

Geotechnical Courses

Soil Description Workshop

27th September 2017

2nd November 2017

Rock Description Workshop

28th September 2017

7th December 2017



Health & Safety Courses

IOSH Safe Supervision (3 Day)

6th - 8th September 2017

IOSH Avoiding Danger (1 Day)

21st July 2017



IOSH Working Safely (1 Day)

18th August 2017

Geotechnical Courses

Geo Foundation Design

21st September 2017

Geotech' Lab Testing Awareness

5th October 2017

In Situ Testing

23rd November 2017



theGeotechnica

August 2017 | Issue 60

Geotechnica

2017

Review of the geotechnical conference

An in-depth review of the content and discussions had at this year's geotechnical extravaganza

BIM for Better Engineering

Keynetix take a look at how geotechnical BIM can help in any situation

CSCS Card Lacks Clarity

The BDA call for clarity on confusion surrounding CSCS card requirements on site

BDA Emerging Best Practice

Linear Infrastructure Projects seminar from the UK's drilling trade association

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2nd November 2017

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The following article is an overview of the content and discussions had at the geotechnical conference portion of Geotechnica 2017 - the UK's largest geotechnical conference and exhibition. The presentation slides from the event can be found on the Geotechnica 2017 website here.

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NEXT COURSE DATES: 6th - 8th September 2017
11th - 13th October 2017

IOSH Avoiding Danger from Underground Services

This one day geotechnically focussed health and safety course follows the requirements and guidance set out within HSG47 and includes the four chapters; identifying and managing the dangers; planning the work; detecting, identifying and marking and safe excavation. Important aspects include the use of real examples from the geotechnical industry and delivery by chartered advisors who are from within the industry.

NEXT COURSE DATES: 18th August 2017
6th October 2017

IOSH Working Safely (on Geotechnical Sites)

This one day geotechnically focussed health and safety course has been developed by industry specialists as a foundation to site safety for all personnel involved in projects in the drilling and geotechnical industry. Its aim is to impart the core safety skills required of those working on geotechnical sites by building on their existing specialist technical skills and making it relevant to their place of work.

NEXT COURSE DATES: 17th August 2017
9th November 2017



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Welcome

Welcome to the 60th Edition of **theGeotechnica** - the UK's fastest growing online geotechnically focussed e-magazine.

In the first entry into this month's magazine, geotechnical data specialists Keynetix examine the importance of Geotechnical BIM and the value for money it can demonstrate, as well as it's ability to improve the client's understanding of any issues that may arise on site.



[Geotechnica 2017 website here.](#)

As with every new edition of the magazine, the Editorial Team here at **theGeotechnica** will be on the lookout for even more new, original and interesting content from all corners of the sector, and would actively encourage all readers to come forward with any appropriate and relevant content - whether it be a small news item or a detailed case study of works recently completed or being undertaken. If this content is media rich and interactive, then all the better. We are looking to increase the already large readership of the magazine through better social media integration and promotion, as well as improving content month on month.

Following changes made to their carding scheme, BDA Members are calling upon CSCS to end confusion regarding non-construction-related staff being granted access to sites. Since the changes came into place, non-construction personnel have been denied access to sites across the country due to not having a relevant CSCS card. Our second article this month focuses on this CSCS card issue.

Finally, for any content that is submitted we will ensure that an advertising space, proportionate to the quality of content provided, is reserved should you wish to place an advert in that single edition of the magazine. We hope you enjoy this month's edition of the magazine and are inspired to contribute your own content for the coming editions of **theGeotechnica**.

The final article in this month's issue is an overview of the content and discussions had at the geotechnical conference portion of Geotechnica 2017 - the UK's largest geotechnical conference and exhibition. The presentation slides from the event can be found on the

**Editorial Team,
theGeotechnica**



HOW GEOTECHNICAL BIM CAN LEAD TO BETTER ENGINEERING

In the first entry into this month's issue of theGeotechnica, geotechnical data specialists [Keynetix](#) examine the importance of Geotechnical BIM and the value it can hold.

Keynetix' article in the [May issue of theGeotechnica](#) focused on the significant time and cost savings that can be realized by investing in geotechnical CAD and BIM.

