

Maxperm Grouting System

Reinforcement and liquefaction protection of the soft ground

Development

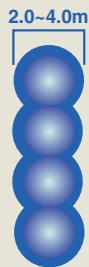
The MaxPerm Grouting System was developed aiming at soft ground reinforcement.

This is a epoch-making permeation grouting method developed from the principles of Dual-tube Double Packer Grouting, the most reliable grouting method, having a track record of tens of thousands of applications. MaxPerm provides a long-term improvement effect by using highly durable grout materials, which permeate into pore spaces and replace pore water without breaking soil structure.

MaxPerm injection is performed at a very low pressure. It allows smooth improvement directly under existing structures (such as oil tank and bridge pier) as well as improvement of soft ground in general.

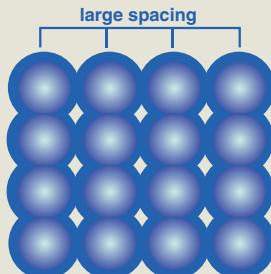
Advantage

Large size improvement



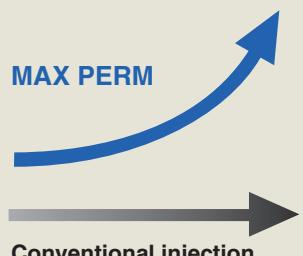
Large size improvement (about dia. 4m) done at one time injection.

Cost saving



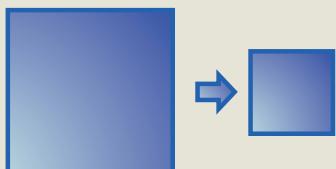
Larger borehole spacing saves the number of drillings.

Cost saving



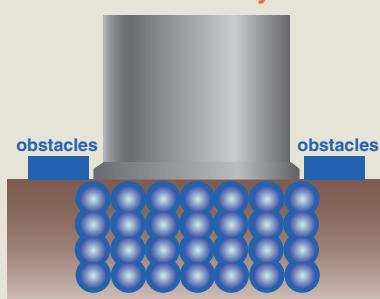
Larger injection rate saves injection time.

Space saving



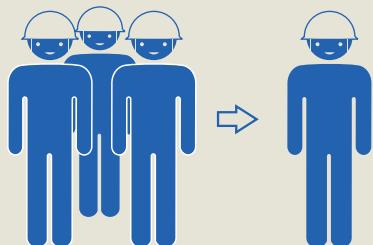
Improvement is performed from a narrow area with small and light weight equipment.

Workability



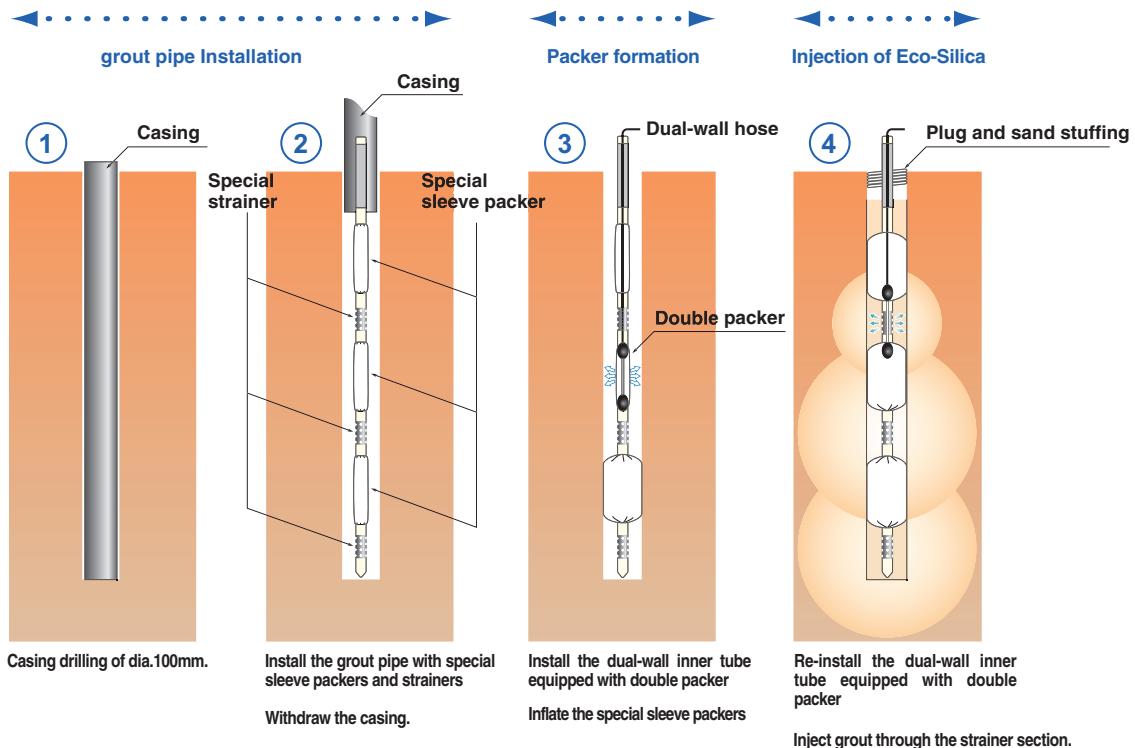
Underground obstacles, such as pipes and utilities, does not affect improvement.

