



Grouting



On site batching of zero slump grout using a high-pressure pump equipment.

Compaction Grouting

Compaction grouting is the high-pressure injection of a thick immobile grout into subsurface soils. Because of high grout viscosity, the grout expands radially as a homogenous bulb from the injection point instead of permeating into the soil pores.

Compaction grouting is suitable for reducing the potential for soil liquefaction, for arresting foundational settlement, and for lifting and leveling structures.

Foundation stabilization of industrial plant using compaction grouting.
-- Grand Junction, CO



Compaction grouting used to raise and stabilize a retail center.
-- Grand Junction, CO



Compaction grouting used at offices of United Companies. -- Grand Jct., CO



Permeation Grouting

Permeation grouts are placed into the soil void spaces by low and high-pressure injection through boreholes. A stabilizer can be added to the grout controls set time.

The grout bonds with the soil particles, producing a composite with higher shear and compressive strengths than the ungrouted formation. Permeation grouting does not use mechanical means to restructure the soil in the process. The soil structure remains relatively undisturbed.

Consequently, the operation creates minimal ground disturbances and better ensures against adverse deformation and damage to the ground formation.

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Chemical Grouting

Chemical grouts constitute the other branch of permeation grouts. Like the cement grouts, the chemical grouts enter the soil by penetration. However, chemical grouts can penetrate into finer grained soils otherwise inaccessible to cement grouts.

The primary design objectives of chemical grouts are ground improvement and water seepage retardation.

Cement Grouting

Primary cement grout components are water and Type I or Type II Portland cement. Cement grout properties are variable. They can be altered by using other cement types, such as Type III (high early strength), Type IV (low heat of reaction), or Type V (resistance to chemical attack). Varying the water to cement ratio changes the grout's bleeding rate, subsequent plasticity, and ultimate strength.

Mixing in an additive, such as bentonite, sodium silicate (a chemical grout), dispersants, retarders, and accelerators, will also alter grout properties

MCSI is qualified and/or certified in the installation of these materials and systems (this is a partial list)

- 3M
- Atlas Systems
- Avanti International
- Cellular Concrete LLC (CLSM)
- Con-Tech Systems, Inc.-
Ischebeck/Titan
- Dayton Superior
- DeNeef
- Dex-o-tex
- Dow Corning
- Dwyidag-Systems International (DSI)
- Earth Contact Products (ECP)
- Euclid
- General Polymers
- Green Mountain
- L.M. Scofield
- Maccaferri
- Master Builders
- Prime Resins
- Quickrete
- Sika
- Sivento
- Sonneborn
- Strata-Tech, Inc.
- Super-Krete
- TenCate (geo-synthetics)
- Tremco/Vulkum
- USG Levelrock
- Williams Form Engineering
- Xypex



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