Malaysia National Annex to Eurocode EC7

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THE current British Standards for geotechnical design will be progressively withdrawn, starting with BS8002 and BS8004, in March 2010. These British Standards will be replaced by the "Eurocode EC7", more specifically BS EN 1997 (2007). Once withdrawn, there will not be further maintenance of the British Standards. The Malaysian geotechnical practice has traditionally referred to the British Standards in design and construction. Even existing Malaysian Standards have borrowed extensively from the same source. Hence, Malaysian engineers are faced with the issue of what codes of practice will be referred to after withdrawal of the British Standards?

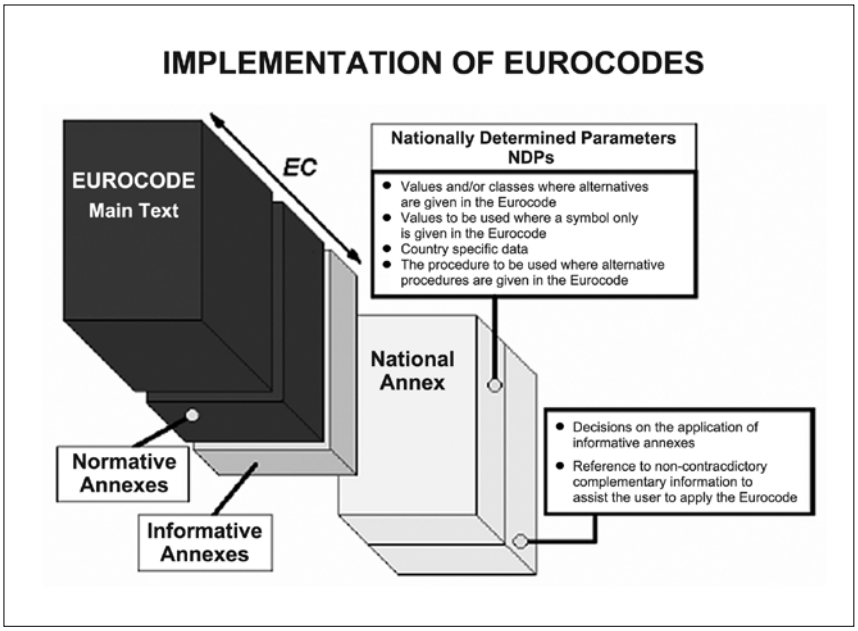

Figure 1: National Annex within the Eurocode (after Frank)

The European Codes were designed to be adopted by member states of the European Union (EU) and the European Free Trade Association to enhance free trade within the EU and improve competitiveness of the European construction industry elsewhere. Although the Main Text of the Eurocodes is fixed (cannot be changed), individual countries are allowed to include non-contradictory "Nationally Determined Parameters" (*e.g.* partial factor values in design) in an accompanying text called the "*National Annex*" (see Figure 1).

Besides EU member states, other countries have taken steps to review their design standards. For example, (a) South Africa – drafting their National Annex to the Eurocodes; (b) Singapore – *Singapore National Annex* to the Eurocodes at various stages of completion; (c) Hong Kong – redrafting Geoguides to make reference to Eurocodes; (d) Japan – represented as an "observer" in the Eurocode drafting committee; incorporating Eurocode principles in their own code (dominated by seismic design); (e) Middle East – Eurocodes being used in practice although not recognised as national codes. It seems likely that EC7, the Eurocode for Geotechnical Works, will be widely accepted by many countries around the world. The combination (or inclusion) of principles from British BS, German DIN and French Codes in the Eurocodes should ensure wider acceptance as compared to the BS alone.

THE IEM DRAFTING COMMITTEE

Acting on the advice of industry players, the Department of Standards, Malaysia (DSM) has decided to adopt the Eurocode for Malaysian practice. DSM, acting under the authority of the Minister of Science, Technology and Environment, has appointed SIRIM Berhad (SIRIM) to manage the works of the numerous Standard Development Committees (SDC) and Standard Writing Organizations (SWO). In a Board of Engineers Meeting on 11 November 2008 which involved all relevant governmental, SIRIM and engineering practitioners, it was resolved that IEM be the SWO to head the drafting of the Malaysia National Annex to EC7. Besides this, IEM is also the SWO for *Malaysia National Annexes* to EC0, EC1, EC2 and EC3, dealing with general design principles, design loads and structural design.

