Post Grouted Drilled Shafts

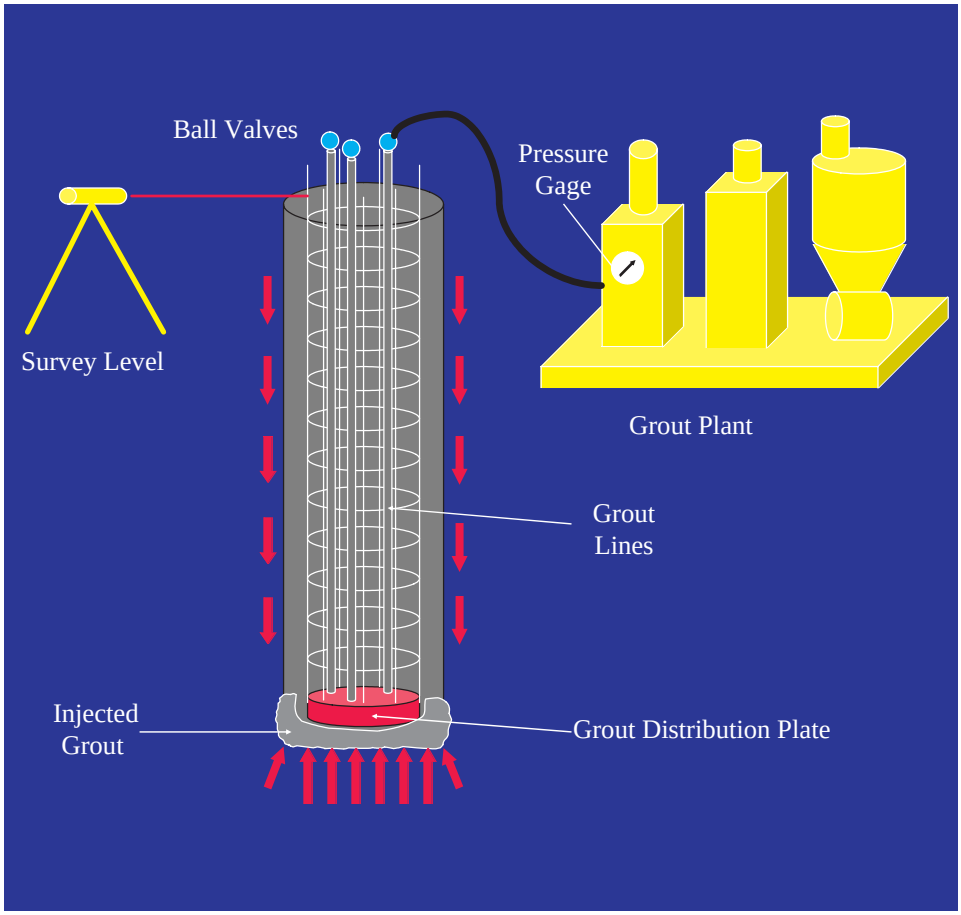
Drilled Shaft Post Grouting Services

End bearing capacity of drilled shafts is typically significantly reduced or even discounted altogether due to the large displacement required to mobilize ultimate capacity. Consequently, a large portion of the ultimate capacity necessarily goes unused. To regain some of this unusable capacity, mechanistic procedures to integrate its contribution have been developed by pressure grouting beneath the shaft tip. The process is known as Post Grouting

The post-grouting process entails: (1) installation of a grout distribution system during cage preparation that provides grout tube-access to the bottom of the shaft, and (2) after the shaft concrete has cured, injection of high pressure grout beneath the tip of the shaft which both densifies the in-situ soil and compresses any debris left by the drilling process.

By essentially preloading the soil beneath the tip, higher end bearing capacities can be realized within service displacement limits. Not only will post grouting significantly increase the tip capacity, it will decrease foundation settlement and bring a higher level of quality assurance to the drilled shafts.

The Post Grouted Shaft Process



Pumping high pressure grout below the base of the shaft through a specially designed distribution system allows the end bearing capacity of drilled shafts to be greatly enhanced and provides unparralled quality assurance on every shaft.

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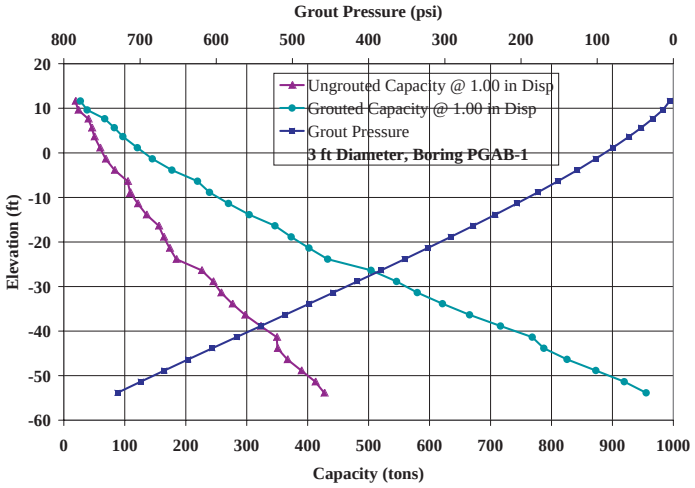
A design approach for post grouted drilled shafts was developed by The University of South Florida under a research grant from the Florida Department of Transportation. The method makes use of common parameters for a conventional drilled shaft design, where the available side shear is used to determine the achievable grout pressure. The grouted end bearing capacity is strongly dependent on available side shear. However, it is relatively independent of the ungrouted end bearing capacity when in sandy soils. As such, the end bearing in loose sands can be greatly improved in both stiffness and ultimate capacity. In silts and clays significant improvement in stiffness can be realized resulting in greater usable end bearing capacity. In rock, post grouted shafts have the potential to engage both the side shear and end bearing simultaneously.



Post Grouted Shaft Design Curve

Grout Distribution System on Shaft Base

By design, the grout distribution system provides a known pressurizing surface area, therefore by monitoring grout pressure, the end bearing and upward skin friction load is determined to a level proportional to the applied grout pressure. Quantitative data about the load carrying capability of every production shaft is obtained thereby increasing confidence in the performance of the structure.

High Pressure Grout Plant

Post Grouting of Production Shafts

Applied Foundation Testing, Inc. is pioneering the use of this revolutionary procedure. AFT is at the core of a team that has developed a proven systematic approach to post grouted shaft design and implementation. We have post grouted more drilled shafts in the United States than any other company. In most cases, the method was used as a cost saving alternate to conventional drilled shafts or to replace competing foundation systems.

AFT can give your drilled shafts a renewed competitive edge in the foundation construction industry.