SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS

Sewage Maintenance Access Shafts

Sewage handling and pressure filtration equipment specialists.

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FRP Maintenance Manholes

The **SPEL FG Manhole** sewer manhole riser Access Shafts offer great advantages over traditional options.

Traditionally, risers have been manufactured from concrete and epoxy lined, but FRP risers offer lighter weight, corrosion resistance, and compressive strengths greater than most concrete products. Another key issue is corrosion resistance. Instead of using PVC liner or some type of coating, FRP offers a solution which you don't have to worry about corrosion.

The contractor receives the benefits of time and cost and the owner gets 100-year corrosion-resistant design.

In Sewage manholes, corrosion resistance is a major concern as many systems are designed to provide storage of combined storm and sanitary sewage in the tunnel after a big rain event. As the rain event subsides, the sewage is gradually released for treatment.

Storage events can lead to increased hydrogen sulfide, which is then released at manholes due to turbulence. Corrosion resistance of the shafts is as important as the sewer line. With FRP Manhole Access Shafts the corrosion-resistant offers the highest life cycle costs of any product.

Advantages

- Corrosion Resistance
- 100 year Design Life
- One Piece Sealed Manhole
- Light Weight
- Fast installation and ground opening times
- Manufactured in Control environments
- Smooth Surfaces and Wall
  - Cleaner Manhole's
  - Less Maintenance
  - No cracking
  - Reduction in Odour

Sizes

The SPEL FG Manhole has many diameters to cater for all applications; the shafts can be up to 4 meters in Diameters with 2.5m Take off pipes. The SPEL FG Manhole, is not limited in any way other than Transport, the units are delivered in one piece to site ready for connection, saving Time and money in the operation. Standard diameters as follows with depths up to Transport restrictions;

- 1000mmØ
- 1200mmØ
- 1520mmØ
- 1850mmØ
- 2200mmØ
- 2470mmØ
- 3000mmØ
- 4000mmØ

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Standard Specifications

All FRP Manhole Shaft Structures meet the performance intent for the design of a buried Manhole Shaft.

All FRP structures will be verified in respect to the design and construction details submitted to the Composites engineer and the appropriateness of the applied design methodology within the bounds of:

- AS1546.1:2008 Section 8: Standard Specification for Glass Fibre-Reinforced Plastic Septic Tanks
- ASTM D-3753: Standard Specification for Glass-Fiber Reinforced Polyester Manholes.
- ASME RTP-1.: Standard Specification for Reinforced Thermoset Plastic Corrosion-Resistant Equipment.
- AS2634-1983, Chemical plant equipment made from glass-fibre reinforced plastics (GRP) based on thermosetting resins
- ASME RTP-1, Reinforced Thermoset Plastic Corrosion-Resistant Equipment

Product Construction Method is:

- Internal Corrosion Barrier Contact Molded
  - 0.5mm “C” Glass Veil Surface layer with Hetron 922 (or equivalent) Vinyl Ester Resin.
- Internal Corrosion Barrier Backing Layers
  - 2.5mm ‘E’ Glass Chop Strand tie layer with Hetron 922 (or equivalent) Vinyl Ester Resin.
- Structural Laminate
  - ‘E’ Glass reinforcement in chopped and continuous strands.
  - Minimum glass content 50% (Thickness according to XTD Drawings)
- Structural Stiffeners
  - Polyurethane Foam rib former overlaid with ‘E’ Glass reinforcement in chopped and continuous strands. Minimum glass content 50%
  - (Thickness according to XTD Drawings)
- External Surface - Final surface
  - 0.5mm “C” Glass Veil Surface layer with Hetron 922 (or equivalent) Vinyl Ester Resin.
- External Surface - Sealer
  - Pigmented ISO/NPG Flowcoat for external protection.

Design

The Sewer Manhole Structures are Designed within the constraints of:

- AS1546.1:2008 Section 8: Standard Specification for Glass Fibre-Reinforced Plastic Septic Tanks
- ASTM D-3753: Standard Specification for Glass-Fiber Reinforced Polyester Manholes.
- ASME RTP-1.: Standard Specification for Reinforced Thermoset Plastic Corrosion-Resistant Equipment.
- AS2634-1983, Chemical plant equipment made from glass-fibre reinforced plastics (GRP) based on thermosetting resins
- ASME RTP-1, Reinforced Thermoset Plastic Corrosion-Resistant Equipment Design with the following process

The Engineering process is:

- Full set of Engineering Design Calculations
  - Shaft, Roof and Base Calculations
  - Anti-Floatation Ballast Calculations
- Design Verification for:
  - Engineering Design
  - Anti-Floatation, Back fill and Installation details

The Manhole is engineered for trafficable area’s allowing the one unit to suit all applications, the top apron slab will need to take into account the subjected area traffic loadings.

