

Alchatek

CASE STUDY
SOIL STABILIZATION

PARKING LOT PAVEMENT BEHIND LOADING DOCKS AT A MANUFACTURING PLANT NORCROSS, GA

Parking Lot *Stabilization*

Settlement of parking lot pavement behind the loading docks at a manufacturing plant in Norcross, GA led to a multi-phase investigation and repair involving soil stabilization, slab lifting, and pipe rehabilitation.

AREA OF SETTLED CONCRETE SLAB
75' x 25'

PRODUCT
AP Fill 700

I · THE PROBLEM

CASE STUDY · 01

PARKING LOT PAVEMENT BEHIND LOADING DOCKS AT A MANUFACTURING PLANT NORCROSS, GA

01 What made this job *difficult.*

Atlanta geotech contractors Lift It Rite were contacted by Deas Construction regarding the settlement of parking lot pavement behind the loading docks at a manufacturing plant in Norcross, GA. An area of concrete slab pavement, approximately 75' x 25', surrounding a crane and a steel rack showed signs of settlement. Holes drilled in random spots within the area revealed voids up to 24" directly beneath the slab, and manual probing of the soil indicated it was quite soft.

KEY CONDITION

A summary of the testing and the walkthrough/site evaluation indicated that the failure of the 72" CMP culvert joints led to major soil erosion, which in turn led to settlement and undermining of the concrete. Additionally, the base of the 12' diameter brick manhole was pitted and broken, leading to more soil infiltration and settlement around the base.

THE CONSTRAINT

24"

VOIDS BENEATH SLAB

Holes drilled in random spots within the 75' x 25' area revealed voids up to 24" directly beneath the slab.

AT A GLANCE

30x AP FILL 700 EXPANSION FACTOR	15x AP LIFT 475 EXPANSION FACTOR	4 gallons per minute PMC PHX-40 OUTPUT	28 gallons RESIN INSTALLED PER GROUT POINT

II · THE SOLUTION

CASE STUDY · 02

02 What was specified, *and how it went in.*

AP FILL 700
SINGLE-COMPONENT
GEOTECHNICAL HYDROPHOBIC
POLYURETHANE RESIN

A proposal was made for a three-step repair: lifting and void-filling the concrete slabs with high-density polyurethane, permeation and pressure grouting of the soils with single-component geotechnical hydrophobic polyurethane resin, and CIPP point repairs of the two breaches in the CMP with concrete repair for the 12' diameter brick manhole base.

THE MATERIAL

AP Fill 700

AP FILL 700 & AP LIFT 475

AP Fill 700, manufactured by Alchatek, played a crucial role in sealing pipe joints and deep soil stabilization. This NSF/ANSI 61-approved polyurethane resin features a low viscosity for soil permeation and an impressive 30x expansion factor. Lift It Rite used Alchatek's AP Lift 475 high-density polyurethane foam for concrete lifting and void filling. This two-component system expands 15x its original volume, creating a strong, watertight support structure.

THE METHOD

01
Injected
AP Fill 700 was injected in a clock pattern at four locations along the two failed CMP joints until reacting polyurethane foam sealed the breaches.

02
Stabilized
A grid pattern with approximately 3-5 foot spacing was cored and pressed to 28' deep; AP Fill 700 was injected through the grid to stabilize the 75' x 25' x 28' soil block, with about 28 gallons installed per grout point.

03
Lifted
A grid pattern of approximately 4' on center was drilled through the slab and AP Lift 475 was injected to fill voids up to 60" and lift the concrete, using a PMC PHX-40 proportioner.

04
Repaired
Pelican Underground performed four CIPP point repairs, covering the two failed joints and an additional breach found further up the line, using fiberglass and felt composite liner impregnated with epoxy resin. AW Cook's polymer-modified concrete material rebuilt the brick manhole base.

03 What the result was, *and what confirmed it.*

INCREASE IN BEARING CAPACITY
SEPTEMBER AND OCTOBER 2021

Lift It Rite performed manual compaction testing by going through the 75' x 25' grid pattern with a ½" probe. With the manual probe, it was difficult to penetrate the ground, which indicated good compaction and void fill throughout the zone. Ground Consolidation Services then brought back a dynamic cone penetrometer to do post-project DCP testing in the areas where testing had been done before. DCP results indicated a great increase in bearing capacity. A few shallow core samples were also taken and showed complete fill and compaction. Ground-penetrating radar was then run along the same scan lines to compare before and after scans; those also showed improvement.

INCREASE IN BEARING CAPACITY

DCP results indicated a great increase in bearing capacity.

START THE CONVERSATION

Send us the job.
We will send back an approach.

Send us the soil report or the failure photos and Technical Services will return a written approach within two business days.

TECH SUPPORT

404 · 618 · 0438

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Alchatek

Alchatek manufactures polyurethane resins, chemical grouts, and injection equipment for infrastructure repair: leak sealing, soil stabilization, concrete lifting, and seawall repair. Headquarters in Tucker, Georgia, with a bonded warehouse in Reno, Nevada.

Information in this document is believed accurate at the date of publication. Product performance depends on site conditions and application; consult the current Technical Data Sheet, which is the controlling document.