such that threaded portions of the bolts will not be exposed to the "shear plane" between tank sheets.

3.4.7 Bolt lengths shall be sized to achieve a neat and uniform appearance. Excessive threads extending beyond the nut after torquing will not be permitted.

3.4.8 All lap joint bolts shall include a minimum of 4 splines on the underside of the bolt head at the shank in order to resist rotation during torquing.

3.5 Sealants

3.5.1 The lap joint sealant shall be a one component, moisture cured, polyurethane compound. The sealant shall be suitable for contact with potable water and shall be certified to meet ANSI/NSF Additives Standard 61 for indirect additives.

3.5.2 The sealant shall be used to seal lap joints and bolt connections and edge fillets for sheet notches and starter sheets. The sealant shall cure to a rubber-like consistency, have excellent adhesion to the glass coating, low shrinkage, and be suitable for interior and exterior use.

3.5.3 Sealant curing rate at 73°F (23°F) and 50% RH.

3.5.3.1 Tack-free time: 6 to 8 hours.

3.5.3.2 Final cure time: 10 to 12 days.

3.5.4 Neoprene gaskets and tape type sealer shall not be used.

4 GLASS COATING SPECIFICATION

4.1 Surface Preparation

4.1.1 Sheets shall be steel grit-blasted on both sides to the equivalent of SSPC SP-10 (Near–White Metal Blast Cleaning).

4.1.2 The surface anchor pattern shall be not less than 1.0 mil (0.001 inches).

4.2 Sheet Edges

4.2.1 After initial sheet preparation, all full height vertical wall sheets and all rectangular shaped floor sheets shall be beveled. A metal coating of 316 stainless steel shall then be thermally bonded on these edges at a thickness of 1.5 to 5 mils (0.0015 to 0.005 inches). The coating shall have a tensile strength of >1500 psi (10 MPa) (per ASTM C633-79).

4.3 Cleaning

4.3.1 After fabrication and prior to application of the coating system, all sheets shall be thoroughly cleaned by a caustic wash and hot rinse process followed immediately by hot air drying.

4.3.2 Inspection of the sheets shall be made for traces of foreign matter, soil particles, grease or rust.

4.4 Coating

4.4.1 A base coat of glass frit containing nickel oxide shall be applied to both side of the sheet.

4.4.2 A second coat of milled cobalt blue glass shall be applied to both sides of the sheets.

4.4.3 A third coat of glass shall be applied to all interior sidewall and floor sheet surfaces which must be a titanium dioxide reinforced mixture, white glass. The specified coating shall be Aquastore Vitrium. An acceptable alternate three coat system must be submitted for approval prior to the bid.

4.4.4 The same glass coating as applied to the exterior sheet surfaces shall be applied to the exposed edges.

4.4.5 The sheets shall then be fired at a minimum temperature of 1500° F (816° C) in strict accordance with the manufacturer's ISO 9001 quality control procedures, including firing time, furnace humidity, temperature control, etc.

4.4.6 The interior coating process for sidewall sheets and floor must be a 3 coat process. The interior color shall be white. The exterior color shall be cobalt blue.

4.4.7 The dry film interior coating thickness shall be 10.0 to 18.0 mils (0.010 to 0.018 inches) minimum.

4.4.8 The dry film exterior coating thickness shall be 7.0 to 15.0 mils (0.007 to 0.015 inches) minimum.

4.5 Factory Inspection

4.5.1 The manufacturer's quality system shall be ISO 9001 certified and refer to ISO (International Organization for Standardization) for the following testing and procedures.

4.5.2 Chemical Resistance of Glass Coating

4.5.2.1 Frits shall be individually tested in accordance with pertinent sections of ISO 28706-1:2008.

4.5.3 Factory Holiday Test

4.5.3.1 A dry volt test using a minimum of 1100 volts is required.

4.5.3.2 Frequency of the test shall be every sheet. Any sheet registering a discontinuity on the interior surface or floor shall be rejected.

4.5.4 Measurement of Glass Thickness

4.5.4.1 Glass thickness shall be measured using an electronic dry film thickness gage (magnetic induction type) approved by CST Storage. The thickness gage shall have a valid calibration record.

4.5.4.2 The thickness of the glass shall be between 10.0 and 18.0 mils (0.010 and 0.018 inches).

4.5.5 Measurement of Color

4.5.5.1 The exterior color of the sheets shall be measured using a colorimeter approved by CST Storage. The colorimeter shall have a valid calibration record.