FRP Maintenance Manholes

Access Openings & Covers

Different applications often require different types of covers. GEBEL can help you with the best choice of cover for your application.

Openings can be tapered back way to 600Dia, 900Dia, 600 x 600, 600 x 900, 900 x 900 and 900 x 1200

Some Cover Options are:

- Cast Iron covers
- Aluminium with Safety Grates
- FRP Covers
- Lockable, gas tight covers constructed from mild steel galvanised, stainless steel and aluminium.
- Lockable safety grates constructed from mild steel galvanised, stainless steel and aluminium.

Ladders

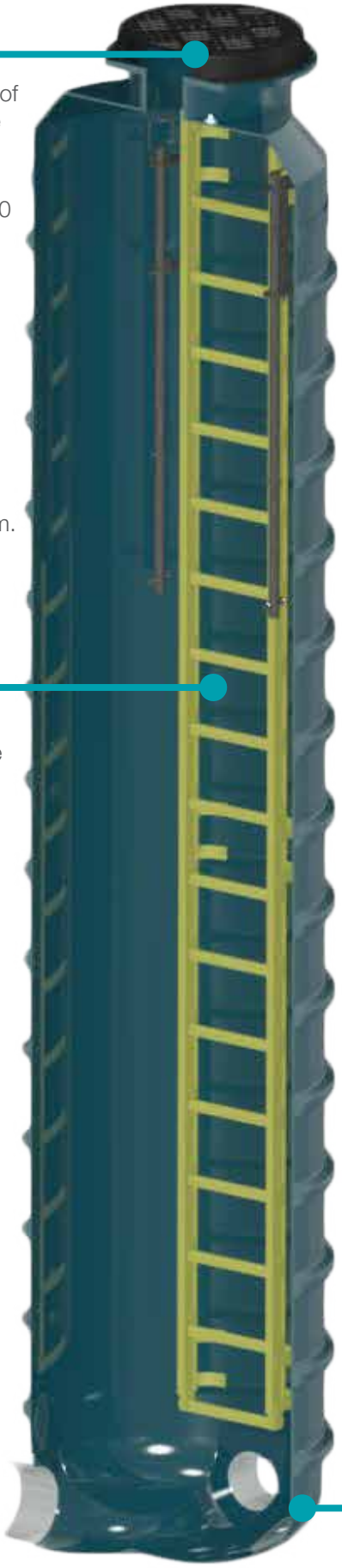
Our manholes can be shop fitted with ladders constructed from steel FRP or stainless steel. The ladders can be fitted with extension handles. The stations can be fitted also with platforms and fall safety nets.

- Full 316 Stainless Steel Construction
  - 316 Stainless Steel Stanchions
- FRP Add- A-Step Ladder
  - 316 Stainless Steel Stanchions

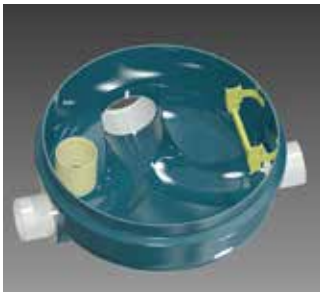
Connections

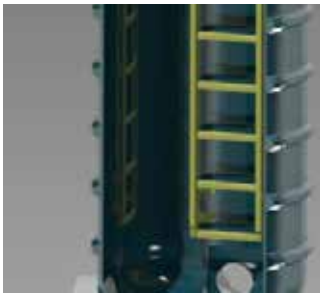
The FRP SPEL FG Manhole a are supplied complete with the connection couplings or flanges ready for installation, typical connections are as follows:

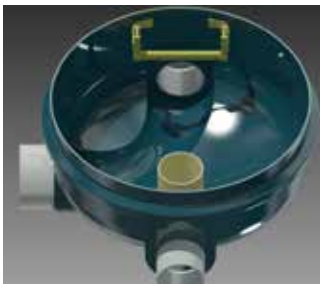
- DWV Sockets
- Flanges
- Concrete Pipe Collars
- Polypipe Sockets



