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also included...

- BS EN ISO 22475 and its influence on SI Practice
- the dangers of quick hitches
- NVQs and their importance to the sector

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an introduction

Welcome to the second edition of **theGeotechnica**.

Following the success and positive feedback from the first edition, the second edition promises to deliver even more interesting and relevant news in order to benefit every sector of our diverse industry.

This issue carries an update on the influence of BS EN ISO 22475, dispelling myths about the various methods of sampling and the quality which may be achieved. In addition, we look at the increasing importance of NVQs, what equipment falls under LOLER, as well as the dangers of the Quick Hitch System. One of the most intriguing articles however, is the introduction of DrillShop.co.uk - a new website that sells drilling equipment, tools and consumables, all in one place.

July is one of the busiest months of the year for the industry, with Geotechnica 2011 taking centre-stage on the 6th and 7th of the month. The premier show of the geotechnical industry, the show is held annually at the Upton Estate Showground near Banbury. This month's edition of **theGeotechnica** provides a preview of the show, unveiling its extensive list of exhibitors, speakers and demonstrations. If you have not signed up to exhibit, or for free entry to the exhibition and trade show, this month's magazine provides one of the final chances to do so.

Here at **theGeotechnica**, we are always on the lookout for not only opinions and responses to our content, but also important and relevant articles themselves. Contributions are always welcomed, provided they are accurate, informative and are not defamatory. We promise to publish any letters, articles or notices that we deem appropriate and relevant.

theGeotechnica will continue to carry advertisements at rates you can afford. You can advertise your services on a full, half or a quarter page throughout the magazine or as part of the Services Directory. In addition this edition of **theGeotechnica** will continue to carry advertisements for items that are for sale or hire and if you are looking for staff there is now an ever expanding section for recruitment.

Contact us at: magazine@geotechnica.co.uk

Editorial Board, theGeotechnica

Contents: What's in this issue?

Pete Reading, is a technical director of the Equipe Group, whilst Matthew Baldwin is fellow technical director, but of Vinci Soil Engineering. Here they write for **theGeotechnica** *about the influence of BS EN ISO 22475 on site investigation practice.*

Although BS EN ISO 22475 has been available to the geotechnical industry for some while now - five years to be precise - the authors do not see much evidence of change in our site investigation practice to reflect the requirements of this document.

22475 deals with the practice of obtaining soil samples and carrying out groundwater monitoring during site investigations. It reflects and builds on the general rules set out in BS EN ISO 1997, Parts 1 and 2, and together these documents provide clear guidance on the way in which site investigations should relate to the structure under consideration.

"...for many, these requirements have only been adopted in parts, mainly those which fit easily into our time honoured practice, and conveniently we are ignoring those parts which do not."

Our experience of investigation practice in the current climate would suggest that for many, these requirements have only been adopted in parts, mainly those which fit easily into our time honoured practice, and conveniently we are ignoring those parts which do not. Those that we ignore are generally the parts which will require a change from our old techniques and probably more importantly require more thinking by the site investigation designer.

Much of 22475 Part 1 provides good information about what each method of drilling/sampling can achieve and what types of sample can be obtained. This, together with the advice and data in the Annexes, provide some excellent guidance, almost to the point of being a definitive text on the process of drilling and sampling. However the devil as ever is in the detail, which in this case is in the tables which appear in the main body of the document.

UT100 Components

The first table appears in BS EN ISO 1997 Part 2 Table 3.1, (repeated as Table 1 in 22475-1) and this alludes to the problems to follow. Table 3.1 deals with categories of drilling and the quality class of sample obtainable from each of the categories. BS EN ISO 1997 also goes on to indicate the types of sample which can be used to perform particular types of laboratory test. Within table 2.2 of BS EN ISO 1997, it is suggested that strength and deformation tests require a Class 1 sample to be obtained of all materials under consideration.

BS EN ISO 1997 Part 2 goes on to describe a Class 1 sample as one which can only be obtained by using sampling methods under category A, where there is "no or only slight disturbance of the soil structure". The industry has known this for many years, but collectively we have chosen to ignore this requirement in the knowledge that a sample with little or no disturbance is difficult to obtain and certainly comes with a cost. Perhaps we were also comforted by our conservative method of design and the use of a lumped factor of safety of 3.

The standard does give some help by describing what might constitute a Class 1 sample, and it suggests

"...tube samples should be pushed or driven with a few blows."

that tube samples should be pushed or driven with a few blows. This would discount the U100 as being suitable because generally unless driven in soft soils they require numerous blows to drive. Perhaps here we should differentiate between the U100 and the 100mm liner sample particularly as the later has almost replaced the true U100 (formerly U4). The U100 comprises a tube of steel or aluminium, threaded at each end, with the top screwing into the drive assembly whilst the bottom thread is able to carry a steel cutting shoe. The inferior liner system uses a much thicker walled sample tube which has a plastic insert approximately 100mm in diameter. The main difference in the two systems is the area ratio, which for the U100 this is about 27% whilst for the liner system this increases to some 49%.

The standards give some guidance on the geometry of an acceptable undisturbed sampling tube which may obtain a Class 1 sample and puts the maximum acceptable area ratio at 15%. Since the publication of BS EN ISO 22475, there have been some advances in the tube geometry and it is now possible to obtain a steel, 100mm diameter sample tube (UT100) similar in design to the original U100 with an area ratio of 15%. This tube, a UT100, is compliant with respect to area ratio and in the right soils where only a few blows are required to drive the tube may be acceptable as a Class 1 Sampler. It should be noted however,

"...some degree of disturbance will result from the driving process and may cause some changes in structure and moisture content across the sample diameter."

that as with all thin walled samplers, some degree of disturbance will result from the driving process and may cause some changes in structure and moisture content across the sample diameter. In addition, the thinner profile of the UT100 means that in cohesive soils of high granular content and/or with shear strengths >150kPa, the cutting shoe is likely to become damaged. It is therefore important to assess the relevance of the UT100 to the soils to be sampled, if there is a requirement for Class 1 samples to be obtained. It may well be the case that other more appropriate sampling techniques should be considered.

Other samplers capable of retrieving quality Class 1 samples include piston samplers, the Shelby tube and the Laval sampler to name just three. Of these the first two samplers were used routinely in site investigation practice in the UK up to 2000 or so. Since then their use has been at best sporadic.

Table 2 of 22475 also provides guidance with other methods of obtaining quality Class 1 samples and suggests that by using triple tube or wire-line core drilling methods an undisturbed sample can be obtained. In practice if this method is adopted it requires a good deal of support around the drilling rig to ensure the sample is cleaned and sealed as soon as it has been removed from the barrel. However if this is done correctly a sample of quality Class 1 can be obtained.

It is clear then that we do have a number of methods

UT100 Sampler

which have the capability of obtaining a high quality sample, but as with all operations it still requires the skill of the operator and equipment in good condition and well maintained to produce a high quality sample. It needs to be recognised however that in some ground conditions it will be more difficult and costly to obtain a high quality Class 1 sample. This is particularly the case for many glacial cohesive deposits.

"...who determines that the samples obtained are of a Class 1 quality?"

Another question that is worth asking is: who determines that the samples obtained are of a Class 1 quality? Can we be sure that by merely complying with the geometric requirements for samplers outlined in 22475-1, that the resulting sample is fit for laboratory test?

Ideally these questions should be addressed and answered in the laboratory, since this is often the first time that the sample will be seen after coming out of the ground. This is likely however to be too late, since often the laboratory will only look at samples after the rigs have left site, thus giving no chance of a replacement sample being obtained if they are deemed to be unsatisfactory. The mechanics and practicalities surrounding this issue clearly need to be ironed out. Certainly there are some issues which need to be considered before we plan our investigations.

If we need to have good quality results, and there are very few times when we would not, perhaps we should also look to other methods to provide them.

