Construction Materials
Volume 169 Issue CM6
Editorial
Soutsos

ice | proceedings

Proceedings of the Institution of Civil Engineers
Construction Materials 169 December 2016 Issue CM6
Pages 275–276 http://dx.doi.org/10.1680/jcoma.2016.169.6.275

ice Institution of Civil Engineers
publishing

Editorial

Marios Soutsos BSc (Eng) Hons, PhD, MICT
Professor of Structures/Materials, Queen's University Belfast, Northern Ireland

It is with great pleasure that I write my third editorial as a member of the Editorial Advisory Panel of *Construction Materials*. My main area of expertise is concrete technology but I do recognise that although concrete is a ubiquitous material, it is not the only construction material. It is good to see – in addition to concrete – papers on timber, bituminous materials and geotechnics featuring in one edition of *Construction Materials*.

Concrete construction is expected to be durable and it has proven to be so. Nonetheless, there are instances where the concrete quality, or what the constituent materials were, need to be determined. We would like to believe that concrete is solid, as it is what the name implies, although this may not be absolutely true. However, hardened concrete cannot be easily separated into its constituent parts. Hardened concrete analysis techniques evolved considerably in the last few decades and they are commonly used to shed some information on concrete and the constituent materials that have been used to make it. It is said that concrete technology is not a science but an art. Experience in the use of hardened concrete analysis techniques is therefore essential, not only in properly following the procedures, but also in the interpretation of the results. Concrete has become more complicated in that neat Portland cement is not the norm. Additions such as limestone, fly ash, ground granulated blast-furnace slag and even silica fume are more commonly used. It is therefore very timely that such a discussion appears in a journal with differing views as to whether such methods that admittedly have been in use for decades are still capable of providing accurate results (Crofts *et al*., 2016).

It is interesting to note that the above discussion is first preceded by a briefing paper that, although on timber and not on concrete, raises the same questions as with the hardened concrete analysis techniques; i.e. that widely used design calculation methods need to be re-evaluated (O'Dowd *et al*., 2016). The need arises from timber structures being pushed to ever greater heights, which is thanks to advances in engineered timbers and confidence in specialised designer skills. The briefing examines three structural design calculation methods; the mechanically jointed beam theory or gamma method, the composite method or K-method, and the shear analogy method. The authors note that there is a lack of readily available test data linking recorded component stiffness to experimentally determined composite stiffness. They show that one of the three methods, the gamma method, will provide conservative results whether characteristic properties or true recorded component stiffness values are used.

The second briefing paper is about innovations and practical applications of concrete (Mangabhai *et al*., 2016). It describes the 43rd Convention of the Institute of Concrete Technology, which showcased the variety and diversity of current innovations, developments and applications in concrete and cement technology. These included carbon-negative aggregate, polycarboxylate ether superplasticisers, waste wood in concrete, steel fibres, calcium aluminate cements, super-absorbent polymers and sprayed concrete tunnel linings. Nearly 100 delegates attended, including academics, cement producers, admixture producers, consultants, contractors, students and researchers.

The topic of the next paper is about fly ash but not regarding its direct use in concrete; it is first used as a colour adsorbent to treat textile-processed effluent and then used for the concrete in reinforced-concrete beams (Jegadesh *et al*., 2016). Addition of synthetics fibres resulted in improved energy absorption and ductility for the reinforced-concrete beams, making them suitable for use in high-seismic zone areas.

Field performance of cold- and hot-applied joint sealants for asphalt pavements is examined next by Badr and von-Heuser-Mason (2016). There are differing views as to which one of the two sealants provides the more durable joint. A survey of roads constructed using both types of sealants showed that both can provide durable longitudinal joints on roads with low-to-medium traffic volume.

The last paper investigates the ageing behaviour of synthetic polymers, such as polyacrylamide-based polymers, as excavation fluids (Lam and Jefferis, 2016). These are increasingly being used as a replacement for the more conventional bentonite slurries in the construction of bored piles and diaphragm walls. The reduction in viscosity over time after mixing has raised concerns. However, this study concluded that the reduction in viscosity ceased at about 60 days with a significant proportion of initial viscosity being retained. This increases confidence in the use of these synthetic polymers over extended times that are normal on construction sites.

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