**FTS Guideline Specifications**

SECTION 33 16 00

# Pipeline Sump Tanks

FIBERGLASS TANK SOLUTIONS

PIPELINE SUMP TANKS

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete tank type below not required for project.

* + 1. Underground Pipeline Sump Tanks:
			1. Tank installations in the following locations:

\*\* NOTE TO SPECIFIER \*\* Delete locale not required.

* + - * 1. United States.
			1. For the following applications:

\*\* NOTE TO SPECIFIER \*\* Delete applications not required.

* + - * 1. Pipeline Sump Tanks.
	1. RELATED SECTIONS
		1. Section 02200 - Earthwork.
		2. Section 03300 - Concrete.
	2. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references by tank type not required.

* + 1. Underground Pipeline Sump Tanks:
			1. American Concrete Institute (ACI) standard ACI 318, Building Code Requirements for Structural Concrete.
			2. NFPA 30: Flammable and Combustible Liquids Code.
			3. NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages.
			4. NFPA 31: Standard for the Installation of Oil-Burning Equipment.
			5. ASTM D4097: Standard Specification for Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks
			6. ASTM D3299: Standard Specification for Filament-Wound Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks
	1. SUBMITTALS
		1. Submit under provisions of Section 01300 - Administrative Requirements.
		2. Product Data: Submit manufacturer's data sheets on each product to be used, including, but not limited to, the following:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation Manual and Operating Guidelines.
		3. Shop drawings: Tank manufacturer shall submit the following for review and approval prior to fabrication of the tanks:
			1. Detailed shop drawings of each tank complete with all accessories supplied by the manufacturer.
			2. Detailed shipping, handling and installation instructions.
	2. QUALITY ASSURANCE

\*\* NOTE TO SPECIFIER \*\* Delete locale not required.

* + 1. Tank installations:
			1. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction.
	1. DELIVERY, STORAGE, AND HANDLING
		1. General: Comply with tank manufacturer's Installation and Operating Guidelines recommendations for delivery, storage, and tank handling.
	2. WARRANTY
		1. Warranty: Provide manufacturer's standard limited warranty.
1. PRODUCTS
	1. MANUFACTURERS:

\*\* NOTE TO SPECIFIER \*\* Delete locale not required.

* + 1. Tank installations:
			1. Acceptable Tank Manufacturer: Fiberglass Tank Solutions, which is located at: 436 S. State Hwy 7, Camdenton, MO 65020. Telephone: 573-317-9620. Email: info@fgtsolutions.com. Web: fgtsolutions.com.
			2. Acceptable Pre-cast Deadmen Manufacturer: Fiberglass Tank Solutions, which is located at: 436 S. State Hwy 7, Camdenton, MO 65020. Telephone: 573-317-9620. Email: info@fgtsolutions.com. Web: fgtsolutions.com.
		2. Substitutions: Not permitted.
		3. Requests for substitutions will be considered in accordance with provisions of Section 01600 - Product Requirements.

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* 1. UNDERGROUND PIPELINE SUMP TANKS
		1. Tank Design - Fiberglass reinforced plastic (FRP) tanks:
			1. Tank Design: Double-Wall or Triple-Wall vessel as specified and shown on the Drawings.
			2. The tank size, fittings and accessories shall be as shown on the drawings.
			3. Tank shall be manufactured with continuous monolithic structural ribs that are placed at a standard 24" spacing along the cylinder of the tank.
			4. Tank shall be manufactured with a laminate consisting of resin and glass fiber reinforcement only. No sand/silica fillers or resin extenders shall be used.
			5. Tank shall be vented to atmospheric pressure.
			6. Tank shall be capable of handling liquids with specific gravity up to 1.1.
			7. Tank shall be compatible with liquids identified in the manufacturer's standard limited warranty.
			8. Actual tank capacity shall be equal to or greater than the nominal capacity listed on sales literature and production drawings.
			9. Tanks shall have ASME 80:10 tank ends, allowing for maximum capacity with minimum tank footprint.
			10. Multi-compartment tanks, the internal bulkhead/divider wall does not include any seam/joints on the tank exterior.
			11. Interior corrosion barrier: premium vinyl-ester used for resin-rich corrosion barrier with a minimum 100mil corrosion barrier, including C-Veil.
			12. Primary wall construction: filament or helically wound laminate of resin and continuous glass fiber with structural ribs integral to wall; ribs constructed over a foam form.
			13. Secondary (outer) wall for DW tanks bonded to inner wall using a 3D structural glass material forming a monitorable interstice.
			14. Exterior finish: smooth hot-coat finish for additional corrosion resistance.
		2. Loading Conditions - Tank shall meet the following design criteria:
			1. Internal Load - Tank shall be designed to withstand a 5-psig air-pressure test with a 5:1 safety factor.
			2. Surface Loads - Tank shall be designed to withstand surface H-20 and HS-20 axle loads when properly installed according to manufacturer's current Installation Manual and Operating Guidelines.
			3. External Hydrostatic Pressure - Tank shall be designed for 7 feet of overburden over the top of the tank, the hole fully flooded, and a safety factor of 2.5:1 against general buckling.
		3. Interstitial Space:
			1. The interstitial space between the tank walls shall be constructed with a three-dimensional glass fabric material that provides a structural bond between the tank walls while creating a defined interstice that allows for free flow of liquid.
			2. The interstice of the tank shall be designed to withstand 20-psig pressure.
		4. Tank Monitoring System:
			1. General:
				1. The continuous monitoring system shall include monitoring fluid factory-installed in the interstitial space and within a fiberglass tank-top mounted reservoir.
			2. Design:
				1. The continuous monitoring system shall be designed to always detect a leak in either the primary or secondary wall, regardless of the water table conditions at the installation site.
				2. The interstice of the tank shall be designed for a 5:1 safety factor beyond normal hydrostatic operating pressure to ensure structural integrity and to prevent false leak alarms.

