

Rigid Inclusions for settlement control on soft ground

Grouted columns with a load transfer platform carry load to deeper layers and control settlement.

CAN BE CONSIDERED WHERE

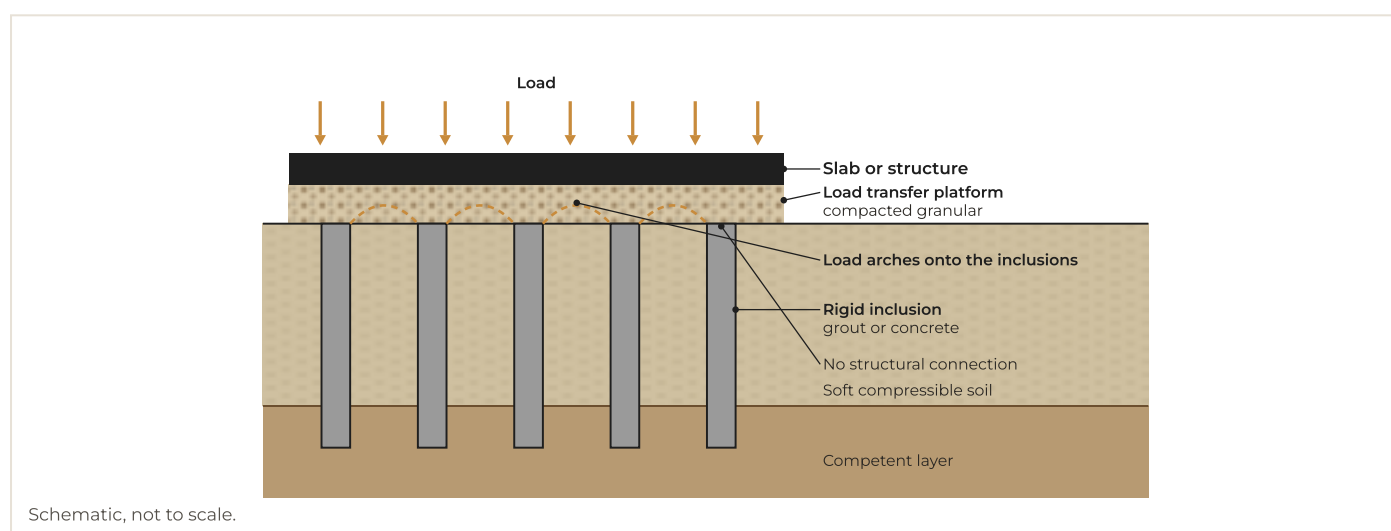
- Soft, compressible soils that are too weak for stone columns.
- Large slabs, tanks, warehouses, embankments and buildings where settlement must be tightly controlled.
- An alternative to piled foundations where a load transfer platform is acceptable.

LIMITATIONS

- A load transfer platform must be designed and built between the inclusions and the structure.
- Inclusions are not structural piles: they are not connected to the foundation.
- Obstructions and hard layers can limit installation.

HOW IT WORKS

Inclusions are usually installed with a displacement auger, which pushes the soil sideways with little spoil. Grout or concrete is pumped through the auger as it is withdrawn, forming a continuous column.



DESIGN INPUTS

- Site investigation: soft layer thickness and strength, bearing layer.
- Loads and settlement criteria.
- Inclusion diameter, length and spacing.
- Load transfer platform thickness and material.
- Grout or concrete strength.

EXECUTION CONTROLS

- Depth, torque and penetration rate from the rig instruments.
- Grout pressure and volume against depth for every inclusion.
- Position and cut-off level.
- Grout or concrete samples for strength testing.
- Platform placement and compaction.

VERIFICATION AND ACCEPTANCE

Design intent: What is required

Settlement criteria and inclusion capacity agreed with the consultant.

Production control: What was done

Rig records of depth, grout volume and pressure for each inclusion.

Acceptance: What was proven

Static load tests, integrity tests, material strength tests and platform compaction tests.

DELIVERABLES

Method statement and risk assessment · Inclusion layout drawings · Test inclusion reports · Rig records for every inclusion · Material test results · As-built records