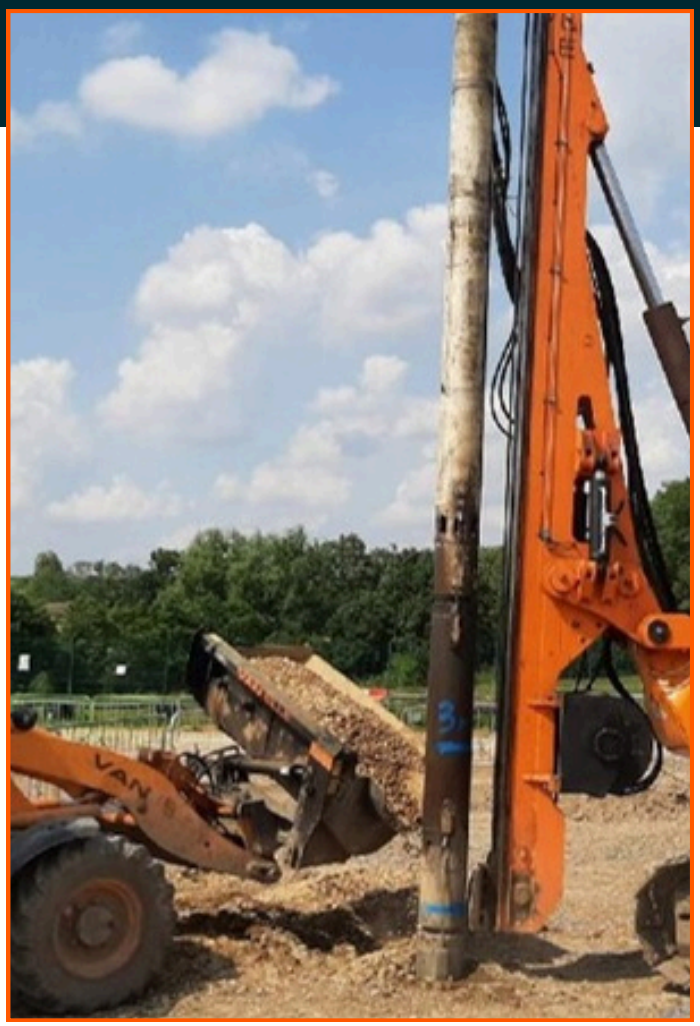
VIBRO STONE COLUMNS

GROUND IMPROVEMENT

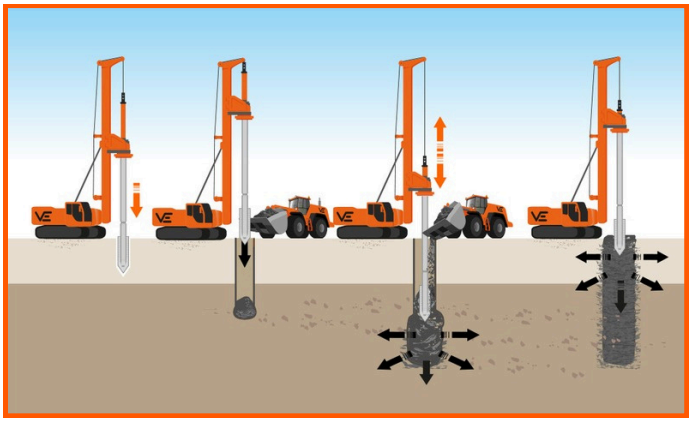


Vibro stone columns provide a quick, cost-effective foundation solution and a practical alternative to traditional piling or deep trench fill. As a displacement technique, they generate minimal spoil.

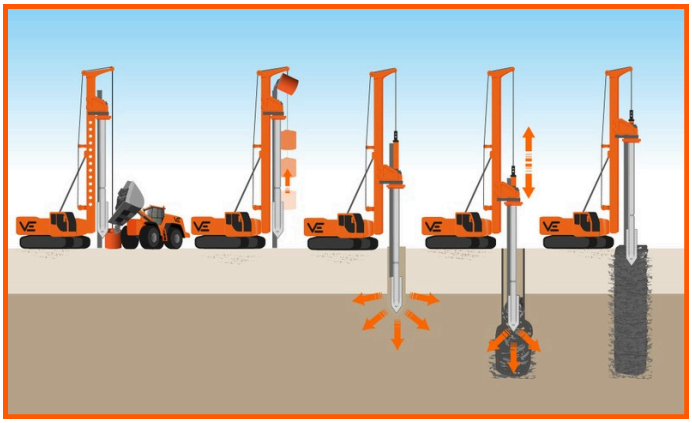
The process involves penetrating a vibroflot to the design depth, creating a bore that is backfilled with primary or recycled aggregate and compacted in stages to form a dense, interlocking column. In granular soils, the vibration increases ground density, while in cohesive soils the columns act as reinforcing elements, improving settlement performance.

UNDERSTANDING VIBRO STONE COLUMNS

Employing two methods for this technique, we utilise rigs that have been customised and engineered to deliver an effective solution. These methods are:



Top Feed
Typically used where an open bore can be formed by the vibroflot and remains stable, allowing it to be filled with stone aggregate from working platform level.



Bottom Feed
Used where an open bore becomes unstable due to very soft soils or a high water table. In this case, stone aggregate is fed into the column through a tube attached to the vibroflot, which supports the bore as the flot remains within the ground during construction of the stone column.

PROJECT ADVANTAGES

- Improved bearing capacity
- Reduction in total & differential settlement
- Significant savings over piling
- Displacement system generates no spoil
- Sustainable solution using recycled aggregates where possible
- Modern fleet of vibro rigs - fully instrumented and with tier 4 engines
- Fast installation process suitable for sites of any size requiring ground improvement
- Enhanced ground conditions allow the use of shallow foundations, providing further cost savings
- Fully validated by load testing for performance assurance

EXAMPLE APPLICATIONS

- Housing Projects
- Warehouses and Distribution Sheds
- Local Authority Schemes
- Education / Health
- Embankment Support

VIBRO STONE COLUMNS

GROUND IMPROVEMENT

HERRINGTON GRANGE

Sector: Housing
Client: Persimmon Homes

A total of 5,238 No. vibro stone columns were installed at the Herrington Grange residential development in Durham, providing ground improvement across areas of deep made ground and variable fill.

The technique strengthened the underlying soils and enhanced foundation performance, creating a suitable bearing platform for the proposed housing development.

Despite challenging ground conditions, including a persistent stiff clay layer identified during ground investigations, a combination of pre-augering and vibro stone column installation enabled the required treatment depths to be achieved.

Validation testing confirmed the success of the solution, delivering a safe allowable bearing pressure of 125 kN/m² across the site.

CREWE COMMERCIAL PARK

Sector: Commercial
Client: Winvic Construction

A total of 5,551 No. vibro stone columns were installed to support the construction of a 305,000 sq ft industrial distribution facility, including associated parking areas for 200 cars and 49 HGVs.

The vibro stone column solution was used to improve ground conditions across the site, providing increased bearing capacity and reduced settlement for the proposed development.

Installation was carried out efficiently across varying soil conditions, while supporting the project's sustainability objectives through the use of recycled aggregates.

MIDLETON, GUILDFORD

Sector: Infrastructure
Client: MCS Group

Van Elle were appointed by MCS Group to deliver ground improvement works at the Midleton development, supporting the construction of Units 1–3.

Using the VBR7 Vibro Rig, our team installed 1,611 Vibro Stone Columns to depths of 3.0m, enhancing the ground conditions for the proposed foundations and ground bearing floor slabs.

The works were successfully completed within a 16-day programme.