Fiberglass Underground Tank Storage

Welcome

ARCSA Symposium

Brookshire, TX

May 21, 2026

Agenda

01 Who We Are

02 Benefits of Composite Materials

03 Manufacturing Process

04 Underground Applications

05 Installation

06 Resources

XERXES®

Our 47 Year History

Xerxes is a key part of the brand portfolio of Mattr, a global growth-oriented company specializing in sustainable products and solutions for the water, energy, infrastructure and transportation markets.

Xerxes was bought by Shawcor Ltd. in 2019. In 2020, Xerxes expanded its product line with its HydroChain™ Stormwater Management Systems products.

In June 2023, we introduced our new company name: **Mattr.** The name Xerxes remains the premiere brand name for market-leading fiberglass tanks.

Xerxes Corporation established in **1979**

Developed the first UL-listed double-wall fiberglass tank

More than 235,000 tanks manufacture and shipped

North America's largest manufacturer of underground storage tanks

TANK MARKETS

Fuel

Water and Wastewater

Water/Wastewater Tanks

Meeting regulatory requirements for:

Water tanks

- Recirculation
- Fire protection
- Potable water
- Rainwater
- Greywater

Wastewater tanks

- Onsite septic
- Industrial wastewater
- Decontamination

Plumbing-Engineered Solutions

- Oil-Water Separators
- Grease interceptors
- Solids-sand interceptors

Composite Technologies

North American Manufacturing Facilities

XERXES®

FLEXPIPE®

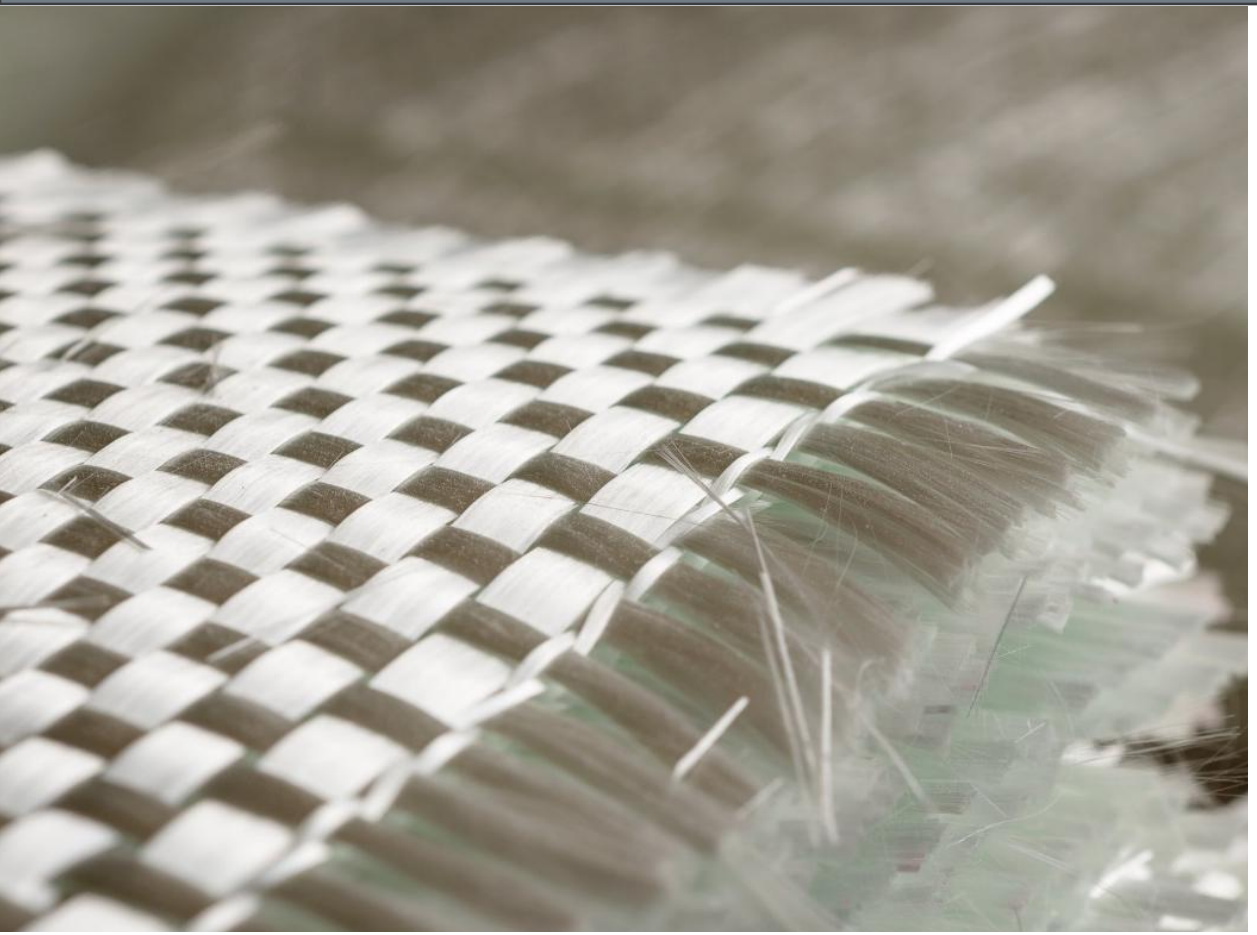
*New facility opening in 2024

Manufacturing Plant

Water Tank Options

- Single-wall & double-wall tanks
- Multicompartment tanks
- Single-tank installations
- Multiple-tank installations – can be designed in series or parallel field-joined and manifolded together
- Diameters – 4’,6’,8’,10’ &12’
- Volumes: 500 - 60,000 Gallons
- Over 70 lineal feet long!

Tank Material



Fiberglass-reinforced plastic:

Corrosion-resistant to both soil and stored liquids

100% impermeable and watertight material

100% premium resin and glass

Fiberglass Advantage

Material Advantage

- NO CORROSION MONITORING
- High Strength vs Weight Ratio

Structural Strength

- 7’ Ht. of cover, std thickness
- 7’ - *15’ HOC,* = thicker wall
- Not limited by water table
- Rated for traffic loads

XERXES®

Our Technology

Internal molding process

Integral ribs

Patented technology

The three key components are:

1. **Glass**
2. **Resin** ***(fuel, potable, other)***
3. **Catalyst**

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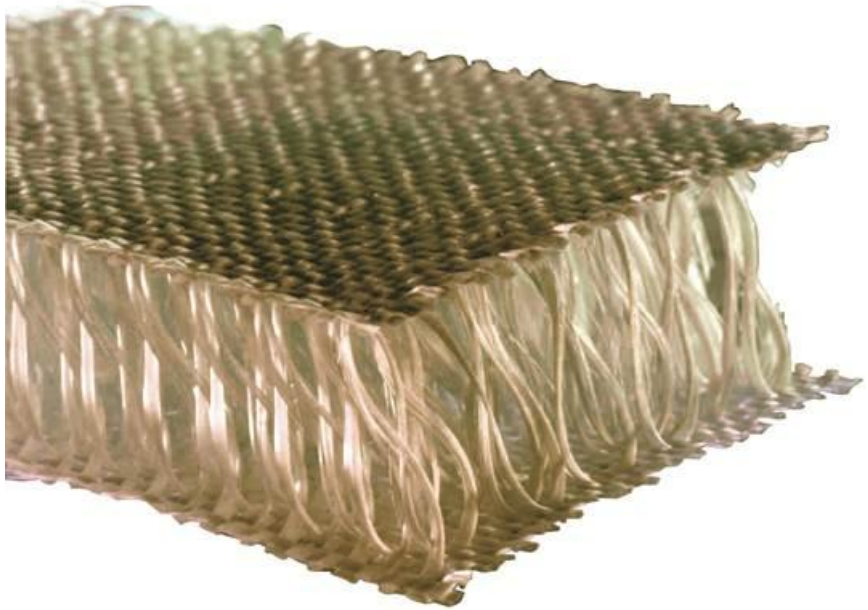
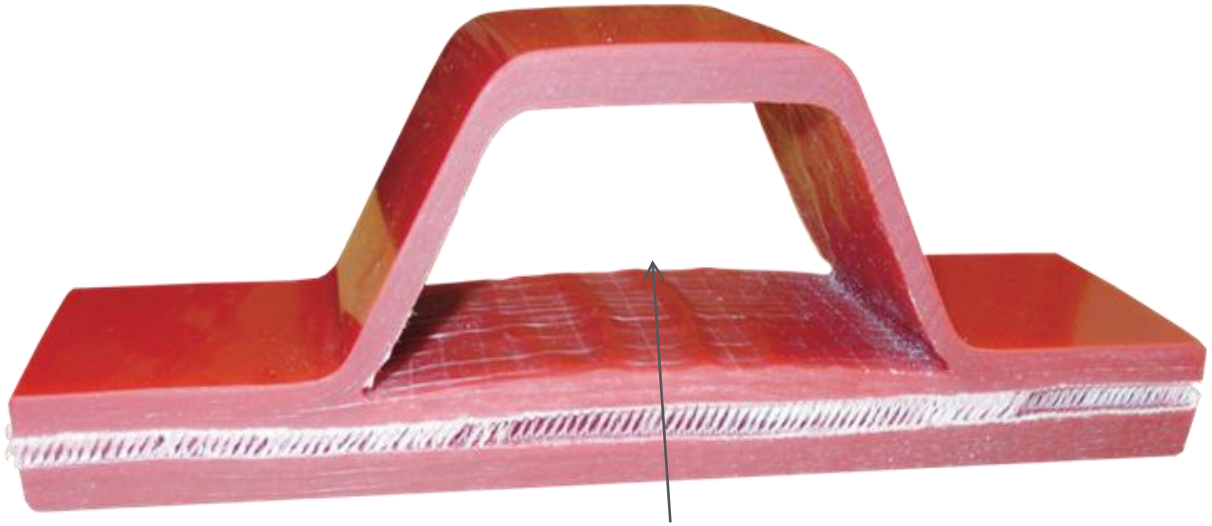
Double wall:

Unique to Xerxes Design

Wet or dry monitoring



Parabeam



Defined interstitial space

Level Sensors & Controls

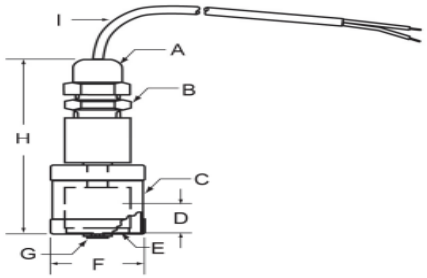
OMNTEC
Advanced Tank Monitoring & Leak Detection

LSF SENSOR
LIQUID LEVEL FLOAT SENSOR

With a compact-sized float, slosh shield and weighted collar, the LSF provides leak detection for a wide variety of applications. Ideal for use in stand pipes or sumps. Contact the factory for information on compatible controllers and special applications.