Our Geotechnical BIM cost calculator shows annual savings for geotechnical specialists can reach tens of thousands of dollars.

However, these are relatively

"... these are relatively small when compared with the potential overall project savings..."

small when compared with the potential overall project savings, should a ground-

related problem be identified during the investigation phase. Early identification can avoid costly changes to design that can arise when having to deal with problems uncovered during construction.

While the wider benefits of using geotechnical CAD and BIM can be difficult to quantify, they are certainly significant:

- Desk studies and site investigations are more focused
- Engineers can react faster to potential issues on site
- A more complete picture of the ground can be built
- Understanding of ground behavior is improved, leading to better design
- Communications within the design team, as well as with the client and other stakeholders are improved.

Deliver value for money through focused site investigation

Site investigations are fundamentally about identifying anomalies in the ground that, if left unidentified, could add considerable cost to a project.

Geotechnical BIM can be a boon during the desk study, as it presents an easy way to compile and visualize data from a variety of sources – historic boreholes, site investigation reports, geological survey maps and so on – enabling a better understanding of what is

going on, even before a spade (or borehole tool) is put in the ground.

It is important that the desk study is carried out in the context of the project, so incorporating designs and plans (from the overall project BIM, for example) at the desk study stage can ensure that the site investigation is designed with the project clearly in mind.

"This means a site investigation is building on (and enhancing) prior knowledge, rather than starting from scratch..."

This means a site investigation is building on (and enhancing) prior knowledge, rather than starting from scratch – it allows sampling, monitoring and testing to be optimized from the outset, offering better value for money in the long run.

React faster on site to investigate potential issues

Nothing beats having a geotechnical engineer on site who can respond to what comes out of the ground during the investigation. Geotechnical BIM can play an important role in helping the engineer, as it enables results to be quickly visualized in context (if, for example, an area of weak, waterlogged ground coincides with a heavy load from a proposed structure), often



within 24 hours, if not sooner.

This makes it easier to refine investigations as they proceed. An extra borehole can be sunk, more samples can be taken and instrumentation can be installed, for example, at relatively low cost. If data is only analyzed once fieldwork is over, it can be too late, and too expensive, to investigate further.

Get the complete picture

Geotechnics is like peering at a famous painting through pinholes; each one giving only limited detail. It is how these details are pieced together that counts when building a complete picture of the ground.

Geotechnical BIM offers two benefits in this regard. First, the ability to compile large amounts of data from different sources creates a more comprehensive 3D picture of the ground and second, the ease of drawing cross-sections

(in seconds, not hours) allows the model to be viewed from a number of different angles. As a result, geotechnical engineers can gain a better understanding of the ground conditions and are more likely to spot any potential issues.

Alongside increasing the opportunity for identifying anomalies, estimates of material volumes and of contamination, can also be improved.

"On a recent residential project we could predict material volumes and optimize the final landform design to balance the earthworks, so there was no need to import material or dispose it off-site. For instance, we ensured there was enough top soil for gardens and soft landscaping, which would have been very expensive to import."

Chris Smith, Technical Director, Wardell Armstrong

Communicate with the wider team to improve design and construction

The ability to visualize and share complex geotechnical problems within the design and construction teams can add value to the geotechnical data. A 3D model can bring the geotechnical report to life, enabling non-geotechnical professionals to relate to, and fully understand, how problems in the ground could affect the project and start to develop and optimize solutions to deal with them.

Improve the client's understanding of the issues

It is important for clients (and other stakeholders) to understand the significance of any geotechnical problems. It is questionable whether the geotechnical report is the best way of highlighting these.

Geotechnical BIM's ability to rapidly produce visuals



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improves the client's awareness and understanding and should also increase the significance and bearing assigned to the geotechnical aspects of the project.

"Being able to use rendered images and fly-throughs of models was a real bonus, as the client could visualize the design and could have far more input in the process."

"We held workshops using video conferencing, making real-time changes to the model to explore different options. For example, we could change road alignments and see how this would affect the landform design and construction costs."

Chris Smith, Technical Director,
Wardell Armstrong

"... a fully integrated, multidisciplinary BIM, including a ground model, can deliver significant value to both geotechnical engineers and the wider design team."

