Case Studies

NCFI Terra-Lok™ 24-120 Used to Stabilize Culvert and Turnpike in NJ

Culvert soil loss was resulting in the weakening of the roadway and causing it to settle. To repair the issue, ECRR treated the soils with NCFI's Terra-Lok™ 24-120.

About The Project

Contractor	Location	Product Used
Expert Concrete Restoration & Repair	Woodbridge, NJ	Terra-Lok™ 24-015

Learn More About Terra-Lok™ 24-120

Once you learn what a box culvert is, it's hard to unsee them. They are everywhere, especially in areas with water bodies, moving water, high rainfall, and where roadways are passing over those water bodies. What purpose do they serve? They allow for creeks to flow under roadways and other structures to maintain connection between bodies of water or to provide adequate stormwater conveyance. A culvert must also support and protect the above structure from being damaged by these water flows. So,

when a culvert shows sign of failure, the important structures they support are put at risk. This was the case for the **New Jersey Turnpike Authority** for one of their culverts in Woodbridge, NJ.

A sinking roadway section of the NJ Turnpike prompted the NJTA to contact their maintenance contractor to determine a repair solution. The maintenance contractor contacted Expert Concrete Restoration & Repair (ECRR) to inspect a suspect culvert to determine if it might be causing the issue and to determine a repair solution.

The 18' long concrete box culvert was experiencing severe soil infiltration. Over time, cracks had formed along the walls and were allowing water and the support soils around the culvert to seep in. The soil loss was resulting in the weakening of the soils underneath the roadway and was causing it to settle. To repair the issue, ECRR determined that treating the soils with NCFI's Terra-Lok™ 24-120 was the best solution.

Soil loss around culverts is a twofold problem to repair. First, the voids and cracks need to be sealed to reestablish soil support around the culvert and to ensure the culvert doesn't fail in the future. The second issue is to rehabilitate the weak soils below the roadway, or whatever structure is being supported, so the soils could continue to have the strength to support the structure. Terra-Lok™ has the capability to accomplish both goals in a single application.

The Terra-Lok™ 24-120 is a single-component polyurethane system that is formulated for permeating loose soils, stopping leaks, and filling voids, making it an exceptional system for culvert rehabilitation. Terra-Lok™ behaves in two stages once injected. Initially, Terra-Lok™ permeates the soil in its chemical state allowing for saturation of the chemical into voids or gaps in the weak soil. Then, when the 24-120 is exposed to the moisture content in the soil, the polyurethane reacts and expands, resulting in a soil base that is densified and void areas that are filled, including cracks, crevices, and separated joints.

ECRR took soil samples onsite to confirm the moisture content for determining the 24-120’s chemical reaction. ECRR then approached the project by injecting the 24-120 on a 2ft grid pattern at 8ft depths. As the culvert was 25ft below the surface, the injection pattern allowed for excellent soil permeation at optimal depth to stabilize the culvert, roadway, and the soil in between.

After a 3-day installation, material travel was confirmed through visual observation in the culvert. The polyurethane had sealed the cracks and was seen around the perimeter of the culvert. The project was a complete success and helped the NJTA avoid weeks of repairs and delays and tens of thousands of dollars with alternative methods.