SPECIFICATIONS	
Operating Temperature **Oil** **Water**	 -40°F to +230°F (-40°C to +110°C) to +180°F (+82.2°C)
Stem & Mounting Material	Brass
Float Material	Buna N
Pressure, PSI, Max.	150
Switch	SPST, 20VA, N.C., Dry
Electrical Termination	PVC cable jacket

Consult factory for compatible controllers.
Current published specifications are subject to change without notification. Verify specifications with manufacturer.



A Sealing Nut
B Liquid Tight Fitting
C Slosh Shield
D 3/4" Actuation (19.0 mm)
E Float
F 1-7/16" (36.5 mm)
G Retaining Ring
H 3-1/2" REF. (88.9 mm)
I 25' Cable
Electrical Termination: 22 AWG, 2-Wire
Cable-Jacket Material Optional

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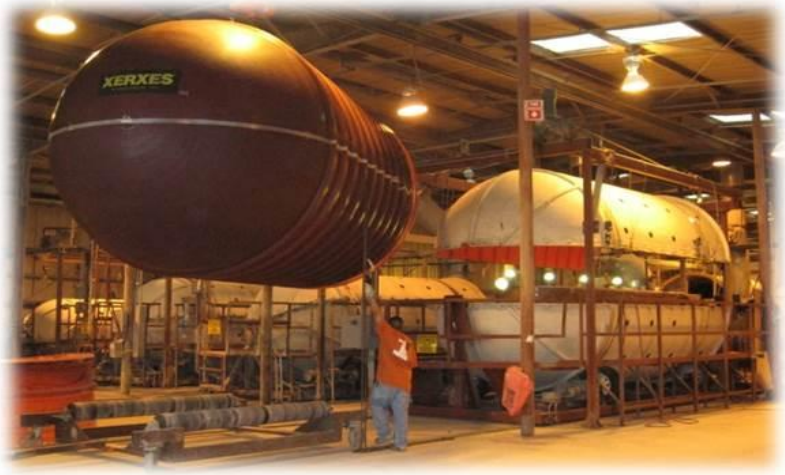

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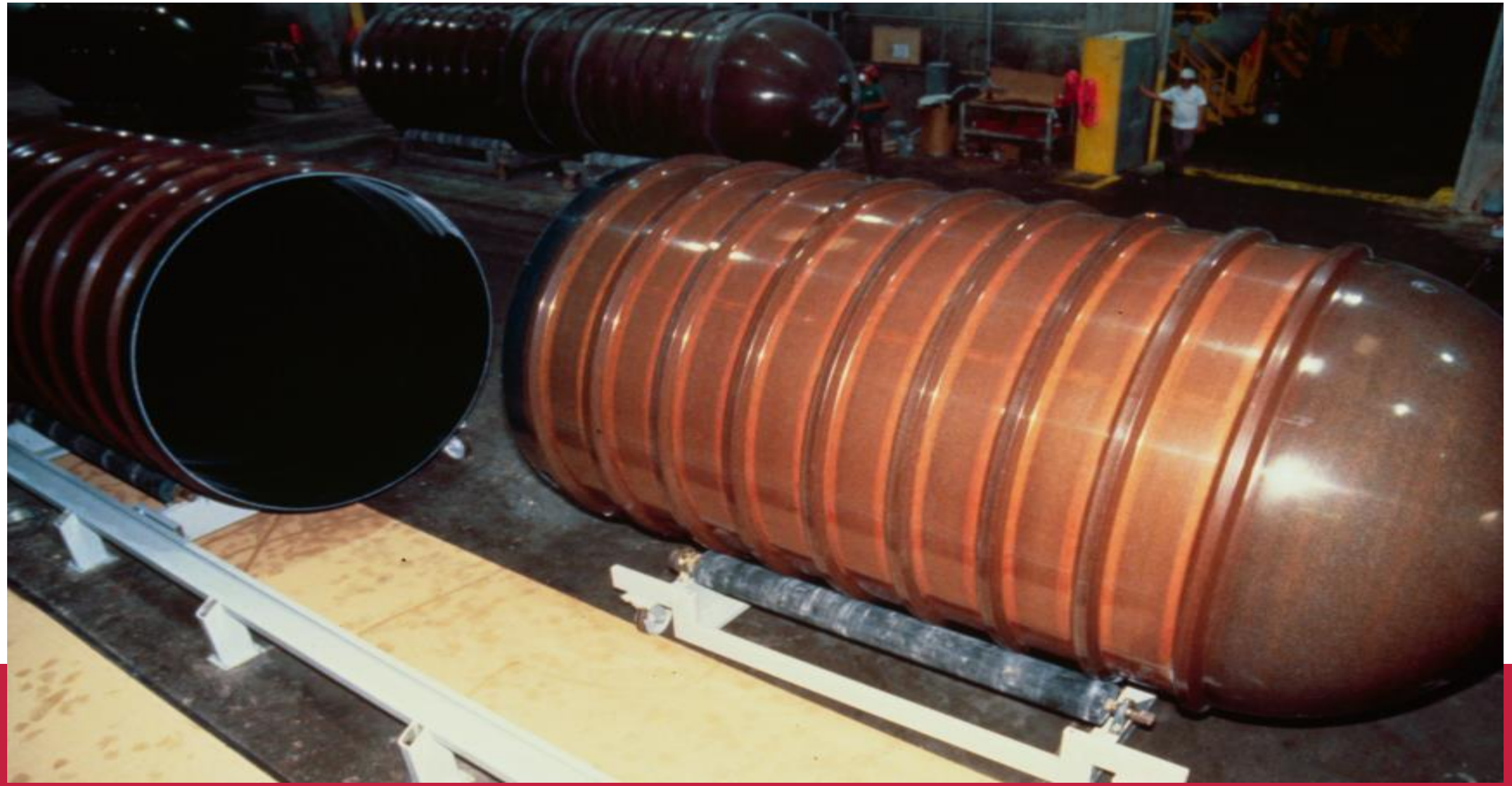
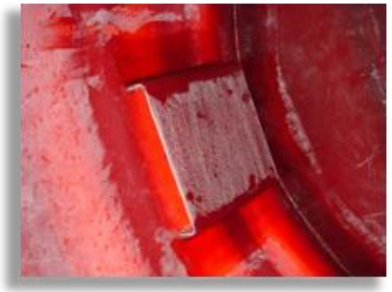


Fittings & Accessories

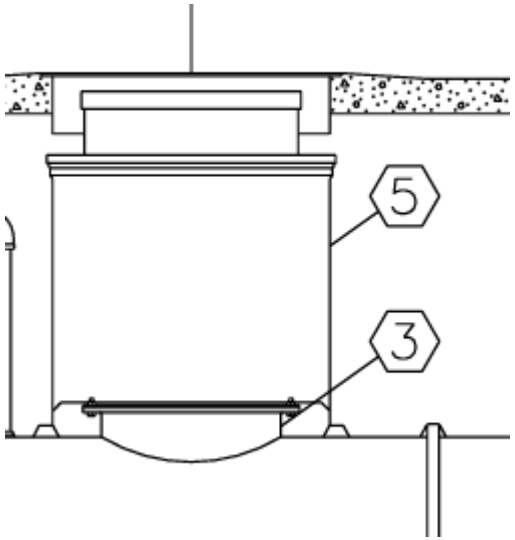


- Access openings & risers
- Hinged & lockable lids
- Flanged manway openings – bolt on extensions
- Inlet/outlet piping (flanged or pvc)
- Baffles and weirs
- FRP Pump platforms
- FRP Ladders
- Lifting lugs
- NPT threaded couplings

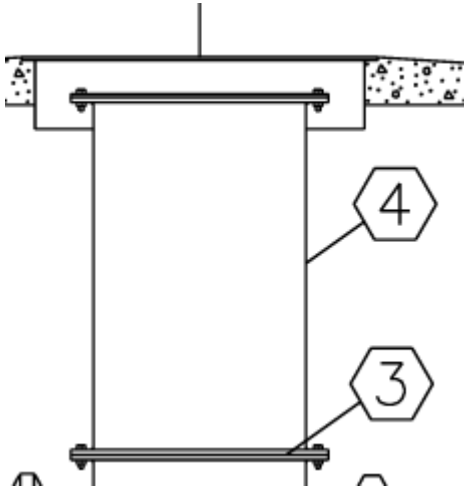
Access Options

Below Ground / Slab Application

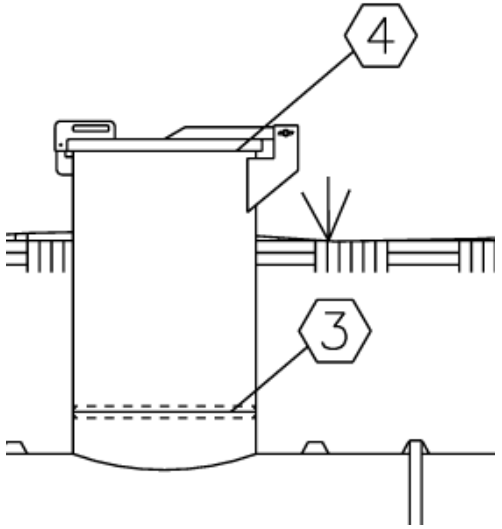
Sump



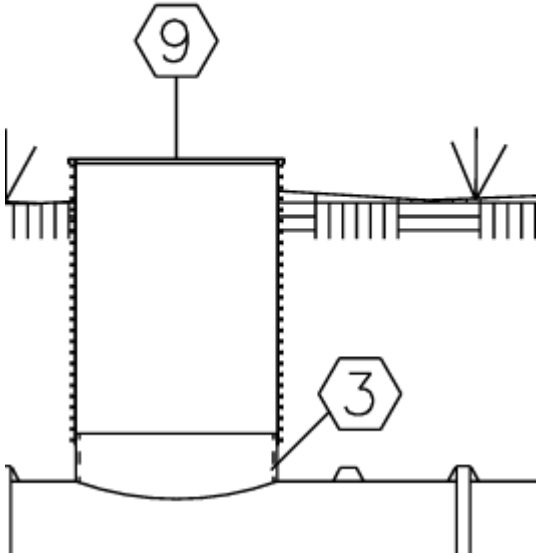
Bolt on Manway



Above Ground



FRP Riser w/Hinged Lockable lid



PVC access Riser

Water Tank Standards

“FRP” Tanks manufactured to meet:

- UL1316 – Flammable Liquids
- UL 2215 – Oil Water Separators

- ANSI/AWWA D120
- IAPMO/ANSI Z1000
- IAPMO/ANSI Z1001
- IAPMO/ANSI Z1002
- NFPA 20
- NFPA 22
- NFPA 1142
- NSF 61
- Local and regional codes

Tank Design

Domed endcaps:

Integral fabrication to tank body

More robust than welded flat endcaps

Allow for deep burial

Cylindrical shape:

Rounded smooth tank walls are easy to clean and pump out

No corners to trap debris

Why Go Underground?

