

Grouting, as applied to civil and geotechnical construction, involves the injection under pressure of a liquid or suspension into the voids of a soil or rock mass or into voids between the soil or rock mass and an existing structure. The injected grout must eventually form either a solid or gel within the injected voids.

The purpose of pressure grouting a soil or rock mass is to improve the strength and durability of the grouted mass and/or to reduce its permeability.

### **Permeability Reduction**

Grouting applications relating to permeability reduction include:

- Reduction of hydrostatic forces acting on the base of water retention structures or tunnel linings
- Reduction of reservoir water loss
- Reduction of erosion of foundations and embankments
- Excavation shoring by stabilization, consolidation, and water control

### **Improvement of Mechanical Properties**

- Grouting applications relating to mechanical property improvement include:
- Enhancement of bearing capacity
- Consolidation of an overburden of either soil or fractured rocks to facilitate an underground excavation.
- Void filling either at the surface or subsurface
- Stabilization and lifting (jacking)

Types of grouting done, and specifically by the Judy Company, include:

- Pressure
- Compaction
- Chemical
- [Jet](#)
- Microfine injection
- Consolidation

Grouting is a valuable tool in geotechnical construction and the type of grouting chosen should be determined by an evaluation of the pertinent aspects of a problem including engineering needs, subsurface conditions, materials and access available, and economic considerations.