4.5.5.2 The color must fall within the tolerance specified by CST Storage, else the panel shall be rejected.

4.5.6 Impact Adherence Test

4.5.6.1 The adherence of the glass coating to the steel shall be tested in accordance with ISO standards. Any sheet that has poor adherence shall be rejected.

4.5.7 Fishscale Test

4.5.7.1 The glass coating shall be tested in-house for fishscale by placing the full size production sheets in an oven at 400º F (204º C) for one hour. The sheets will then be examined for signs of fishscale. Any sheet exhibiting fishscale shall be rejected and all sheets from that gage lot will be similarly tested.

4.6 Packaging

4.6.1 All sheets that pass Factory Inspection and Quality Control checks shall be protected from damage prior to packing for shipment.

4.6.2 Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet-to-sheet abrasion during shipment.

4.6.3 Individual stacks of panels will be wrapped in heavy mil plastic and steel banded to special wood pallets built to maintain the roll-radius of the tank panels and minimize contact or movement of finished panels during shipment.

4.6.4 Shipment from the factory will be by truck, hauling the tank components exclusively.

5 ERECTION

5.1 Foundation

5.1.1 The tank foundation is a part of this contract and shall be installed by the tank bidder.

5.1.2 The tank foundation shall be designed by the manufacturer to safely sustain the structure and its live loads.

5.1.3 Tank foundation design shall be based on the soil bearing capacity given in section 2.5.4 above as determined by geotechnical analysis performed by a licensed soils engineer. The cost of this investigation and analysis is not to be included in the bid price. Copies of the soil report are to be provided to the bidder prior to bid date by the Owner or Engineer.

5.1.4 Foundation designs for soil bearing strengths less than that

specified, and those designs deviating from tank manufacturers' standard shall be the responsibility of the Owner and his Engineer based on tank live and dead loading data provided by the tank manufacturer.

5.1.5 Embedded starter shall be 19" or 25" as determined by manufacturer.

5.1.6 Slot Mount concrete footing is not acceptable.

5.2 Tank Floor Options: (Check one)

5.2.1 Glass Coated Bolted Steel Floor

5.2.2 Bolted steel panels shall be either placed over a 3 inch (76 mm) compacted sand base contained by a steel or concrete ring wall, or a non-extruding and resilient bituminous type filler meeting the requirements of ASTM D1751 if set on a concrete slab.

5.2.3 A plastic encapsulated nut shall be used to cover the bolt threads exposed on the inside of the floor. The plastic encapsulation shall be NSF compliant.

5.2.4 Leveling of the starter ring shall be required and the maximum differential elevation within the ring shall not exceed 1/8 inch (3 mm) , nor exceed 1/16 inch (2 mm) within any 10 feet (3048 mm) of length.

5.2.5 Concrete Floor

5.2.5.1 The floor design is of reinforced concrete with an embedded glass coated steel starter sheet per the manufacturer's design and in accordance with AWWA D103 latest edition, Sec 11.4. Slot Mount style foundation is not acceptable.

5.2.5.2 Leveling of the starter ring shall be required and the maximum differential elevation within the ring shall not exceed 1/8 inch (3 mm) , nor exceed 1/16 inch (2 mm) within any 10 feet (3048 mm) of length.

5.2.5.3 A leveling plate assembly consisting of two anchor rods and a slotted plate shall be used to secure the starter ring, prior to encasement in concrete. Installation of the starter ring on concrete blocks or bricks, using shims for adjustment, is not permitted.

5.2.5.4 Place one butyl rubber elastomer waterstop seal on the inside surface of the starter ring below concrete floor line. Place one bentonite impregnated water seal below the butyl

rubber seal. The materials shall be installed in accordance with tank manufacturer's instructions.

5.3 Sidewall Structure

5.3.1 Field erection of the glass-coated, bolted-steel tank shall be in strict accordance with the procedures outlined in the manufacturer's erection manual, and performed by an authorized dealer of the tank manufacturer, regularly engaged in erection of these tanks, using factory trained erectors.

5.3.2 Specialized erection jacks and building equipment developed and manufactured by the tank manufacturer shall be used to erect the tanks.