- Mitigates the potential of vandalism and tampering
- Protects stored liquids from **extreme weather** and temperature variations
- Makes land available for buildings, parking space, green space or landscaping
- **Avoids** unsightly aboveground installation

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Chilled Water Recirculation

Data Centers

- Can help reduce energy consumption by storing cold water made at night when energy rates are lower.
- Stored water can be used during the day to reduce the load on mechanical cooling systems.
- Provides reliable cooling with low energy use and cost.

Data Center Example

Fire Suppression
150,000 Gallons

Cooling
Recirculation
Water Tanks
480,000 Gallons

Stormwater
Chambers

Wastewater
Tanks

- **Twelve** 12'-diameter, 40,000-gallon chilled water tanks
- **Three** 12'-diameter, 50,000-gallon fire suppression tanks
- **One** 6'-diameter, 3,000-gallon wastewater tank

- **Engineer:** HH Angus

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Fire Protection Water

Tank types

Dry hydrant tank

Break tank

Fire Sprinkler Tank w/Pump Vault

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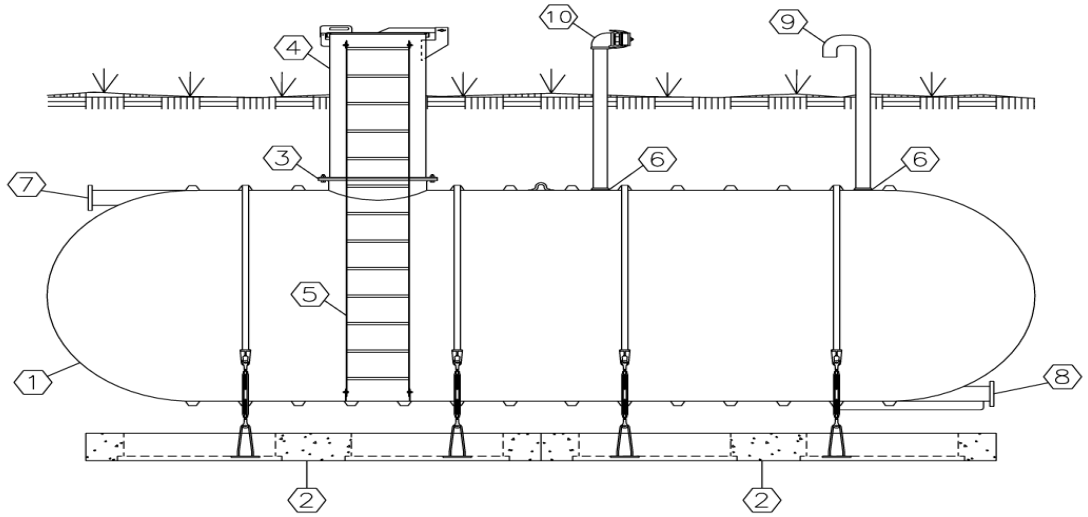
Potable Water – NSF61

Typical applications

Remote water source or low-performing wells require storage tanks for:

- Parks and campgrounds
- Schools and churches
- Private residences, ranches, farms and subdivisions
- EMERGENCY Storage - hospitals & medical centers

Potable Water



NO.	DESCRIPTION
1	XERXES SINGLE WALL FRP TANK
2	XERXES PRECAST DEADMAN SYSTEM W/ HOLD DOWN STRAP AND TURNBUCKLE ASSEMBLY
3	30" MANWAY WITH (BLANK COVER FOR TANK TESTING ONLY)
4	30" MANWAY EXTENSION ACCESS WITH HINGED & LOCKABLE TOP (UV PROTECTED)
5	NSF APPROVED FRP LADDER
6	4" NPT SERVICE FITTING
7	6" NSF APPROVED TANGENTIAL NOZZLE
8	6" NSF APPROVED TANGENTIAL FULL BOTTOM DRAIN NOZZLE
9	4" VENT PIPE WITH GOOSENECK AND BUG SCREEN
10	4" AUXILARY FILL W/CAM LOCK CONNECTION

POTABLE WATER

This drawing is for illustrative purposes only.
Consult with an engineer for specific applications.

XERXES®
a ZCL company

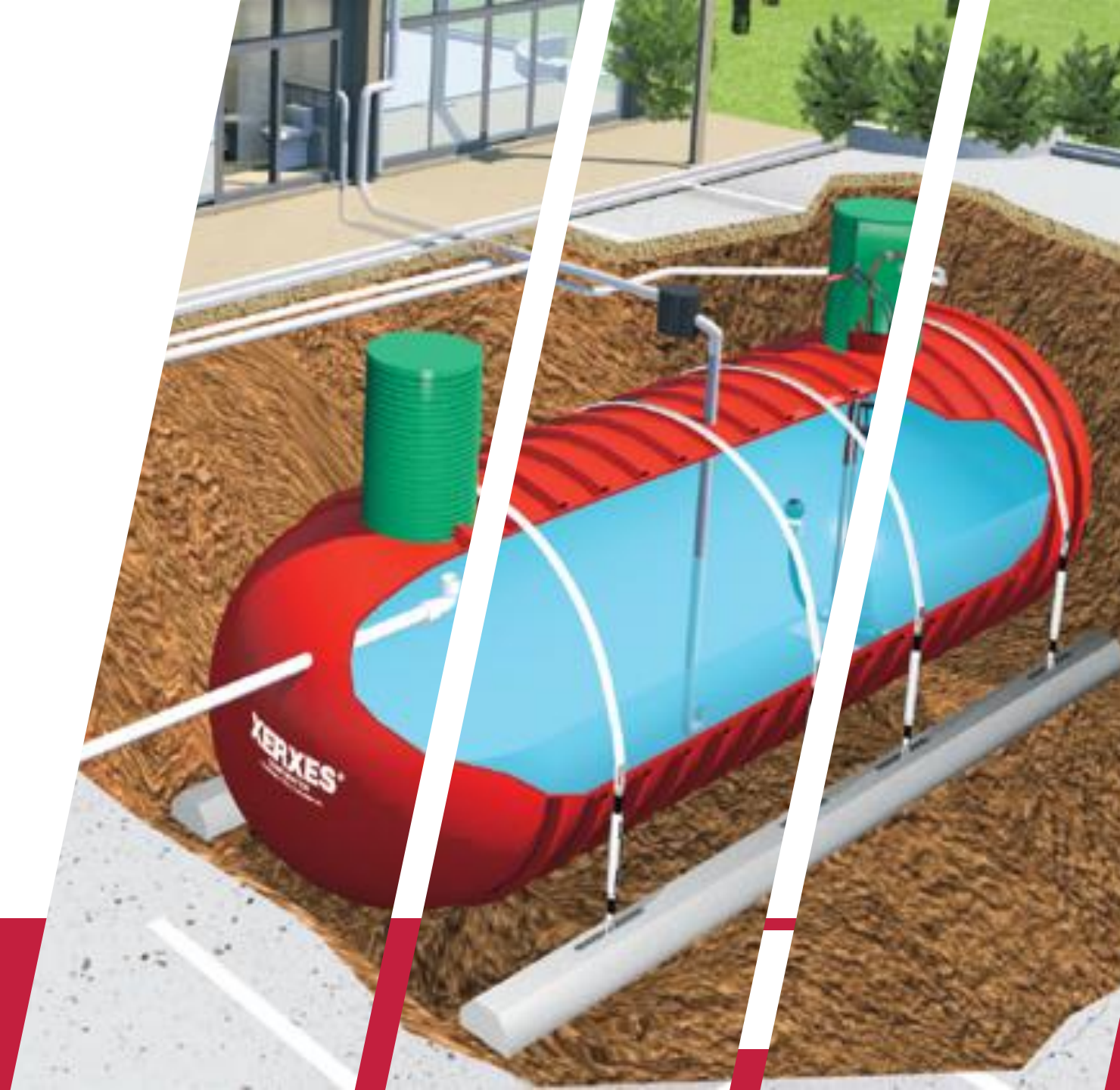
TITLE
NSF LISTED POTABLE WATER
STORAGE TANK
WITH TANGENTIAL NOZZLE INLET
AND FULL BOTTOM DRAIN

DATE 4-11

DR. NO. S20-302-01

Rainwater Harvesting

- Can be manufactured to comply with the IAPMO/ANSI Z1002 standard
- Helps reduce water consumption
- Collected water can be used for irrigation and Green Building usage



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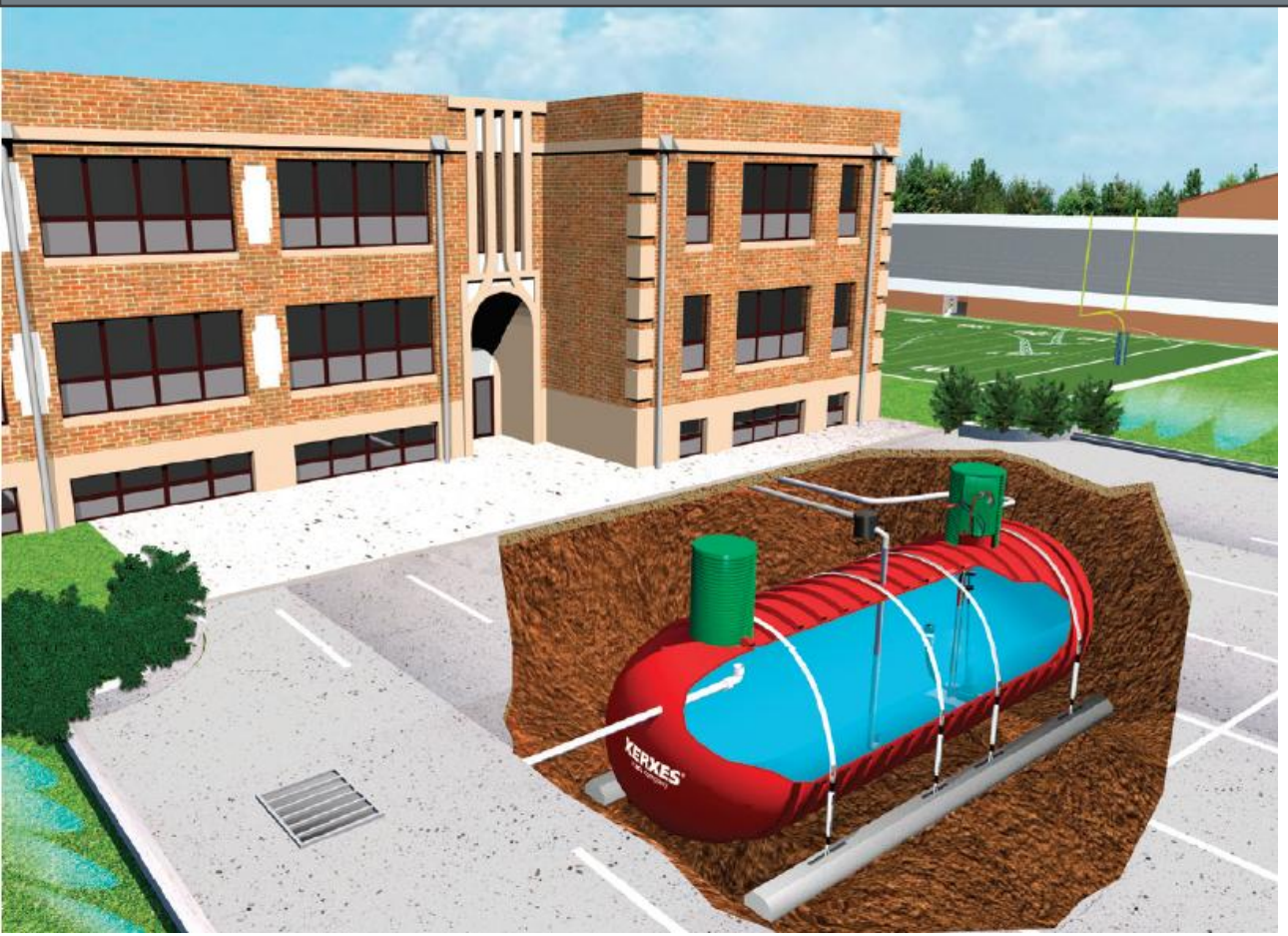
Greywater



