

Distribution Facility Expansion

Memphis, Tennessee

A state-of-the-art, 1.4 million square foot distribution facility was to be constructed in Memphis, Tennessee. Ground improvement was used to treat the very poor, alluvial soils and seismic concerns.



The project

Keller provided design and construction of vibro piers and wick drains to address the variable sub-surface conditions to support a 1.4 million square foot distribution facility expansion.

The challenge

Site investigations revealed fills up to 24 feet deep underlain by soft fine-grained soils, underlain by coarse-grained soils. Between 0 and 18 feet of engineered fill was required to reach slab sub-grade elevation. Preliminary calculations estimated up to 5 inches of settlement due to new fill placement would occur over a 5-month time frame without treatment.

The solution

The vibro pier and wick drain ground improvement system provided an economic alternative to deep foundations. This system allowed for the structure to be designed utilizing shallow foundations with a slab-on-grade as opposed to a deep foundation system with pile caps, grade beams, and a structural slab.

Keller placed up to 18 feet of engineered fills placed to reach slab sub-grade elevation and installed over 81,000 linear feet of vertical wick drains and 173,000 linear feet of vibro piers. The wick drains accelerated consolidation settlement to a depth of approximately 50 feet allowing foundation and slab construction to commence within 2 weeks of new fill placement completion as opposed to an estimated 5 months without treatment.

Project facts

Owner(s)

Confidential

Keller business unit(s)

Keller

Main contractor(s)

H&M Construction Company Inc.

Engineer(s)

Keller

Solutions

Ground improvement

Markets

Commercial

Techniques

Wick (PVD) drains

Vibro (aggregate) piers®

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