"...why not use in situ vane tests or pressure-meter tests in the borehole, or carry our static cone tests?"

For example why not use in situ vane tests or pressure-meter tests in the borehole, or carry our static cone tests? Alternatively target the taking of high quality samples to sensitive areas of the structure or structures, rather than obtaining large numbers of very poor quality samples. This need not come with an increased cost, but certainly will require more thought and better planning.

If we are going to embrace the ethos and core values of the Eurocodes, we need to start considering the structure and design requirements before we start planning the site investigation phase. This will require the designers/specifiers of site investigations to spend more time considering the rationale behind the investigation, but need not lead to higher costs for our investigations. Even in the case of more challenging ground conditions, where a small increase in ground investigation costs may be inevitable, this is surely a small price to pay for the peace of mind of knowing that the parameters we are using in our design are meaningful.

Finally, the authors recommend that for all investigations, it is good practice to include the site investigation contractor in early discussions just to see what might be achievable given their experience. The current practice of telling the contractor to produce Class 1 samples and by inference expecting them to do this with either a cable tool rig using a liner system or by window sampling techniques must be stopped as soon as possible.

Eurocodes are here and they are here to stay. It would be much better for the industry as a whole to start working with and not against the standards. Change is long overdue within the site investigation industry and Eurocodes have given us the chance to improve the way in which we obtain our design parameters. Let's accept the challenge and set the agenda for the next 20 years! ■

An undisturbed test

LOLER: what you need to know
drilling

Keith Spires is veteran of the drilling industry. With 30 years experience within the field. Now a director at the Equipe Group, Keith writes for **theGeotechnica** *about the importance and relevance of LOLER.*

LOLER

Cable Percussion drillers will be all too familiar with the LOLER terminology and have been required to have lifting certification for their rigs for many years.

"...the regulations apply to many other parts of our industry and this is all too often overlooked. To put it simply, we need to look closer."

However, the regulations apply to many other parts of our industry and this is all too often overlooked. To put it simply, we need to look closer.

So firstly what is LOLER?

The Lifting Operations and Lifting Equipment Regulations 1998 replaced existing legal requirements relating to the use of lifting equipment, for example the Construction (Lifting Operations) Regulations 1961, the Docks Regulations 1988 and the Lifting Plant and Equipment (Records of Test).

The LOLER Regulations aim to reduce risks to people's health and safety from lifting equipment provided for use at work. In addition to the requirements of LOLER, lifting equipment is also subject to the requirements of the Provision and Use of Work Equipment Regulations 1998 (PUWER).

"If you are an employer or self-employed person providing lifting equipment for use at work, or you have control of the use of lifting equipment, then the Regulations will apply to you".

"Lifting equipment includes any equipment used at work for lifting or lowering loads, including attachments used for anchoring, fixing or supporting it."

What equipment is covered by the Regulations?

Lifting equipment includes any equipment used at work for lifting or lowering loads, including attachments used for anchoring, fixing or supporting it. The Regulations cover a wide range of equipment including, cranes, fork-lift trucks, lifts and hoists, but they also include lifting accessories such as chains, slings, eyebolts etc.

If we take these terms into the drilling industry, it becomes far clearer what is covered: let's look at the Regulations specifications in drilling terms:

"Equipment used at work for lifting or lowering loads, including attachments used for anchoring, fixing or supporting it…"

Rotary Rigs:
Rotary Rigs lift the drill string constantly, therefore fall under LOLER, but not just the winch as many think. The whole rig is supporting the winch and therefore a LOLER inspection is a requirement for the whole rig, not just the winch and cable.

Under LOLER: Dynamic Sampling Rig

Dynamic Probling Rigs:
Dynamic Probing Rigs lift the drill string constantly: again the whole rig supports this lifting and therefore the inspection is required for the whole rig.
Both of these types of rigs should carry this certification from new, and are subject an annual inspection. It is worth noting too they are subject to an annual examination under this legislation. However a lifting test is only a requirement when the machinery is new or has been subject to repairs or modification.

"Also includes lifting accessories such as chains, slings, eyebolts etc."

A simple way to clarify whether something is required to comply with the regulations is to ask yourself: What is the purpose of the piece of equipment? If lifting is its purpose then you can be sure the legislation applies. Accessories, such as swivels, swivel hooks, rods swivels, lifting heads, shackles, lifting blocks, SPT lifting points, swivels or lifting rings fitted to the tops of sinker bars, all have a prime purpose to lift and must be examined.

Under LOLER: Lifting Swivel

All of these accessories should be examined, but here the legislation is different and they should be examined at least once every 6 months. Again there is no need to test unless repair or modification has taken place.

In order to comply with these regulations you must ensure that the equipment is:

- **Strong and stable enough**
- **Clearly marked** *(with unique reference number and SWL).*
- **Used safely**
- **Subject to ongoing thorough examination** *(either 12 monthly or 6 monthly dependent on the appropriate legislation).*
- **Inspection by competent people** *(the competent person should have: a minimum of 5 years practical and theoretical experience of the equipment to be examined, the experience and maturity to call upon specialist advice should they need to do so, and have appropriate practical and theoretical knowledge and experience of the lifting equipment to be thoroughly examined).*

"All too often equipment is subjected to the lifting test because the 'so called' competent person does not have the practical and theoretical experience to pass something safe from examination alone..."

This competent person must therefore have thorough knowledge of the equipment. All too often equipment is subjected to the lifting test because the 'so called' competent person does not have the practical and theoretical experience to pass something safe from examination alone, and therefore subjects the equipment to the test to prove that it is safe. The equipment should also be inspected every week whilst in use by a responsible person – again this person should have appropriate knowledge and understanding of the equipment. The inspection record must identify the pieces of equipment by their unique number and a record which states "the swivel was safe to use" would not be acceptable. ■

A template for the examination of the equipment is available free to all Drilling Academy members. For more information or to arrange an onsite Thorough Examination of your equipment and accessories, please contact The Drilling Academy on 01295 670990.

safety issues

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Writing for **theGeotechnica** *once more,* Tom Phillips*, an independant chartered occupational safety professional from* RPA Safety Services*, voices his concerns about the improper usage of the quick hitch system.*

When I was asked to write this article, I was preparing to deliver another of our hugely successful IOSH Safe Supervision of Geotechnical Sites training courses. I was reviewing the section of the course related to quick hitches when the following HSE alert landed on my desk:

'Fines totalling £18,700 have been handed down after a foreman died when an excavator bucket filled with concrete fell on him at a London construction site. Euro Earthworks Ltd general foreman, Gerry Fox, was crushed by an excavator bucket when it fell from the arm of the 12 tonne excavator being driven by a colleague. The Health and Safety Executive (HSE) prosecuted Hydro Plant Ltd, the plant hire company which had provided the excavator and Michael Cunningham, the excavator operator, for safety breaches after the August 2007 incident.

Hounslow based Euro Earthworks Ltd, the principal contractor and Mr Cunningham's employer, also faces charges but has entered administration and did not appear at court.

City of London Magistrates' Court heard that on 28 August 2007, Mr Cunningham, who now lives in Eastbourne, failed to manually insert a pin into the 'quick hitch' (a device attached to the excavator arm used for the rapid changing of attachments) which was necessary to safely lock the bucket in place.

HSE prosecution summary 19th May 2011'

It was a timely reminder that although this is one of the most commonly used pieces of hire equipment, few engineers or supervisors who attend the 3 day course, know anything of the safety requirements when dealing with quick hitches or the implications should an HSE inspector find a fault on site.

What is a quick hitch?

A quick-hitch is a latch device designed to facilitate the efficient connection and removal of attachments (such as buckets, grapples and rock breakers) to plant and equipment. It is often affixed to the end of the dipper arm of an excavator, as a means of enabling different types and sizes of excavator bucket (for example) to be changed at will.

