

TWO-STORY RESIDENTIAL HOUSE NORTH CAROLINA

Deep Soil Stabilization *with Polyurethane*

A two-story residential house in North Carolina, built on poorly compacted fill dirt, began settling after 20 years. A contractor used deep soil polyurethane injection to stop the sinking and reinforce the soil.

INJECTION POINTS INSTALLED
18 *tubes*

PRODUCT
AP Lift 440

I · THE PROBLEM

01 What made this job *difficult.*

TWO-STORY RESIDENTIAL HOUSE
NORTH CAROLINA

A two-story residential house in North Carolina was built on poorly compacted fill dirt. After about 20 years, it began showing evidence of settling. Interior cracks appeared in the sheetrock and some of the floors were no longer level, indicating that the footings were slowly sinking. These symptoms of unstable soil were caused by about 1 inch of settling. The engineer on the project determined that the problem was not severe enough to require helical piers. A contractor was called in to stop the sinking and reinforce the soil via deep soil polyurethane injection.

THE CONSTRAINT

1 *in*

SETTLING

SIGNS OF SETTLEMENT

01
Sheetrock cracks
Interior cracks appeared in the sheetrock.

02
Out-of-level floors
Some of the floors were no longer level.

03
Sinking footings
About 1 inch of settling on poorly compacted fill dirt.

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

AP LIFT 440
DEEP LOCK®

An Alchatek tech consultant worked with the contractor to draw up a plan, indicating exactly where the injection points would be located. The engineer reviewed the plan for feasibility.

THE MATERIAL

AP Lift 440

AP LIFT 440

Compressive Strength (ASTM D-1621): 80 p.s.i. or 11,520 p.s.f. Tensile Strength (ASTM D-638): 88 p.s.i. Expansion (Unconfined): 17-19 times. Density (ASTM-D 1622): 3.75 to 4.25 lb/ft3. Shrinkage (ASTM D-1042/D-756): Negligible.

THE METHOD

01
Planned
An Alchatek tech consultant worked with the contractor to draw up a plan indicating exactly where the injection points would be located; the engineer reviewed the plan for feasibility.

02
Installed
The contractor installed 18 injection tubes to a depth of 7 feet.

03
Injected exterior
Foam was injected from outside the house, beneath the exterior footings.

04
Injected interior
Foam was injected from inside the house, beneath the load bearing interior walls.

WHY NOT HELICAL PIERS

The engineer determined the problem was not severe enough to require helical piers.

Instead, a contractor was called in to stop the sinking and reinforce the soil with deep soil polyurethane injection.

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

LIFT PER INJECTION SEQUENCE

The deep soil stabilization process densified the soil and stopped the settlement. In addition, the contractors achieved a half inch lift from the exterior injections and another half inch lift from the interior injection sequence. The customer was extremely happy with the results. The engineer was impressed as well and said he would recommend this procedure in similar future scenarios.

LIFT PER INJECTION SEQUENCE

0.5 *in*

half inch lift from exterior injections and half inch lift from interior injections

AT A GLANCE

18 tubes

INJECTION TUBES

installed to a depth of 7 feet

50 lbs

FOAM PER TUBE

split between 7 feet and 3.5 feet below grade

5 ft

SPACING

approximate spacing between injection points

> *The engineer said he would recommend this procedure in similar future scenarios.*
>
> PROJECT ENGINEER

THE CUSTOMER

The customer was extremely happy with the results.

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

WWW.ALCHATEK.COM

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.

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