

<b>Course Title</b>	G19/307: Theory and Practice of Lime and Cement Stabilisation
<b>Duration</b>	1 day
<b>Delivery Mode</b>	Day course
<b>Cost</b>	£250 + VAT per delegate
<b>Delegate Nos.</b>	5 to 15
<b>Intended Audience</b>	Geotechnical engineers, engineering geologists and other engineers with experience of earthworks wanting to expand their understanding and skills to include soil stabilisation with lime and cement.
<b>Objectives</b>	<p>At the end of this course delegates should have:</p> <ul style="list-style-type: none"> <li>• Understood the theoretical basis of how binders affect soil properties and explored a range of applications for treated soil.</li> <li>• Examined how to prepare a mix design programme and considered good site practices, with reference to HA74/07 and BS EN 16907-4:2018.</li> <li>• Examined key aspects of how soil treatment is included within a wider earthworks specification, including requirements for monitoring, control and reporting.</li> </ul>
<b>Course Description</b>	<p>The treatment of soil with binders such as lime and cement during earthworks can be effective at achieving project strength, stiffness and settlement requirements using materials that would otherwise be unsuitable. This has led to the increasing use of soil stabilisation.</p> <p>Often soil treatments are considered to be ‘specialist design’, with stabilisation contractors establishing binder combinations to meet performance criteria. This can lead to an imbalance of understanding of this ‘black art’ between specialists and overall scheme designers, leading to uncertainties such as “is all that cement really necessary” and “could our project fail like the M40?”.</p> <p>The reality is that soil stabilisation is not a ‘black art’ and experienced practitioners should be working through a well-structured approach to designing, executing and validating the treatment. This should align closely with industry guidance (e.g. HA74/07) and the recently published BS EN 16907-4:2018. This course is aimed at providing practitioners involved in earthworks featuring soil stabilisation with an overall perspective and understanding of some of the design, specification and construction issues.</p> <p>This one-day course will begin by establishing how binders react with soils to change the engineering properties of soils. Delegates will then work through the mix design process to understand how decisions on binder combinations / contents are made to meet the needs of different engineering applications before siteworks commence. This will lead into a practical review of how the treatment is executed on site with consideration of case studies to show how a well-managed treatment leads to successful outcomes. Consideration of failures will be used to signpost the potential pitfalls (e.g. sulphate swell) to watch out for and how risks can be controlled. Throughout the course the requirements of industry specifications and British Standards (e.g. HA74/07 and BS EN 16907-4:2018) will be applied in discussions.</p>

<b>Course Tutor</b>	The tutor will be Dr Paul Beetham CEng MICE. Paul has extensive experience of soil stabilisation working both for specialist contractors and as a consultant. Paul has a professional doctorate in soil stabilisation and is an ICE appointed Panel Expert advising HS2 on soil stabilisation.
<b>Indicative Content</b>	The indicative content comprises the following: <ul style="list-style-type: none"><li>• How binders react with soil</li><li>• Overview of how treatments apply to different applications</li><li>• How 'mix design' processes determine binders type / dosage</li><li>• Content and requirements of HA74/07 and BS EN 16907-4:2018</li><li>• Siteworks execution and workmanship considerations</li><li>• Case study reviews of successful / failure examples</li><li>• Consideration of specification, testing, and verification aspects of limes and cement stabilisation</li></ul>