



## A Concrete Code for Africa

### Jan A Wium

Professor  
University of Stellenbosch  
South Africa  
[janw@sun.ac.za](mailto:janw@sun.ac.za)

Jan Wium, born 1957, received his BScEng from the Univ. of Pretoria in South Africa and a PhD from the EPFL in Switzerland. He specializes in design and analysis of reinforced concrete structures.



### Ali S. Ngab

Professor,  
El Fatah University, Tripoli,  
Libya  
[ngab@acmc-ngo.org](mailto:ngab@acmc-ngo.org)

Ali S. Ngab, born 1950, received his Ph.D in Structural engineering from Cornell Univ. MS from Pennsylvania State University. He specializes in the behaviour and design of reinforced concrete structures.



## Summary

Many countries in Africa use either foreign developed concrete codes or no codes at all. This paper presents the process for the development of a concrete code for Africa. The code will use existing international codes as reference documents, but will reflect the materials, construction practice and local environment of the African regions. The basis of design and durability aspects will receive special attention in the development of the code. A working group structure has been created, consisting of African participants and international specialists. The task is now to compile information about the African continent which will include climatic and environmental regions, materials information, level of technology and training, and construction practices. Decisions are also needed on the scope of the code, both as it relates to structures and loading. The process started towards the end of 2005 and a date of 2010 has been set for the preparation of a first draft.

**Keywords:** Africa, climate, concrete, construction, design code, durability, environment, materials, technology.

## 1. Introduction

In order to support its economic growth, Africa needs to develop its infrastructure in this twenty first century. Nowadays, in Africa there are various standards and codes for the design and practice in concrete and concrete structures. Some African countries such as Egypt, South Africa and Zimbabwe have developed their own codes based on international and accumulated local experience. Other countries adopted international foreign codes, whereas, many countries have neither a local code nor an adopted one. Many countries use several codes sometimes in the same project.

Obviously, foreign codes reflect the source of their making. Codes which are developed in Europe, America or Asia will reflect the material quality, technological level, climate and economic conditions of these regions. These codes may be inappropriate for direct application in another region of the world. Globally, the world is merging on the technological level on three basic codes for concrete construction and design. These are the American concrete code ACI-318 [1], the European concrete code Eurocode-02 [2] and the Asian model concrete code [3]. It is quite logical that the African continent in its stride for unification on the political and economic levels, must start drafting a unified standard for concrete design and construction. This step will facilitate and accelerate economic and technological development in the building industry.

This paper provides an overview of the process for the development of a concrete code for Africa. It provides the background to the code development initiative and provides an appraisal of the African continent. The paper highlights two aspects that need special attention, namely basis of design and