



Manufacturing Storage Facility



Ground Improvement – Installing Vibratory Stone Columns

PROJECT OVERVIEW

A company in Cape Girardeau, Missouri, was adding a new storage facility at their existing manufacturing site. The sub-surface conditions generally consisted of a lean clay fill material to a depth of approximately 3 feet. The material below the fill consisted of high plastic clays approximately 9 to 18 feet thick. Below the high plastic clay was 5 to 13 feet layer of silt. This site was close to the Mississippi River and wetlands area.

REQUIREMENTS AND CHALLENGES

The design for this new facility required the stone columns and continuous footings to have 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) as the ground improvement method. We installed vibratory stone columns to a depth of 20 feet under the column and continuous footings. In the floor slab area, we installed VSCs to a depth of 10 feet. Overall, CNC Foundations installed over 1,600 Vibratory Stone Columns to support the new foundation and floor slab.

We performed load tests to validate the design and installation of the Vibratory Stone Columns. The all load tests had deflections ranging from 0.14 to 0.25 inches.

Project Details

SECTOR

Manufacturing Storage Facility, River soil

LOCATION

Cape Girardeau, Missouri

APPLICATION(S)

Vibratory Stone Columns (VSCs) / Aggregate Piers