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* + 1. Pipeline Sump Tank Applications:
			1. Governing Standards, as applicable:
				1. American Concrete Institute (ACI) standard ACI 318, Building Code Requirements for Structural Concrete.
				2. NFPA 30: Flammable and Combustible Liquids Code.
				3. NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages.
				4. NFPA 31: Standard for the Installation of Oil-Burning Equipment.
				5. ASTM D4097: Standard Specification for Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks
				6. ASTM D3299: Standard Specification for Filament-Wound Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks

\*\* NOTE TO SPECIFIER \*\* Delete the following three standards if the project is not in Canada.

* + - 1. Tank Accessories - Pipeline Sump Tanks Applications:
				1. Tank Anchoring:

Anchor straps shall be as supplied by tank manufacturer and designed for a maximum load of 25,000 lbs.

Galvanized turnbuckles shall be supplied by the tank manufacturer.

Prefabricated concrete anchors shall be manufactured and supplied by the tank manufacturer, designed to the ACI 318 standard, manufactured with 4,000 psi concrete and shall have adjustable anchor points.

* + - * 1. Manways:

The standard manway shall be flanged, 22 inches I.D. and complete with gaskets, bolts and cover.

* + - * 1. Manway Extensions:

The standard fiberglass manway extension shall be flanged, 22 inches I.D. and complete with gaskets, bolts and cover.

The top 3 feet minimum of extension shall be provided with white gel coat exterior finish.

* + - * 1. Threaded Fittings:

All threaded fittings shall be NPT half or full couplings, in 2-inch, 4-inch and 6-inch diameters.

Threaded fittings are available in FRP, carbon steel and stainless steel.

Fittings shall be installed on the tank-top centerline or in the cover of the manway.

* + - * 1. Flanged Fiberglass Nozzles:

Flanged fiberglass nozzles shall be flat faced and conform dimensionally to ASME B16.5 "Pipe Flanges and Flanged Fittings", Latest edition.

Maximum bolt torque on FRP flanges is 25 ft-lb, unless otherwise noted.

Standard nozzle sizes to be 2-inch, 4-inch, 6-inch, or 8-inch diameter.

All nozzles are to be gusseted. Gussets shall not interfere with hold down strap locations or flange bolt holes.

* + - * 1. Nozzle Extensions:

Fiberglass nozzle extensions shall be 2-inch, 4-inch, 6-inch, or 8-inch diameter FRP pipe with standard 2-inch, 4-inch, 6-inch, or 8-inch diameter flanges on both ends. Nozzle extensions shall be shipped loose with installation hardware.

Steel nozzle extensions shall be 2-inch, 4-inch, 6-inch, or 8-inch diameters size pipe meeting ASTM A53, type F, grade A or B, with flanges meeting ASME B 16.5, 150# bolting pattern, on both ends. Nozzle extensions shall be shipped loose with installation hardware.

Nozzle Extensions shall be to length and type.

* + - * 1. Mounting Hardware:

Flange nozzle bolts and nuts shall be provided for the nozzle blind flange, nozzle extension, manway, manway extension, sump and sump extensions. Bolts shall be ASTM A193, Grade B7, and nuts shall be ASTM A-194, Grade 2H.

Gaskets shall be fluorocarbon type FKM, meeting ASTM D1418 standards, and shall be new and shipped loose.

* + - * 1. Stinger Piping:

Stingers shall be constructed of FRP pipe matching the diameter of the flange nozzle and cut at 45 degree angle 12 inches off of the tank bottom.

Stainless steel stingers shall be a 6-inch flange x 3-inch pipe, Schedule 40, Type 316 and cut at 45 degree angle 12 inches off of the tank bottom.

Stingers shall be to length and type.

* + - * 1. Vents:

Vent shall be BAYCO 3 inches Station Vent #49 or approved equal.

* + - * 1. Gauge Hatch:

Hatch shall be a 4-inch or 8-inch VAREC Gauge Hatch or approved equal.

* + - * 1. Tank Upload Connection:

Tank upload connection shall be a Dixon 3-inch Stainless Steel quick Coupling with a 3-inch Dust Plug or approved equal.

* + - * 1. Secondary Containment Collars and Sumps:

The tank shall have factory-installed 42-inch or 48-inch diameter containment collars.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

1. EXECUTION
	1. TESTING
		1. Tank shall be tested according to the tank manufacturer's Installation Manual and Operating Guidelines in effect at time of installation.
	2. INSTALLATION
		1. Tank shall be installed according to the tank manufacturer's Installation Manual and Operating Guidelines in effect at time of installation.

END OF SECTION

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