Case Studies

Kentucky Water Treatment Center Walkway Collapse and Soil Subsidence Stabilization

Soil Subsidence and base soil loss led to sinkhole-like conditions and the collapse of a walkway at a Kentucky Water Treatment Center.

About The Project

Contractor	Location	Product Used
United Dynamics	Fort Thomas, KY	Strata-Fill™ 24-070

Problem

In Fort Thomas, KY, The Northern Kentucky Water District (NKWD) had quite the jolt. One day everything was fine, the next a 10ft x 8ft section of an asphalt walkway had collapsed next to one of their water treatment center's office buildings! The collapse wasn't caused by a sudden issue, but by a soil subsidence problem that had developed over time.

The walkway was located between NKWD's office building and its water treatment tanks. Below the walkway were 36″ diameter pipes at approximately 10′ below grade

that penetrated a concrete wall, that supported a utility access point at the end of the walkway. Water eventually penetrated the pavement and found its way to the annular voids around the pipe penetrations and caused a hole in the wall's earthen footing, leading to severe soil subsidence which created a sinkhole-like condition that caused the walkway to collapse.

Solution

A General Contractor, Dugan & Meyers, LLC, was brought in to prepare the area and bring the walkway back to use. During the excavation, Dugan & Meyers fully exposed the pipes and hired United Dynamics to seal the voids and prevent future soil loss using the TerraThane 24-070 geotechnical polyurethane.

"We chose the 24-070 because we knew it would spread optimally to penetrate and fill the voids that were hard to reach. With the high concentration of polyurethane being sprayed, the low-exothermic qualities ensured the area wouldn't cause fire safety issues," stated Eric Minzenberger, VP of United Dynamics.

Results

United Dynamics approached the project by spray applying the 24-070 to the hole at the base of the wall. The polyurethane spread throughout the void and re-established contact between the wall and the support soil. United Dynamics continued to spray apply the 24-070 to form a 6ft tall 8ft x 5ft monolith of polyurethane which encapsulated the pipes, stabilized the hole, and sealed the pipe penetrations to prevent any future soil migration. The polyurethane monolith also provided a structural "bridge support" to further protect the pipes.

"The pipes and hole were void-filled and encapsulated within a day ensuring the area was stabilized against future soil subsidence. The light-weight qualities of the 24-070 also reduced overburden stress on the fill material," said Minzenberger. "The GC was

able to immediately backfill the hole and complete the project quickly, making for minimal man hours and costs!”

Project Images