SECTION 02611
BURIED FIBERGLASS REINFORCED PLASTIC (FRP) GRAVITY SEWER PIPE

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Centrifugally Cast Fiberglass Reinforced Polymer Mortar Pipe (CCFRPM)

1.2 RELATED WORK SPECIFIED ELSEWHERE
A. Section 02650 – Laying and Jointing Buried Pipe

1.3 REFERENCES
A. Commercial Standards: (Latest Revision)

1. ASTM D3262 – Standard Specification for “Fiberglass” (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe


PART 2 PRODUCTS

2.1 MATERIALS
A. Resin Systems: The manufacturer shall use only polyester resin systems with a proven history of performance in this particular application. The historical data shall have been acquired from a composite material of similar construction and composition as the proposed product.

B. Glass Reinforcements: The reinforcing glass fibers used to manufacture the components shall be of highest quality commercial grade E-glass filaments with binder and sizing compatible with impregnating resins.

C. Silica Sand: Sand shall be minimum 98% silica with a maximum moisture content of 0.2%.
D. Additives: Resin additives, such as curing agents, pigments, dyes, fillers, thixotropic agents, etc., when used shall not detrimentally affect the performance of the product.

E. Elastomeric Gaskets: Gaskets shall be supplied by qualified gasket manufacturers and be suitable for the service intended.

2.2 MANUFACTURE AND CONSTRUCTION

A. Pipes: Manufacture pipe by the centrifugal casting process to result in a dense, non-porous, corrosion-resistant, consistent composite structure

B. Joints: Unless otherwise specified, the pipe shall be field connected with fiberglass sleeve couplings that utilize elastomeric sealing gaskets made of EPDM rubber compound as the sole means to maintain joint watertightness. The joints must meet the performance requirements of ASTM D4161. Joints at tie-ins, when needed, may utilize fiberglass, gasket-sealed closure couplings.

C. Fittings: Flanges, elbows, reducers, tees, wyes, laterals and other fittings shall be capable of withstanding all operating conditions when installed. They may be contact molded or manufactured from mitered sections of pipe joined by glass-fiber-reinforced overlays. Properly protected standard ductile iron, fusion-bonded epoxy-coated steel and stainless steel fittings may also be used.

D. Flanges, elbows, reducers, tees, wyes, and other fittings shall, when installed, be capable of withstanding specified operating conditions. Field taps shall be made using “inserta-Tee” as manufactured by Fowler manufacturing Company, or equal. All fittings and accessories shall be furnished by the pipe supplier and shall have bell and/or spigot configuration compatible with the pipe.

E. Acceptable Manufacturer: Price Brothers, Hobas Pipe USA Inc., or approved equal.

2.3 DIMENSIONS

A. Diameters: The actual outside diameter (18 – 48 inches) of the pipes shall be in accordance with ASTM D3262. For other diameters, OD’s shall be per manufacturer’s literature.

B. Lengths: Pipe shall be supplied in nominal lengths of 20 feet. Actual laying length shall be nominal +1, -4 inches. At least 90% of the total footage of each size and class of pipe, excluding special order lengths, shall be furnished in nominal length sections.

C. Wall Thickness: The minimum wall thickness shall be the stated design thickness.

D. End Squareness: Pipe ends shall be square to the pipe axis with a maximum tolerance of 1/8 inch.
2.4 TESTING

A. Pipes: Pipes shall be manufactured and tested in accordance with ASTM D3262.

B. Joints: Coupling joints shall meet the requirements of ASTM D4161.

C. Stiffness: Minimum pipe stiffness when tested in accordance with ASTM D2412 shall be 46 psi (F/Y = 32.34 Kg/cm²).

2.5 INSPECTION

A. The OWNER or other designated representative shall be entitled to inspect pipes or witness the pipe manufacturing.

2.6 PACKAGING, HANDLING, SHIPPING

A. Packaging, handling, and shipping shall be done in accordance with the manufacturer’s instructions.

PART 3 EXECUTION

3.1 INSTALLATION

A. Burial: The bedding and burial of pipe and fittings shall be in accordance with the project plans and specifications and the manufacturer’s requirements.

B. Pipe Handling: Use textile slings, other suitable materials or a forklift. Use of chains or cables is not allowed.

C. Jointing

1. Clean ends of pipe and coupling components.

2. Apply joint lubricant to pipe ends and elastomeric seals of coupling. Use only lubricants approved by the pipe manufacturer.

3. Use suitable equipment and end protection to push or pull the pipes together.

4. Do not exceed forces recommended by the manufacturer for coupling pipe.

5. Join pipes in straight alignment then deflect to required angle. Do not allow the deflection angle to exceed the deflection permitted by the manufacturer.

D. Manhole Connections: Provide a water stop flange boot or gasket for connection of the fiberglass pipe to the manholes.
3.2 TESTS FOR GRAVITY SEWERS - GENERAL

A. Gravity sewers shall be required to pass a leakage test before acceptance. Leakage tests shall be as described in Section 02676.

B. All polyvinyl chloride and fiberglass sewer pipe shall be subject to deflection testing assuring that the maximum deflection of 5% has not been exceeded. Any pipe failing this test is subject to removal and replacement at the CONTRACTOR’s expense. Do not use pipe rounders.

3.3 TELEVISION INSPECTION

A. All sanitary sewer gravity lines shall be televiewed in accordance with Section 13511.