Typical tanks

Storing greywater for treatment and reuse as nonpotable water – landscaping irrigation

Onsite wastewater

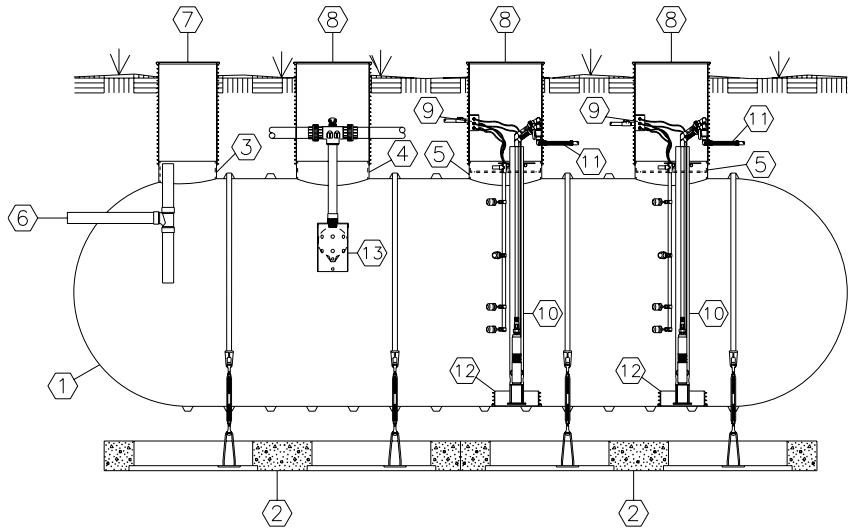
Typical applications:

- Medical Facilities
- FEMA Housing
- Subdivisions
- Schools and churches
- Regional parks and reserves
- Interstate rest areas
- Resorts and campgrounds

Onsite wastewater

We work with treatment system packagers, so tanks are designed and manufactured to meet multiple configurations:

- Primary/secondary septic
- Aerobic treatment
- Fixed film media
- Recirculation
- Dosing



Typical accessories:

Access opening and risers

Baffle walls

Pump platforms

Engineered anchoring systems

Inlet and outlet piping

Industrial Wastewater

Typical applications:

Hospital Decontamination

De-Icing collection or glycol storage

Food-processing facilities

Landfills

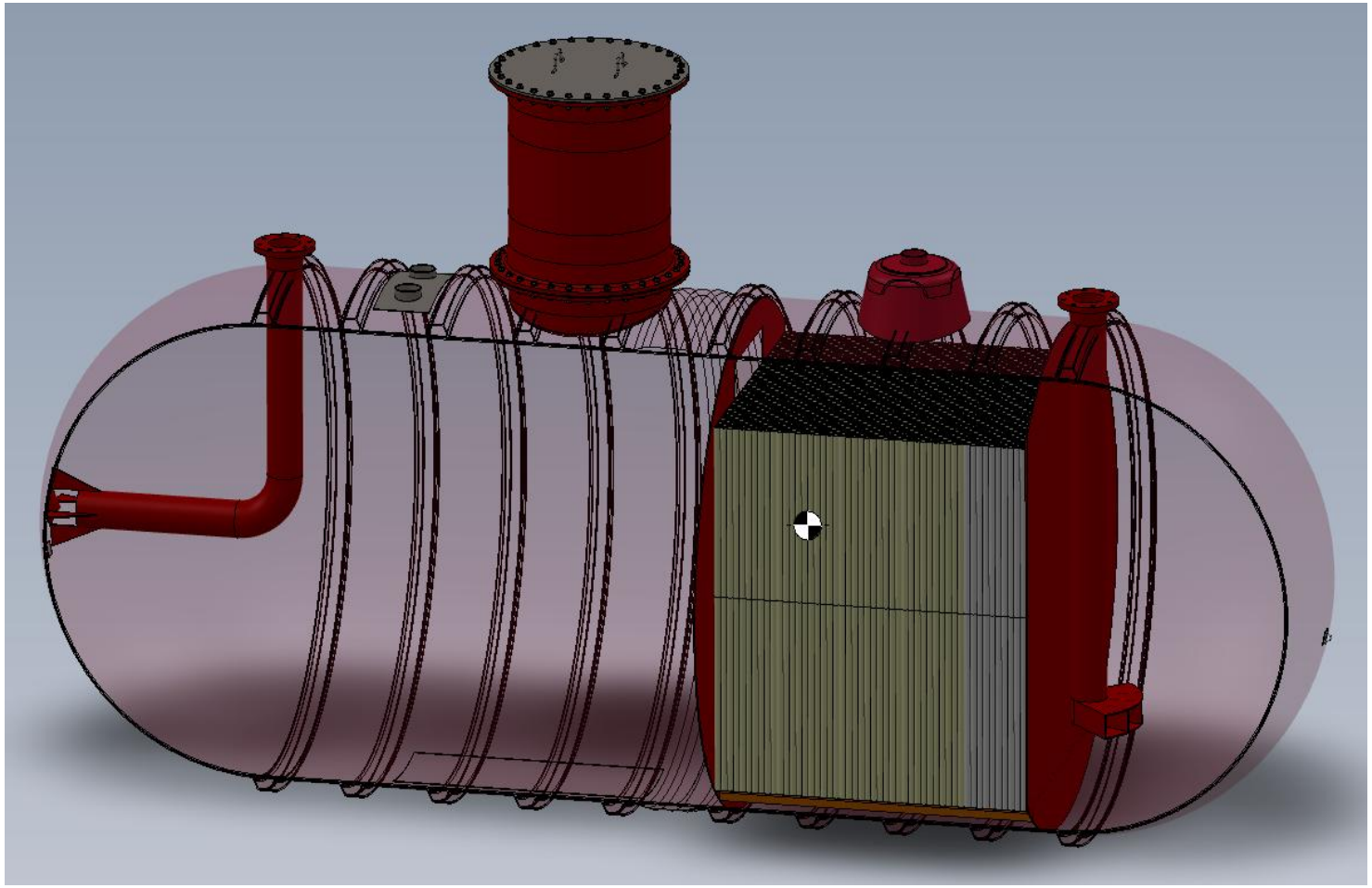
Resin choice to fit the chemical and corrosion characteristics of usage

Oil-Water Separator (OWS)

- SEPARATOR - A complete system consisting of a base **tank** (atmospheric tank) with or without internal coalescer, controls, or other devices, **designed to remove oil from an oil-water mixture**.

➢ UL 2215 – Outline of Investigation for OIL/WATER Separators.

OWS Design Details, Parts, Optional Accessories. Delta Tubes : 8 ft and 10 ft Base Tank Diam.



Inlet: FRP flange, internal diffuser spool.

Outlet: FRP flange, drop pipe with collector.

Coalescing Delta Tubes Row, access door, FRP grating bottom support.

Manway with extension and cover.

Wet Monitor

Installation

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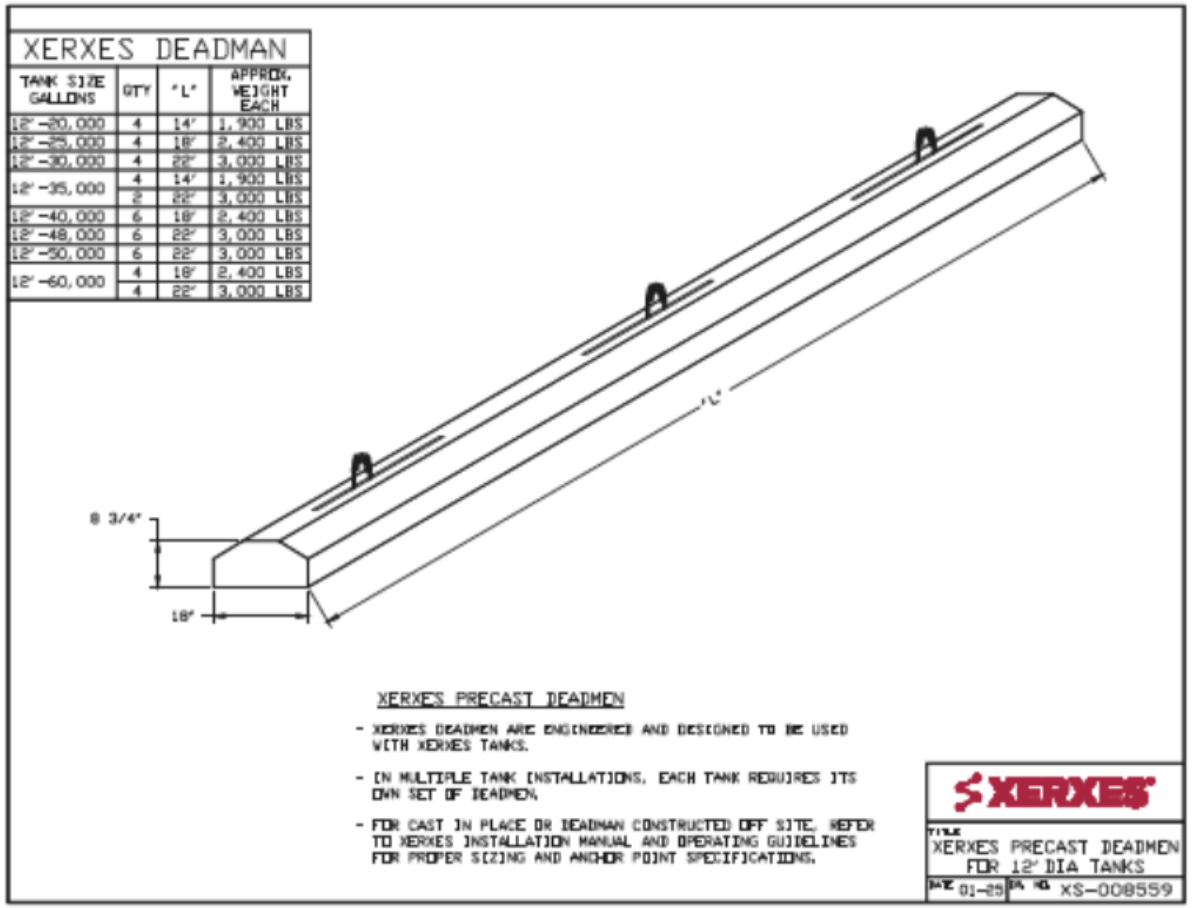
Installation

