Technical Specification for
Fiberglass Gravity Sewer Pipe

Part 1: General

1.01 Scope
This specification designates the manufacturing, design and installation requirements of Fiberglass (glass-fiber-reinforced polymer) Gravity Sewer Pipe for sanitary sewer systems, storm sewers and industrial applications. Fiberglass pipe and couplings shall be manufactured in accordance with ASTM D3262 (latest edition).

1.02 References
This specification references American Society of Testing and Materials (ASTM) standard specifications, which are made a part hereof by such reference and shall be the latest edition and revision thereof.
A. ASTM D3262 Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe
B. ASTM D3681 Standard Test Method for Chemical Resistance of “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe in a Deflected Condition
C. ASTM D4161 Standard specification for “fibreglass” pipe joints using flexible elastomeric seals

Part 2: Product

2.01 Materials
A. Resin Systems: The manufacturer shall use only approved polyester resin systems with a proven history of performance of in this particular application.
B. Glass Reinforcements: The reinforcing glass fibers to be used to manufacture the components shall be of the highest quality commercial grade of glass filaments suitably treated with binder and sizing compatible with impregnating resins.
C. The internal liner shall be suitable for service in a sewer pipe, and shall be highly resistant to exposure to sulfuric acid as produced by biological activity from hydrogen sulfide gases. Pipe shall meet or exceed requirements off ASTM D3681.
D. Silica Sand: Sand shall be minimum 98% silica with a maximum moisture content of 0.2%
E. Additives: Resin additives, such as curing agents, pigments, dyes, fillers, thixotropic agents, etc., when used, shall not detrimentally effect the performance of the product.
F. Elastomeric Gaskets: Gaskets shall be supplied by qualified gasket manufacturers and be suitable for the service intended.

2.02 Manufacturing and Product Construction
A. The pipes shall be manufactured in accordance with ASTM D3262.
B. The pipe shall be field connected with glass reinforced plastic sleeve couplings that utilize elastomeric sealing gaskets as the sole means to maintain joint water tightness. The joints shall utilize elastomeric sealing gaskets meeting the performance requirements of ASTM D4161.
C. All fittings shall be fabricated from pipe meeting the requirements of these standards. Ductile iron, stainless steel or fusion bonded epoxy coated steel fittings may also be used.

2.03 Dimensions
A. Diameters: The outside diameter of pipe shall be per the ASTM D3262-Table 3.
B. Lengths: Pipe shall be supplied in nominal lengths of 10 - 40 feet. Actual lay length shall be nominal ±1 inch. Special short lengths may be used where surface geography or installation conditions require shorter lengths.
C. Wall Thickness: The average wall thickness of the pipe shall not be less than the nominal wall thickness published in the manufacturer’s literature, and the minimum wall thickness at any point shall not be less than 87.5% of the nominal wall thickness.
D. **End Squareness:** All points around each end of a pipe unit shall fall within ±1/4 inch or ±0.5% of the nominal diameter of the pipe, whichever is greater, to a plane perpendicular to the longitudinal axis of the pipe.

2.04 **Testing**

A. **Pipes:** Pipe shall be manufactured in accordance with ASTM D3262.

B. **Joints:** Joints shall meet the requirements of ASTM D4161.

C. **Stiffness:** Each pipe shall have sufficient strength to exhibit the minimum pipe stiffness at 5% deflection as required by the Engineer. Minimum pipe stiffness provided by pipe diameter shall be as shown on plans. Stiffness shall be tested in accordance with the test method of ASTM D2412. A minimum of one pipe shall be tested every 100 lengths of each type, grade, and size pipe produced.

D. **Chemical Resistance:** Pipe shall meet or exceed the requirements of ASTM D3262 Table 4 when tested in accordance with ASTM D3681.

2.05 **Customer Inspection**

The Owner or other designated representative shall be entitled to inspect pipes and witness the manufacturing process.

2.06 **Packaging, Handling and Shipping**

Packaging, handling and shipping shall be performed in accordance with the Manufacturer’s instructions.

**Part 3: Execution**

3.01 **Installation**

A. **Installation:** The Bedding, backfill and general installation requirements of pipe shall be in accordance with the project plans and specifications and the manufacturer’s recommended practices.

B. **Pipe Handling:** Use of slings, ropes or forklift is recommended. Do not use chains or cables.

C. **Jointing:**
   1. Thoroughly clean the pipe bell coupling grooves and rubber gaskets to ensure no dirt is present.
   2. Apply a pipe lubricant to the pipe ends and gaskets. Use only the lubricant supplied by the manufacturer.
   3. Use suitable methods to push or pull the pipes together without damaging the pipes.
   4. Contact manufacturer for the maximum angular deflection allowed.

D. **Field Tests:**
   1. **Infiltration / Exfiltration Test:** Maximum allowable leakage shall not exceed local specification requirements.
   2. **Low Pressure Air Test:** Each run of pipe may be tested with air pressure (max 5 psi). They system passes the test if the pressure drop due to leakage through the pipe or pipe joints is less than or equal to the specified amount over the prescribed time period.
   3. **Individual Joint Testing:** For pipes large enough for man entry; individual joints may be pressure tested with a portable tester to 5 psi max. with air or water in lieu of line infiltration, exfiltration, or air testing.
   4. **Deflection:** Maximum allowable long-term deflection shall not exceed 5% of the initial diameter.