5.3.3 Particular care shall be taken in handling and bolting of the tank panels, structural members, and appurtenances to avoid abrasion of the coating system. Prior to a liquid test, all surface areas shall be visually inspected by the Engineer.

5.3.4 An electrical leak test shall be performed during erection using a wet sponge 9 volt leak detection device. All electrical leak points found on the inside surface shall be repaired in accordance with manufacturer's published touch up procedure.

5.3.5 No backfill shall be placed against the tank sidewall without prior written approval of the tank manufacturer. Any backfill allowed shall be placed according to the strict instructions of the tank manufacturer.

5.4 Roof

5.4.1 Tanks with diameters of 14 to 31 feet (4267 to 9449 mm) shall include a radially sectioned roof fabricated from glass - coated, bolted steel panels, as produced by the tank manufacturer, and shall be assembled in a similar manner as the sidewall panels utilizing the same sealant and bolting techniques, to assure a weather tight assembly. The roof shall be clear - span and self-supporting. Both live and dead loads shall be carried by the tank walls. The roof shall be of a rolled knuckle design, with no rolled angle connection between sidewall and roof panels. The manufacturer shall furnish a roof opening which shall be placed near the outside tank ladder and which shall be provided with a hinged cover and a hasp for locking. The opening shall have a clear dimension of at least 24 inches (610 mm) in one direction and 15 inches (381 mm) in the other direction. The opening shall have a curb at least 4 inches (102 mm) in height, and the cover shall have a downward overlap of at least 2 inches (51

mm), or a gasketed weather-tight cover in lieu of the 4 inch (102 mm) curb and 2 inch (51 mm) overlap.

5.4.2 Roofs for tanks greater than 31 feet (9449 mm) in diameter shall be constructed of non-corrugated triangular aluminum panels which are sealed and firmly clamped in an interlocking manner to a fully triangulated aluminum space truss system of wide flange extrusions, thus forming a dome structure.

5.4.2.1 The dome shall be clear span and designed to be self-supporting from the periphery structure with primary horizontal thrust contained by an integral tension ring.

5.4.2.2 The dome and tank shall be designed to act as an integral unit. The tank shall be designed to support an aluminum dome roof including all specified live loads.

5.4.2.3 Materials:

5.4.2.3.1 Triangulated dome frame struts: AA6005A-T6 aluminum.

5.4.2.3.2 Structural frame node plates: 0.375 inch (10 mm) nominal thickness, AA6061-T6 aluminum,

5.4.2.3.3 Triangular dome panels: 0.050 inch (1 mm) nominal thickness, AA3003-H16 aluminum Sheet.

5.4.2.3.4 Triangular skylight panels, (if specified): nominal thickness of ¼ inch (6 mm) thick clear acrylic or polycarbonate.

5.4.2.3.5 Perimeter tension/compression ring: AA6005A-T6 aluminum.

5.4.2.3.6 Fasteners: AA2024-T4 aluminum or austenitic series 300 stainless steel as required by the manufacturers design.

5.4.2.3.7 Sealant: Silicone, conforming to Federal Specification TT-S-00230.

5.4.2.3.8 Gaskets: Silicone, conforming to Federal Specification ZZ-R-765, Class 2, Grade 50 or equal or Neoprene conforming to ASTM C509-00.

5.4.2.3.9 Dormers, doors, and hatches: AA6061-T6, AA6005A-T6, AA5086-H34 or AA5052-H36 aluminum, 0.090inch (2 mm) nominal thickness.

5.4.2.4 Supplier shall be CST Covers of Lenexa, Kansas.

5.4.3 Roof Vent

5.4.3.1 A properly sized vent assembly in accordance with AWWA D103 shall be furnished and installed above the maximum water level of sufficient capacity so that at maximum design rate of water fill or withdrawal, the resulting interior pressure or vacuum will not exceed ½ inch (13 mm) water column.

5.4.3.2 The overflow pipe shall not be considered to be a tank vent.

5.4.3.3 The vent shall be constructed of aluminum such that the hood can be unbolted and used as a secondary roof access.

5.4.3.4 The vent shall be so designed in construction as to prevent the entrance of birds and/or animals by including an expanded aluminum screen (½ inch [13 mm]) opening. An insect screen of 23 to 25 mesh polyester monofilament shall be provided and designed to open should the screen become plugged by ice formation.

