

# Steele Plastics, Inc

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## Specifications

### Tapered Fiberglass Basin/wetwells

#### SCOPE

This specification is intended to describe the minimum design and manufacturing requirements for tapered fiberglass reinforced plastic sump basins and wetwells supplied by Steele Plastics Inc.

#### REFERENCED STANDARDS

- ASTM D2583, Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
- ASTM D3753, Standard Specification for Glass-Fiber Reinforced Polyester Manholes and Wetwells.
- AWWA C950, Fiberglass Pressure Pipe.

#### DESIGN

**General:** Shell design shall be in accordance with the methods and formulas in AWWA C950 M-45. Design of flat bottoms shall account for both limiting stress and deflection. Design shall be based on industry standard lamination analysis for the glass reinforcement layers and resins system. Design shall determine cylinder and flat bottom thicknesses.

**Laminate Properties:** The minimum flexural modulus in the circumferential direction shall be 1,000,000 psi and in the longitudinal directions shall be 1,000,000 psi.

**Wall Thickness:** Wall thickness shall vary with basin/wetwell height. Calculated wall thicknesses shall be based on the following site assumed conditions:

- Soil Modulus: 700 psi.
- Soil Density: 120 Lbs. per cubic foot.

Calculations shall employ a Luchers's safety factor of 2.

#### MATERIALS

**Resin:** Resins used shall be commercial grade unsaturated polyester type, suitable for the intended service as indicated by usage history or resin manufacturer's recommendation.

**Cure System:** Resin promotion and catalyst system used shall follow resin manufacturers' guidelines.

**Fillers and additives:** No fillers or resin extenders of any type shall be utilized. A maximum of two percent by weight of any commercial grade thixotropic agent may be added to resins for the purpose of viscosity control.

**Reinforcing Materials:** Reinforcing material shall be commercial grade "E" type glass fibers in the form of chopped strand mat, chopped roving, woven roving or continuous roving. Glass fibers shall be treated with a coupling agent that facilitates bonding between the reinforcement and the resin.

## **Laminate**

The exterior surface shall be relatively smooth with no sharp projections. Hand-work finish shall be utilized to ensure that enough resin is present to eliminate exposed fibers. The exterior surface shall be free of delamination, exposed fibers and blisters larger than 0.5 inches in diameter. The interior surface shall be resin-rich with no exposed fibers. The surface shall be free of crazing, delamination, blisters, and wrinkles larger than 0.125 inches or greater in depth.

The wall and bottom laminates shall have a glass content of 30%  $\pm$  5% glass content by weight and resin content of 70%  $\pm$  5%.

## **APPURTENANCES**

**Top Flange:** The basin shall have a top flange that is 3" larger in diameter than the interior diameter of the tank.

**Bottom Anti-floatation Flange:** The bottom anti-float flange shall be a minimum of 3" larger in diameter than the basin/wetwell and be constructed to withstand the maximum uplifting force that could be exerted with an empty wet well and full water column outside the tank.

**Cover Attachments:** Stainless steel threaded inserts shall be installed in the top flange of the basin/wetwell to accommodate attachment of covers. The inserts shall be 3/8 inch diameter in a 6-bolt pattern, 60 degrees apart, and secured using polyester resin to permanently hold in place.

## **QUALITY ASSURANCE**

**Visual Acceptance:** The inner surface shall be free of exposed fiber, crazing and delaminations. No Blisters larger than 1/2 inch or wrinkles more than 1/8 inch in depth will be allowed.

**Laminate Cure:** Laminate cure shall be indicated by means of Barcol hardness measured in accordance with ASTM D2583. The average Barcol hardness shall not be less than 90 percent of the resin manufacturer's recommendation for clear resin castings.

**Workmanship:** All workmanship and materials throughout shall be of the highest quality available.

## **INSTALLATION**

Installation Instructions shall be laminated into the wall of each basin/wetwell. The installation must comply with the Installation Instructions.

This basin/wetwell shall be as manufactured by Steele Plastics Inc, Conway Arkansas.