



Summa Health - Behavioral Health Pavilion Akron, OH

UNITED STATES



Owner
Summa Health

Engineer
Wertz (Geotechnical); Thorson Baker (Structural)

General contractor
Eclipse Co.

Dates of work
March 2021 April 2021

Main figures

Stone columns
510 EA.

Description

In an effort to solidify its position as the leading healthcare provider in Akron, Summa Health announced a long-term master facility plan in 2016. A highlight was the proposed construction of a \$90 million, 60-bed inpatient/outpatient facility on Summa Health's Akron campus. The 7-story, 105,00 sq-ft building -- part of the "Phase 2" initiative -- would provide an integrated, state-of-the-art space for a partial hospitalization program, while enabling Summa Health to meet its objective of "Looking at the whole person when treating a patient."

Due to the loose and compressible nature of the soils at the site, spread footing construction was deemed untenable due to excessive settlements and insufficient bearing capacity. Menard USA was contracted to provide ground improvement via stone columns to enhance the engineering properties of the soil.

Ground conditions

The site soils were largely of natural origin, but consisted of loose silts and sands. The soils generally increased in density with depth until weathered shale bedrock was encountered, roughly 25 ft below the working surface.

Solution

Drilled shafts were originally considered for the foundation support. However, it was determined that stone columns would provide the requisite bearing capacity and were more cost-effective and offered constructability advantages compared to drilled shafts. It was determined that support of floor slabs would not be required, and the ground improvement support would be for column, wall, and mat foundations only.

Approximately 500 stone columns were installed to an average depth of 13 ft and a maximum depth of 35 ft. The design provided for 1 in of post-construction settlement with a 1/2 in of differential settlement. The project was designed for maximum bearing pressures of 5,000 psf meeting the performance criteria of the new facility. Menard successfully performed three load tests on stone columns to confirm the soil and column parameters assumed in the design. While two tests were initially planned, the third confirmed that a portion of stone columns -- which were terminating in dense layers at shallower-than-anticipated depths -- would still meet the design.

The building included a basement area where stone columns were also required to meet the performance. To allow for safe installation in the first-floor area near the basement cut slope, a second mobilization was required. The downtime allowed the contractor to construct and backfill against the basement wall, eliminating the slope stability concerns.

For a 7-story inpatient/outpatient healthcare facility in Akron, Menard successfully installed an estimated 500 Stone Columns.

