Forkers Ltd

Civil and Ground Engineering Contractors

Capability

Experience

Quality

Safety

Ground Engineering Services

Specialist Drilling Services
Drilling & Grouting
Mine Workings Stabilisation
Mine Shaft Treatment
Compaction Grouting
Site Investigation
Slope Stabilisation
Soil Nailing
Ground Anchors
Mini-Piling
Deep Wells

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Introduction

We are one of UK's leading Ground Engineering Contractors, the activities that we carry out are mainly based around our extensive fleet of specialist drilling rigs and grouting equipment and cover everything from site investigation drilling to mine workings and mineshaft stabilisation, mini-piling to soil nailing and deep wells to compaction grouting.

With a fleet of over 50 drilling rigs including mini-rigs, geotechnical rigs and 'Dual Head' rigs we can offer a broad range of drilling services and drilling techniques to suit any application and with our in-house mining expertise we can also carry out redundant mines access and stabilisation work from underground.

We have an enviable reputation for problem solving, quality and client focus and with our extensive in-house knowledge and expertise we are happy to work with designers, developers, project managers and main contractors to provide technical advice, innovative ideas and practical solutions for any ground engineering problem. All activities can be provided as fully validated design and construct services if required.

Site Investigation

We carry out a full range of geotechnical site investigations of soils and rock strata as well as investigations of mine workings and mine shafts in coal, oil shale, chalk, salt, limestone, ironstone, sandstone and other minerals.

Investigation techniques offered include; rotary percussive probing, rotary open hole, coring & core logging, simultaneous casing methods, shell and auger (soils) boreholes, dynamic probing, installation of stand pipes, piezometers, ground water level monitoring, instrumentation & permanent packers, in-situ testing, trial pits, sampling, investigation of contaminated sites and production of factual reports.

In addition a range of specific survey and testing techniques such as down-hole laser void scanning can be provided through our links with specialist geotechnical service providers.

Our fleet of drilling rigs includes versatile Casagrande C6S/M9 dual-head drill rigs, Casagrande C6 and Klemm KR904 Geotechnical Drill Rigs with multi-functional rotary/rotary percussive heads, Klemm KR701 mini rigs and excavator mounted rotary percussive rigs for rapid probing work.

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Mine Workings and Mine Shaft Treatment

We have over 45 years experience of stabilisation of old shallow mine workings and mine shafts.

- Treatment of shallow coal, ironstone, chalk, sandstone, fireclay and other mineral workings using pfa/cement grout, sand/cement grout, clay (bentonite) based grouts and use of thixotropic or polymeric additives.
- Location and treatment of mine shafts and adits up to 400m deep and sites with over 100 shafts including, probing, filling open shafts with granular material, proving shafts, stage grouting and use of drilling safety platforms.
- Forming grout caps or reinforced concrete caps to treated shafts.
- Major shallow coal workings treatment contracts for road, rail, pipeline, infrastructure, residential and commercial development schemes.
- We operate over 45 rotary and rotary percussive drilling rigs and have resourced up to 22 drilling rigs on individual sites.
- We use 101mm or 88.9mm rotary percussive steel casing in our mine workings treatment drilling which can be drilled to the full depth of the drill hole in collapsed or unstable ground ensuring insertion of grouting tremmies to the base of the hole or allowing 'end of casing' stage grouting to be undertaken.
- We can also provide a full design and construct service for mine workings treatment schemes.

Mine Infilling

- The company has carried out a large number of major Mine Infilling projects using a range of bulk infill materials including pumped PFA/ cement pastes, sand, foamed concrete and concrete, or infill placement of stone or sand by conveyor and vertical auger system.
- Infill quantities of up to 350,000 tonnes and pumping mixed infill materials up to 3,000m to injection points.
- Create infill barriers in mines, adits and roadways by installation of materials through large diameter cased boreholes including gravel, crushed stone, sand and concrete, includes using an innovative drill rig mounted auger fed stone placement system.

Many of these Mine Infilling contracts have required working in sensitive residential and ecologically important areas including SSSI's, SINC's, nature reserves and sites of geological importance. All these schemes were successfully completed by collaborative working with clients together with consulting and informing stakeholders and the public.

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Underground Mine Stabilisation works

Forming access by shaft sinking or constructing supported headings and roadways to investigate, infill or provide support to abandoned and derelict mines. Involves providing ventilation; construction of underground barriers and bat mitigation measures, infilling with pfa paste, foamed concrete or pumped sand, mechanical stowing of voids with sand and stone, install support arches and frames, rock bolting and shotcreting. Work is carried out under MASHAM Regulations under the direction of a mines manager.

Specialist Drilling Services

We operate a number of multi-functional Casagrande C6S and M9 'Dual Head' rotary drilling rigs which allow holes to be simultaneously cased to depths of up to 150m. The dual head facility enables one-pass fully cased & clean hole drilling for a range of functions such as; anchors, drilling through unstable ground, filled mineshafts or landfills, installation of monitoring or measurement equipment, geothermal or ground source heating installations, injection of gravel, sand or other infilling materials, accurate angle hole drilling and use with specialist grouting techniques.