"...13% of all accidents investigated on excavators are attributed to the bucket detaching from a quick hitch and injuring a ground worker."

According to Health and Safety Executive (HSE) figures, 13% of all accidents investigated on excavators are attributed to the bucket detaching from a quick hitch and injuring a ground worker. These are mostly fatal or major injuries but it is likely there are many more dangerous bucket detachments which go unreported because no injury occurs. The HSE believe quick hitch failures are relatively common, although injuries are less so.

As a result of these facts and a number of recent fatalities, this is now a major topic for HSE enforcement on construction sites, reflecting the serious nature of their concerns. To ensure safety on site it is important those hiring excavators understand their obligations towards safety and have in place the systems and procedures required.

A quick hitch

Quick hitches are not normally made by the excavator manufacturer although some are badged and sold by them for use with their equipment. Research conducted by the HSE some time ago identified 20 different manufacturers, most of whom had several different designs of QH with either manual, semi automatic or automatic functions. Due to this vast array of equipment and the variations in type and designs, any procedures in place must cater for all eventualities and this brings its own problems. It is unreasonable for the engineer in charge of the site to become an expert on all quick hitches yet they as the senior person on site are deemed responsible for safety.

Enforcement

Recent enforcement guidance from the HSE to their inspectors outlines the standard expected for safety on site, which should be referred to for full guidance.

"It is important any organisation using excavators as part of their work reviews their procedures..."

It is important any organisation using excavators as part of their work reviews their procedures and ensures systems are in place to manage the risk to which staffs are exposed. Risk assessments and safe systems of work must be in place and if you employ more than five people these have to be written.

What is to be done?

As outlined in the Management of Health and Safety at Work Regulations 1999, the first objective must be to eliminate risk where reasonably practicable. In such circumstances this would involve the replacement of quick hitches with 'Direct Attachment Connections' but this may not be reasonably practicable as an excavator operator may change the bucket on his excavator up to 30 times a day to maximise the machine productivity. Despite this inconvenience, this is the approach being taken by at least one major plant hire company due to their concerns about the viability of managing quick hitch safety on site.

"If the hazard cannot be eliminated it should be substituted with something less hazardous."

If the hazard cannot be eliminated it should be substituted with something less hazardous. All quick hitches carry a risk of detachment so achieving this is difficult although in some cases a fully automatic hitch could prove easier to manage than a manual or semi automatic version. Where manual intervention is required there is a risk of retaining pins being missed, put in to wrong holes or just being left off for expediency but automatic hitches must be properly maintained and used in accordance with manufacturers instructions for safe operation.

Realistically, most ground investigation companies do not control their own excavator fleet and are governed by the equipment they can get hold of local to the site and at short notice, so demanding direct connections or fully automatic hitches may not be a realistic option. In such cases the obligation will be on the ground investigation company to ensure they have suitable safe systems of work in place to ensure, so far as is reasonably practicable, the safety of staff on site no matter what equipment turns up on site.

Placing the emphasis on the receiving engineer on site may cause delays and encourage uncontrolled risks to be taken in an effort to get the job done. A better approach would be to consider safety at the moment of hire where the following items can be checked and discussed with the provider.

If you are hiring an excavator with driver for use on site, you must ensure the contractor has adequate public liability insurance. Your public liability insurers may stipulate a required level of cover which will typically be in the range of £1m to £2m.

quick hitches
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If you are hiring plant and driver from a larger plant hire company, they should be able to provide you with a written risk assessment covering the risk to site staff. This must cover the risk from bucket detachment as a result of quick hitch failures and operators must be in possession of a CPCS or CSCS card. These do not ensure competence with a quick hitch so should be supplemented with evidence of training in the particular type of hitch in use.

Realistically, many of the excavators you hire will be provided by small companies. Where the number of employees is less than five the assessment does not, by law, need to be recorded so in such cases you should ensure you have a risk assessment which covers such eventualities and drivers and hirers should then work to these. The risk assessments must consider the competency of excavator drivers and their understanding of quick hitches and how this should be demonstrated on site.

Any safe system of work and risk assessment, either from the plant hirer or your own, must include an outline of how staff are instructed and trained to remain clear of the excavator bucket while in use and where to stand. This is the primary method of risk management and makes sure that if the bucket becomes detached, there is no risk of injury.

Clear evidence of equipment maintenance in line with manufacturer guidance must be seen. In addition to the regular service and daily maintenance checks required for excavators, quick hitches should have a thorough examination and inspection at six monthly intervals as they are classified as lifting accessories under the Lifting Operations and Lifting Equipment Regulations (LOLER).

Excavator

“When you don’t check what you are hiring or have not clarified the competency of the sub contract staff, you are bringing uncontrolled risks into your organisation.”

Awareness is key

None of these requirements should pose any problem to responsible equipment hirers and an inability or reluctance to provide such information should ring alarm bells. When you don’t check what you are hiring or have not clarified the competency of the sub contract staff, you are bringing uncontrolled risks into your organisation. In a dynamic environment these will combine with other causal factors such as commercial requirements and client deadlines, leading to a high likelihood of accidents.

In many cases, the engineer on site, acting as the supervisors will be the final control and organisations should ask themselves how much their staff know? For this reason, we spend significant time talking about quick hitches and their safety, during the IOSH Safe Supervision of Geotechnical Sites course. This includes group exercises on the selection of competent contractors and how to spot an unsafe piece of equipment.

It is also worth remembering that any prosecution, prohibition notice or improvement notice applied by the HSE will generally need to be stated when clients ask you to demonstrate your health and safety record. As a key requirement of the Construction Design and Management Regulations 2007(CDM), where competency and your ability to demonstrate you can do the work safely is key, any such blemish could be the difference between being awarded a contract or not. ■

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Writing for **theGeotechnica** *for the first time,* Julian Lovell *has 25 years in geology and geotechnics, with the last 18 years in site investigation. Now a director at the* Equipe Group, *here he discusses the merits of NVQs.*

The geotechnical and drilling industry has always operated a two tier system with respect to qualified staff. On the one hand the industry employs and engages degree qualified 'professional' people and on the other, drillers and technicians who are often employed with no qualifications or without relevant qualifications for their work activity. So are qualifications really that important?

The stipulation of workers holding qualifications is often written into specifications or requested by clients but is this the same as competency? The requirement for using a competent workforce is set down within health and safety statute and is inherent throughout the Health and Safety at Work Act but more clearly explained in the Construction (Design and Management) Regulations (CDM) 2007 ACOP (approved code of practice).

Regulation 19 of the ACOP states that to be competent, an organisation or individual must have:

- sufficient knowledge of the specific tasks to be undertaken and the risks which the work will entail.
- sufficient experience and ability to carry out their duties in relation to the project; to recognise their limitations and take appropriate action in order to prevent harm to those carrying out construction work, or those affected by the work.

Regulation 4 provides additional advice on the competence and training requirements of trainees, site workers and supervisors.

With regard to the technical aspects of the work is there a requirement for competency and how can employers and clients establish that workers are competent? It is futile to dispute here that workers must be competent as we are a skilled industry which works to standards and codes. Notwithstanding the latter, surveys have proven time and time again that a competent workforce will work more professionally, safely and efficiently and so on legal, moral and commercial grounds it should be a given. But how does an Employer or Client determine technical competency and is it a statutory obligation? Eurocode or more specifically BS 22475/2 : 2011 now defines individuals who shall have the relevant technical competencies as well as a knowledge of the health and safety aspects. The Standard defines a Responsible Expert and a Qualified Operator and as with the CDM ACOP provides guidance with regard to the specific aspects of the work which these individuals should be competent.

"...surveys have proven time and time again that a competent workforce will work more professionally, safely and efficiently..."

