

NJTA Culvert Rehabilitation

Woodbridge, NJ



Problem

A sinking roadway section of the NJ Turnpike prompted the New Jersey Turnpike Authority (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 underneath the roadway to seep in. The soil loss was resulting in the weakening of the soils underneath the roadway and was causing the roadway to settle. To repair the issue, ECRR determined that treating the soils with NCFI-120 (formerly Terra-Lok™ 24-120) was the best solution.

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 supported structure, so the soils retain the strength to support it. NCFI-120 has the capability to accomplish both goals in a single application.

ECRR took soil samples onsite to confirm the moisture content for determining the NCFI-120's chemical reaction. ECRR then approached the project by injecting the NCFI-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.



Results

After a 3-day installation, polymer travel was confirmed through visual observation in the culvert, confirming full material penetration. The polymer sealed cracks and walls around the culvert perimeter.

The project was a complete success and helped the NJTA avoid weeks of repairs, delays, and tens of thousands of dollars associated with alternative methods while minimizing disruption to traffic.



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