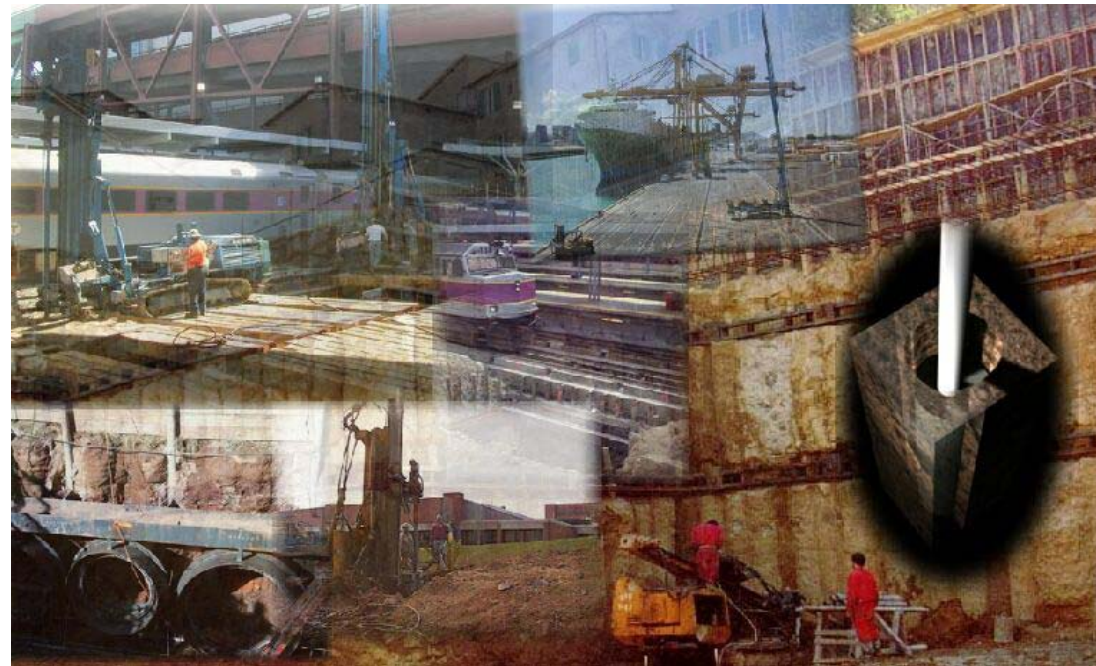




**GeoConstruction**

*A Division of Layne Christensen Company*

## Specialty Foundation Construction



Jet Grouting  
Drilled Micropiles  
Vibratory Ground Improvement & Stone Columns  
Construction Drilling, Grouting & Anchors



**GeoConstruction**

Layne GeoConstruction, a division of Layne Christensen Company, is a singularly qualified specialty geotechnical construction company, offering a wide array of service capabilities. A commitment to solution-driven innovation, positions Layne GeoConstruction as a leader in jet grouting, drilled micropiles, vibratory ground improvement, and construction drilling, grouting and anchor technologies. Many technologies that have become industry standards were pioneered by Layne GeoConstruction and its predecessor companies. From design through construction, Layne GeoConstruction has unparalleled expertise and geographical reach.

## Experienced. Equipped. Committed.

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## JET GROUTING

- Soil Stabilization
- Excavation Support Systems
- Seepage Barrier/Cutoff Walls
- Environmental Remediation

Jet grouting is a specialized *in situ* mixing of soil and cement grout. After drilling to the required depth, the drill rods are rotated and raised to the ground surface

at a constant rate, while injecting cement grout at a high pressure, forming a **soil-cement** column. When placed in tangential rows, the columns can be con-

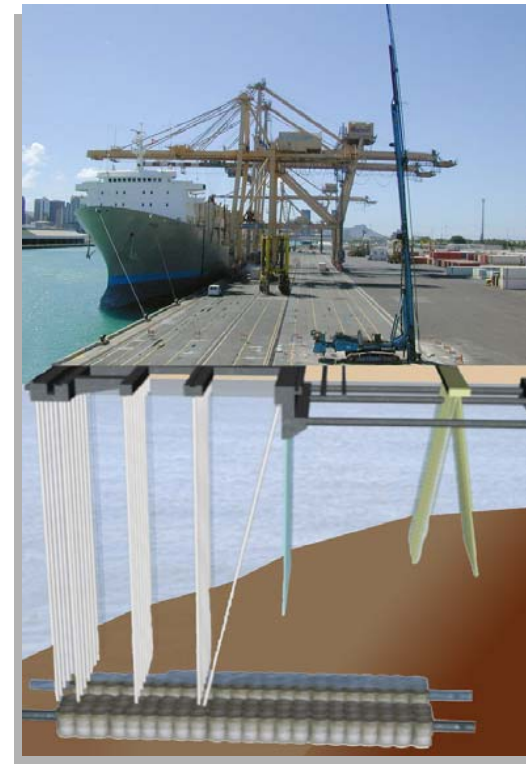
### Jet Grouted Columns

Provide soil stabilization and support to pier piles, bearing 500 ton crane loads, during construction of twin 48-inch diameter pipes.

figured to provide selective treatment or mass-treatment areas of soils..

