



FOUNDATION VIEW



Foundation, Crawl Space & Basement Solutions for Design Professionals

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LOAD TESTING *Helical Feats of Strength*



The helical pile is at the center of this field test beneath the horizontal beam. A hydraulic jack is used to provide pressure on the pile.

Load testing involves applying weight on a system or device and measuring its response under both normal and potential load conditions. The objective is to determine how a structure will perform beyond standard operational capacity. For helical piles, which derive their load-bearing capacity from both end bearing on the helix plates and skin friction on the shaft, load tests are routinely conducted to establish ultimate and allowable pile capacities, determine pile head movement under load, verify design assumptions and capacities and establish site-specific torque correlation factors (K). ICC-ES AC358 states that full-scale load tests on helical piles shall be conducted in general accordance with the following standards:

- ASTM D1143, Standard Test Methods for Deep Foundations Under Static Axial Compressive Load (Figures 2.10.a1 and 2.10.a2)
- ASTM D3966, Standard Test Methods for Deep Foundations Under Lateral Load

AC358 further states that the Quick Test method of ASTM D1143 shall be used for compression tests. Additional discussion and guidance regarding the test procedures are provided in AC358 and within the respective standards.

For axial compression and tension tests, AC358 defines the ultimate pile capacity as the load achieved when plunging of the helix plate occurs or when the net deflection exceeds 10 percent of the average helix diameter, whichever occurs first. Net deflection is defined as the total pile head deflection minus the elastic shortening or lengthening of the shaft.

Recommended for new and existing construction, helical piles provide substantial support and satisfy performance expectations when used in foundation underpinning or remedial repair.



Movement and fluctuations of the steel pile are measured and recorded.





Thank You for Your Referrals!

Our commercial/industrial division continues to grow thanks to you and your confident referrals. We hold your referrals in the highest regard. JES specializes in the design and installation of foundation support systems for new construction and structural rehabilitation. We also offer poly-leveling, commercial crawl space encapsulation and other foundation related services.

Contact Director of Engineering, Dave Stinnette, PE directly at dstinnette@jesnow.com.



JES Trusted Partners

JES is looking for strategic business partners within our industry such as engineers, designers, architects, property managers and real estate professionals who share a commitment to service excellence. The purpose of JES Trusted Partners will be to strengthen referral relationships as well as to share resources and information. Each JES Trusted Partner will be showcased on our new commercially focused website for their area of specialty later this season. For more information on becoming a JES Trusted Partner, contact Eric Lackey at elackey@jesnow.com.

■ CASE STUDY: *Homestead Resort*



The Homestead Resort



Spa Building Renovations

The Challenge:

The Homestead Resort in Hot Springs, Virginia, in the middle of the Allegheny Mountains, is an iconic reminder of Virginia history. The site of this National Historic Landmark can be traced all the way back to 1766 and has been hosting vacationers ever since, including twenty-two U.S. presidents.

During renovations to the spa area of the resort in which new interior footing construction was required for the support of two new steel columns, an existing grade beam was encountered below the concrete floor slab. The subgrade soils below the grade beam were determined by the geotechnical engineer to be marginal in supporting an added load to the grade beam. Deep foundation support elements were determined to be the best solution.

The challenge was to add supplemental support to the existing grade beam allowing for the two new columns. Work had to be performed inside the spa building and in relatively tight confines. Cobbles, brick, wood debris and other rubble were also encountered requiring “pre-drilling” of the underpinning locations.



Exposed Grade Beam and Footing



Rock Drill in Position

The Solution:

A Push Pier system by Foundation Supportworks Inc. (FSI) was chosen because of its relative ease of installation in tight spaces with limited access. The push pier system, required to meet structural specifications, was designed by the JES engineering staff.

A TEI MP260 Portable Rock Drill was used by JES to pre-drill the pier locations. Two (2) FSI Model PP288 push piers with a “Retro-Fit” foundation bracket were installed beneath the grade beam for each new steel column. A total of four push piers were installed.



■ CASE STUDY: *Homestead Resort*



Push Pier Bracket



Hydraulically Driven Pier Shafts



JES Project Engineer:

David E. Stinnette, PE

Structural Engineer:

Nolen Frisa Associates

Geotechnical Engineer:

Froehling & Robertson, Inc.

General Contractor:

Mathers Construction

The Project Summary:

The push pier brackets were positioned on each side of the grade beam, directly across from each other, and generally in-line with the new column. The piers were extended to variable depths of approximately 13 feet to 19 feet below existing floor slab.

Based on final pier cap "lock-off" pressure of 3,800 psi using an Enerpac Lift Cylinder, each push pier was rated for an allowable compression capacity of 22,572 pounds (22.5 kips). To provide added stability against pier shaft buckling, each pier shaft (tube) was filled with concrete (5,000 psi Quikrete) prior to capping.

Work was completed in three days, allowing the contractor to re-pour the floor slab and renovations to continue at the resort spa.

Engineer Spotlight



David E. Stinnette, PE

After graduating from the Virginia Military Institute in 1985 with a B.S. in Civil Engineering, David served in the United States Navy for three years. After the Navy, he pursued a geotechnical engineering career in the civilian world.

David has over 24 years of experience in geotechnical engineering and construction inspection. His expertise includes: subsurface investigations using borings, test pits and geophysical methods, site development evaluation and assessment, foundation design, roadway design, retaining wall design, dam design, slope stability evaluation, and construction material testing.

Lunch Is On Us!

JES is dedicated to educating the professional community on commercial and residential foundation solutions, crawl space moisture management and basement waterproofing.

We provide opportunities for free continuing education credits to home inspectors, architects, real estate agents, engineers, property managers, and insurance adjusters. Free continuing education hours are offered through several classes, seminars, and lunch and learns hosted by JES throughout the year.

JES is a registered continuing education provider with ASHI, the AIA/CES, the RCEP and the Virginia Association of Realtors.

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■ StableFILL™: Who are you calling lightweight?



STABLE FILL™
CELLULAR CONCRETE

JES is fully committed to setting new standards of design and sustainability in our industry. StableFILL™ is one of the products we offer that demonstrates our passion for going above and beyond. Its applications involve everything from rooftops to roadways, making it a highly recommended solution for a range of structural problems. Used in new and existing construction, StableFILL™ is a versatile material that can be formulated to allow or stop water penetration. The cellular concrete solution corrects uneven footings, foundation walls and floor slabs.

The stone aggregate found in standard concrete is replaced by air bubbles giving StableFILL™ excellent insulating values. The bubbles, created by adding foaming agents to concrete, allow the material to be manipulated from densities of 15 to 120 lbs. per cubic foot.

What StableFILL™ lacks in weight, it makes up for in strength. It tends to be stronger than compacted fill or soils. With a high air content and low density, it is easy to pump no matter the distance. Aside from being cost-effective, the benefits of StableFILL™ abound. Invented by Swedish architect Johan Axel Ericksson in the mid-1920s, the aerated concrete has several “pour-in-place” applications.

Benefits

- Cellular concrete flooring
- Floor repairs
- Roofing projects
- Load-reducing backfill
- Abandonment fills
- Preconstruction soil treatment
- Annular space grouting
- Underwater placement
- Roadway rehabilitation

If you'd like to book a JES expert to speak at your company or industry meeting, go to www.jeswork.com/professional-resources/speakers-bureau.aspx.

The mid-Atlantic's premier engineered solution expert for foundation repair, new construction deep foundation installation, crawl space moisture management and basement waterproofing.

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