

Case Study #2: The URETEK Deep Injection Process on a Public Culvert

- Customer Profile:** The Alabama State Department of Transportation (AL DOT).
- Customer Environment:** A large underground void forms beneath a public culvert under a busy public roadway.
- Customer Situation:** Soils below the culvert were eroded; Water flowed beneath the culvert compromising the structure and roadway above.

Background: A case involving a ground soil problem with a public 3-barrel culvert underneath a busy divided highway in Alabama was brought to the attention of URETEK USA during August 2002.

After many years, the soil beneath a 3 barrel culvert had washed away to the point where the stream water no longer flowed through the culvert but into a large void. Figure 4 below, illustrates this problem showing the entrance and the exit of this culvert, with water flowing beneath the infrastructure.

Since the two lane roadway above the culvert was heavily traveled, there was growing concern that the culvert and the road above might collapse. The potential for serious traffic danger and disruption as a result of such an event prompted the DOT to take action to resolve the problem.

Total replacement of the culvert was considered. This solution would both exceed the AL DOT budget for the project as well as necessitate a fifty mile traffic detour, creating long term and extensive travel problems for the rural community nearby.

Figure 4 - Water Flowing Underneath a Public Culvert

Culvert Entrance



Culvert Exit



After careful review of possible repair options AL DOT chose URETEK USA to fill the existing voids, and stabilize the existing culvert structure.

Methodology: URETEK applied a uniform injection pattern for the polymer material, ensuring an even disbursement of the material throughout the void area. With the three barrel design of the culvert, URETEK used a multi-point pattern injection spread evenly across each of the three culvert barrels. The two barrels located directly above the deepest section of the void received the most injections, while the third, outer barrel received the remaining injections.

Validation: The injection process began at 8am in the morning and was concluded by 3pm that afternoon. Continuous injection of polymer along the base of the culvert gave visual assurance of filling. The rapid curing time of URETEK's material allowed both traffic lanes of traffic above the culvert to be fully opened to traffic by 4pm. URETEK's rapid resolution to the problem saved AL DOT from having to manage several weeks of detours and disruptions, as well as the additional expenses associated with lane and traffic closure.

Figure 5 - Injecting Polymer Material into one of the 3-Barrels



Figure 6 below shows the repaired infrastructure, with water re-directed and correctly exiting through the culvert.

Figure 6 - Water Correctly Exiting Through the Repaired Culvert



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For more information about URETEK and the URETEK Deep Injection Method for Infrastructures, please visit our website at www.worldofuretek.com or call 1-888-287-3835.



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