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Book reviews

THE ESSENTIAL GUIDE TO STABILISATION/SOLIDIFICATION FOR THE REMEDIATION OF BROWNFIELD LAND USING CEMENT AND LIME
British Cement Association/British Lime Association. British Cement Association, 2004. ISBN 0 7210 1603 0, £24·75, 63 pp.

This document, the title of which states precisely what it is about, is clearly laid out and leads the reader gently through the topic. Notably it provides flow charts to aid in the development of understanding. It is probably as complete as it can be, or should be, under the headings adopted for a document of this type, and yet there is much detail that has not been included as a result. Anyone coming to this topic for the first time will therefore find the guide of great value, but will need to read more widely for information on specific applications. What this document does is provide helpful references to relevant standards and official reports, but an obvious omission is a lack of references to the relevant research work from which the standards have been developed. An interested reader would therefore be left with a significant task in hunting down the important journal and conference papers to provide the essential further information to develop the ideas in this introduction to the topic.

There is a sensible section on risk assessment using the source–pathway–receptor model for pollution linkages on site, with specific emphasis on the water environment. It deals with site characterisation, together with development and validation of the conceptual model for the site in question. The effectiveness table is particularly valuable. The section on design properly emphasises the need for laboratory testing, bench-scale modelling and field trials, and the fact that a trial-and-error should be expected.

The complexity of the sampling process is well described and necessary precautions are discussed. Importantly, it is noted that characterisation must be linked to the conceptual model for the site. A table is provided to assist in characterisation work, but this is weak in geotechnical terms (see below). Here, and elsewhere, the need for communication between all parties, so that expectations are agreed and can be managed, is repeatedly emphasised. Leaching tests are (rightly) dealt with in some detail and many caveats are added, again supported by a helpful table. Mix design is generally dealt with satisfactorily, yet after a good introductory section it is stated that 'strength. . . may be correlated with the ability of the material to immobilise contaminants', which is a bold, if not outright dangerous, statement to make. Even if it is possible to see why the statement has been made, such an assumed link between physical and chemical properties is not appropriate for the uninitiated, who presumably constitute the intended readership. There is a good section on binders and what can be treated, and why. The complexity of applying this process shines through again in this section. Mixing methods are dealt with well.

The guide leads the reader well through the implementation process, which is far from straightforward to grasp, and this section is therefore especially useful. The section on site processing equipment and methods is far more satisfactory than the earlier material in the sense that the text is far more certain and positive about the techniques. The remediation workplan provides a useful checklist that will be a valuable aid to the user and, combined with the section on remediation completion, will engender some confidence in the processes (which might have proved lacking after being introduced to all of the areas of uncertainty due to the complexity of the treatments being undertaken and the site-specific nature of the designs). In effect, it rewards the reader, for having worked through the heavily technical sections of the guide, with a clarity that derives from, both practicality and a sense of order and method.

And so to the negative criticisms of the document. The guide appears to be very firmly targeted at the UK community. The lack of reference to the key research papers, no doubt justified because of the potential enormity of the task and the need for selection, nevertheless remains an important weakness. An extension of this omission is the lack of references to detailed UK case histories, information that engineers, as professionals who necessarily base their judgements on experience, either directly or vicariously garnered, would find essential before embarking on the use of such a technique. As such, it is a 'dry' technical document that has not been 'brought to life' by examples of the application of stabilisation or solidification.

It is most obviously weak in terms of geotechnical engineering. It has evidently not been written by geotechnical engineers and yet application of geotechnical engineering expertise will be vital when introducing the technology to practice. Perhaps this is such a glaring omission because the reviewer is a geotechnical engineer, but in turn perhaps this is fortunate. The document falls back on index tests and this could prove seriously damaging to future short- and long-term performance, while other tests could prove unnecessary. For example, the use of the California Bearing Ratio (CBR) is advocated, and yet the industry has moved towards the use of the measurement of resilient elastic modulus if one is truly to measure performance; a similar adoption of the unconfined

compression (or UCS) test in place of the triaxial test could also lead to unsatisfactory designs. In mitigation, it notes that specialist advice should be sought as necessary, but this is not strong enough in my view. Indeed there are many cases throughout the document where the reader is told to refer to expert advice and after a while one begins to wonder how far one can get by reading this document. The authors *are* correct to refer the reader accordingly but, even though it is a complex process that is being introduced, one hopes that a reader would not be put off it by being repeatedly told it is so complex. The impression that is given is that one needs to be a geochemist exposed to the latest geotechnical thinking, and possibly geotechnical practice, to apply this technology efficiently.

All in all it is a valuable reference document for those who need to engage in stabilisation/solidification works as well as providing a helpful introduction to those coming to the topic for the first time. Its strength of conciseness is also a weakness in that examples (via case histories, which could have been usefully appended to the guide if there was a worry that the essential messages would have been diluted) are missing. Once the document has been read, the next question will inevitably be 'where can I find properly documented case histories to provide me with additional confidence to take this technology into the field', and it is unfortunate that this question is not answered.

C. D. F. Rogers

ENERGY AND ENVIRONMENTAL ISSUES FOR THE PRACTISING ARCHITECT

Ward I. C. Thomas Telford, 2004. ISBN 0 7277 3216 1, £29.95, 176 pp.

I think almost everyone involved in construction now recognises that the environmental impacts, and particularly the energy consumption, of buildings are important issues on which good design has a significant influence. The public recognition of environmental issues, particularly those of climate change, and increasing demand at all levels for higher standards of environmental performance therefore make this book, and its focus on encouraging and helping designers to think about and address these issues right at the initial design stage, both timely and important.

The book is comprehensive in its coverage, starting with a general introduction that nicely sets the scene, as well as introducing the issues covered in more detail in later sections. Section 1 then commences with the basics of why we need to conserve energy—and getting started, moving on to basic information about energy use in buildings (section 2). This section not only considers the fabric and services for a wide range of building types and refurbishment, but starts with the need to address comfort—that is it starts by addressing the needs of the occupants—essential if a building is to be sustainable, not just good in purely energy performance and environmental terms. Section 3 looks at 'Aids at design stage to help produce an energy efficient building', starting with the brief and covering site analysis, fabric design and the use of thermal mass, as well as provision of services and effective use of space for these. Section 4 looks more widely at the environmental issues other than energy, the site, water issues, materials and the indoor environment, although it is perhaps a criticism that these are not covered as comprehensively as that of energy, which is quite clearly the principal focus of the book. The final section then provides a series of case examples illustrating how the 'theory' has been put into practice.

Throughout the book is easy to read and well illustrated. For the inexperienced it can be read from cover to cover as an introduction to the subject, for the more experienced it can be dipped into for guidance on specific topics.

If I have one significant criticism it is that the book, although comprehensively covering ventilation, does not seem to consider in any way the importance of airtightness supported by a controlled ventilation strategy—a factor considered by many as essential to good energy performance—and an area in which, evidence suggests, buildings in the UK continue to under-perform. Perhaps this can be a topic for future editions, which I am sure there will be scope for as both technology and practice move on.

D. Crowhurst