



Pharmaceutical Manufacturing Plant



Ground Improvement- Installing Vibratory Stone Columns

PROJECT OVERVIEW

A chemical plant was adding a new manufacturing facility. The sub-surface conditions generally consisted of a sand/gravel material to a depth of approximately 10 feet. The material below the fill consisted of stiff gray clay approximately 9 to 18 feet thick.

REQUIREMENTS AND CHALLENGES

The design requirements for this new facility included columns and continuous footings with a bearing pressure of 1300 psf and the floor slab was 230 psf. The maximum long-term settlement was less than 1 inch and the maximum differential settlement was less than a half an inch.

SOLUTION AND RESULTS

Based on the sub-surface conditions and the design requirements, CNC Foundations chose Vibratory Stone Columns (VSCs or Geopiers) as the ground improvement method. We installed 24 inch diameter vibratory stone columns to a depth of 25 feet below the column and continuous footings.

In the floor slab area, CNC Foundations installed 24 inch diameter vibratory stone columns to a depth of 10 to 19 feet.

Overall, we installed 1,578 Vibratory Stone Columns to support the new foundation and floor slab.

CNC Foundations performed one (1) full scale modulus test and two (2) plate load tests to validate the design and installation of the VSC's. The full scale load test had a quarter of an inch deflection at 1.5DL (17.55 kips). The two plate load tests had less than 0.14" deflection at 1.0DL.

Project Details

SECTOR

Pharmaceutical
Manufacturing Plant

LOCATION

Ohio

APPLICATION(S)

Deep Foundations,
Vibratory Stone Columns
(VSCs), Aggregate Piers