5.5 Appurtenances (per AWWA D103, Section 5)

5.5.1 Pipe Connections

5.5.1.1 Where pipe connections are shown to pass through tank panels, they shall be field located, saw cut, (acetylene torch cutting or welding is not permitted), and utilize an interior and exterior flange assembly. Tank shell reinforcing shall comply with AWWA D103 latest edition. A single component urethane sealer shall be applied on any cut panel edges or bolt connections.

5.5.1.2 Overflow piping shall be _____ inches (_____ mm) diameter schedule 80 PVC, seamless aluminum tubing, or FRP.

5.5.2 Outside Tank Ladder

5.5.2.1 An outside tank ladder shall be furnished and installed as shown on the submittal drawings.

5.5.2.2 Ladders shall be fabricated of aluminum and utilize grooved, skid-resistant rungs.

5.5.2.3 Safety cage and step-off platforms shall be fabricated of galvanized steel. Ladders shall be equipped with a hinged lockable entry device.

5.5.3 Access Doors

5.5.3.1 One bottom access door shall be provided as shown on the submittal drawings in accordance with AWWA D103.

5.5.3.2 The manhole opening shall be a minimum of 24 inches (610 mm) in diameter. The access door (shell manhole) and the tank shell reinforcing shall comply with AWWA D103 latest edition, Sec. 5.1.

5.5.4 Identification Plate: A manufacturer's nameplate shall list the tank serial number, tank diameter and height, and maximum design capacity. The nameplate shall be affixed to the tank exterior sidewall at a location approximately 5 feet (1524 mm) from grade elevation in a position of unobstructed view.

5.5.5 Cathodic Protection

5.5.5.1 A passive cathodic protection system shall be designed and supplied by the tank manufacturer based upon information supplied by the Engineer or Owner.

6 FIELD TESTING

6.1 Hydrostatic

6.1.1 Following completion of erection and cleaning of the tank, the structure shall be tested for liquid tightness by filling tank to its overflow elevation.

6.1.2 Any leaks disclosed by this test shall be corrected by the authorized dealer in accordance with the manufacturer's recommendations.

6.1.3 Water required for testing shall be furnished by the Owner at the time of tank erection completion, and at no charge to the tank erector. Disposal of test water shall be the responsibility of the Owner.

6.1.4 Labor and equipment necessary for hydrostatic tank testing is to be included in the price of the tank.

7 DISINFECTION

7.1 Standards

7.1.1 The tank structure shall be disinfected at the time of testing by chlorination in accordance with AWWA Standard C652-02 "Disinfection of Water Storage Facilities" as modified by the tank

manufacturer.

7.1.2 Disinfection shall not take place until tank sealant is fully cured.

7.1.3 Acceptable forms of chlorine for disinfection shall be:

7.1.3.1 Liquid chlorine as specified in AWWA C652-02.

7.1.3.2 Sodium hypochlorite as specified in AWWA C652-02.

7.1.4 Acceptable methods of chlorination shall be:

7.1.4.1 Chlorination method 1 as outlined in AWWA C652-02 Section 4.3.

7.1.4.2 Chlorination method 2 as outlined in AWWA C652-02 Section 4.3.

7.1.4.3 Chlorination method 3 as outlined in AWWA C652-02 Section 4.3.

7.1.5 Acceptable application methods shall be:

7.1.5.1 Chemical feed pump.

7.1.5.2 Spraying, brushing, or painting of all water-contact surfaces.

8 TANK MANUFACTURER'S WARRANTY

8.1 The tank manufacturer shall include a warranty for the tank materials and coating. As a minimum, this warranty shall provide assurance against defects in material or workmanship for the period of 1 year and corrosion of the glass coated surface for the period of 5 years.

9 References

9.1 SSPC SP-10 - Surface Preparation Standard – Near-White Metal Blast Cleaning

9.2 ASTM C633-79 - Standard Test Method for Adhesion or Cohesive Strength of Flame-Sprayed Coatings

9.3 ISO 28706-1:2008 - Vitreous and Porcelain Enamels -- Determination of Resistance to Chemical Corrosion

9.4 ISO 2859 – Sampling Procedures for Inspection by Attributes

9.5 EN 14430:2004 – Vitreous and Porcelain Enamels – High Voltage Test

9.6 ISO 6370-2 – Vitreous and Porcelain Enamels – Determination of

Resistance to Abrasion