

RIGID INCLUSIONS

GROUND IMPROVEMENT

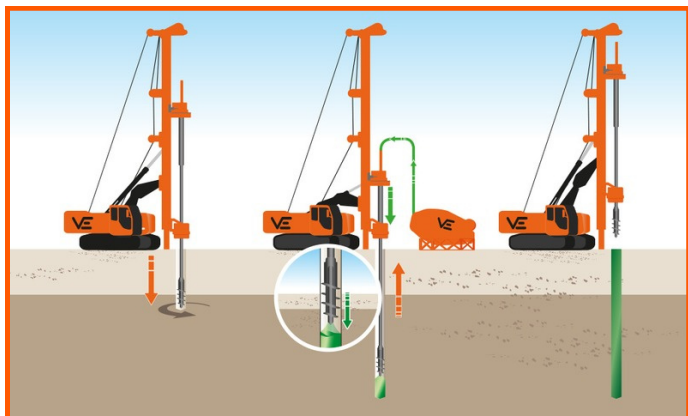
Rigid inclusions are a cost-effective ground improvement solution that increases bearing capacity and reduces settlement in weak or compressible soils, bridging the gap between vibro stone columns and traditional piling.

Constructed using a displacement auger, concrete columns are formed with minimal or no spoil generation. Columns are typically unreinforced, formed from low-strength concrete, and are commonly up to 350mm in diameter.

The system is used in conjunction with a load distribution mattress, enabling the use of conventional shallow foundation solutions such as pad foundations, strip footings, and ground-bearing slabs.

Rigid inclusions are well suited to industrial, commercial, and infrastructure applications, including warehouses, embankments, and, in some cases, residential developments.

UNDERSTANDING RIGID INCLUSIONS



Rigid Inclusions begin with the set up of a displacement auger over position and the commencement of drilling to design depth.

The use of a displacement auger forces the soil laterally into the ground around the position, improving the ground. Concrete or grout is pumped from a concrete drum through the centre of the auger while it is extracted.



PROJECT ADVANTAGES

- Increased bearing capacity
- Improved settlement performance
- Significant savings over piling
- Bearing capacities of up to 250kN/m2 achievable
- Up to 350mm diameter installed
- No pile caps / cropping required
- Installed to depths of up to 20m
- Displacement system – no spoil
- Modern fleet of rigid inclusion rigs – fully instrumented
- Fast process – suitable for any size site
- Improved ground allows the use of ground bearing floor slabs for further cost savings
- Fully validated by load testing

EXAMPLE APPLICATIONS

- Warehouses
- Distribution sheds
- Embankment support
- Commercial and industrial buildings
- Residential projects
- Wind turbines



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GUILDFORD DEPOT

Sector: Commercial

Client: McLaren Construction

A total of 1,400 No. rigid inclusions were installed at Guildford Depot to support the development of a new council waste depot, including a multi-storey car park, storage facilities, tanks and external areas.

The rigid inclusion solution was used to enhance ground performance and provide support for both foundations and external infrastructure, delivering a cost-effective alternative to more traditional foundation systems.

Despite space constraints and heavy plant operations, the works were carefully coordinated to maintain programme efficiency and minimise disruption to below-ground services.

The tailored ground improvement solution supported delivery within the wider 8-week construction programme.



MANDELA WAY

Sector: Commercial

Client: McClaren Construction

A total of 565 rigid inclusions (320mm diameter) were installed at the Mandela Way Urban Logistics development to support the ground-bearing floor slab and dock levellers.

Site constraints included limited working space and the requirement to complete column installation across two separate areas, requiring careful planning and coordination.

An alternative installation methodology was adopted during the second phase, with concrete pumped directly rather than via a holding drum. This improved efficiency, reduced the operational footprint and helped keep the works on programme.

PROJECT NIGG

Sector: Energy

Client: Europlan

Van Elle delivered ground improvement works at the Port of Nigg, supporting the construction of a new subsea transmission cable factory. The facility will play a key role in strengthening the UK electricity transmission grid and connecting renewable energy projects to the network.

Our scope included the installation of 1,256 No. rigid inclusions to enhance the ground conditions and provide a suitable foundation solution for the development.

