



Benefit from soil stabilisation

McArdle Group leads the way in soil stabilisation

Soil stabilisation is used to improve the properties of soils to transform otherwise unusable materials into suitable fills and/or substitute material for expensive imported granular aggregates.

It is an extremely cost-effective and environmentally-sound method of converting areas of weak soil into construction materials.

The technique is endorsed by the UK Highways Agency, and the McArdle Group has built up a proven track record over many years in soil stabilisation.

Experience

We have pioneered the use of modern soil stabilisation techniques alongside traditional earth-moving capabilities in the UK for more than a decade. McArdle was also the first civil engineering group to conduct large-scale soil stabilisation in Ireland, in the N25 Waterford by-pass project.

As leading soil stabilisation experts, our specialists offer an important and reassuring edge in this fast-growing area.

The benefits

Our technological advances and innovative techniques have paved the way for the growing use of soil stabilisation in infrastructure construction. By using natural materials on site, construction can be carried out more cheaply, quickly and effectively.

The key cost benefits include:

- Significant savings, from landfill to transportation
- Reduced programme time

The environmental advantages are also extensive:

- Life of landfill is extended, as materials are kept on site
- Natural resources are extended, by eliminating use of stone
- Emissions associated with transport are radically reduced
- Transport miles are eliminated, reducing wear and tear on roads

The treatment

The treatment process can range from simple modification of saturated soils (to restore optimum moisture content) to

treatment for use as an engineered fill, as capping and/or sub-base replacement, and treatment to achieve CBM (cement bound material) status.

The commonly used additives are lime and/or cement. These are used in:

- **General fill** – using a small amount of quicklime to reduce moisture content and turn the material into a workable soil for excavation and earthworks
- **Capping** – CBR values of over 15% are achievable with most cohesive or granular materials
- **Sub-base** – CBR values of over 30% with a suitable material and appropriate dosage of lime or cement
- **Cement bound material (CBM)** – converting aggregate into re-useable material by crushing and treating with cement

The process

The soil stabilisation process is carried out in layers and consists of:

- **Excavation** and spreading of material to the required layer thickness for stabilising
- **Lime or cement spreading**, with regular checks to control dosage

- **Mixing**, to a depth depending on the soil and on the design requirements
- **Sealing** the material, preventing carbonisation of the lime while it reacts with the moisture in the soil. This involves trimming of the treated layer using bulldozers and passing over by a smooth roller
- **Mellowing** (or maturation) period – to allow time for the exothermic chemical reaction to take place between the lime and clay
- **Compacting** the treated layer with a roller until required compaction is achieved

earthworks and preparation of material for stabilisation.

McArdle uses purpose-built soil mixing machines, with computer control of mixing depths, moisture addition and other key stages in the process.

McArdle also has integrated mixers which spread and mix in one process, for use in highly environmentally sensitive areas.

Quality and innovation

A key factor throughout the process is our management and monitoring of moisture in the soil - from its initial natural water content through to any water added to modify the moisture or to hydrate binders.

We conduct quality control checks including geotechnical testing at each stage of the process, to ensure that the required strength has been achieved.

Many of the stabilisation projects that we undertake in the UK are handled by our own equipment fleet, including preliminary

Contact Us

For more information about the McArdle Group and soil stabilisation, contact us today at:

McArdle House
 McArdle Way
 Colnbrook
 Berkshire, SL3 0RG

t: 01753 68 68 20

f: 01753 68 68 21

e: info@mcardlegroup.co.uk