Case Studies

Terra-Lok™ Used to Stabilize and Leak Seal North Carolina Lock & Dam

Discover how the US Army Corps of Engineers and Ram Jack revived the William O'Huske Lock & Dam, preventing water intrusion and preserving its structural integrity.

About The Project

Contractor	Location	Product Used
Ram Jack	Cumberland County, NC	Terra-Lok™ 24-015

Learn More About Terra-Lok™ 24-015

The William O'Huske Lock & Dam is a legacy structure that used to help boaters and commercial vessels move their way up and down the Cape Fear River in Cumberland County, NC. The Lock, which is maintained by the U.S. Army Corps of Engineers – Wilmington District, was experiencing soil loss and voids due to water infiltration through the wall's joints at the upstream and downstream gates. The soil loss caused settlement and joint separation throughout the wall, as water was flowing through the lock. This issue caused the structural integrity of the lock to degrade over time, and the Wilmington District needed to address it to prevent the Lock from being a safety hazard.

USACE's goal was to stabilize the wall and prevent water intrusion by sealing the joints and avoid having to demolish the structure. Working with Ram Jack of Durham, NC, the Wilmington District determined using the NCFI Terra-Lok™ Single Component Polyurethane was the best product for accomplishing their goals.

"We needed to address 2-inch gaps in the joints while providing enough backing behind the upstream and downstream walls to prevent water intrusion and washout," stated Gabriel Knutson, Director of Polyurethane at Ram Jack. "As the age of the concrete structure concerned us, we wanted to make sure we used a polyurethane product that would not compromise the wall but would still stabilize it. That is why we chose NCFI's Terra-Lok™ system."

Terra-Lok™ is a single-component polyurethane system produced by NCFI Polyurethanes. Known for their low viscosity and excellent permeability, NCFI's single component systems are ideal for filling voids and annular space without compressing against the structure to the point of compromising its integrity.

Ram Jack approached the project by first addressing the external gaps in the joints using an oakum insert. Oakum is tarred fiber used to fill gaps as a type of caulking. The Oakum was installed using a crane with a basket, giving the Ram Jack team access to the outer portions of the wall. Once the exterior cracks were filled, the oakum would provide an effective backing for the polyurethane.

The injection of the Terra-Lok™ took place from the surface of the Lock, behind the upstream and downstream walls. Ram Jack injected every 2 ft along the walls from 1’ to 15’ depths. During injection Ram Jack pulled the rods to the surface to ensure an effective saturation of the polyurethane. Once the single-component polyurethane encounters moisture, it begins its chemical reaction and expands throughout the voids, permeates the soil, and fills the cracks and joints. The result was sealing cracks and joints, stopping water intrusion, filling voids, and re-establishing structural support of the wall.

After injection, excess polyurethane was removed from the walls, fished out of the water, and the exposed polyurethane at the joints and cracks were sealed using SikaFlex to protect against ultraviolet light and joint movement.