The Geotechnical Engineering Technical Division (GETD) of IEM formed a Drafting Committee consisting of experienced geotechnical engineering practitioners in 2007 to study EC7 and its impact on the local industry under the chairmanship of Ir. Dr Ting Wen Hui. The Chief Drafter

is Ir. Tan Yang Kheng. The committee decided that since the Malaysian practice has traditionally followed the UK practice, the *Malaysia National Annex* will broadly follow the *UK National Annex*.

EC7 has been developed over several decades in Europe. To avoid "reinventing the wheel" and due to the shortness of time, the committee decided to solicit help from European experts involved in the drafting of the Code. In this regard, Prof. Brian Simpson, Chairman of the UK National Annex Drafting Committee of Eurocode 7, and Prof. Roger Frank, European Chairman of the Drafting Committee of Eurocode 7, who both continued to serve in the Eurocode Maintenance Committee, agreed to act as advisors to the Drafting Committee.

The committee plans to finalise its recommendations by the last quarter of 2009. The document will then be reviewed by SIRIM's Technical Committee on Geotechnical Works and DSM before the document is circulated for public comment. Seminars and workshops have been and will continue to be organised across the nation to educate and familiarise design engineers with the new code.

UNIFORM BUILDING BY-LAW (UBBL)

Besides the *Malaysia National Annex*, IEM is also assisting the Ministry of Housing and Local Government in their effort to revise the UBBL under the Street, Drainage and Building Act 1974. The UBBL suffers from lack of development, maintenance and promotion. The By-Laws stipulates that the Malaysian Standard Specification and the Malaysian Standards Code of Practice (MSCP) are deemed to prevail over the British Standard Specifications and the British Standards Code of Practice (BSCP) respectively. Other than the By-Laws contained within the UBBL, there is currently no legislation in place to regulate the use of Code of Practices in Malaysia. It is recognised that the Codes of Practice referred to in the UBBL are out of date, for example, CP2004 has long been superseded by BS8004. IEM has recommended that the revised UBBL will incorporate the use of EC7 and the *Malaysia National Annex* to EC7.

FUNDING

The cost of developing and drafting a *Malaysian National Annex* to EC7 is high and time consuming. It is understood that neither DSM nor SIRIM have been allocated any funds for this important endeavour and are relying mainly on volunteers. IEM, being a learned society, should not need to finance the works of the committee to draft the *Malaysian National Annex* to EC7. Notwithstanding, it would not be prudent to delay the work until funds are available. Hence, finance is being drawn from the GETD accounts and reimbursement will be made when outside funds become available.

HOW WILL EC7 AFFECT THE MALAYSIAN ENGINEERING PRACTICE?

EC7 introduces a major change in design philosophy, from the traditional allowable (a.k.a. permissible) stress design involving a single, lumped factor of safety to the limit state design in which various possible modes of failure are considered and verified with different partial (safety) factor values. Therefore, Malaysian engineers will have to make a drastic shift to using "limit state design" for geotechnical design. In contrast, structural design has been utilising limit state design since the introduction of CP110 about 35 years ago. Basically, this means that the design is checked for both safety (ultimate limit state) and functionality (serviceability limit state). Design is carried out in conjunction with partial factors applied on action (loads), resistance, soil parameters, *etc*.

Furthermore, geotechnical positions are still in the state of evolution in Malaysia, with many issues still unresolved in technical and practical applications. Some of these aspects may need to be addressed in the Malaysia Annex.

Special treatment may also be required on challenging ground conditions such as foundations on limestone and treatment of peaty soil. Local knowledge and case histories would be studied and perhaps some form of guidance provided in the Annex.

EC7 does not cover all aspects of geotechnical engineering. For example, settlement reducing piles are not specifically covered. Other guidance notes can be drafted later to be "non-contradictory" and complementary to EC7. ■

REFERENCE

[1] Frank, R., IEM Workshop on Eurocode 7: Geotechnical Design. Kuala Lumpur, July 2009.

Circulating in cyberspace ...

Sanity ... (engineers beware!)

During a visit to the mental asylum, I asked the director, "How do you determine whether or not a patient should be institutionalized."

"Well," said the director, "we fill up a bathtub, then we offer a teaspoon, a teacup and a bucket to the patient and ask him or her to empty the bathtub."

"Oh, I understand," I said. "A normal person would use the bucket because it's bigger than the spoon or the teacup."

"No." said the director, "A normal person would pull the plug. You would need a bed here ..."