Advanced
Geotech
Solutions

GEOTECH **PROCEDURES**

Deep Lock® **Process**

Powerful Polumers
Painless Procedures
Rapid Results

Alchatek, LLC
4508 Bibb Blvd, Suite B5
Tucker, GA 30084

Alchatek.com

Alchatek

Deep Lock® **Process**

Description

Deep Lock® is the process of using tubes to inject structural polymer at a desired depth for the purpose of stabilizing weak sub-grade.

Tools & Equipment

Proportioner:
The minimum recommended proportioner for Deep Lock® is the PMC Ph-2, Graco E-30 or equivalent.

Injection Ports:
Depending on which injection gun is being used there are several options for connecting to Deep Lock® Tubing. The most commonly used ports are compression fitting with buttonhead and coupler or standard steel ports.

Injection Tube:
The tube will be driven to depth and injected through in order to place material in the desired locations. 5/8" O.D. and ½" O.D. are the most commonly used sizes.

Tube Tips:
While driving the tubes a pointed tube tip or carriage bolt must be installed on the bottom side of the tube to prevent soil from filling the tube during the driving process.

Drill Bits:
A masonry bit is used to drill through any concrete on the surface as well as create a pilot hole for driving your tube. Various lengths of drill bits are needed.

SDS Max Ground Rod Driver:
A ground rod driving bit attached to a Hilti TE-60/70 (or equivalent) is used to drive the tubes to the desired depth.

Tube Plug Punch:
A solid steel rod is needed to punch the tip from the rods that are driven.The thickness of the rod will vary depending on what size tubing is being used.

Dynamic Cone Penetrometer (DCP):
Equipment designed to test soil density and stiffness at depth. Suggested equipment Pagani DPM30

Ground Penetrating Radar (GPR):
A GPR is used to locate underground utilities, drain lines, post tension, etc.

Best Practices

Injection locations are generally placed at 3'-4' spacings or grid pattern to effectively compact weak sub grade soils.

In certain scenarios multiple injection depths are required to properly compact soils and stabilize structures. When utilizing more than one depth per injection location tubes are driven in 3'-4' depth intervals. When shooting multiple depths it is best practice to shoot the shallow tubes first, then the deep tubes. This allows you to create increased surface area for the deeper injections to push against and it helps keep material from running vertically. In some case it can be beneficial to inject from deep to shallow depending on the desired result and site conditions.

While injecting, timed shots are used to keep the material localized and prevent material from coming out at the surface, however when pausing between shots special care must be taken as material will clog the tubes quickly if allowed too much time between shots.

Each tube is injected until significant back pressure is felt or until the desired amount of material per tube has been met.

When injecting Deep Lock® tubes it is important to pay very close attention to ensure that material is flowing through the tube and that it is not backing up, as this can cause your injection port to be ejected from the tube and allow pressurized and expanding material to spray from the top of the tube.

Always make sure deep and shallow tubes are marked to allow quick differentiation between the two while performing work.