It can be argued that both Eurocode and the CDM ACOP are not legislative but good advice which, if employers follow the guidance, they will generally be doing enough to meet their legal obligations. This would also form a line of defence in a court of law in the event of a serious incident or accident occurring. Therefore, in order for employers and clients to meet their statutory obligations, it is very clear that sufficient competency has to be established for each worker and this would be sensibly obtained prior to works being undertaken. Eurocode and the CDM ACOP provide a workable framework for employers and clients to follow.

NVQ Assessment

So for geotechnical and drilling projects, how do employers and clients ensure that the work force is competent?

Qualifications undoubtedly provide clear tangible evidence towards establishing competency but taking into account the above guidance, this also has to be combined with relevant experience and training. The problem with relevant experience and training is that it is often less tangible and more difficult to substantiate. Employers and clients will often use professional qualifications as the only criteria and the relevance of further education degrees, masters and postgraduate qualifications is readily accepted. So if qualifications are the cornerstone for establishing competence, are professional qualifications sufficient for all site roles and what is available for 'non professional' workers in the geotechnical and drilling industry?

"The problem with relevant experience and training is that it is often less tangible and more difficult to substantiate."

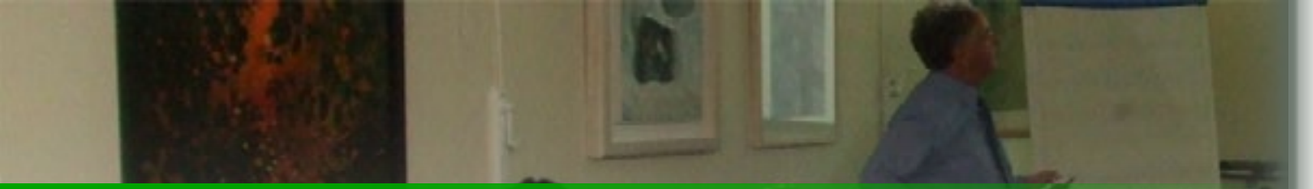
The simple answer is National Vocational Qualifications (NVQs). NVQs are work based awards in England, Wales and Northern Ireland that are achieved through assessment and training. In Scotland they are known as Scottish Vocational Qualification (SVQ).

NVQ Certificates

To achieve an NVQ, candidates must prove that they have the ability (competence) to carry out their job to the required standard. NVQs are based on National Occupational Standards that describe the 'competencies' expected in any given job role. Candidates will work towards an NVQ that reflects their role and they will have to obtain evidence to prove their competence in the technical aspects of their work, as well as operational and health and safety. Unlike most professional qualifications, NVQs are holistic in their approach to assessing competence which should provide employers and clients with a greater degree of confidence that they are fulfilling their obligations with respect to ensuring the workers are competent in all aspects of their work.

Within the geotechnical and drilling industry there are NVQs for the majority of field and laboratory roles and these comprise:

Site Role	NVQ Title	Level	Awarding Body
Sit Supervisor	Occupational Work Supervision	3	CAA
Lead Driller	Land Drilling - Lead Driller	2	CAA
Second/Third Man	Land Drilling - Drilling Support Operative	2	CAA
CPT Operator	Laboratory and Associated Technical Activities	3	PAA/VQSet
Field Technician	Laboratory and Associated Technical Activities	2&3	PAA/VQSet
Laboratory Technician	Laboratory and Associated Technical Activities	2	PAA/VQSet
Laboratory Supervisor	Laboratory and Associated Technical Activities	3&4	PAA/VQSet
Plant Operator	Construction Plant Specific	2	CAA



Employers, clients and site supervisors should be familiar with the qualifications available and carry

“Where drilling is taking place the whole crew should be competent which means that both the Lead Driller and the Second Man/Assistant Driller hold relevant NVQs. “

out suitable checks. Where drilling is taking place the whole crew should be competent which means that both the Lead Driller and the Second Man/Assistant Driller hold relevant NVQs. Where CPTs and other in situ testing are being carried out by Field Technicians the site operatives should be suitably experienced and qualifications such as NVQs should be checked.

NVQs are also available for all types of construction plant and therefore where site or drilling staff are operating plant they should hold an NVQ relevant to that piece of plant as well as a valid CPCS card.

Geotechnical laboratories have also started to use NVQs to prove the competency of their staff as well as to provide a structure within the laboratory. Companies such as Geolabs Limited have embarked on NVQs for their lab staff as they recognise the qualification goes far beyond UKAS accreditation and more importantly is directed at the individual rather than the laboratory itself.

Often for commercial reasons, many geotechnical

sites are supervised by graduates who hold professional qualifications but often with insufficient relevant experience and training. Adoption of the site supervisor’s NVQ is very ad hoc as graduates already arrive at their employers with a qualification. However, employers would be hard pressed to provide evidence that these professional qualifications include sufficient information relating to site supervision to deem the individuals competent as a supervisor. In addition to the supervisors NVQ, courses such as the IOSH Safe Supervision of Geotechnical Sites course will help to build up competence but these should also be combined with mentoring programmes and in-house training.

“In summary, employers and clients are often not meeting their legal obligations...”

In summary, employers and clients are often not meeting their legal obligations as they should be ensuring that all individuals are competent for the roles they are carrying out. Robust checking systems should be in place both prior to works commencing and by the site supervisor to ensure that all workers are competent and hold valid and current qualifications and competency for the work activity. Physical checks must be made and the old argument that ‘we only use large reputable companies’ would not be deemed to be sufficiently robust. It should also be borne in mind that, as currently little or no checks are carried out, very few companies currently have a fully qualified workforce. Competency must be obtained through a combination of relevant experience and knowledge which may include qualifications as well as training. Professional qualifications and vocational qualifications provides very good evidence of competence, however, the overriding criteria must be sufficient knowledge and experience which requires time and ongoing training (continual professional development). As experience takes time, it should be combined with a well structured training programme. ■

drillshop.co.uk

products and innovations

contents

The drilling and geotechnical industry is at the forefront of technology and innovation in many ways, and on many fronts Equipe Geosolutions' new service, Drillshop, now provides a new dimension.

Drillshop is a web based 'one stop shop' for drilling and site resources and uses the latest e-commerce techniques and technology. Drillshop provides a single point web based solution where customers of any size can order drilling tools, equipment and materials delivered to their chosen location at the touch of a button.

"Drillshop provides a single point web based solution where customers of any size can order drilling tools, equipment and materials..."

The products have been sourced from leading suppliers and the website offers an easy, customer focussed, user friendly platform to order those critical site items. The website seamlessly brings together products which otherwise would have to be ordered from multiple suppliers from all over the UK, which not only saves time, but money also. The Drillshop team have built up an enviable source of high quality suppliers to ensure that the products are reliable, fit for purpose and often state of the art.

"The website seamlessly brings together products which otherwise would have to be ordered from multiple suppliers..."

<u>Customers who use Drillshop benefit from:</u>

Cost Efficiencies - *Drillshop's buying power allows products to be sold at competitive rates.*

Time Efficiencies - *The One Stop Shop for your drilling and site tools, equipment and materials.*

Instant Credit - *Drillshop guarantees instant credit to all customers with a valid credit card.*

Customer Control - *A free choice of quantities and preferred delivery options.*

Carbon Reduction - *Buyers can now out-source their consumer needs with piece of mind.*

Quality Assurance- *Only best quality products are sourced and sold.*

Drillshop provides instant access to drilling equipment, from dynamic probing sacrificial cones to drilling rigs, installation materials: from piezometer sand to 165mm geocasing, geothermal equipment: from thermal grout to mud pumps and essentials such as plastic core boxes and KeyLogbook.

The products are sympathetically banded and grouped to allow the customer to make their choice quickly and efficiently. Each product has a clear description written in language which allows the customer to make the right decision. In many instances the product descriptions are accompanied by technical information to make that decision informed. Suggestions and reminders are also provided to ensure that customers buying a product do not forget essential linked items. ■

"Each product has a clear description written in language which allows the customer to make the right decision."

