

Book review

Soil and Rock Description in Engineering Practice

David Norbury. Whittles Publishing, Dunbeath, UK, 2010, ISBN 978-1904445-65-4, £80.00, 288 pp.

This new book provides sage practical advice on soil and rock description (SARD) that stems from notes developed for an internal training course run many times since the mid-1980s at Soil Mechanics Ltd. The stated aim of the book is to 'provide practical guidance for those having to go out in the field to undertake engineering geological logging of the soil and rock samples and the exposures that are available'. The book is intended not only for the novice, but also for seniors, mentors and the responsible expert signing off the logs and reports.

There are 17 chapters in all, covering a wide variety of topics, as follows: introduction; history of description and codification; systematic description; description of materials; relative density and strength; structure, fabric and texture; colour; secondary and tertiary fractions; geological formation; weathering; discontinuity logging; fracture state recording; low-density soils; made ground; classification schemes; the description process – boreholes; description process – field exposures.

For seasoned practitioners the chapter on the history of description and codification is particularly useful and informative. It identifies the subtle and not-so-subtle differences and inconsistencies in the various codes that have emerged from the *Code of Practice on Site Investigation*, BS CP 2001 (BSI, 1957), the Engineering Group of the Geological Society Working Party reports, International Society for Rock Mechanics (ISRM) suggested methods (ISRM, 1978, 1981) and BS 5930 (BSI, 1999). Norbury then addresses the current state of the practice with discussion of the recent international standards EN ISO 14688 (BSI, 2002) and EN ISO 14689 (BSI, 2003) published between 2002 and 2005, which are normative procedures in EN 1997-2 (CEN, 2007). The amendments to BS 5930 in 2007 and 2010 are also mentioned. Attention is drawn to the multiple usage of defined terms such as clay and silt, loose and dense, compactness of silt, and differences in rock strength terminology and rock weathering.

A couple of chapters are particularly worthy of note in this review in that they provide material that is not easily accessed elsewhere. These cover the description of made ground, and the description of low-density soils, including organic soils such as peat, volcanic soils and loess. In the made ground section, treatment is given to odours, pavement material types, description of brickwork and the logging of cores of manufactured materials.

In comparison to much of the material in the book which is of a factual or codified nature, the last two chapters provide insight into the description process for logging boreholes and field exposures. These chapters are packed full of experience including notes on the use of appropriate tools and equipment, and tips on core photography. Opinions are provided on the importance of supervision of junior loggers by senior experienced staff in a process that Norbury terms 'check logging' so that the 'logger's thumb or hammer swing is suitably and correctly calibrated against the descriptive terms applied, that there is consistency in approach between various loggers and that the log fits the geological model'.

There are 115 tables throughout the book that serve as accessible aide-memoire. In addition, colour-shaded boxes are used throughout to isolate and highlight sample descriptions, tips and background text on certain topics. The sample descriptions are particularly helpful in that they underscore the principles and protocols described in the body of the text. An

appendix provides several useful field record sheets and proforma for sample descriptions, trial pit and core logs, a scanline log and a tunnel face log.

The production quality is good, with a heavyweight paper and a hardcover binding that feels suitably robust for a reference book that will be thumbed on a regular basis. Care has been taken by the author to frame crisp, close-up colour photographs to illustrate features in various hand specimens, and to demonstrate the simple tactile tests for dilatancy, toughness and plasticity. Other colour photographs are used to show various soil and rock fabrics found in trial pit excavations, borehole cores and in field exposures. The few line drawings in the book are clear and informative.

Overall, *Soil and Rock Description in Engineering Practice* is a beautifully illustrated and well-written reminder that our profession relies for much of its source data on the careful and systematic application of a craft. It ought to be in the library of every practitioner and should be compulsory reading for new graduates prior to their first field assignment.

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