COMPACTION GROUTING

GROUND STABILISATION



Compaction grouting is the controlled injection of low-slump grout to densify and stabilise loose or compressible soils, including granular deposits, made ground, and collapsed strata.

Injected under pressure through cased boreholes, the grout displaces and compacts surrounding soil, increasing density and bearing capacity while addressing sinkholes and subsurface voids.

Treatment effectiveness depends on ground conditions and may involve multiple injection stages. The technique can be applied in restricted-access areas, including low headroom spaces or from existing basements, and can penetrate hard overlying layers to reach weaker soils below.

UNDERSTANDING COMPACTION GROUTING



Primary cased boreholes are drilled in a predetermined grid pattern across the treatment area.

An injection pipe is inserted into each borehole, and grout is pumped under pressure (typically 0.5 to 1 Bar per metre of depth), starting at the maximum depth of treatment. As the grout is injected, it forms a bulb that displaces and compacts the surrounding soil, increasing its relative density.

Temporary casing is typically withdrawn in successive two metre stages, and the grouting process is repeated to create an area of grout columns and compacted soil.

Once the planned compaction grouting scheme is completed, additional validation holes may be drilled and pressure grouted to ensure the effectiveness of treatment. Further tests for resulting allowable bearing pressure may also be carried out.



PROJECT ADVANTAGES

- More cost-effective than traditional methods such as removal and replacement
- Can significantly reduce the cost of the resulting foundation solution
- Can be carried out in post to remediate unforeseen settlement

EXAMPLE APPLICATIONS

- Reduce or correct settlement
- Increase bearing capacity
- Stabilise sinkholes and subsurface voids
- Suitable for rubble fills, poorly placed fills, loose or collapsible soils, soluble rocks, and liquefiable soils

TECHNIQUE CAPABILITIES

- Rotary percussive open hole drilling, 70mm-121mm diameter
- Rotation capability to drill at most angles
- Installing casing to accompany drilling operations up to 320mm diameter