

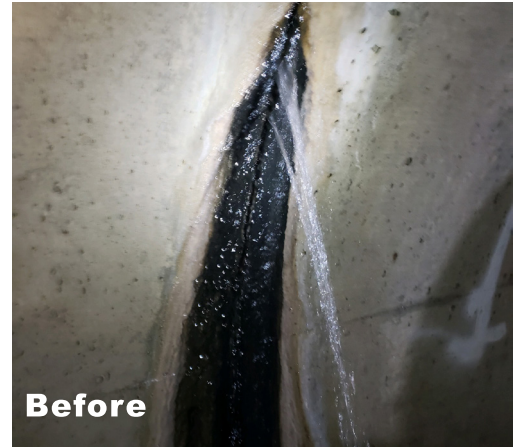


## Culvert Restoration Project: Sealing Pipe Joints

A major culvert restoration project was recently completed by a geotech contractor in Ohio. The Este Ave culvert is a concrete storm sewer that runs about 1000 feet from 4861 Este Ave to Mill Creek. The culvert includes 200 pipe joints, the majority of which are not watertight, and is 108 inches in diameter. A few of the sealed joints in the culvert have failed, leading to enhanced infiltration at downstream joints. The groundwater infiltration ranges from modest seepage to major leaks. Although there aren't any voids easily seen at the surface, it's expected that some channeling has happened along the pipe's bottom. In 2008, grout was injected to seal several joints near the intake and to fill voids around the outside of the pipe. Controlled density fill was then used to fill voids at the surface around the wing wall. Since that time, the wing wall has remained stable. Unfortunately, the culvert's sealed joints have degraded, leading to more infiltration at downstream junctions.

### Powerful Polymers

The crew used Spetec PUR GT500 to seal all the pipe joints in the culvert and to fill voids around the outside of the structure. Spetec PUR GT500 is NSF/ANSI 61 approved for contact with drinking water. This single-component polyurethane resin is designed to penetrate and seal off leaks in cracks, joints, and pipe penetrations. As a hydrophilic polyurethane, it chases down water and gets into the microstructure of the concrete, forming a flexible seal and a mechanical bond with the wet concrete.



SPETEC PUR GT500			
Tensile Strength	(ASTM D-3574)	450 p.s.i.	31,026 millibar
Tensile Elongation	(ASTM D-3574)	350%	-
Shrinkage	(ASTM D-1042/D-756)	Less than 2%	Negligible
Tear Resistance	(ASTM D-3574)	21 lbs / inch	3750 gram / centimeter
Same Day Viscosity at 25° C (77° F)	300 - 330 Centipose		

### **Painless Procedure**

Every joint in the culvert's bottom half was leaking and allowing groundwater to seep in. The technicians drilled one injection hole in the middle of the culvert joint at the bottom and injected the GT500 until the joint was completely sealed. Additional holes were drilled, based on how the material was traveling. About 3500 gallons were injected overall.

### **Rapid Result**

The entire 1000-foot culvert was sealed in just under 30 days.

### **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 into 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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