Geotechnical BIM: delivering better engineering

Clearly, a fully integrated, multidisciplinary BIM, including a ground model, can deliver significant value to both geotechnical engineers and the

wider design team.

Geotechnical BIM's ability to rapidly deliver 3D visualizations of the ground, from a variety of angles, offers the ability to reduce project risk and costs during construction. Site investigations are more focused and offer better value for money, the understanding of what is going on in the ground is improved and communication of complex problems to non-geotechnical professionals is far easier.

Ultimately, it is an important aid for geotechnical professionals' and should increase the value of geotechnical engineering among the project team and in the eyes of the client. ■



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CALLING FOR CLARITY: CSCS CARD CONFUSION

Following changes made to their carding scheme, [BDA Members](#) are calling upon CSCS to end confusion regarding non-construction-related staff being granted access to sites. Since the changes came into place, non-construction personnel have been denied access to sites across the country due to not having a relevant CSCS card.

Following changes to the Construction Skills Certification Scheme (CSCS) Carding System that ‘...card schemes carrying the CSCS logo must only certify those occupations with nationally recognised construction-related qualifications,’ British Drilling Association (BDA) members are reporting issues relating to

non-construction-related staff being wrongly refused entry to some sites that operate a 100% CSCS workforce.

The wide range of services required on many construction projects means there are times when individuals may need to attend a site to perform a non-construction activity, such as catering, drivers delivering

materials, managerial or security etc. These are not construction workers and the CSCS has therefore stopped issuing cards for over 60 non-construction related

“This change to the scheme however is leading in some instances to people being wrongly refused access.”

occupations. This change to the scheme however is leading in some instances to people being wrongly refused access.

Speaking about the issues Anne Baxter, Chair of the BDA’s said: “The BDA’s members are not questioning the important role the ▶

Emerging Best Practice in Ground Investigation for Linear Infrastructure Projects

Tuesday 12th September 2017

Park Plaza Hotel, Victoria, London

Wed 7th February 2018

(The National Motorcycle Museum, Solihull, West Midlands B92 0EJ)

Wed 25th April 2018

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The BDA is a not for profit organisation, committed to improving standards in health & safety, quality of workmanship and technical standards for the benefit of the Drilling Industry and its Clients

www.britishdrillingassociation.co.uk

“... there appears to be a basic misconception that personnel arriving on site to perform non-construction-related services should be in possession of a CSCS card.”

Construction Skills Certification Scheme performs in improving safety and standards on-site. However there appears to be a basic misconception that personnel arriving on site to perform non-construction-related services should be in

possession of a CSCS card. This clearly demonstrates a misunderstanding of the scheme and undermines the construction industry's desire for a fully qualified (not carded) workforce.

Anne added: “We have reports from members of problems with Principal Contractors (PC) applying a strict 100% CSCS Card policy irrespective of the activity being undertaken. Many site investigation companies undertake on-site soils testing. Laboratory Technicians who attend such sites do not undertake any construction work and yet they are having to obtain CSCS Cards not appropriate to their disciplines simply to gain access.”

“The BDA is calling on CSCS to issue more guidance, aimed in particular at PCs [Principal Contractors]...”

The BDA is calling on CSCS to issue more guidance, aimed in particular at PCs, and put an end to the thinking that only CSCS-carded people can be allowed on-site. ■

For more information about the BDA contact the BDA by email (office@britishdrillingassociation.co.uk) or visit the BDA website <http://www.britishdrillingassociation.co.uk>.

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Image courtesy of FlyThru via @Geoterra_Mark on Twitter

GEOTECHNICA 2017 CONFERENCE REVIEW: 2020 VISION FOR THE GEOTECHNICAL INDUSTRY

The following article is an overview of the content and discussions had at the geotechnical conference portion of Geotechnica 2017 - the UK's largest geotechnical conference and exhibition. The presentation slides from the event can be found on the Geotechnica 2017 website [here](#).

