CASE STUDY
LEAK SEAL

Preventing Undermining: US-98 Stormwater Repair

US Highway 98 is the main coastal route along Florida's panhandle, connecting Panama City Beach, Destin, and Fort Walton Beach. Over time, the Florida Department of Transportation (FDOT) faced persistent issues with groundwater infiltrating the stormwater system. This infiltration carried exceptionally fine "sugar sand" into pipes and manholes, gradually reducing capacity and causing flooding on roadways during heavy rains. The situation escalated when a vehicle was damaged after falling into a void created by soil loss beneath the roadway, highlighting the urgent need for a lasting solution.

Initial Assessment

Inspections found that groundwater was entering through pipe joints, manhole connections, and cracks in concrete structures, transporting fine sand and creating sizable voids beneath the infrastructure. The affected system included concrete pipes ranging in diameter from 36 to 84 inches, with numerous manholes spread along a three-mile stretch of highway. Traditional repair would have required full excavation and replacement—a disruptive and prohibitively expensive process for such a critical transportation corridor. Based on the extent of sand loss and the depth of infrastructure, voids were estimated to range from several inches to several feet around key structures.

Proposed Solution

Alchatek recommended Spetec PUR H100, a semi-rigid polyurethane grout, for comprehensive rehabilitation. This material was chosen for its ability to expand and fill voids, while remaining flexible enough to accommodate minor ground movement and maintain a watertight seal. The approach involved direct injection into leaking joints and cracks, followed by creating a curtain wall around critical structures to prevent further sand migration and stabilize the surrounding soils. FDOT required a five-year warranty on the repair, underscoring both the severity of the problem and their confidence in the solution.

Procedures

1. Technicians drilled directly into each pipe joint, installing injection ports for precise placement of H100 grout.
2. Additional holes were drilled about one foot from each joint in a clock-pattern to encapsulate the joints and stabilize the surrounding soil.

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3. Injection began at the lowest point of each structure and progressed upward to ensure complete filling and displacement of water.
4. Manholes received perimeter injections to form a waterproof curtain wall, with special attention to all pipe penetrations.

Results

Over the course of 18 months, approximately 2,000 pipe joints and numerous manholes were treated along a three-mile stretch of US 98. Since the project's completion in 2017, there have been no warranty claims or reported issues, even during multiple heavy storm seasons. The highway has remained free of flooding and sand accumulation, and no further undermining of the roadbed has occurred. By choosing polyurethane injection over full excavation, the FDOT avoided estimated replacement costs of $7 million to $16.5 million, while keeping the highway open and safe throughout the process.

About Alchatek

Alchatek is an international leader in the manufacture and supply of chemical grouts and construction products for Geotechnical, Leak Seal, and Seawall Repair applications. Providing solutions from its headquarters in Tucker, Georgia and its manufacturing facility in Reno, Nevada, Alchatek specializes in advanced construction technologies for sealing leaks, stabilizing soils, lifting concrete, and protecting infrastructure and seawall structures. To best serve its customers, Alchatek is organized onto three divisions:

The Leak Seal Division combines a full system offering of polymer chemical grouts and equipment with perhaps the most experienced technical team in the industry. It specializes in preventing water ingress through concrete infrastructure including parking garages, culverts, basements and foundations, and sewer manholes.

The Geotechnical Division offers a complete line of single component products for soil stabilization as well as two component polyurethane foams for concrete lifting, void filling, and stabilization of infrastructure. This includes lifting sunken structures such as warehouse floors, back into place.

Seawall Repair Network® is the only national network of certified contractors in the repair, preservation, and protection of Seawalls waterfront barriers. Its proprietary methods and materials are environmentally friendly and safe for use in all marine environments and provide a non-destructive solution for seawall repair at 80% less than the cost of replacement.

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