



SUSTAINABLE SOLUTION FOR CALIFORNIA REST AREA



APPLICATION
Wastewater



HIGHLIGHTS

- Easy installation
- Repurposed tank
- Fiberglass replaces concrete



PRODUCTS
Two 8'-diameter
single-wall tanks



TOTAL CAPACITY
25,000 US gallons



LOCATION
California, USA

CONCRETE IS THE PAST: FIBERGLASS IS THE FUTURE

In April 2020, two Xerxes corrosion-resistant fiberglass tanks were installed at a rest stop area in Elkhorn, California. They replaced a cast-in-place concrete system that was installed about 15 years ago, which, in turn, replaced the rest area's original precast-concrete septic installation.

A senior sanitary engineer at Caltrans (the California Department of Transportation), Gerhard Panuschka, explains why Caltrans now specifies only corrosion-resistant fiberglass for its wastewater tanks: "Our problems with concrete over all these decades made us conclude that it's better to use fiberglass tanks. Even if it's a little more expensive at the start, we're looking for a good quality product over time."

"We don't just look at the initial cost of the tank. We can't afford to close down rest stops. Installing fiberglass tanks is quicker than installing concrete. That, along with the longevity of the tank, gives fiberglass an edge over concrete."

A WASTEWATER TEST TANK IS REPURPOSED

One of the two tanks installed at Elkhorn was originally installed at a wastewater treatment pilot test site in 2012. After that test was completed, the 15,000-gallon single-unit tank was "recycled." It was easily unearthed, cleaned and transported on a truck bed to the rest area 30 miles away.

The other Elkhorn tank is a new equalization tank. This 10,000-gallon tank has submersible pumps to transfer the wastewater effluent to a treatment system. After being treated, the effluent is dispersed underground through a subsurface drip dispersal system beneath the rest area's lawns. This helps avoid surface contamination, run-off problems and the ongoing costs of additional effluent wastewater treatment.

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SPECIAL CHALLENGES AT REST STOPS

Unlike residential systems, the wastewater at a rest stop is not diluted by greywater, such as from showers, washing machines and dishwashers. Rest-stop wastewater is therefore highly concentrated, which results in even more aggressive deterioration of concrete.

Not only is rest-area wastewater more acidic, it also contains more sludge, making it a heavier consistency. In its original location, Caltrans used the 15,000-gallon tank to test the value of using several compartments to address this challenge. The design of the relocated five-compartment tank allows most of the sludge to settle in the bottom of the tank's first and longest compartment. The system is designed to handle an average daily flow of 3,600 gallons a day.

Another engineering challenge at rest stops is that they often have lift stations, which frequently become clogged with wipes, diapers, clothes and other items flushed down with the

wastewater, explains Panuschka. The original Elkhorn plan included a lift station. Moving the new septic tank and equalization tank closer to the comfort station eliminated the need for a lift station.

The Elkhorn installation involved a deeper burial than the test site. That required taller access risers for the relocated tank. That change was easily managed by simply setting the nine risers higher on the tank's collars.

THE MANY ASPECTS OF SUSTAINABILITY

For Caltrans' engineers, weight is another valuable feature of fiberglass. "Sometimes our locations are remote and road conditions aren't great. It's a problem bringing in heavy equipment and loads, so it's definitely a benefit to keep loads light," says Panuschka.

The combination of lighter loads and shorter shipping distances – with Xerxes manufacturing facilities throughout North America – translates into another environmental plus.

Beginning with a recycled tank and ending with treated effluent released into the ground below the site, Xerxes tanks are key to achieving a high degree of sustainability at this Caltrans rest stop.

A HISTORY OF SUCCESSFUL FIBERGLASS INSTALLATIONS

In 50+ years of installing septic systems, Caltrans has tried many remedies to address concrete's deterioration problems, including the addition of coatings. Nothing fully addressed the core problem that concrete is susceptible to corrosion by sulfuric acid. Eventually, this powerful acid created in septic tanks causes concrete to deteriorate.

Today, Caltrans specifies only fiberglass for its wastewater tanks. Over the last 15 years, Caltrans contractors have chosen Xerxes fiberglass tanks in nearly 40 projects at Caltrans rest stop areas and maintenance stations. Those installations include fire protection, water and wastewater tanks.