This year there was a real buzz around Geotechnica, and there were high expectations for another set of interesting, high quality sessions at the geotechnical conference. Visitors were not let down and the opportunity for debate

and discussion during each session was taken up ably by those in attendance. This year's sessions took on a slightly different format to the previous eight Geotechnica conferences, in that the AGS and BDA had seen the event as an opportunity to engage with the wider geotechnical community after completion of their joint survey. Copies of the presentations are available on the Geotechnica 2017 website.

Session 1: AGS/BDA Task Force - Spotlight on the Industry

Neil Parry, AGS Chair, and Martyn Brocklesby, BDA Vice Chair, provided an overview of the purpose of the recent industry survey; its aims, the results; and the Association's desires to engage industry



Image courtesy of @ags_geotech on Twitter

“They explained that the survey had produced some very interesting responses but there was a need to develop direct discussion...”

and discuss the results. They explained that the survey had produced some very interesting responses but there was a need to develop direct discussion and only then could the industry consider further initiatives.

The session concentrated on the four key areas identified within the survey as future challenges for the industry. These are outlined below and the joint Chairs threw them out to the audience for feedback and comment.

1. Availability of suitably

qualified people

2. Raising the understanding of those involved in the procurement process

3. Improving the image of the industry and attracting young recruits

4. Encouraging innovation

In general, the audience had mixed views on all of these subjects which was not unlike the results of the survey. It was clear that some organisations represented within the audience have a very proactive approach to some of the subjects discussed, such as local engagement with schools and colleges. There were audience participants who believed that the industry was in very good shape and others who believed that it needed a shake-up. Some organisations were having no difficulties recruiting whilst others were and these were both from the technical and

operative side. There were a number of comments relating to how new recruits might view our industry in comparison to joining another industry which linked with discussion point 3 about improving the image of the geotechnical sector.

“It was recognised that new rigs were being purchased and the industry was playing a key role in all of the major construction and infrastructure projects.”

The press articles were discussed and parts of the audience were disappointed that a negative viewpoint had been aired and the industry should concentrate on the good things which were happening in the industry. It was recognised that new



Image courtesy of @Geoterra_Mark on Twitter

rigs were being purchased and the industry was playing a key role in all of the major construction and infrastructure projects.

With respect to innovation, the cost to innovate was discussed and there was a belief that this would always be driven by the Contractor but not necessarily supported by the Clients. Without this support, which does not have to be through sponsorship of the research project, most Contractors would be reluctant to make such huge investments.

Session 2: Standards and standards – UK Implementation and Compliance

Professor David Norbury, Member of B/526/3, Convenor of ISO TC 182 WG1, UK expert on ISO TC 182 and CEN TC 341 and CEN TC 396 WG2, introduced the session and provided an insight into the current revisions underway within the CEN and ISO Standards. Currently there are some major revisions

“Professor Norbury explained about how CEN was a separate and independent body to the European Union and therefore any impact from Brexit was unlikely to affect the current Standards...”

underway including revision of EC7 Parts 1 and 2 resulting in new publications due in 2020. Professor Norbury explained about how CEN was a separate and independent body to the European Union and therefore any impact from Brexit was unlikely to affect the current Standards or review process for new or revised Standards. He explained that the UK industry was poor with respect to compliance and that careful planning should

not necessarily lead to huge cost differences. This was not necessarily agreed within the audience. He challenged the audience to participate in the review process and emphasized that this was the industry’s opportunity to ensure that they were not saddled with Standards which they believed they could not work to. He also explained that if Company’s chose to not work to the Standards that they should have a robust documentation to explain why they had not as this would be required by the Courts should something untoward happen.

Matthew Baldwin, UK lead delegate for ISO-TC182-WG4, Member of B/526/3 and Convenor of TG1 within WG2 on rewrite of Eurocode 7 Part 2, followed on from David’s talk and suggested that the UK had always cherry picked parts from the Standards which it wanted to comply with. He explained that the Standards are not Eurocodes / European standards, but UK standards and the clue is in their titles

“Matthew made a compelling argument as to why standards and Standards were important and, if everybody wanted a ‘level playing field’, essential.”

e.g. BS EN ISO 22475. Matthew made a compelling argument as to why standards and Standards were important and, if everybody wanted a ‘level playing field’, essential. Matthew explained that the BDA/AGS survey had indicated that nearly 40% of respondents were not fully familiar with the new Standards and suggested that this was a major concern.

