

City of Robinson Reservoir • Robinson, TX - USA



Community doubles water supply with Firestone GeoGard™ EPDM lined reservoir



In 1991, two clay lined reservoirs were installed on the outskirts of Robinson, Texas. They were designed to hold water pumped in from the Brazos River, about 6,44 km away, until it was pumped to a nearby treatment plant and on into Robinson.

Following the initial filling in 1991, one reservoir performed well while the other failed right from the start. Attempts were made to repair the reservoir by repacking it with new clay, but it never held water. So for 17 years the town operated on one reservoir, until the town's population threatened to exceed the single reservoir's capacity.

In 2007, city officials worked with Lockwood, Andrews and Newman, an engineering firm in Waco, Texas, to find a solution. They considered RPP, HDPE and EPDM membranes but ultimately specified 1,1 mm Firestone GeoGard™ EPDM for the application because of its ease of installation, membrane

Quick Facts

Project scope:

- 18,21 ha clay lined reservoir unable to hold water
- Expanding population increased water demand requiring use of 2nd reservoir
- City official and engineering firm consider RPP, HDPE & EPDM liner options

Challenges faced:

- Attempts to repair/repack clay liner proved unsuccessful
- Wave impact causing embankment erosion of clay liner
- Expedited installation schedule required rushed material delivery

Solutions:

- Install more than 185.800 m² of 1,1 mm Firestone GeoGard™ EPDM
- Installed an average of 11.000 m² of membrane daily over 17 days
- Obtain entire system, including accessories, from a single manufacturer



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flexibility, puncture resistance and long-term performance. "City officials were unfamiliar with lining systems, so it was important our recommendation ensure a long-term solution," said Mitch Davison, project engineer, Lockwood, Andrews and Newman. "Firestone's GeoGard™ EPDM system was definitely the best choice given the unique challenges of this application."

One challenge was to design a system that addressed wave impact, erosion and potential embankment failure, according to Davison. "These were problems with the functioning clay lined reservoir," he said. "With a large, open body of water, the waves can cause significant erosion. Because the water is being held for treatment, the resulting sediment affects the water quality."

Geosynthetics Inc. (GSI), Waukesha, Wisconsin, installed the liner. The crew first installed a geotextile. Then, the geomembrane was unrolled in slightly overlapping 15,25 m by 61,00 m panels down the 3:1 slopes. The EPDM panels were seamed with Firestone QuickSeam™ Tape to ensure a watertight seal. Pipe boots and batten strip were installed, where necessary.

An unexpected, yet welcomed, result was that the city of Robinson has been able to cut costs by reducing chemicals used to treat the water at the plant. "We're very pleased with the outcome of this project. It has doubled our water capacity and has eased our operational burdens significantly," Hobbs stated. "The water in the lined reservoir is better quality because there is no clay sediment."

GSI is also pleased with the results. "Bad weather led to a tight installation schedule. Firestone's GeoGard™ EPDM system proved to be an excellent choice because it enabled us to cover a lot of ground very quickly," said John Tenhover, project manager, GSI. The ability to get the entire geomembrane system, including all accessories, from a single manufacturer also helped to expedite the installation.



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