- * (4) measurements to confirm roundness
- Offload using lifting lugs (*1)
- Set tank on 12” aggregate bedding layer
- Place concrete deadman
- Attach anchoring straps (*2)
- 12” lifts, tamp backfill under haunch area
- Backfill to top of tank (*3)
- Backfill to subgrade, before pavement (*4)

Anchor System



XERXES DEADMAN

TANK SIZE GALLONS	QTY	"L"	APPROX. WEIGHT EACH
12' -20,000	4	14'	1,900 LBS
12' -25,000	4	18'	2,400 LBS
12' -30,000	4	22'	3,000 LBS
12' -35,000	4	14'	1,900 LBS
	2	22'	3,000 LBS
12' -40,000	6	18'	2,400 LBS
12' -48,000	6	22'	3,000 LBS
12' -50,000	6	22'	3,000 LBS
12' -60,000	4	18'	2,400 LBS
	4	22'	3,000 LBS

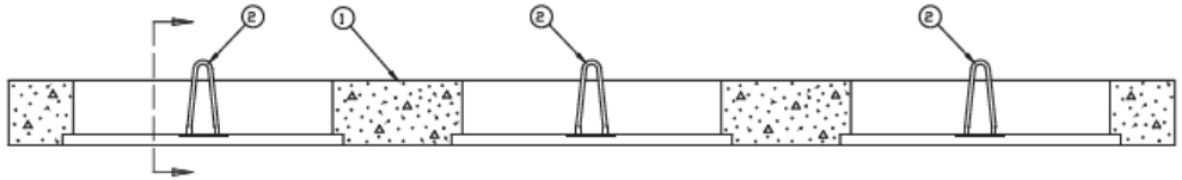
XERXES PRECAST DEADMEN

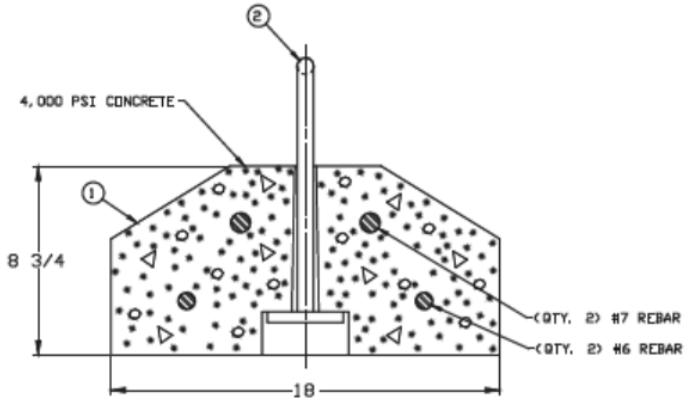
- XERXES DEADMEN ARE ENGINEERED AND DESIGNED TO BE USED WITH XERXES TANKS.
- IN MULTIPLE TANK INSTALLATIONS, EACH TANK REQUIRES ITS OWN SET OF DEADMEN.
- FOR CAST IN PLACE OR DEADMAN CONSTRUCTED OFF SITE, REFER TO XERXES INSTALLATION MANUAL AND OPERATING GUIDELINES FOR PROPER SIZING AND ANCHOR POINT SPECIFICATIONS.