As Lead UK Expert for the revision of BS EN ISO 22475 Matthew then led his talk into the revision and explained why this was a prime example of why the UK should be active in the Standards process. He

discussed how the current version was confusing for the UK as some of the techniques and practices were unfamiliar whilst others purporting to be UK practice were poorly described or documented. The link between Categories and Classes is not as clear as it could be and the tables which attempt to clarify their definitions are inconsistent and misleading. This has led to Class 1 samples being required or Category A samplers being specified in materials where the ground conditions are difficult and unlikely to achieve the class required. He also believes that there is a lack of appreciation of how the sampler(s) and material types relate to laboratory tests, material parameters and the structure(s) for which the GI has been commissioned. The review of BS EN ISO 22475 has had one meeting so far and a further meeting is scheduled in October. Matthew and Julian Lovell, the other UK expert on WG4, will provide further comment within theGeotechnica as this

proceeds.

Session 3: Occupational Health and Safety

This session was started by John Underwood of the Health and Safety Executive. John explained how the legal process worked and what would be expected from the geotechnical industry. He explained about what would be deemed ‘reasonably practicable’ and that companies would be investigated to determine if they followed their documented procedures if an incident occurred. He also advised that compliance/ adherence to HSE guidance and industry guidance and Standards would also be investigated. He provided a summary of the most common hazards in construction and their link to geotechnical work.

He then went on to describe areas where the geotechnical industry needed to be more vigilant because of the nature of the works undertaken and the sites it works on and these included access, work

Hazard	Deaths/Year
Asbestos – fatal lung damage	~2000
Silica dust – fatal lung damage	~500
Diesel fume – fatal lung damage	~300
Falls from height	~20
Falling materials / equipment	~10
Plant & Vehicles – run over or crushed	~10
Excavation collapse	~2

“He then went on to describe areas where the geotechnical industry needed to be more vigilant...”

on gradients, services, voids, contamination, ordnance, geological gas under pressure – flammable / toxic / asphyxiant and artesian gas and water.

John’s talk was followed by two short presentation by Jon Christie, Chair of the BDA Safety Working Group and Adam Latimer, Chair of the AGS Safety Working Group. Jon’s talk was centred around a summary of findings from an independent analysis of the latest cable percussion rigs and current drilling practices. It provided a number of areas where the findings suggested that the current specifications and configurations of the rigs were incorrect and could mislead users and went on to suggest that some common practices may lead to failure of ancillary equipment or the rig itself. Other conclusions included that current rope and lifting accessories are likely to be under rated due

to increased loading whilst snatching or using snatch blocks as these loads are not clear within the current specifications. Jon explained that the BDA were working with the rig manufacturers to resolve these issues.

Adam gave a talk which summarised a number of issues which have been arising during AGS Safety Meetings and centred around safe trial pitting. Adam explained that the AGS had provided guidance, however, due to these other issues it was time for a review but this required input from the geotechnical community. Adam explained that trial pitting is seen as a cheap method of investigation, however, questioned whether other methods might be more appropriate. He explained that practitioners should now consider how they control the risk from asbestos in soil, contamination, falls from height, collapse, services, UXO, confined space and manual handling. He questioned if a trial pitting exercise, taking into account all of these hazards, would still be as cost effective as it is now. In general, the audience believed that trial pitting still has a benefit over other investigation methods

but currently there is not a consistent approach to what is expected with respect to risk control and therefore additional guidance would be welcomed.

Session 4 Improvements and Future Advancements

The last session at Geotechnica 2017 was delivered by David Jones, Chief Engineer, United Utilities, Geotechnical Engineering, Reservoirs and E&S and John Bussey – Qualifications Development Manager, MP Awards.