In addition we operate sophisticated mini-rigs for use in areas of difficult access or size/weight restriction which can be resourced with rotary, rotary percussive and ODEX drilling equipment.

We are also able to equip our geotechnical drilling rigs with bespoke equipment to suit site requirements such as short masts and to provide ancillary equipment to undertake hole flushing with muds, polymers and grouts.

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Compaction Grouting

- Compaction grouting is a technique we use for treating solution features, sink holes and other strata anomalies in chalk, limestone and gypsum and also for consolidating residual loose and soft materials in old chalk mine workings following infilling of large voids.
- The technique densifies the host (weak) material by injecting controlled volumes of mortar grout in ascending stages using 'end of casing' drilling and grouting methods. Rotary or rotary percussive casing is drilled to full depth of the borehole and then used as the injection tube, the casing is withdrawn in stages thus allowing the complete control and monitoring of the mortar grout volumes and pressures.
- The injection of grout at low pressure on a prescribed grid and through the vertical extent of the weak material provides key ground improvement benefits;
  - ◊ Densifying the host material by it being compacted through the introduction of a connected series/columns of 'bulbs' of grout.
  - ◊ Traditionally strength gain aimed for in the host material is a 3 fold increase which is validated using Dynamic Probing techniques.
  - ◊ Specific depths or lenses of softer/weaker material can be targeted within the host strata.

Specialist Grouting Services

- Consolidation grouting of loose fills or granular strata
- Encapsulation grouting of inaccessible hot spots of contamination
- Groundwater or gas barriers
- Fissure grouting of fault zones and other anomalies
- Packer installation and deep borehole grouting
- Annulus filling to large diameter pipelines
- Tunnel grouting for example to fill behind linings in brick lined rail tunnels
- Underwater grouting for bridge abutments and foundations using anti wash-out grouts
- Anchor grouting—cintec anchors, soil nails, rock bolts and ground anchors
- Sewer, culvert and redundant utility pipeline grouting
- Bridge, underpass, subway and cellar filling using pfa and foamed grouts
- Slab jacking

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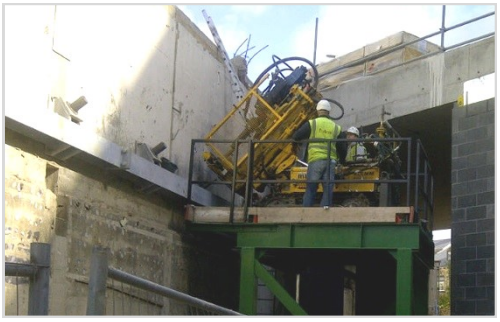
Anchoring, Soil Nailing and Slope Stabilisation

Our fleet of specialist drilling plant enables us to offer a range of anchoring, soil nailing & slope stabilisation services. Rigs include Klemm KR 904 geotechnical drill rigs, Klemm KR 701 mini-rigs, Casagrande C6 and C6S & M9 dual head simultaneous casing rigs, track mounted rotary & rotary percussive units, soil nailing feed beams for excavator attachment and mini-piling rigs.

- Soil nailing and rock anchoring including placement of steel or geo-grid or geotextile mesh systems, soil reinforcement & rock fall protection
- Ground anchors for retaining walls
- Gabions, revetments, reinforced earth and proprietary retaining systems
- Installation of embankment drainage to improve stability
- Bridge tying to prevent abutment spread
- Steel sheet piling for retaining walls, cofferdams, canal river & watercourse bank stabilisation
- Driven steel mini-piles, CFA, secant wall, augered and rotary cased piling
- In-situ concrete or grout retaining walls, gravity retaining structures and infill barriers, grouting of unstable slopes and collapse debris



Mini-Piling

We offer a wide range of cost effective mini-piling solutions for new build, underpinning and ground engineering problems which are based on specialist drop hammer, auger and rotary mini-piling rigs. Mini-piling services include rotary bored, augured and driven steel piles up to 375mm diameter, pile depths to 25m. We provide a pile design service as well as design and installation of pile caps and ground beams.

- Rotary cased or augered mini-piles to 375mm dia using Klemm KR 701 mini rigs with separate electric power packs or Casagrande C6S & M9 rigs with ‘dual head’ systems
- Grout or concrete piles incorporating large diameter high strength steel tube as pile reinforcement
- Driven steel cased piles
  - ◊ Drop hammer rigs from 0.5 - 3.5 tonnes, tracked or wheeled units
  - ◊ Bottom driven piles with welded connections to pile extension sections
- Our range of mini-piling rigs are designed to work in areas with restricted access, working space or headroom including inside buildings
- The mast kinematics and stability of these rigs also allow easy installation of angled piles and pile groups