Base Channel Designs







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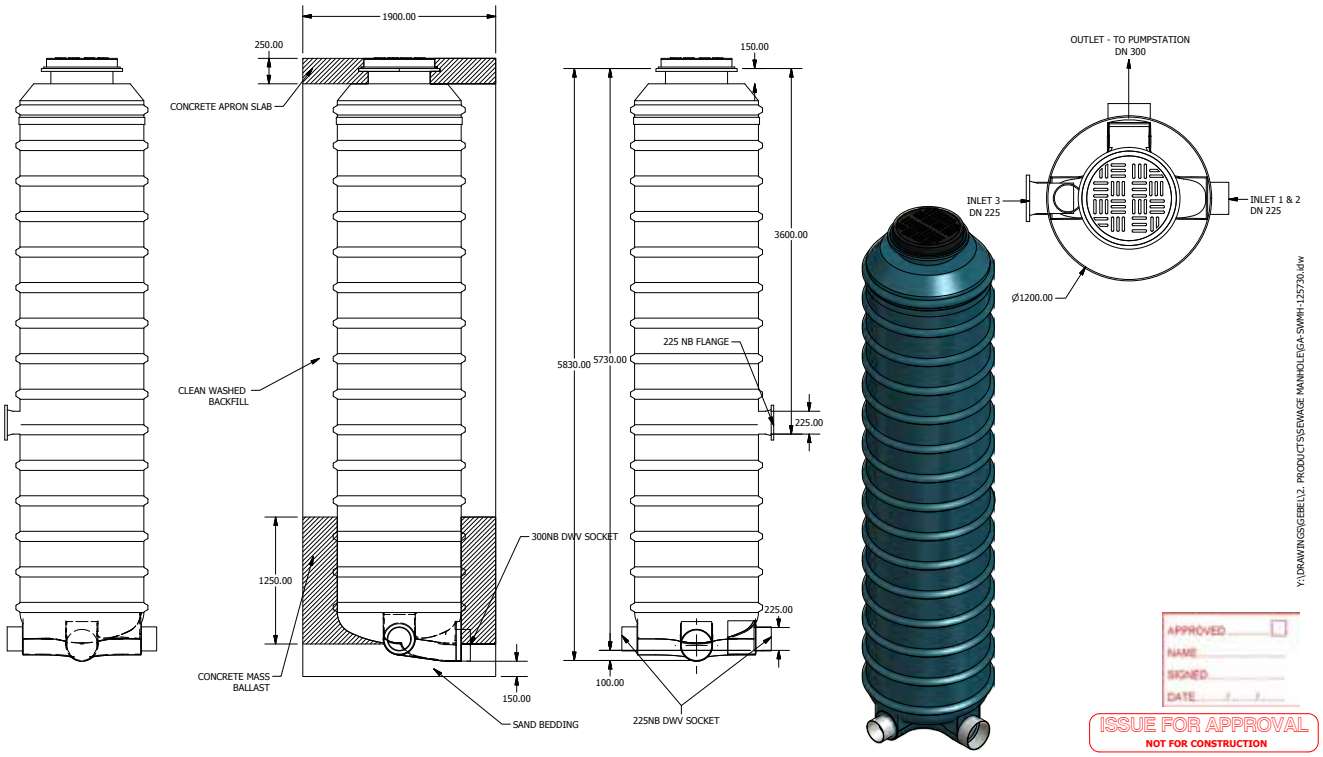
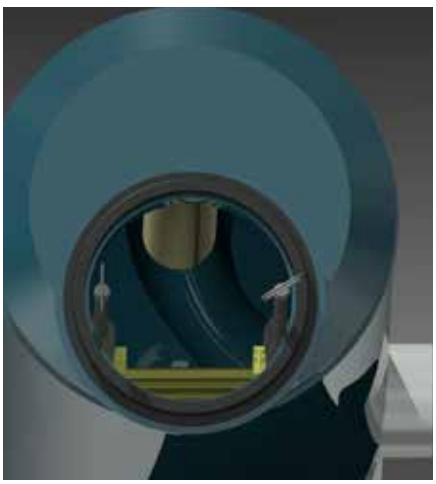
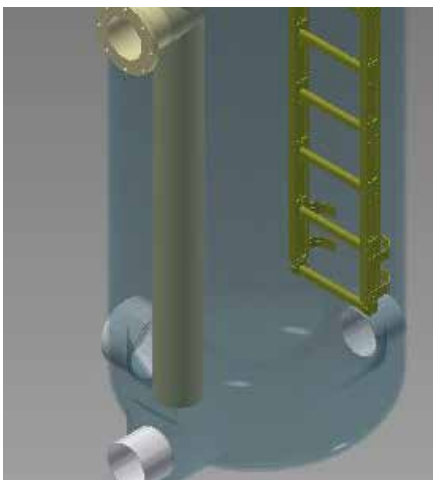
Technical Drawing







FRP Maintenance Manhole

Installation

A FRP Manhole can be installed in 1 day. Fast installation times with corrosion resistance gives the asset owner years of trouble free service and decreases asset life cycle costs.

Ballast Information on prevention of uplift against high water tables is as per the Sewage Pumps station Installation Guide M200.

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Projects

Normanton QLD

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