

Alchatek

CASE STUDY
WATERFRONT STAIRCASE STABILIZATION

PUBLIC PARK WATERFRONT STAIRCASE, NEW YORK

Waterfront Staircase *Stabilization*

A New York City park's eroding beachfront staircase, built over landfill, was stabilized with polyurethane injection in under two weeks, at an estimated 97% lower cost than heavy reconstruction and without closing the park.

ESTIMATED COST SAVINGS	COMPLETED IN	PRODUCTS
97 *percent*	<2 *weeks*	AP Fill 720 AP Lift 430

01 What made this job *difficult.*

PUBLIC PARK WATERFRONT
NEW YORK

A public park in New York had critical erosion issues at its waterfront staircase and adjacent beach, which were built over a landfill. Over the years, natural erosion pulled back sand, exposing uneven foundation areas and creating safety hazards for visitors.

The partially buried concrete staircase showed significant subsidence and shifting soil, posing a risk of structural collapse. The New York City Parks Department needed a rapid solution to stabilize the site before further degradation occurred.

KEY CONDITION

Voids beneath the stairs and along the beachfront, with sand migration making the instability worse.

THE CONSTRAINT

No room to excavate.

LIMITED ACCESS, ADJACENT STRUCTURES

Traditional excavation or pier-and-casing methods were impractical due to limited access and the need to avoid displacing adjacent structures.

AT A GLANCE

97 %	<2 weeks	6–8 feet	~1 gal/ft
ESTIMATED COST SAVINGS VS. HEAVY RECONSTRUCTION	TIME TO COMPLETE THE WORK	AP FILL 720 INJECTION DEPTH, EVERY 4 FEET	AP LIFT 430 BENEATH THE STAIRCASE

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

AP FILL 720
AP LIFT 430

Technicians found differential settlement in the staircase and surrounding sand, likely caused by uneven soil compaction and erosion. The team selected two materials: AP Fill 720 for soil compaction and stabilization, and AP Lift 430 for structural void filling.

AP Fill 720 addressed the loose sand through permeation and consolidation, while AP Lift 430 filled the critical voids beneath the staircase, providing lift and support.

THE MATERIALS

AP Fill 720

SINGLE-COMPONENT POLYURETHANE

AP Lift 430

TWO-COMPONENT STRUCTURAL FOAM

THE METHOD

01
Stabilize
Inject AP Fill 720 every 4 feet at 6 to 8 feet deep to bond sand particles and prevent further migration.

02
Fill voids
Inject AP Lift 430 directly beneath the staircase's granite slabs through strategic ports, about 1 gallon per linear foot.

03
Seal
Use the reserved AP Fill 720 to seal surface gaps around the staircase and prevent sand washout.

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

POST-REPAIR INSPECTIONS

The dual-material injection rapidly stabilized the waterfront staircase, eliminating soil migration and structural risk without closing the park. Compared to traditional heavy reconstruction, the approach cut costs by an estimated 97% and finished in under two weeks with minimal marine or community disruption. Post-repair inspections confirmed lasting results with no recurrence of erosion.

ESTIMATED COST SAVINGS

97 *percent*

Park open throughout. No recurrence of erosion.

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.

TECHNICAL SUPPORT

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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.