



UNITED STATES

## Confidential Client Office Building Salt Lake City, UT



### Owner

M.L. Harris and Company, LLC

### General contractor

VCC Construction Company

### Dates of work

2011/04 2011/06

## Main figures

**Vibro stone columns**  
1000 EA.

## Description

The construction of a new 94,000 sq. ft facility in Salt Lake City, Utah included a four-story office building and attached parking garage. Before construction could start, ground improvement was required to improve the bearing capacity of the soil.

Due to the soft soil and the tight project schedule, Menard designed a solution using vibro stone columns to reduce the magnitude of settlement and improve load bearing characteristics of the soil.

## Ground conditions

The project site's predominant soil profile consisted of sand and sandy clay. The bearing stratum was a stiff marine deposit encountered at depths between 15 and 25 ft. The foundations were designed for a bearing pressure of 5,000 psf with the requirement of limited differential movement once construction was completed. Liquefiable sands were also present at the site.

## Solution

Menard developed a ground improvement solution using vibro stone columns to mitigate the risk of liquefaction and to control settlement of the foundation footings installed at a maximum depth of 25 ft. Because of the site conditions, Menard used the dry-bottom fed method of construction, which introduces the stone via a side-feeder tube without removing the probe.

Due to the tight project schedule, two full time crews were utilized.

In addition to the vibro stone columns, there was also a need for wind and seismic load resistance at several key footing locations. For this aspect of the project, Menard teamed with its sister company, Nicholson Construction, to install a series of ground anchors to satisfy the engineer's requirement for uplift and lateral loading conditions. The anchors were installed to a depth of approximately 50 ft, with the work being done in tandem with the stone column operation.

Together, Menard and Nicholson were able to use their expertise in ground improvement and knowledge of local geology to create a two-part foundation support solution that met the performance, schedule, and economic needs of the client.