XERXES

TITLE: XERXES PRECAST DEADMEN FOR 12' DIA TANKS

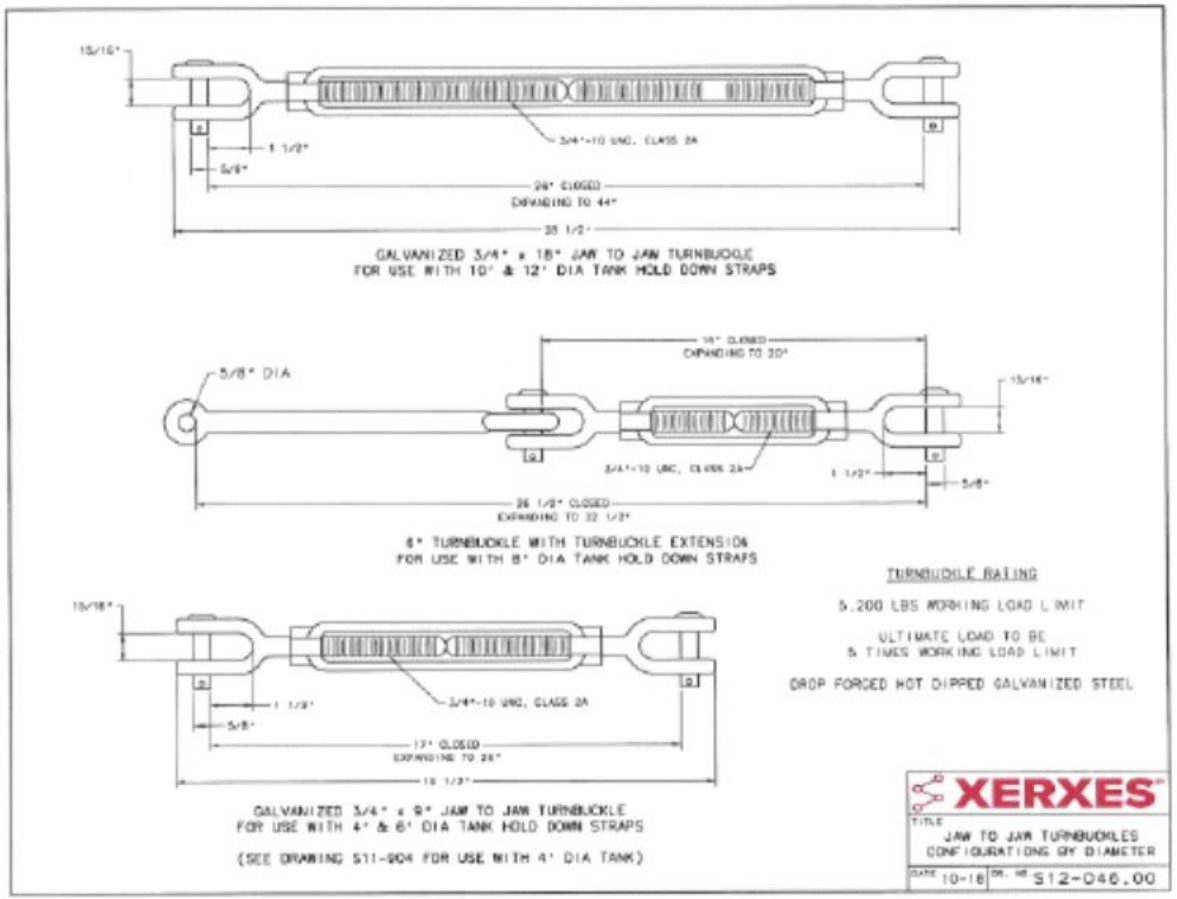
DATE 01-25 DWG NO. XS-008559

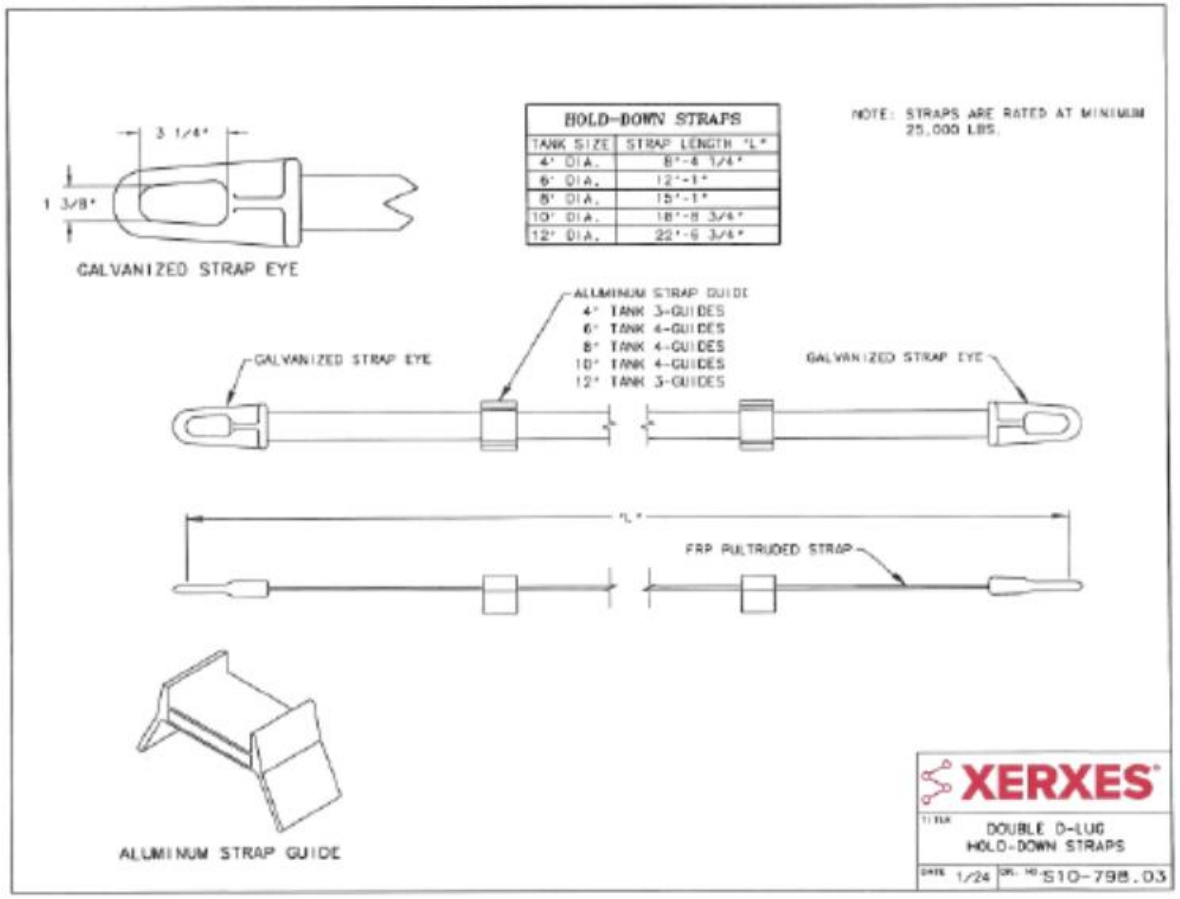




10' & 12' diameter tanks

Anchor System





Installation

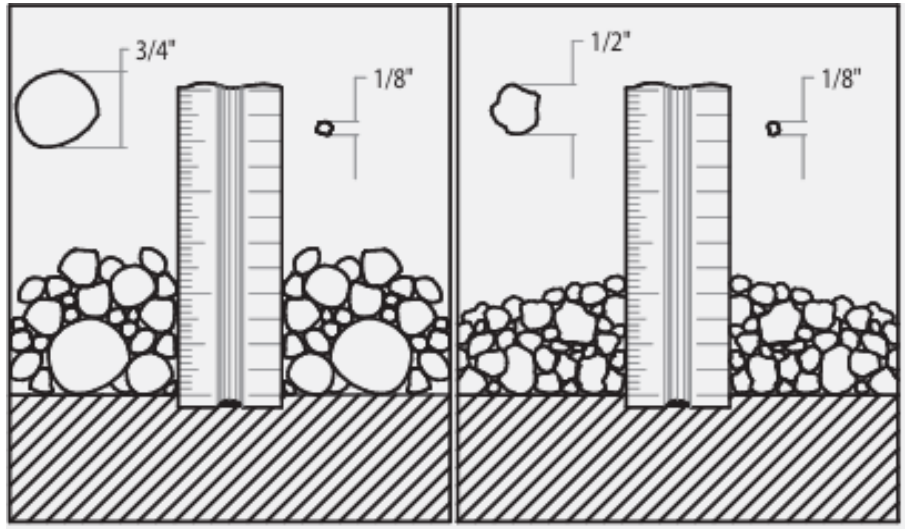
PRIMARY BACKFILL

2. Use coarse aggregate (rounded stones or crushed stones) as primary backfill material. See size requirements in drawings below.

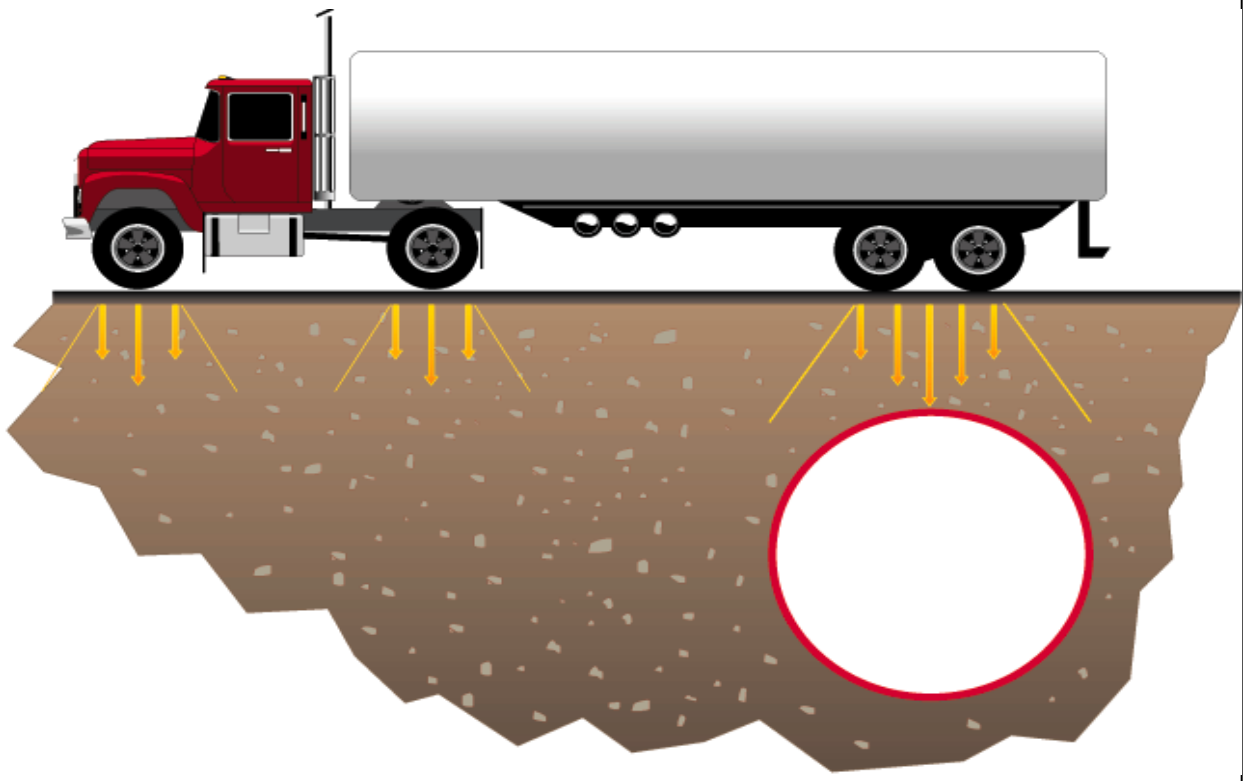
3. Primary backfill material should be a mix of well-graded stones, generally conforming to the 6, 67, 7 and 8 sizes of ASTM's C33.

4. No more than 5% of this material can be small enough to pass through the #8 sieve.

5. Do not use materials like soft limestone, sandstone, sea shells or shale that break down over time.



Installation



Designed to withstand AASHTO's H-25/HS-25 vehicle loads

Proper backfilling is key to installation.

Minimum cover is:

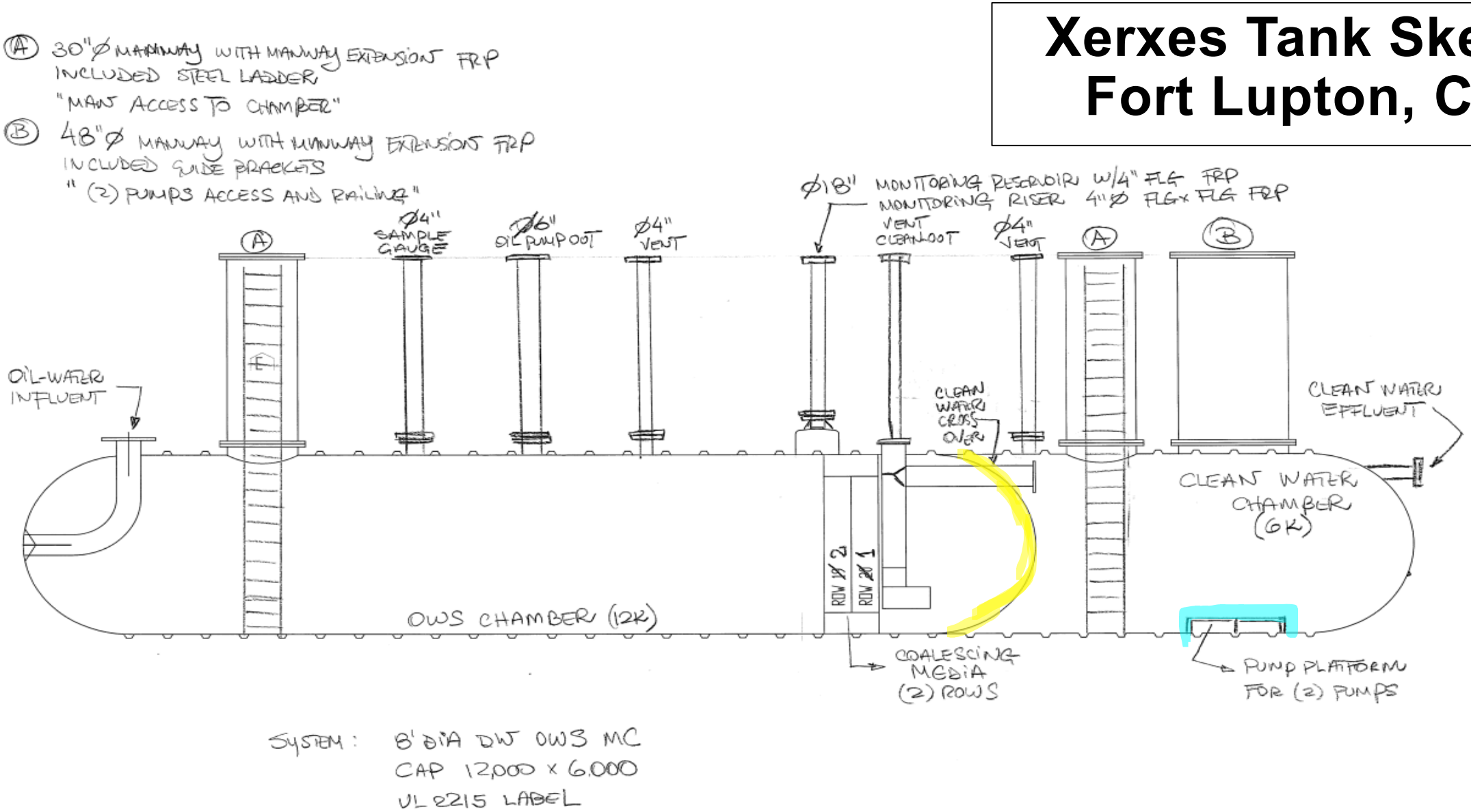
- 36-inch (91-cm) backfill
- 18-inch (46-cm) backfill + 6-inch (15-cm) concrete pavement
- 18-inch (46-cm) backfill + 8-inch (20-cm) asphalt pavement

Technical Support

Technical Support from Experts

- Experienced engineering and sales teams
- Training workshops on LRFD (Load and Resistance Factor Design)
- Customer consultations on structural and site elements
- Online resource library, including:
  - Guide specifications and technical drawings
  - Product brochures and application case studies

Xerxes Tank Sketch
Fort Lupton, CO



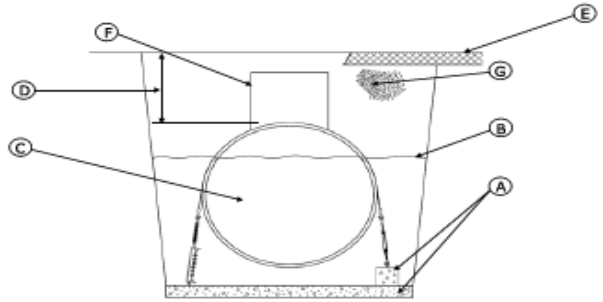
ZCL | XERXES®
making a lasting difference®

Buoyancy Calculation
Request Form

Project name: _____

Customer:
Contact: _____
Phone: _____
Fax/Email: _____

Contractor:
Contact: _____
Phone: _____
Fax/Email: _____



Check here for Canadian tanks: ☐ Imperial ◉ Metric ○

A Anchoring: ☐ No secondary anchorage, OR:

If deadmen are used: ☐ ZCL | Xerxes supplied, OR ☐ Supplied by others.