Labor saving



Computer controlled injection system saves labor.

Improvement Sequence



Injection Rate

Standard injection rate is 15L/min to 20L/min. For the soil with fines, the maximum injection rate to allow uniform permeation into pore spaces is determined by water injection test (qcr test).



Drilling

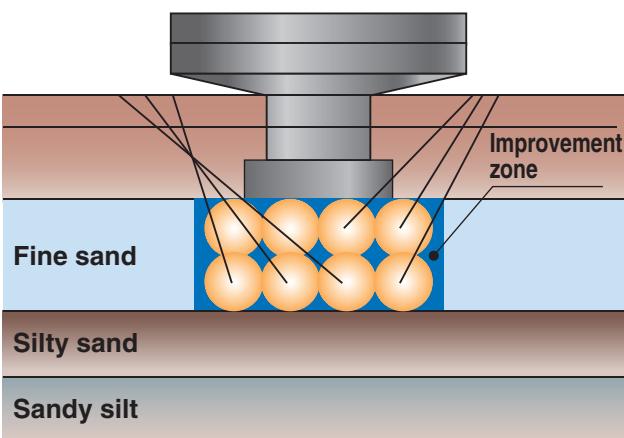


Installation

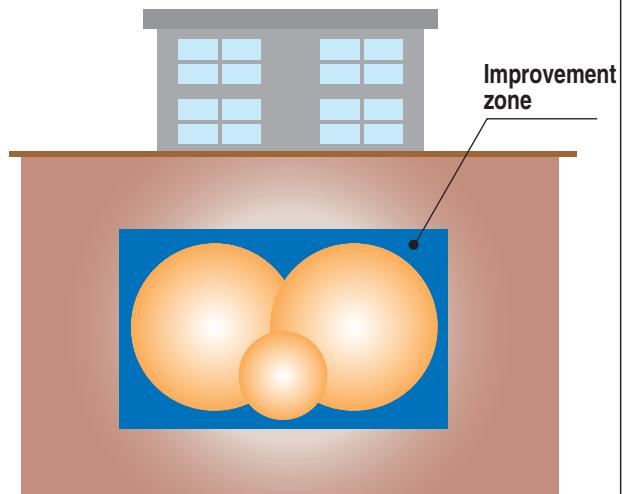


Injection

Improvement example under a bridge pier and abutment

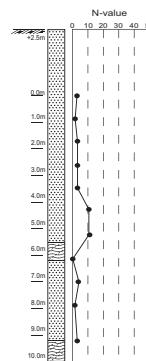


Improvement example beneath a building

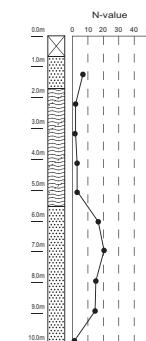


Large diameter permeation improvement by MaxPerm

Product diameter: 2.0 to 2.5M



Product diameter: 3.0M



MaxPerm grout plant for liquefaction prevention work at Tokyo International Airport (Haneda)



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