So for all of your drilling needs, make your life easier and visit www.drillshop.co.uk now.

Geotechnica 2011

This month sees the return of the UK's Largest Geotechnical Trade Show and Exhibition - Equipe's Geotechnica. It is with great pleasure that **the-Geotechnica** is able to give readers a preview of this year's event, with full and complete listings of this year's demonstrations, speakers and exhibitors. Moving from strength to strength with every passing year, the event continues to grow in stature and popularity. This year is no exception.

Geotechnica was established in 2009 to celebrate all that is good about the geotechnical and drilling industry. The event was developed to bring together all sectors of the industry and appeals to all stakeholders, from suppliers and manufacturers through

"It brings the disparate parts of our industry together at a single focussed event..."

contractors to clients. It brings the disparate parts of our industry together at a single focussed event, helping to promote the specialist services, products and innovations the industry has to offer.

No other event brings together such a diverse group of specialists, all of whom are focussed on the development of the industry. Also, there is no other event that allows visitors to receive answers to all of their project queries instantaneously.

Exhibitor numbers have grown year on year and range from major multi-disciplinary consultants such as Mott MacDonald to specialist consultants such as Concept, from laboratory equipment suppliers such as Controls to commercial laboratories such as Geolabs, from major ground investigation contractors such as Geotechnical Engineering to drilling equipment suppliers such as Drillwell and from instrumentation suppliers such as Strainstall to specialist installation and monitoring contractors such as Geotechnical Observations.

"Geotechnica is free to all visitors..."

Geotechnica is free to all visitors, and encompasses a free CPD Geotechnical Symposium which has speakers comprised of industry experts and lead-

"This year, Geotechnica aims to provide some indicators of where and how growth can be achieved..."

ing academic lights. This year, Geotechnica aims to provide some indicators of where and how growth can be achieved, in order to aid the recovery out of these difficult market conditions. Geotechnica has also asked some searching questions from the leading experts asking if there are obstacles to growth such as additional qualifications and changes to legislation and technical standards.

With live demonstrations, technical presentations, equipment and services on display throughout, the exhibition covers all bases. ■

Preview: Geotechnica 2011's Event Programme

Demonstrations

contents

Wednesday 6th July

Exhibition Opens - 09:00
Exhibition Closes - 17:00

10.00: Vacuum Excavation - Vac-Ex - Stand O8

10.30: Premier 110 Dynamic Sampling Rig – Premier Plant Engineering - Stand O6

11.30: SPT Calibration - Measurement of Energy Ratios - Equipe - Display Area

12.30: Slope Climbing Rigs - Geotechnical Engineering - Slope Display Area

13.30: Vector Vacuum Excavation and Air Spade - ADP Group - Stand O10

14.00: CPT and Marchetti Probe – In Situ Site Investigation - Stand O5

15.00: Portable Falling Weight Deflectometer - Jet Materials - Stand 53

Thursdsay 7th July

Exhibition Opens - 09:00
Exhibition Closes - 16:00

10.00: Slope Climbing Rigs - Geotechnical Engineering - Slope Display Area

10.30: Vector Vacuum Excavation and Air Spade - ADP Group - Stand O10

11.30: CPT and Marchetti Probe – In Situ Site Investigation - Stand O5

12.30: Portable Falling Weight Deflectometer - Jet Materials - Stand 53

13.30: Self-Boring Pressuremeter - Cambridge In-situ - Display Area

14.00: Premier 110 Dynamic Sampling Rig – Premier Plant Engineering - Stand O6

15.00: SPT Calibration - Measurement of Energy Ratios - Equipe - Display Area

Speaker Programme

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Exhibition Opens - 09:00
Exhibition Closes - 17:00

Equipe Geotechnical Symposium
"Engineering Efficiences for Sustainable Growth"

Wednesday 6th July

Session1 - **How do clients view innovative design?**

The drivers to produce a sustainable recovery will need to be promoted by the clients, this session will look at how clients receptiveness to new ideas can deliver successful projects and cost effective solutions.

10.00 to 10.30: Professor Quentin Leiper - Group Chief Engineer Carillion - Delivering a sustainable business in difficult times.

10.30 to 11.00: Alex Kidd - Highways Agency – Looking to the future of the UK Motorway network.

11.00 to 11.30: Ivan Hodgson – URS Scott Wilson - The use of tyre bales to provide lightweight embankments using waste materials.

11.30 to 12.20: Dinesh Patel – Arup Consulting - The foundations for the Pinnacle - a lesson in reuse.

12.20 to 12.30: Andrew Milne- Geotechnical Engineering – 50 years of service.

Session 2 - **Are the new codes and guidance helping or hindering growth?**

With a host of new Codes and Guidance being launched on the geotechnical industry, this session looks at how the industry is coping and if this plethora of new codes can actually produce efficiencies.

13.30 to 14.00: Andrew Howley - Loopmaster Europe – Ground source codes of practice.

14.00 to 14.30: Dr Andrew Bond – Geocentrix - Eurocodes moving forward.

14.30 to 15.00: Derek Smith – Coffey - Site Investigation Steering Group the redrafted documents.

15.00 to 15.30: Paul Maliphant - Halcrow/EGGS – The UK's Register of geotechnical engineering professionals (RoGEP).

15.30 to 16.00: Professor Barry Clarke - Leeds University - Will the codes and specification help or hinder growth?

Exhibition Opens - 09:00
Exhibition Closes - 16:00

Thursdsay 7th July

Session 3 - **Producing Efficiencies with the use of Innovative Management and Smart Data systems.**

With the use of innovative management and smart Data collection our investigation and design can be made more effective, these new processes are the way forward for our industry, this session presents some of the ways these ideas can be used.

10.00 to 10.30: Peter Turner - Environment Agency – The client perspective on Health and Safety what he expects and what he gets?

10.30 to 11.00: Digby Harman – Vinci Soil Engineering - Drilling Parameter Recording - cost effective provision of better data from boreholes.

11.00 to 11.30: Professor John Reynolds – Reynolds International – Maximising the benefits from near-surface geophysical survey.

11.30 to 12.00: David Whitaker - Arup Consulting - Ground source - getting the design right.

12.00 to 12.30: Professor Paul Nathanial - Nottingham University – Environmental interpretation - doing the right thing.

12.00 to 12.30: Clive Dalton - Cambridge Insitu - The self boring pressuremeter - how to interpret the results for design.

Session 4 - **Where has all the geotechnical innovation gone?**

Innovation will be necessary to enable the construction industry to grow out of its current position – where will that innovation come from? This afternoon session will show how some companies are using new techniques to deliver the project.

14.00 to 14.30: Professor Edward Bromhead - Kingston University – "Is there any innovation left to drive a recovery?"

14.30 to 15.00: Dr Andrew Ridley - Geotechnical Observations – Innovation the only way forward.

15.30 to 16.00: Neil Smith - Applied Geotechnical Engineering – Innovation starts with training.

