

ICS 91.080.40

ISBN 0-626-12497-2

SABS
0100-1*

**This standard references other standards*

Edition 2.2

2000

SOUTH AFRICAN STANDARD

Code of practice

The structural use of concrete

Part 1: Design

Consolidated edition incorporating amendment No. 1 : 11 April 1994 technical corrigendum No. 1 : 26 September 1994 amendment No. 2 : 31 March 2000
--

ICS 91.080.40

SABS 0100-1
Ed. 2.2

SOUTH AFRICAN BUREAU OF STANDARDS

CODE OF PRACTICE

THE STRUCTURAL USE OF CONCRETE

PART 1: DESIGN

Obtainable from the

South African Bureau of Standards
Private Bag X191
Pretoria
Republic of South Africa
0001

Telephone : (012) 428-7911
Fax : (012) 344-1568
E-mail : sales@sabs.co.za
Website : <http://www.sabs.co.za>

COPYRIGHT RESERVED

Printed in the Republic of South Africa by the
South African Bureau of Standards

SABS 0100-1

Ed. 2.2

Notice

- | This part of SABS 0100 was approved in accordance with SABS procedures on 13 August 1992.
- | Amendment No. 2 was approved in accordance with SABS procedures on 31 March 2000.

Amdt 2, March 2000

NOTE 1 In terms of the Standards Act, 1993 (Act 29 of 1993), no person shall claim or declare that he or any other person complied with an SABS standard unless

- a) such claim or declaration is true and accurate in all material respects, and
- b) the identity of the person on whose authority such claim or declaration is made, is clear.

NOTE 2 It is recommended that authorities who wish to incorporate any part of this standard into any legislation in the manner intended by section 31 of the Act consult the SABS regarding the implications.

This part of SABS 0100 will be revised when necessary in order to keep abreast of progress. Comment will be welcome and will be considered when this part of SABS 0100 is revised.

Foreword

- | Edition 2.2 cancels and replaces all previous editions **Amdt 2, March 2000**

Annex A (Methods of checking for compliance with serviceability criteria by direct calculation), annex B (Movement joints), annex C (Elastic deformation of concrete), annex D (The design of deep beams) and annex E (Bibliography) are for information only.

SABS 0100 consists of the following parts, under the general title *The structural use of concrete*:

- *Part 1: Design*

- *Part 2: Materials and workmanship*

A vertical line in the margin shows where the text has been modified by amendment Nos. 1 and 2.

Introduction

The Council of the South African Bureau of Standards decided that the South African code of practice for the structural use of concrete should be based on the British Standards Institution codes of practice BS 8110-1:1985 and BS 8110-2:1985. It should be emphasized, however, that the South African code uses different loading procedures (compatible with section 4 of SABS 0160:1989) and introduces a few minor changes on account of South African conditions.

Attention is drawn to the normative references given in clause 2 of this standard. These references are indispensable for the application of this standard.

ISBN 0-626-12497-2

Contents

	Page
Notice	ii
Foreword	ii
Introduction	ii
Committee	x
1 Scope	1
2 Normative references	1
3 Limit states design	2
3.1 General objectives and recommendations	2
3.2 Limit states requirements	2
3.2.1 General	2
3.2.2 Ultimate limit state (ULS)	2
3.2.3 Serviceability limit states (SLS)	4
3.2.4 Other considerations	6
3.3 Loads and strength of materials	7
3.3.1 Loads	7
3.3.2 Strength of materials	7
3.3.3 Values for the ultimate limit state (loads and materials)	8
3.3.4 Values for serviceability limit states (loads and materials)	9
3.4 Analysis	10
3.4.1 General	10
3.4.2 Properties of materials	10
3.4.3 Analysis (ultimate limit state)	11
3.4.4 Analysis (serviceability limit states)	12
3.4.5 Model analysis and testing	12
3.4.6 Experimental development of analytical procedures	12
4 Reinforced concrete (design and detailing)	15
4.1 General	15
4.1.1 Basis of limit states design	15
4.1.2 Stability	15
4.1.3 Durability and fire resistance	15
4.1.4 Loads	16
4.1.5 Strength of materials	16
4.1.6 Other considerations	17
4.2 Analysis of structures and structural frames	17
4.2.1 Analysis of complete structures and complete structural frames	17
4.2.2 Analysis of structural frames supporting vertical loads only	17
4.2.3 Analysis of structural frames supporting vertical and lateral loads	18
4.2.4 Redistribution of moments	19
4.2.5 Column and beam construction	19
4.3 Beams	20
4.3.1 General	20
4.3.2 Continuous beams	21