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Specifications

FILAMENT WOUND STRAIGHT WALL FIBERGLASS BASIN/WETWELL WITH "FIGURE EIGHT" STYLE ATTACHED VALVE BOX

SCOPE

This specification is intended to describe the minimum design and manufacturing requirements for Filament Wound Fiberglass Reinforced Plastic Sump Basins and Wetwells supplied by Steele Plastics LLC.

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: 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 2,000,000 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. Uni-directional glass shall be used in addition to any other glass used. Glass fibers shall be treated with a coupling agent that facilitates bonding between the reinforcement and the resin.

LAMINATE

General: Basin laminates shall consist of three layers (inner surface, interior layer and structural layer).

Inner Surface: The inner surface shall consist of a resin rich layer with no exposed fibers.

Interior Layer: The interior layer shall consist of a resin rich reinforced layer with a nominal fiber content of 30 percent. Reinforcements shall be chopped strand mat or chopped roving.

Structural Layer: The structural layer shall be chop-hoop filament wound consisting of chopped strand and continuous roving reinforcement oriented in the hoop direction. As required, uni-directional roving shall be incorporated into this layer to enhance longitudinal properties. The exterior surface shall be relatively smooth and with no exposed fibers or sharp projections. Nominal fiber content on the structural layer shall be a minimum of 62 percent.

APPURTENANCES

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

Bottom: The bottom of the wet well shall be built to withstand full exterior water column with a maximum deflection 3/8".

Bottom Anti-floatation Flange: The bottom anti-float flange shall be a minimum of 3" larger in diameter than the wet well 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.

Basin/Wetwell: Shall be designed to withstand H-20 traffic load when properly installed.

Attached Valve Box: Shall be "Figure Eight" style. Valve box bottoms shall be designed to drain any accumulated liquid toward the wet well, and exit the dry well into the wet well thru a simple drain, or check valve drain assembly. The attached valve box is designed for one piece installation with no valves in the wet well. The valve box shall be attached in a manner as to be structurally sound and properly aligned with wet well. The valve box shall be sized in width and depth to accept the piping required to meet the specification.

Cover Attachments: Stainless steel threaded inserts shall be installed in the top flange of the basin/wetwell to accommodate attachment of cover. The inserts shall be 3/8 inch diameter in a bolt pattern as required to secure cover.

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 tank shall be as manufactured by Steele Plastics LLC, Conway Arkansas.