- **For deadmen supplied by others:** Thickness: ____ in x Width: ____ in x Length: ____ ft

If bottom anchor slab is used: Thickness: ____ in x Width: ____ in x Length: ____ ft

B Water table (note: **you must select one of these 3 options):**

☐ Level with middle of tank, OR ☐ Level with top of tank, OR ☐ At finished grade level

C Tanks description:

Nominal tank diameter: ____ ft Nominal tank capacity: ____ gallons

☐ Single-walled tank, OR ☐ Double-wall tank, OR ☐ Double-wall tank (wet interstitial space)

For multicompartment fuel tanks, capacity: ____ x ____ x ____ gallons

D Total depth of top of tank **(includes soil & top slab):** ____ ft ____ in

E Top slab (if any): ☐ Concrete, OR ☐ Asphalt Thickness: ____ in

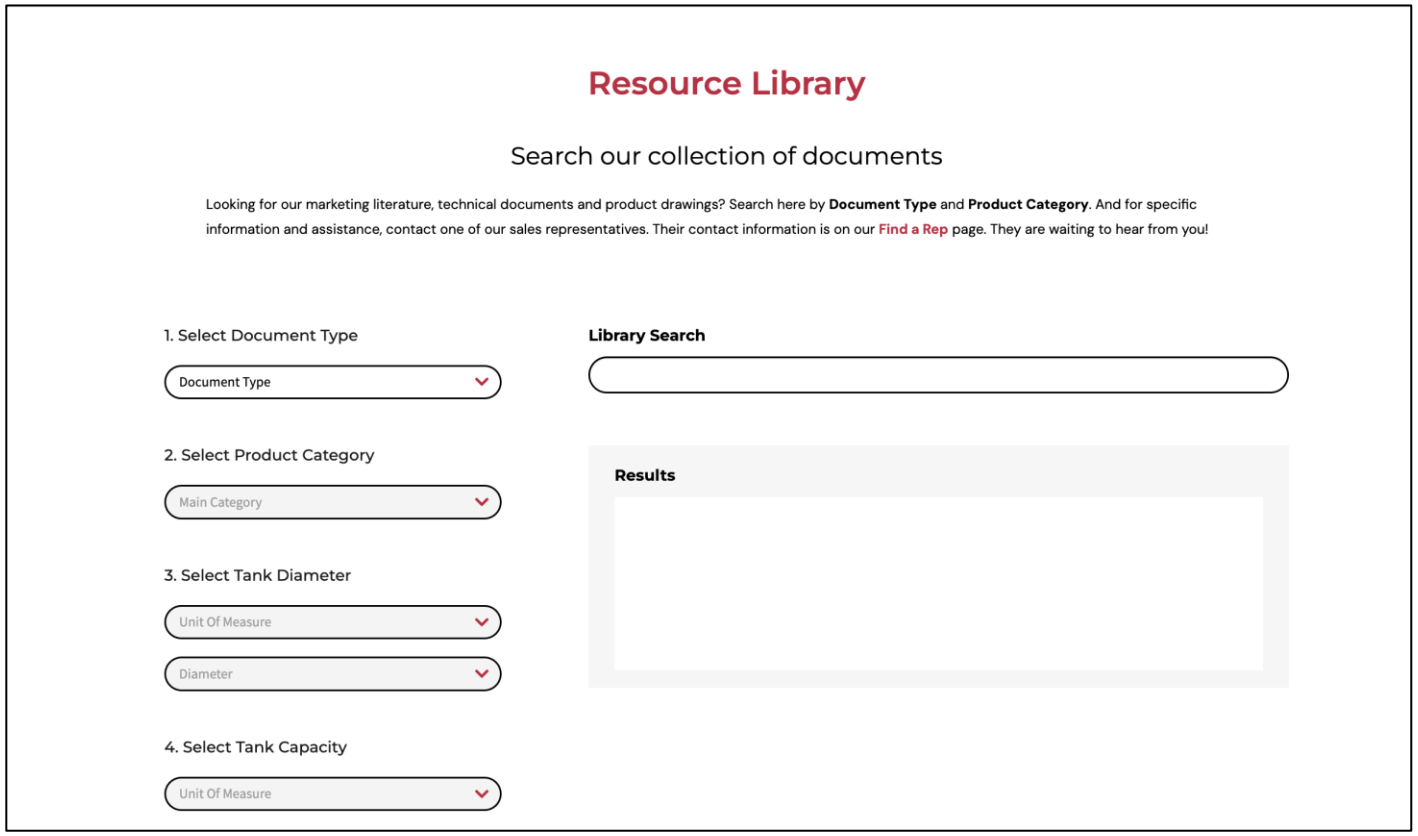
F Containment sumps/risers/extensions (indicate quantity and diameter):

____-22" Dia; ____-24" Dia; ____-30" Dia; ____-36" Dia; ____-48" Dia; ____-Other Dia

G Tank backfill material: _____

Buoyancy Calcs

Resources – Website



Our website's RESOURCES section has detailed information on:

Product information

Installation instructions

Guide specifications

Tank & accessory drawings

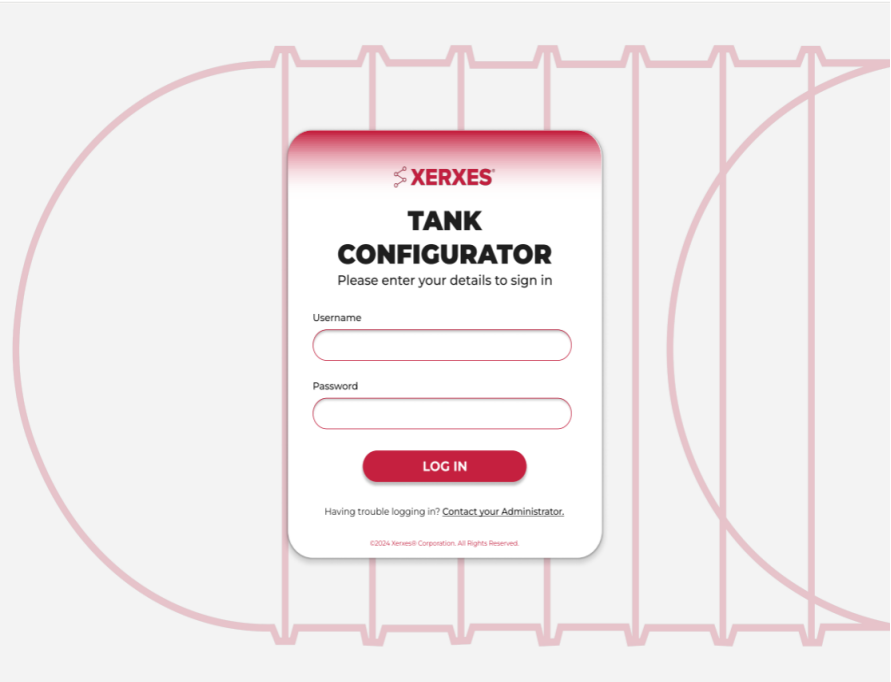
Data charts

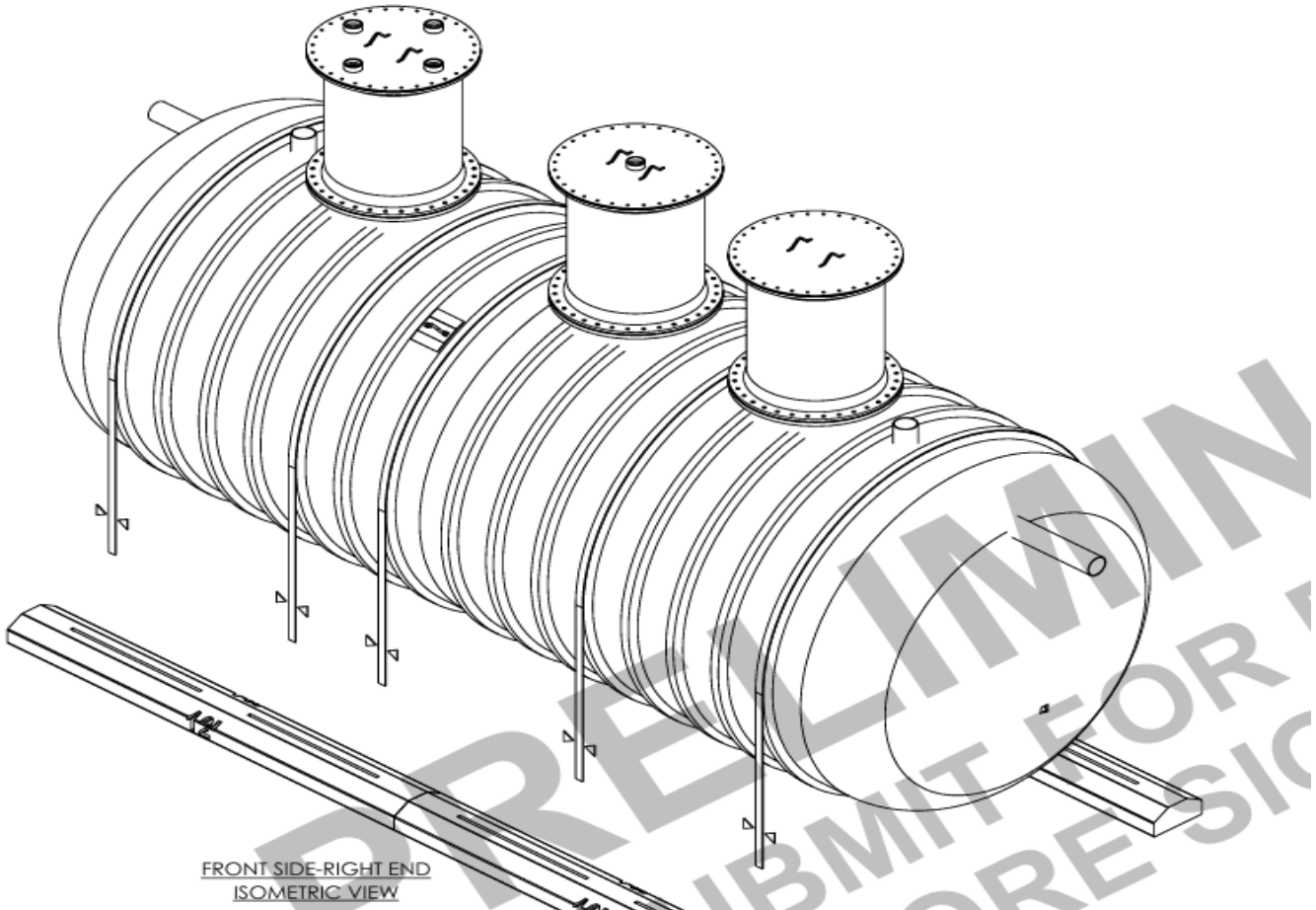
Limited warranties

Calibration/Volume Charts

XERXES®

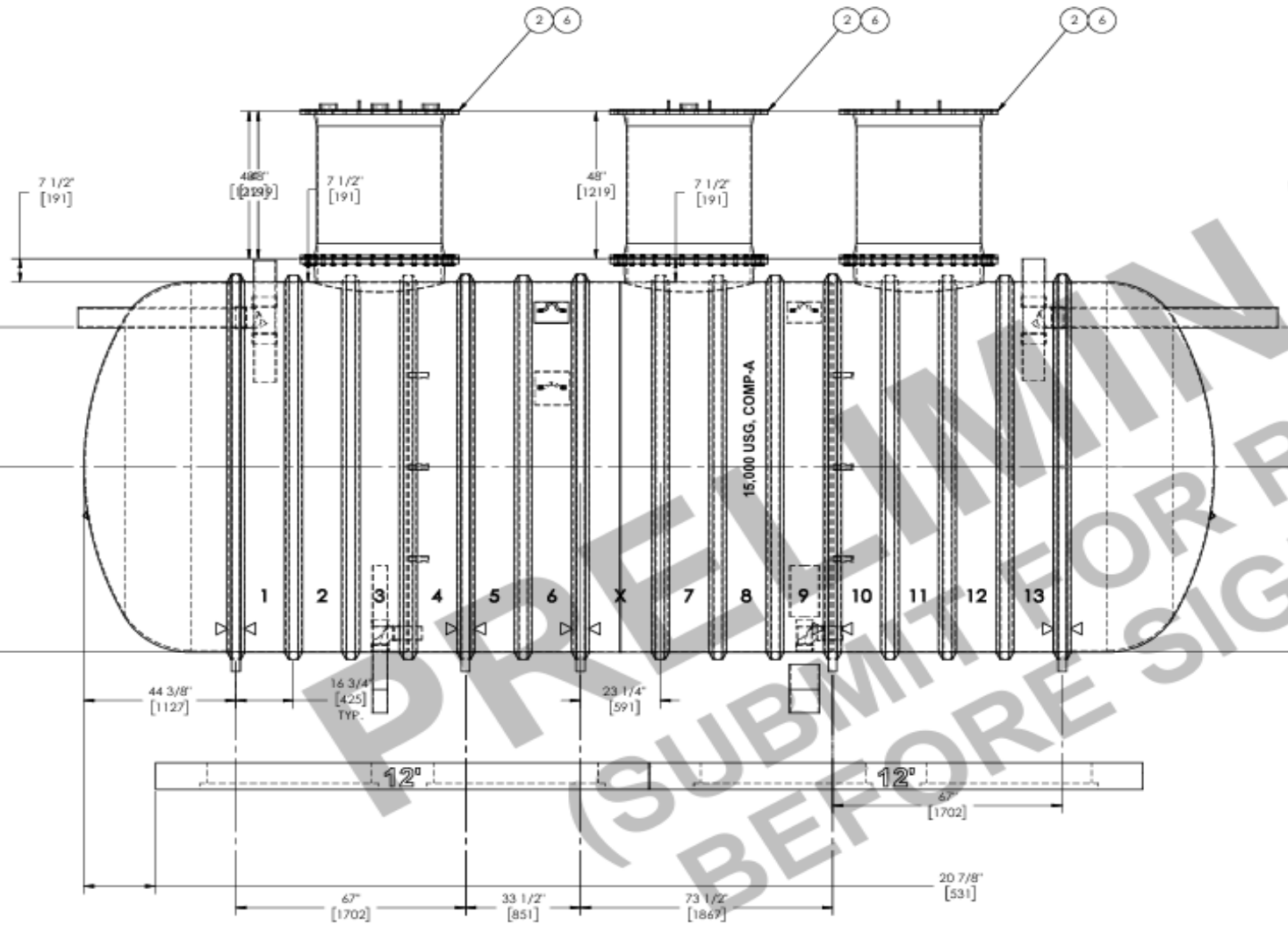
Water Tank Design Tool – online soon!





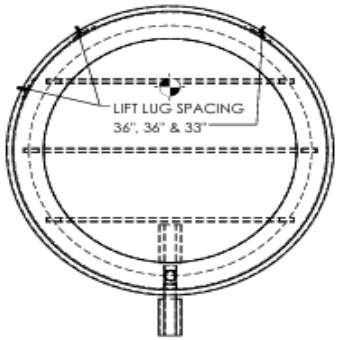
FRONT SIDE-RIGHT END
ISOMETRIC VIEW

ALL DIMENSIONS SHOWN ARE IN FEET/INCHES [mm].
ONLY MATERIALS THAT HAVE BEEN TESTED AND APPROVED BY XERXES SHOULD BE USED FOR BONDING OF CONTAINMENT SUMP OR ACCESS RISER COMPONENTS.
DRAWING EXPIRATION: DRAWING VALID FOR SIX (6) MONTHS FROM DATE OF LAST REVISION. XERXES RESERVES THE RIGHT TO REVIEW AND UPDATE.
INVERT HEIGHT DIMENSIONS ARE BASED ON TANK ID.
ROTATE SHIPMENT ON TRAILER TO AVOID COMPONENT DAMAGE.
TANK SPECIFIED FOR STANDARD BURIAL UP TO 7'-0".
NOMINAL TANK WEIGHT: 6400 LBS [2900 KG]

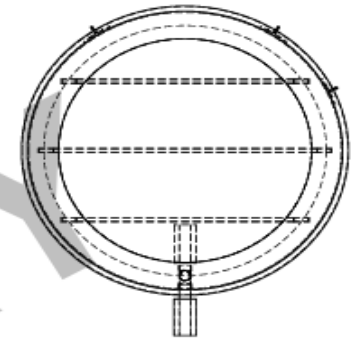


FRONT ELEVATION

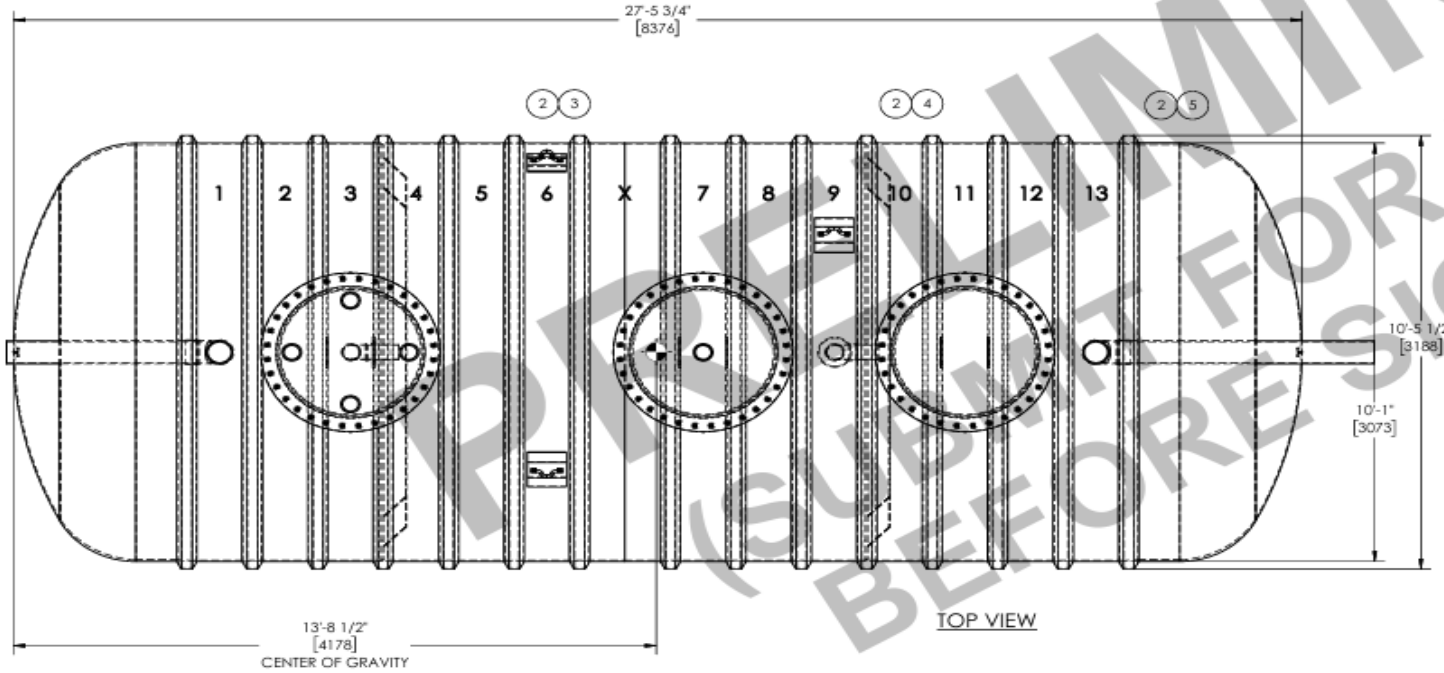
INDUSTRY: M205-WASTEWATER-ONSITE SEPTIC		THIRD ANGLE PROJECTION	XERXES'
SALES MANAGER: BILL GONZALEZ		UNITS: INCH [mm] DATE: MM/DD/YY	
PROPRIETARY AND CONFIDENTIAL THIS DRAWING IS THE PROPERTY OF MATTE CORP. THE COPYRIGHT/ OWNERSHIP OF THIS DRAWING IS AND WILL REMAIN WITH MATTE CORP. THE PHYSICAL POSSESSION OF THIS DRAWING DOES NOT CONVEY THE RIGHT TO USE ITS DESIGN CONCEPT, OR TO REPRODUCE IT, OR TO MANUFACTURE IN WHOLE OR IN PART THE ITEM(S) DEPICTED HEREIN WITHOUT WRITTEN PERMISSION AND AUTHORIZATION OF MATTE CORP.	DRAWN BY: ---	DESCR:	10FT SWX NUL CAP. 15,000 USG Vehicle Wash Facility, Camp Bullis, TX
	APPR. BY: ---	SIZE: B	DWG NO.: example dwg 1
	APPR. DATE: MM/DD/YY	SHEET: 2 of 3 - FRONT ELEVATION	REV.: 0



LEFT END VIEW
LIFT LUG ORIENTATION



RIGHT END VIEW



TOP VIEW

INDUSTRY: M205-WASTEWATER-ONSITE SEPTIC		THIRD ANGLE PROJECTION	XERXES
SALES MANAGER: BILL GONZALEZ		UNITS: INCH [mm] DATE: MM/DD/YY	
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	APPR. BY: ---	SIZE: B	DWG. NO.: example dwg 1	REV.: 0
	APPR. DATE: MM/DD/YY		SHEET: 3 of 3 - TOP VIEW-LIFT LUGS	

Thank you.
Questions?

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