

CASE STUDY/wastewater treatment plant

HARRISON COUNTY, MISSISSIPPI

Background

A utility management company controls several water treatment tanks within one of their facilities along the Mississippi Coast. As with any aging concrete structure where moisture is present, maintenance is inevitable. When it comes down to dollars spent on water treated, maintaining water leaks is paramount and knowing your options for repair can save the project and the budget.

The Problem

The original construction of the water treatment tanks included two main vertical joints with a water stop set between the concrete joints. The floor of the tanks is built, by design, where water migrates under portions of the floor to create a floating effect. Facility managers noticed water leaking from both vertical joints as well as seepage through parts of the walls, so exploratory measures were taken.

Initial repairs included a waterproof coating sprayed on the walls and across the joints as well as a strip of waterproofing material installed over all joints in the interior of the structure. Wall seepage stopped meaning the coating did the trick, but the vertical joint leaks persisted.



The Solution

Helms Polyfoam was brought in to trace and seal off the leak using a unique polyurethane resin designed specifically for this type of application. Investigation found the leak was actually coming from beneath the floor, completely bypassing the topical joint seal. Once the penetration point was found, a low viscosity, hydrophobic resin was injected with a slow catalyzation. The hydrophobic properties are designed to repel and “chase” water while the low viscosity component made sure that anywhere water could get, so could the resin. Lastly, the low catalyzation ensured that the resins ran the entire water path prior to curing.

One other important point about the polyurethane resin used; hydrophobic and polyurethane resins typically means a semi rigid foam is produced. In this instance though, the resin used possess a fairly high tensile elongation percentage, which will allow it to flex in the joint with the seasonal concrete movement. This very important detail prolongs the success of the repair and could not be achieved with “normal” hydrophobic polyurethane resins.

Why did this method work?

- Site evaluation determined the true source of the leak was not topical but came from underneath the floor.
- Resins used allowed for a total seal of the water path from its true source.
- Cured tensile elongation properties of this particular resin makes sure that not only was the leak stopped, but its future return was mitigated.