



CIVIL CONSTRUCTION DIVISION



Sector:

Large Agricultural Chemical
Formulating and Packing Facility

Location:

Omaha, NE

Application(s):

Vibratory Stone Columns (VSCs)
/ Aggregate Piers, Helical Piles

PROJECT CASE STUDY VIBRATORY STONE COLUMNS

Description

A large agricultural chemical formulating and packing facility was adding (2) new additions between (2) existing plant facilities approximately 25 feet apart.

Requirements & Challenges

The project included heavy column loads and a series of mat foundations to support machinery and tanks. The site consisted of soft fill sand and clays so ground improvement was required to prevent detrimental settlements.

Due to low density soils, the EOR recommended the ground within the footprint of new addition to be improved to 2000 psf bearing pressure to accommodate adequate support of the new addition.

Solution

Helitech chose to install Vibratory Stone Columns (VSC's) throughout the footprint of the new addition. The improvement included 9 isolated footings and approximately 2,700 sf of the floor slab. At limited access areas, Helitech substituted the VSC's with Helical Piles. Helitech conducted load tests to field verify the VSC load and deflection. The Helical Pile Capacities were field monitor by using a torque indicator to measure installation torque values.

Results

VSC's were installed to support the mat foundations and columns with VSCs being installed within 5 feet of the existing facilities. The design was validated with load testing and full-time computer monitoring of the installation process.

Helitech completed the ground improvement work ahead of schedule. The site was challenging due to tight working conditions. The owner liked the VSC's and Helical Pile method as a viable solution to their project because neither application produced soil spoils, which alleviate any concern of potentially the need to remove hazardous materials which can be costly if required. The VSC's tested well and deflections were approximately 50% of the maximum tolerances.



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VIBRATORY STONE COLUMNS



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