Advantages to the jet grouting method include: higher compressive soil strengths, compared with other soil improvement methods; homogenous soil improvement; ability to improve isolated soil areas; and definitive quantity and scheduling.

*Hart Street/WWPS/Pier 52 Project  
Sand Island, Oahu  
Honolulu, Hawaii*



*Bobsled/Luge Foundation Project  
Mount Van Hoevenberg  
Lake Placid, New York*



Drilled micropiles consist of a core steel element surrounded by a *neat cement* grout mixture. Micropiles are a viable, practical solution to high-capacity structural load transfer to more stable, competent soil strata.

Micropiles are installed using water flush rotary drilling or rotary percussion drilling techniques. Measuring between 6"-12" in diameter, micropiles consistently achieve strengths of 20-100 tons, with special installations of up to 200 tons.

Drilled micropiles offer the same high bearing capacity as driven steel piles, with the added advantage of installation in areas presenting difficult access and low headroom. Micropile drilling methods generate minimal disturbance or vibration to adjacent structures, making micropiles an excellent underpinning alternative.

### Drilled Micropile Foundation

1300+ micropiles installed down the mountainside, through dense glacial till and hard underlying bedrock to support state-of-the-art, refrigerated bobsled/luge track.

## DRILLED MICROPILES

- Structural Foundation Support
- Structural Underpinning
- Soil/Slope Stabilization

With over 25 years experience, Layne GeoConstruction continues to innovate and advance micropile technology. As a result, Layne GeoConstruction offers drilled micropiles systems superior in both design and installation.

Vibrocompaction is a deep compaction technique for densifying sandy soils in place, by means of a vibrating probe. Under the influence of vibration, loose sand particles are rearranged into a more compact state. The improved soil has more load bearing capacity, and decreases problems associated with ground settlement. In areas with seismic

*Alameda Corridor Project  
Henry Ford Avenue Grade Separation  
Wilmington, California*



### Dry Bottom Feed Stone Columns

Increase cyclic shear resistance and bearing capacity of silty sands that will bear the MSE wall.

## CONSTRUCTION DRILLING, GROUTING & ANCHORS

- Post Tensioning
- Seismic Stabilization
- Earth Retention Systems
- Deep Drilling & Bedrock Grouting
- Compaction Grouting

Layne GeoConstruction is a proven leader in non-oil field contract drilling, with more than two hundred years cumulative experience. Possessing the most versatile fleet of drill rigs in the country, Layne GeoConstruction is the foremost drilling specialist, particularly in constricted access areas, and complex drilling conditions. Achieving depths greater than 400 feet, Layne GeoConstruction drills deep and accurate.

## VIBRATORY GROUND IMPROVEMENT & STONE COLUMNS

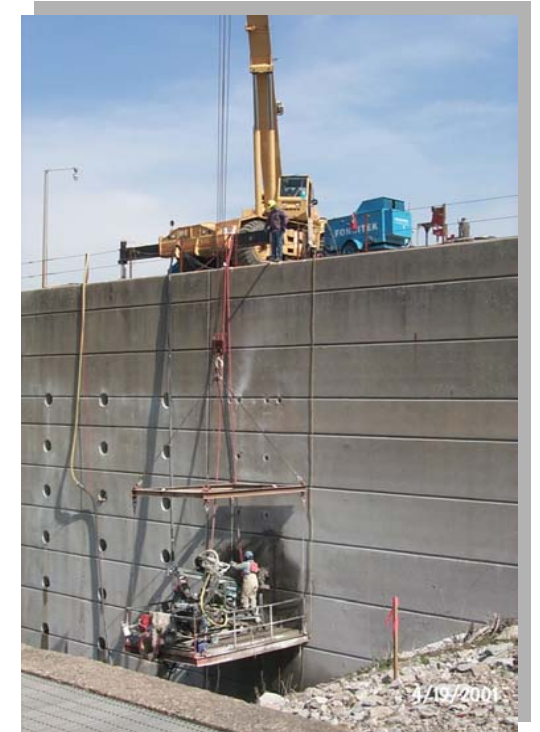
activity, vibrocompaction also decreases the potential for liquefaction.

Stone columns are created by adding crushed stone through a separate duct along side the vibroprobe. The stone column serves as a vertical drain, thus reducing excess pore pressures caused by rapid loading or earthquakes, making soil liquefaction less likely.

- Ground Settlement Systems
- Liquefaction Prevention
- Hydraulic Permeability Systems

Vibrocompaction and stone columns, are among the oldest vibratory ground improvement technologies, but remain the most economical solutions for foundation stabilization.

*McAlpine Lock & Dam Project  
Louisville, Kentucky*



Layne GeoConstruction also provides a variety of specialized, geologic specific grouting technologies. Moreover, Layne GeoConstruction develops and engineers specialized grout testing programs, which assist in determining the optimum level of grouting for future designs.

### Anchor System

498 designed and installed, double corrosion protected anchors, stabilize existing 600 and 1200 foot locks.

Layne GeoConstruction has completed many of the largest and most challenging post-tensioning dam anchor projects throughout North America.

From design through installation, Layne GeoConstruction is the total solution for anchor systems, including: dam anchors to counteract lateral hydrostatic forces and overturning; rock bolts and tie-backs for excavation support.