

PolyLEVEL™

Project: NDOR Highway Slab Lift

Location: Gretna, NE

Date: July 2012

Challenge:

The Nebraska Department of Roads (NDOR) commissioned the repair of a 24-foot wide, 100-foot long section of Highway 6 near the intersection with Giles Road. This area of poured concrete road had settled 1.5 inches at its mid-span, creating a dip or sag in the highway that affected both ride quality and safety. Voids were also likely beneath the pavement at the joints. The NDOR specified that the concrete be lifted back toward level, voids be filled between the pavement and subgrade, and the entire project be completed in one day to minimize traffic disruption and inconvenience to the public. Although restricted, traffic flow had to continue throughout the project duration.

Solution:

The NDOR selected PolyLEVEL™ polyurethane injection to fill the voids and lift Highway 6 back toward its original position. PolyLEVEL™ is a two-part urethane that expands into a rigid foam used to fill voids, stabilize slabs and lift concrete. Once injected through small 5/8-inch drilled “ports” in a slab or surface, a chemical reaction converts the liquid urethane components to a strong, rapidly-setting foam material. In its foam state, PolyLEVEL™ is relatively light, weighing two to six pounds per cubic-foot (pcf). Other void-filling or lifting materials can weigh upwards of 120 pcf, adding significant weight to supporting soils or base materials and potentially contributing to further settlement issues. With a compressive strength of 100 pounds per square inch (psi), PolyLEVEL™ can provide the necessary resistance to support heavy loads.

The two northbound lanes affected by the settlement were each repaired independently of the other to allow continued traffic flow. Due to the quick-set nature of PolyLEVEL™, the first restored lane of highway was reopened to traffic a mere 20 minutes after injection. This allowed crews to quickly close and begin work on the adjacent northbound lane. A total of 2,358 pounds of PolyLEVEL 400 were injected through 90 injection ports laid out in an approximate 5-foot grid. The expanding PolyLEVEL™ foam filled the voids and lifted the sag in the highway 1.5 inches. The entire project was completed in seven hours.

Project Summary

Certified PolyLEVEL™ Installer: Foundation Supportworks® by Thrasher

Products Installed: PolyLEVEL™ 400, High Density Spray Polyurethane

Product Characteristics (PL400): 100 psi Compressive Strength, 146 psi Tensile Strength, 69 psi Shear Strength, 19:1 Expansion Rate, 6 pcf Typical in Place Density



Highway slab before lift



Drilling PolyLEVEL™ injection points



Injecting PolyLEVEL™ and raising slab



Highway slab after lift