Exhibitors

Stand	Company	Description
1	GEOLABS	GEOLABS are wholly independent testing-only company which ensures that they can respond to clients needs and requirements and are not influenced by any parent company considerations. Their testing is performed by staff with a combined total of over 300 years of soils testing experience. They ensure that the highest level of quality is achieved and maintained in their operations and they are accredited by UKAS for a wide range of tests including: effective stress; shearboxes; classification; earthworks; consolidation; permeability; total stress tests etc.
2	J D P	JDP offers a vast portfolio of products from the world's leading manufacturers and brands. Products include solutions for adoptable sewers, house drainage, rainwater, soil, waste, channel and land drainage, gullies and covers, storm water management systems, service pipes and fittings, pressure fittings, ducting, fuel tanks and many more. JDP provides a one-stop shop for national and regional contractors, building and construction companies, including water utilities, telecommunication and civil engineering contractors.
3	Boart Longyear	Boart Longyear is the world's leading provider of rota-sonic drilling. They drill routinely for soil and groundwater investigations in the most challenging climatic and logistical conditions and have considerable experience in a wide variety of drilling applications and environments. They can combine sonic drilling with core, rotary, and reverse circulation — offering a complete and unrivalled service.
4	Geotechnical Observations	Geotechnical Observations Limited (GeO) is a leading company for the provision of high quality field and laboratory geotechnical services. Established in 2000 as a spin-out company from Imperial College London, GeO specialises in the application of soil suction measurements in geotechnical engineering. They also install and monitor all forms of geotechnical and structural instrumentation and undertake measurements of small strain stiffness in soils using bender elements.
5	Structural Soils	Structural Soils Limited is a site investigation contractor, based in Bristol, with a branch office in Castleford near Leeds, the company operates throughout the United Kingdom and has also undertaken overseas contracts. The company is part of the RSK Group of Companies. The company's experience provides a sound knowledge of all aspects of geotechnical engineering and the staff are always ready to give advice. As the company operates various drilling rigs and associated equipment, an investigation can normally be designed to suit the client's requirement and obtain information in the most efficient manner.
6	ALcontrol Laboratories	ALcontrol Laboratories is Europe's largest independent provider of accredited laboratory testing services for the environmental industry, with over thirty years of global experience. They provide a range of tests including the following: TPH, PAHs, VOCs, phenols, PCBs, pesticides, metals, standard water tests, and WAC testing. In addition, they now offer full interaction over our web portal, @mis, including collections and deliveries, accessing results, self scheduling, and archiving data, all on a 24/7 basis.
7	Concept Consultants	Concept was established in 1997 as a geotechnical / environmental organisation, specialising in the supply of quality ground investigation services to clients throughout the UK, and occasionally abroad. Concept carry out all forms of drilling works, diamond coring, in situ monitoring and soils laboratory testing. Concept also provides structural investigation services and they are Link Up approved by audit for work on the railways.
8	Drillstore UK	Drillstore UK is a supplier to the UK drilling industry and is the Exclusive distributor for Boart Longyear Drilling Products. Other specialised products are sourced from their network of suppliers from around the world. Drillstore was established just over 3 years ago but their staff have over 21 years experience manufacturing and supplying drilling equipment. Drillstore UK supplies equipment to the mining, geotechnical and natural stone industries.
9	Keynetix	Keynetix is the UK's leading supplier of Geotechnical data management and mapping solutions. Keynetix staff will be happy to help you learn more about geotechnical data management, using free mapping data, the implications of AGS 4 or how their existing products can improve your efficiency: Pocket SI - handheld data collection; HoleBASE - borehole logging; KeyLAB - Geotechnical laboratory management; KeyCSM - Conceptual Site Mode; KeyHOLE - CAD presentation of Geotech. data; KeyAGS - Checking and manipulating AGS data and KeySpatial – Web based mapping.
10	Atlas Copco/ H&F	H&F Drilling Supplies are the largest independent manufacturer, stockist and supplier of drilling equipment in the UK. From bespoke equipment solutions to complete drill string packages, they work with some of the world's leading equipment manufacturers, including Fraste, Atlas Copco, Numa, DriconeQ, Rip Amonti, Matex, Cetco & Australian Mud to offer a unique "one stop shop" service.

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Stand	Company	Description
11	Archway Engineering	Archway is one of the UK's leading manufacturers of drilling equipment for site investigation, mineral exploration, water well construction, and environmental monitoring. Archway manufactures drilling equipment and sampling tools suitable for use in a wide range of geological formations, from soft silts and soils to the hardest rocks.
12	RPA Safety Services	RPA Safety Services provide a comprehensive range of externally certified training courses. They are providers of IOSH Managing Safely and CIEH Working Safely and their highly successful IOSH accredited Safe Supervision of Geotechnical Sites, which is run in partnership with Equipe Training.
13 & 14	Equipe Group	Equipe provides specialist services into the drilling and geotechnical industry comprising training, events such as Geotechnica, innovation and new products. Equipe Training is the UK's leading provider of geotechnical and health and safety training to the industry and includes their nationally accredited IOSH courses for Safe Supervision and Avoidance of Services. Equipe is also at the forefront of innovation and works with a number of strategic partners to develop and deliver new products to the market, with concepts such as DrillShop.co.uk and KeyLogbook.
15	Robertson Geologging	Robertson Geologging provide extremely high quality borehole logging equipment which is available for purchase or as a service based contract.
16	Bentley Systems Inc.	Bentley is the global leader dedicated to providing architects, engineers, constructors, and owner-operators with comprehensive software solutions for sustaining infrastructure. Founded in 1984, Bentley has nearly 3,000 colleagues in more than 45 countries, $500 million in annual revenues, and, since 1999, has invested more than $1 billion in research, development, and acquisitions.
17	Chemtest	Chemtest Limited is the UK's premier contaminated land laboratory providing a comprehensive national service for the analysis of soil, water, leachate and gas samples. Extensive accreditation for UKAS and MCERTS is held for the majority of analysis undertaken. The analytical service provided is supported by the Chemtest onsite team providing collection, monitoring and sampling services.
18	Boode UK	Boode UK is a world leader in the manufacture of PVC water well casing and screen systems and offers a range of high quality PVC water well products, this, coupled with excellent service, fast on time delivery schedules and flexibility have ensured that Boode products are installed successfully, worldwide. Boode UK prides itself in providing highest quality products and is also a distributor of Johnson stainless steel well screens and Baroid drilling fluids.
19	Mott MacDonald	Mott MacDonald is a world class engineering, management, and development consultancy employing over 10,000 staff world-wide and work in over 100 countries. Mott MacDonald offers a wide range of professionalservices to both the public and private sectors – adding value to projects by providing leading edge, practical and innovative solutions. Over the years, Mott MacDonald has taken a prominent role in risk management of ground movements resulting from deep basement construction, cut and cover works and major tunnelling works.
20	Terra Firma GI	TFGI carries out ground investigations and geothermal drilling for any size of project from domestic houses and extensions through to major infrastructure projects. They can offer a complete range of in-house drilling services from hand held window sampling equipment through to large rotary rigs.
21	Geoquip Water Solutions	Geoquip Water Solutions supply quality products and services to water related industries. Renowned for creating innovative, individual solutions, Geoquip partner with leading manufacturers and apply in-depth technical expertise to help maximise water flow and output. With over 25 years of international experience, Geoquip specialise in construction and landfill dewatering, remediation & contaminated ground, irrigation, geothermal, groundwater abstractions and public and private water supply.
22	Terra Tek	Terra Tek Limited has bases throughout the United Kingdom offering comprehensive site investigation and testing services including: Laboratory soil and rock Testing; On site testing and monitoring; Environmental testing and monitoring; Site Investigations; Environmental Reporting. Our Group of Companies can also provide the following services: Drilling; Exploration; Geothermal; Water Wells and Environmental Consultancy and Auditing.
23	European Geophysical	European Geophysical Services provide geophysical logging, imaging and video surveying of boreholes, adits, shafts and wells for the water, mineral, environmental and civil engineering industries. Their expertise and experience ensure a high quality service resulting in them being the preferred contractor to several major utilities, government agencies and engineering companies.

