Baptist Memorial Hospital – Crittenden

West Memphis, Arkansas

Keller combined vibro piers with earthquake drains (EQDs) for a cost-effective alternative to applying deep foundations solutions.

The project

Baptist Memorial Hospital is a $44 million, 65,000-square-foot facility replacing a regional hospital that closed in 2014. Subsurface conditions consist of soft, compressible clays and liquefiable sands to 50 feet below the ground surface.

The challenge

Proposed site grading required approximately five feet of new fill which, if left untreated, would cause up to four inches of settlement and require over eight months to stabilize. The site is located within the New Madrid Seismic Zone, which is one of the most active seismic areas east of the Rocky Mountains. Because it is a critical facility, the hospital was required to remain functional after the design-level earthquake. The anticipated post-liquefaction settlement was approximately five inches, which exceeded all structural tolerances for stability and serviceability. Therefore, the seismic response of the soils required mitigation.

The solution

Keller proposed a design-build combination ground improvement system using vibro piers and earthquake drains. Vibro piers were installed below the spread footings to improve static settlement performance. Earthquake drains were installed on a grid pattern beneath the entire building and outside the building footprint to reduce the post-liquefaction settlement to acceptable levels.

Project facts

Owner(s)
County of Crittenden

Keller business unit(s)
Keller

Main contractor(s)
Flintco, LLC

Engineer(s)
Keller

Solutions
Liquefaction mitigation

Markets
Institutional
Healthcare

Techniques
Vibro (aggregate) piers®
Earthquake drains

Email address
info@keller-na.com

Phone number
1 (800) 456-6548