David presented an overview of the recent embargo which United Utilities imposed on their ground investigation contractors after two significant incidents. David explained that as a result of the two incidents and in particular the incident which resulted in a thumb amputation, the UU team brought together over 70 participants to identify the causes, create solutions and also to investigate alternative investigation methods. David explained that UU were very pleased with the contributions made during the initial meetings and subsequent working group meetings. A solution comprising a retro-fitted restraining bar was provided which the manufacturer adopted and this has become a requirement on cable percussion rigs for all UU projects. David raised a concern that although a solution had been found and adopted by the manufacturer that not all operators adopted

“David’s team would prefer to see consistency across the industry when modifications have been agreed.”

the manufacturers design. David’s team would prefer to see consistency across the industry when modifications have been agreed. David and the UU team were satisfied by the response of the industry and the manufacturer to allow the embargo to recently be lifted but recognised that more work was still required.

John Bussey provided a very comprehensive talk discussing

the BDA requirement to improve the Land Drilling NVQs. He explained that MP Futures had carried out a review of the National Occupational Standards (NOS) which then required a full review of the NVQ. He advised that MP Futures and MP Awards were part of MPQC which is the sector skills council for mining and extractives. As such they are very familiar and comfortable with specialist services and welcomed Land Drilling. John explained that MP Awards, the Awarding Body, for the sector had been approached by BDA to develop a new Land Drilling NVQ based on the new NOSs. MP Awards was ideal for this type of NVQ as they were not interested in large

numbers or the commercial aspect but the quality of the NVQs. John explained how they had assembled an industry working party comprising trade associations, assessors and companies from the extractives, directional drilling and land drilling sectors. He told the audience that only when he had started the process had he better understood how complicated the Land Drilling NVQ actually is, but they have listened to the working party and believe this has created a more robust and fit for purpose qualification and hoped it would be taken up by more NVQ centres. ■

Full presentations can be found online: www.geotechnica.co.uk



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This one day geotechnical training course is delivered by the UK's leading Soil and Rock Description expert, Professor David Norbury, and will bring delegates up to speed on the changes within the Standards and provide a detailed approach to soil description practices and techniques. The British Standards (Codes) under which investigations in the UK have been carried out continue to incorporate and mirror the European Standards. UK practice has changed to meet these new requirements and practitioners will learn about them and how to follow compliant soil logging techniques within this course.

Rock Description Workshop - £275 + VAT per person

From 2007 new European Standards have started replacing the British Standards (Codes) under which investigations in the UK have been carried out. UK working practice will have to change to meet these new requirements but few practitioners are aware of the changes or the timetable. The workshop will comprise a series of lectures on the changes, and lectures on rock description followed by practical sessions describing rock and compiling mechanical logs of rock core.

In Situ Testing - £225 + VAT per person

The course will cover both the theory and the practice of various In Situ Testing techniques used on typical geotechnical projects. In addition the courses will consider the effect that Eurocodes will have on the UK's current practice. This course provides an overview of in situ tests used in common practice and some of the more specialist tests together with their advantages and limitations.

Geotechnical Foundation Design - £225 + VAT per person

This one day course will provide a general overview of foundation design. It will include an assessment of the use and choice of shallow foundations and piles. It will cover the derivation of bearing capacity formula and their use. Exercises will be carried out to calculate the working loads and settlement of simple foundations. The methods used to calculate these will be in accordance with those described in Eurocode.

IOSH Working Safely (on Geotechnical Sites) - £175 + VAT per person

This one day course is developed by industry specialists within RPA Safety Services and Equipe Training as a foundation to site safety. Its aim is to impart the core safety skills required of those working on geotechnical sites by building on their existing specialist technical skills. After attending the course, candidates should be able to identify hazards on site, understand basic safety legislation, participate fully and confidently in site safety consultation and manage priority risks to a sufficient standard.

IOSH Avoiding Danger from Underground Services - £150 + VAT per person

Partnering with RPA Safety Services once again, Equipe provide another IOSH certified health and safety course. This one day course is aimed at anybody involved in specifying, instructing, managing, supervising or actually breaking ground and really addresses the problems and risks related to underground services, which may be encountered during both planning and execution of geotechnical projects.

IOSH Safe Supervision of Geotechnical Sites - £450 + VAT per person

Equipe has partnered with RPA Safety Services, an independent occupational health and safety specialist, to provide a unique IOSH certified course for the Drilling and Geotechnics industry. This three day course is certified by IOSH, is specifically focussed on the geotechnical industry and provides a totally unique and relevant Health and Safety course for managers and supervisors.



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