Exhibitors

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Stand	Company	Description
24	Quarry Design	QuarryDesign are specialists in long-range (up to 2,000m) terrestrial LiDAR surveying and remote geotechnical mapping of rock-faces. Initially, this was for the purposes of providing accurate quarry design criteria for their UK and Irish quarrying clients. However, they also undertake this type of geotechnical mapping, routine monitoring of slope failures and rock-fall analyses in any situation where traditional surveying/mapping techniques would be limited.
25	Perforator	Perforator Ltd have available for sale or hire their range of guided thrustboring systems with full training packages to suit individual requirements. Perforator PBA guided boring systems with 'Optical Electronic Navigation' are now equiped with proven techniques for the accurate installation of lost steel casings, ducts, water and sewerage systems, particularly clayware, to accurate line and level.
26	Rock Drilling Tools	Rock Drilling Tools Limited is a drilling consumable supply company servicing the rotary, geotechnical/environmental, exploration and construction drilling markets. With over 60 years experience in the onshore drilling industry they have the knowledge and expertise to provide the equipment to serve your drilling needs.
27	Controls Testing	Controls is a world leader in the design, manufacture and distribution of Testing Equipment for construction materials. They provide equipment for testing and evaluation of soils, geotechnical materials, concrete, cement, aggregates, steel, asphalt/bituminous materials and general laboratory products.
28	Seba KMT UK	Seba KMT UK operates in a number of industries, offering product sales, training and technical support for utility location, cable avoidance and land survey, pipeline inspection, power fault location, thermal imaging and water leak detection.
29	Cambridge Insitu	Cambridge Insitu designs, develops, manufactures and uses on site pressuremeters for measuring insitu the stiffness and strength of soils and rocks. Their best known product is the Cambridge Self Boring Pressuremeter and their devices are found world wide and have been used on many important civil engineering projects. They are the UK agents for the Marchetti probe. In addition they make load cells and similar devices that use strain gauges, to their own design and also in co-operation with others. They are experienced in the design and manufacture of data logging systems and writing software for recording and displaying data.
30	Cable Detection	Cable Detection Ltd is part of the Hexagon Machine Control Group. Manufacturing and servicing buried service location equipment is their sole focus. Using their in house expertise they are pushing the boundaries of the buried service location sector and discovering new ways to improve on traditional methods of underground data capture.
31	Strainstall	Strainstall Monitoring are specialists in a diverse range of measurement and monitoring techniques and producing specially developed data acquisition solutions that are frequently the key to resolving problems. Strainstall has extensive expertise in geotechnical, tunnel and structural monitoring and testing including noise and vibration; measuring residual stresses in concrete and steel structures and conducting pile load testing with their innovative Bi-Directional Static Load Testing technique. They also offer a design consultancy service for monitoring installations.
32	R S Hydro	RS Hydro is a multi-discipline company providing a total solution for flow, level, water quality, telemetry and groundwater monitoring. They have been in operation for over 13 years and have a strong reputation with small and large companies alike, offering a wide range of products and services.
33	Rapspan Tools	Rapspan Tools manufacture and design a range of tools that aim to save workers time and energy, with the R Series of spanners at the forefront of an ever increasing catalogue.
34	Geospec	Geospec is an independant geosynthetic and geotechnical testing laboratory providing a service that is fast, flexible, reliable and complete. They provide a balanced range of testing facilities to characterise not only geosynthetic products, but also their interaction with the soils in which they are installed. Geospec are accredited by the United Kingdom Accreditation Service (UKAS) to the international standard ISO/IEC 17025.
35	Clear Solutions	Clear Solutions manufacture and supply a comprehensive range of drilling equipment, offering various different product lines including: High performance, environmentally friendly drilling fluids, grouts and sealants, geothermal grouts, high pressure drilling fluid pumping systems and high performance sealed bearing tricone drill bits and hole openers.
36	GeoTest Laboratories	GeoTest Laboratories Ltd specialises in testing and other activities associated with quality control, monitoring and investigation of engineering properties of Construction and Geotechnical materials. GeoTest's purpose built premises at Adlington are well situated for all Motorway access and are well equipped to carry out a wide range of tests. The laboratory can perform all routine soils tests in accordance with BS 1377 and is UKAS accredited for the majority of their work and they can also offer accredited aggregate testing to both BS EN and BS812 standards and concrete to BS EN and BS1881 standards.

Stand	Company	Description
37	British Geotechnical Association	The British Geotechnical Association (BGA) is the principal association for geotechnical engineers in the United Kingdom. It performs the role of the ICE Ground Board, as well as being the UK member of the International Society for Soil Mechanics & Geotechnical Engineering (ISSMGE) and the International Society for Rock Mechanics (ISRM).
38	The Geological Society	The Geological Society of London was founded in 1807. It is the UK national society for geoscience, and the oldest geological society in the world. As well as boasting one of the most important geological libraries in the world, the Geological Society is a global leader in Earth science publishing, and is renowned for its cutting edge science meetings.
39	Borehole Logging Solutions	Borehole Logging Solutions Limited (BLS) is based in North Wales and has extensive experience of geophysical borehole logging and geophysical data logging operations throughout the United Kingdom and overseas. The Company focus is Data Acquisition via Wireline logging for Site Investigation, Mineral Exploration, Water Investigation, Cavity and CCTV Surveys
40	Waterra UK	Waterra provides a cost effective range of groundwater equipment sourced worldwide. Their customers include leading environmental consultancies, contractors, researchers, blue-chip organisations, government and environmental agencies. They have the experience, skills, training courses and product to provide a real choice of equipment options for groundwater projects. On display this year: Low Flow and Passive sampling equipment; NEW MiniRae 3000 PIDs; Rain gauges and dataloggers; GPS Aquameter multi-parameter meter.
41	TerraDat UK	TerraDat is a European leader in state-of-the-art Geophysical Site Investigation, Geological Mapping and 3D Geodetic Laser Scanning. Their work is carried out using non-invasive methods with the very latest equipment to produce the highest quality solution for the Client. They have extensive experience in all areas of subsurface mapping in relation to the Geotechnical, Civil Engineering, Environmental, Water Resource and Mineral Industries. They also have an ever increasing involvement in the Energy Sector.
43	AGS	The Association of Geotechnical and Geoenvironmental Specialists (AGS) is a non-profit making trade association established to improve the profile and quality of geotechnical and geoenvironmental engineering. The membership comprises UK organisations and individuals having a common interest in the business of site investigation, geotechnics, geoenvironmental engineering, engineering geology, geochemistry, hydrogeology, and other related disciplines.
45	Zetica	Zetica is the UK's leader in engineering and environmental geophysics with an enviable reputation for objective advice, cost effective surveys, and easy to understand reporting. The company also has a standout track record for innovation with recent advances including a wireless borehole magnetometer to survey while you drill, a multisensor data acquisition system for multi-instrument surveys, and a train-mounted rail radar system for scanning at speeds of over 300km/h.
46	Universal Augers	Universal Augers manufacture and supply foundation drilling tools and accessories from their UK base. They offer a complete design service for any type of drilling tool: small post hole augers, mini piling, hexagon core augers, CFA from 200mm to over 1.5m in diameter, rock augers, core barrels and drilling and cleaning buckets. All profiling, pressing, fabrication and welding is done in-house and we machine all our CFA couplings in their machine shop.
47	Drilline Products	Drilline Products is an independent supplier of no-dig and trenchless technology. They have a wealth of experience and expertise and pride themselves on high levels of customer support. They are the UK dealer for IDS, manufacturer of innovative ground radar systems that are portable, easy to operate on-site and are accurate in detecting and mapping utilities. Drilline Products will be showing The Detector Duo for instant mark out and the Hi-Mod multi array mapping system.
48	Stuart Well Services	Stuart Well Services is the UK's leading specialists in dewatering and groundwater and ground remediation systems using Wellpoint systems, Deep wells, together with the supply of consumables to the drilling industry. Wellpoint dewatering systems are used to lower groundwater levels to provide stable working conditions in excavations. Wellpoint dewatering systems are particularly suited to dewatering in foundation pipelines runs and trench works.

Exhibitors

Stand	Company	Description
50	Scientific Analytical Laboratories	Scientific Analytical Laboratories (SAL) offer accredited chemical analytical services to the environmental, geotechnical, food, safety, petrochemical and manufacturing sectors. There are 5 laboratories in the group, all of which hold third party accreditation by UKAS. Extensive MCERTS accreditation for soil analysis is held at the group's facilities in Manchester and Braintree. In addition to providing excellence in analysis, SAL offer excellence in customer service including the ability to report results in AGS format.
52	Global Geotech	Global Geotech is a manufacturer and supplier of exploration drilling and sampling equipment. They currently provide customers throughout the world with high quality earth drilling, boring, sampling and in-situ ground testing equipment.
53	Jet Materials	Jet Materials are a UK based company providing a range of services and products to the Civil Engineering Industry and Education. With over 30 years of relevant experience, both in technical and sales and marketing, they provide a complete service for your laboratory needs. Their main focus is Materials Testing Equipment, covering Soils, Geotechnical, Concrete, Asphalt, Bitumen, Cement, Steel, Rock, Aggregates and general laboratory equipment. All of their equipment is manufactured and sourced in Europe or USA, to EN, BS, ASTM or AASHTO standards.
54 & 55	Geotechnical Engineering	Geotechnical Engineering Limited provides site investigation solutions to a wide range of clients in the construction and property development industries. They gather data in various ways from sites throughout the UK for geotechnical and geoenvironmental assessment and when requested, they analyse the data and give advice. Geotechnical Engineering prides itself on providing innovative solutions delivered in a professional and competent way and are winners of the GE Innovation Award for their P60 slope climbing rig.
56	Baker Associates Hydro Solutions	BAHS is a leading Hydro-Thermogeological Consultancy which provides a comprehensive range of technical and support services to the drilling, water and ground-source heating/cooling industries. Services range from basic hydrogeological summaries, to full design and management of the largest abstraction boreholes and heating/cooling systems in the UK, and abroad. BAHS operates equipment for all types of testing and ground characterisation, including thermal response testing and test pumping. All staff are qualified, experienced and carry relevant tickets.
57	Subsurface Laser Scanning	Subsurface Laser Scanning are the only geospatial and geotechnical engineering company in Ireland or the U.K. to specialise in down bore hole surveying of subsurface voids. They employ the Cavity Auto Laser Scanning System, C-ALS, and Imagenex down-hole sonar for measurement for subsurface void. Both laser and sonar instruments allow for the accurate geo-referenced measurement of underground cavities via boreholes or small openings.
59	Muovitech	Muovitech was founded in 2002 and has grown to a position as one of Europe's largest manufactures of collector pipe systems. They create innovative and reliable products for their customers and all product development complies with environmental and technical requirements. They also ensure that legislative and industry requirements are complied with in full. Muovitech's aim is to facilitate ground source heat pump installations and save you time by delivering the complete collector system.
60	Bachy Soletanche & Vinci Soil Engineering	Bachy Soletanche Limited is one of the UK's leading geotechnical specialists with a reputation for quality and innovation within the field of foundation and underground engineering.
61	Soil Engineering	Soil Engineering is a major provider of site investigation services, specialist drilling services, ground stabilisation and geotechnical testing, together with geotechnical and geoenvironmental advice. With comprehensive wholly owned resources in all these areas they offer their clients a complete package from desk study, through investigation and interpretation to foundation design with site remediation proposals
62	British Drilling Association	The British Drilling Association is a membership association for those who drill holes in the ground, manufacture or supply the rigs and equipment, or have an interest / connection in any aspect of ground drilling. Committed to Excellence in Health & Safety,Quality of Workmanship and Technical Standards for the Benefit of the Drilling Industry and its clients.
63	Land Rover	The first Land Rover made its debut in 1948. It was designed with brilliant simplicity for extraordinary ability, unrivalled strength and durability. This culture of innovation continues with Land Rover new models, more refinement, more innovative technology, more efficiency and fewer emissions, great platforms for a wide range of applications.

Stand	Company	Description
O1	Drillwell	Drillwell Limited is the leading supplier and manufacturer of Drilling Equipment such as Drill Rods, Casing, Corebarrels, Drilling Equipment, Drilling Rigs, Bits and Pumps. They supply to both the mining and exploration industries, and provide a range of both standard and non-standard equipment. Their experience and reputation in the field has enabled them to identify their customers immediate and future individual needs both in the UK and the international market.
O2	Rockbit UK	Rockbit UK supply a complete range of drilling rigs and equipment. At Geotechnica 2011, Rockbit UK will be launching it's range of 'Wildbore' pumps comprising trailer mounted mud pump, water pump and mist pump. They will also be exhibiting the Massenza drilling rig with a selection of drill bits and accessories.
O2A	DuraDeck	DuraDeck ground protection, traction and access mats are perfect for a wide variety of applications and uses. Its super-durable design allows for heavy equipment such a trucks, lulls, forklifts, backhoes, tractors, golf carts, pickup trucks and even tanks. Whether your need is temporary or semi-permanent, DuraDeck's unique plastic construction allows sections to be used virtually anywhere and for nearly any period of time – from 5 days to 5 years and more.
O3	JKS Boyles	JKS Boyles is a leading supplier to the drilling industry, from drilling rigs and wireline drilling systems to drill rods and diamond core bits. They carry large stocks of drill spares and drilling consumables; can provide immediate despatch, have extensive workshop facilities and field service engineers; can provide repair and maintenance programmes to suit your requirements; and provide drilling support and training.
O4	Soilmec	Soilmec Ltd supplies new Drilling Rigs, Piling Rigs, Geothermal Rigs, Cranes to the construction & drilling industries in the U.K and Ireland and used equipment worldwide. They provide Servicing, Repair and supply of Spare Parts for their wide range of machines to provide the highest levels of customer service. Soilmec drilling & piling rigs are used every day on jobsites all around the world for bridges, viaducts, motorways, tunnels, railways, residential builds and structures of all types.
O5	In-Situ	In Situ Site Investigation is a specialist geotechnical and geo-environmental site investigation company, which specialises in the use of Cone Penetration Testing (CPT) techniques and other related pushing technologies.
O6	PPE	Premier Plant Engineering is one of the UK's leading manufacturer's of dynamic and soil sampling machinery for use in site investigation, environmental monitoring and soil sampling. Premier produces one of the most reliable, robust and operator friendly site investigation machines on the market.
O7	MGS & Geothermal Supplies	MGS – Marton Geotechnical Services – is one of the UK's leading manufacturers and suppliers of products for environmental, geotechnical and civil engineering applications. The drilling division, established in 1988, supplies a range of products for use in site investigation, land remediation, water well construction and geothermal drilling. Their specialist drilling range includes products for borehole lining and sealing, filter media, piezometers, sampling equipment, well covers and cathodic protection wells.
O8	Vac-Ex	Based in Doncaster, South Yorkshire, Vac-Ex Ltd are designers and manufacturers of vacuum excavation systems.
O9	Lankelma	Lankelma has become the UK's leading cone penetration testing provider and it's aim is to bring state of the art site investigation into mainstream operation as a standard site investigation package. Lankelma also now operates from offices in the USA and UAE and provides green energy solutions as well as it's extensive marine cone penetration capability.
O10	ADP Group	ADP are widely recognised throughout many different industries as being one of the UK's safest, most efficient and most technically advanced specialist contractors. They utilize only the best equipment, from the worlds best manufacturers, all this equipment is backed up and maintained by their team of dedicated specialist engineers.
O11	Geotechnical Engineering	Geotechnical Engineering Limited provides site investigation solutions to a wide range of clients in the construction and property development industries. They gather data in various ways from sites throughout the UK for geotechnical and geoenvironmental assessment and when requested, they analyse the data and give advice. Geotechnical Engineering prides itself on providing innovative solutions delivered in a professional and competent way and are winners of the GE Innovation Award for their P60 slope climbing rig.
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